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Перспектива глобалізації та капіталізації сільського господарства Європи в постковідний період

Анотація. *Особливо актуальним в даний час є вивчення впливу глобальної кризи – пандемії, викликаної інфекцією COVID-19, на країни та їх сталий розвиток. Дана стаття присвячена дослідженню наслідків популярного тренда глобалізації, визначеної замкнутості принципів капіталізації і, звичайно ж, впливу глобальної кризи, викликаної COVID-19. Дослідження спрямовано на підтвердження трансформації тенденцій сталого розвитку і переходу від світової глобалізації до національної капіталізації потенціалу сільськогосподарського підприємництва в сучасних умовах глобальної кризи Covid-19. Мета досягнута за рахунок обліково-аналітичного супроводу і математичного аналізу квадратичної кореляційної і регресійній залежності інтегрального показника сталого розвитку. Методологія дослідження складається з аналізу і збору економічних, екологічних і соціальних даних про сільське господарство європейських країн. Були відібрані найбільш значимі показники шести країн: України, Німеччини, Угорщини, Румунії, Польщі та Білорусі. Використаний індексний аналіз для формування інтегрального показника – індексу сталого розвитку. Також використано інструменти Microsoft Excel. Проведено індексний аналіз основних показників сталого розвитку, що дало змогу сформувати інтегрований індекс сталого розвитку сільського господарства та побудувати лінію тренду і спрогнозувати вектори глобалізації / капіталізації. Авторами обґрунтовано прогноз: якщо інтегральний індекс сталого розвитку сільського господарства має тенденцію до зростання, то це свідчить про безперервний процес глобалізації. Ця закономірність відповідає Білорусі та Румунії і підтверджена на основі імперських досліджень. Також представлені розрахунок і прогноз переходу від глобальної глобалізації до національної капіталізації в результаті впливу пандемії і карантину. Ця закономірність властива Угорщини, Німеччини, Польщі та України.*

Ключові слова: *глобалізація, капіталізація, аналіз, облік, сталий розвиток, сільське господарство, COVID-19.*

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The Perspective of European Globalization and Capitalization of Agriculture in the Post-Covid Period

Abstract. *Especially relevant at the present time is the study of the impact of the global crisis – a pandemic caused by the infection COVID-19 on the countries and the world's sustainable development. The consequences of the popular trend of globalization, a certain closedness of the principles of capitalization, and, of course, the impact of the global*

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crisis caused by COVID-19 were investigated in the scientific work. The study aims to confirm the transformation of sustainable development trends and the transition from worldwide globalization to national capitalization of the agricultural entrepreneurship potential in the modern conditions of the global crisis of Covid-19. The goal will be achieved by tasks through accounting and analytical support and mathematical analysis of the quadratic correlation and regression dependence of the integrated indicator of sustainable development. Research methodology consist of analysis and collection of economic, environmental, and social data of agriculture in European countries. At this stage, the most significant indicators of six countries were selected: Ukraine, Germany, Hungary, Romania, Poland and Belarus. Index analysis was used for formation of an integral indicator – a sustainable development index. Also Microsoft Excel tools were used. An index analysis of the main indicators of sustainable development is provided in the paper. On the basis of the integrated index of sustainable development of agriculture, a trend line was built and a forecast of the vector of globalization/capitalization was made. An upward forecast of the integrated index of agriculture sustainable development, which indicates a continuous process of globalization was proved in the paper. This pattern corresponds to Belarus and Romania and was proved by the basis of imperial studies. The calculation and forecast of the transition from global globalization to national capitalization as a result of the impact of the pandemic and quarantine were presented in the scientific work too. This pattern is inherent in Hungary, Germany, Poland and Ukraine.

Keywords: *globalization, capitalization, analysis, accounting, sustainable development, agriculture, COVID-19.*

1. Introduction

For the time being, in the recent past, everyone spoke of globalization as a factor in the vector of development of states, associations of countries and the world as a whole. Of course, multinational companies were the driving forces and catalysts of these processes in each country of their representation. However, on the other hand, globalization enhances not only interconnections but also emphasizes the uniqueness of people and the culture of civilization. Globalization is a derivative of the evolution and acceleration of scientific and technological progress in developing countries. World experts and researchers justify globalization as the main factor in solving not only economic problems, but also in improving external relations, improving the management system, and ensuring sustainable development.

However, in addition to positive aspects, there are some opinions that the capitalization of individual companies will be so great that it will be greater than the sum of the individual national accounts of individual independent states. This opposite point of view is shared by anti-globalists, who are supporters of localization processes, namely the capitalization of the potential of agricultural entrepreneurship. And with the negative consequences of recent events – a global pandemic, their positions and persuasiveness also have the right not only to exist but also to develop.

In the current conditions, many things and principles in the world are in a state of transformation, therefore, it becomes necessary to study modern world trends in the development of globalization or the transition to capitalization of the potential of agricultural entrepreneurship. These changes should have regularity and influence on other indicators. Therefore, this study is relevant for the development of methods for assessing and forecasting globalization and capitalization processes of individual states in light of the global trend of sustainable development.

2. Literature review

2.1. World globalization

Globalization refers to increases in the movement of finance, inputs, output, information, and science across vast geographic areas. The gains from globalization increase net income in many places and facilitate decreases in levels of poverty and may thereby increase levels of food security. However, there is an implication of frictionless movement and perfect knowledge that understates the requirements for benefiting from globalization.

Globalization can greatly enhance the role of agriculture as an engine of growth in low-income countries by making it possible for agriculture to grow considerably faster than domestic consumption. It also increases the potential for agriculture to increase food security through enlarged multipliers to the massive, employment-intensive, non-tradable rural non-farm sector. With such potential benefits, it is important to understand what is required for participation and to ensure that the poor and hungry are lifted out of poverty and hunger by these processes [1].

2.2. Coronavirus disease (COVID-19) pandemic

From past pandemics that the world has experienced, it has been shown that quarantines and panic have an impact on human activities and economic growth; but, the effect also occurs in agricultural activities. When there is an outbreak of infectious disease, there is also an increase in hunger and malnutrition.

The situation worsens as the disease progresses, making movement restrictions more and more stringent, causing labor shortages for the harvest, or difficulties for farmers to bring their products to market.

Agriculture is one of the most important sectors in human development and is related to food security; hence, the objective of this research is to analyze the relationships between agriculture globalization and capitalization and how these relationships are being affected by events related to the disease of COVID-19 [2].

2.3. National capitalization

The re-capitalization of agriculture is the rapprochement between producers and unaccounted resources. In this context, the root “capital” in “re-capitalization” is synonymous with “proximity”.

The re-capitalization of agriculture favors short food supply chains in order to promote farmers’ economic autonomy. In addition to production, the farmer can carry out all or part of the processing and marketing, within the territory where the final product will be consumed. Reinvestment of the added value in the territory is

therefore possible with agricultural projects or citizens, for instance with the creation of value of capitalization. This enables reinforcement of the viability of farms and local businesses, a boost of the municipalities, and an increase of the territories' attractiveness. The reconciliation of "cities" and "countryside" enabled by capitalization increases production transparency towards consumers and the creation of a strong farmer-consumer social fabric.

Quarantine measures and, as a consequence, the violation of export-import trade flows in many countries of the world led to a rapid reorientation to local producers. That is why the capitalization of the economy is becoming an urgent issue. The Covid-19 pandemic has demonstrated the importance of developing and supporting local producers, creating an efficient supply chain to the end consumer, especially against the backdrop of stopping or restricting transport flows between countries. For the sake of economic security, cities must be able to function autonomously and independently produce essential goods. This means that local entrepreneurs will need to focus on concentrating their capital investments and measure future globalization or capitalization own resources.

Before starting the development of this scientific article, we researched a large amount of scientific, statistical and analytical literature. The following sources have made the greatest impact on our research in the study of the principles of sustainability in globalization [3, 4, 5, 6, 7, 8, 9]. Also, a special influence on this scientific article was made by such sources as [10, 11, 12]. And of course, the main reason for comparing the principles of globalization and capitalization was the sudden global crisis in the sustainable development of the world caused by the COVID-19 virus [13, 15]. In this regard, we decided to do some research on the confrontation between globalization and capitalization as a result of recent events.

3. The aim

Statement of the objective and tasks of the study is to confirm the transformation of sustainable development trends and the transition from worldwide globalization to national capitalization of the agricultural entrepreneurship potential in the modern conditions of the crisis of Covid-19.

4. Research methodology

The goal will be achieved through accounting and analytical support and mathematical analysis of the quadratic correlation and regression dependence of the integrated indicator of sustainable development. The research methodology is shown in Fig. 1.

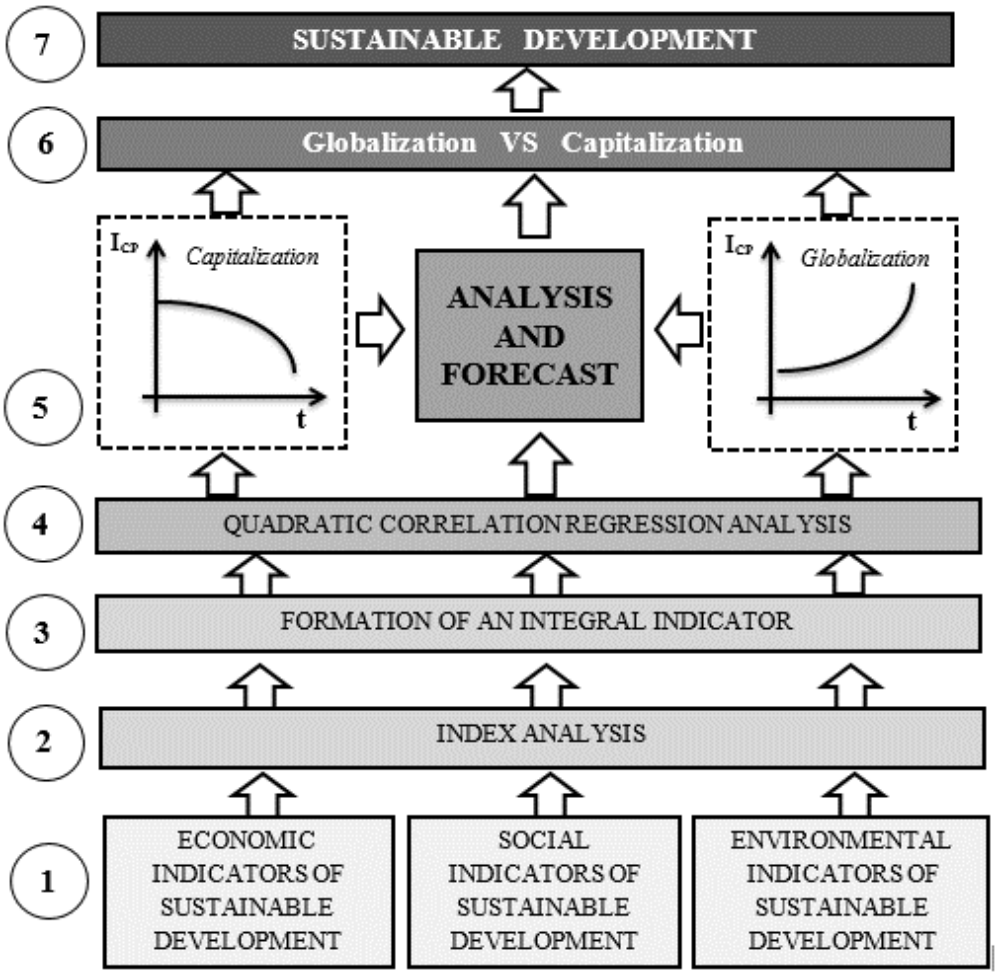

Figure 1. **Research methodology**

Source: author findings.

• Analysis and collection of economic, environmental, and social data. At this stage, the most significant indicators of six countries were selected: Ukraine, Germany, Hungary, Romania, Poland and Belarus. Such indicators that had a significant impact as a result of the pandemic crisis, lockdowns, and quarantine measures in 2020 include GDP, export and import volumes, mortality population, unemployment rate, CO2 emissions, volumes of household waste, most of these indicators, particularly from agriculture. The analysis period covers the period from 2009 to 2020. The ecological and social groups of indicators included 2 indicators each, and the economic – 3, as the most significant and most mutual influence on the previous two. Data were obtained from official and verified sources of the international statistical base Knoema [14].

, Index analysis – the use of accounting and analytical procedures for generalization and primary processing of data. To unify all indicators for single absolute format, the procedure for calculating indices was carried out using the formula:

$$I_n = \frac{P_n}{P_{n-1}}, \qquad (1)$$

where *n* is the period (year) of the study

I_n – indicator index for the period of analysis;

P_n – indicator for the period of analysis;

P_{n-1} – indicator for the previous period.

To calculate the indices of economic, social, and environmental indicators for 2010-2020, the period from 2009 to 2020 was analyzed. (Providing the results of calculations by personal appeal to the authors).

ƒ Formation of an integral indicator – an agriculture sustainable development index (ASD index). At this stage, it was decided to evenly distribute the share and level of significance of each indicator of the country's sustainable development. The sustainable development index for each period is calculated by the formula:

$$I_{CP_n} = \frac{I_1+I_2+I_3+\cdots+I_n}{n} = \frac{\sum_{i=1}^{n} I_n}{n}, \qquad (2)$$

where, I_{CPn} - index of sustainable development of the period;

n – the period (year) of the study;

I_n –indicator index for the period of analysis;

(Providing the results of calculations by personal appeal to the authors).

„ Carrying out analytical procedures using technical means of information support Microsoft Excel, namely, correlation and regression analysis followed by the formation of a trend line of the fourth degree [15, 16]. The calculation results are shown in Fig. 2.

… Analysis and forecast of the results obtained. After visualizing the trend line of the integral index of agriculture sustainable development, the trajectory and rhythm of globalization processes within the country becomes obvious. When predicting this trend for 2-3 years, 2 scenarios are possible:

1. If $y = ax^4 + bx^3 - cx^2 + dx - e \rightarrow \infty$, then the processes of globalization have a positive trend and the country as a whole is pursuing such a policy.

2. If $y = ax^4 + bx^3 - cx^2 + dx - e \rightarrow 0$, then the processes of capitalization have a negative tendency and the country as a whole is pursuing a policy of capitalization of the agricultural entrepreneurship potential.

In this case, the value of the reliability of the approximation R2 is important, which can be within the following limits:

– more than 0.8 – the constructed trend line forecast has greater reliability;

– from 0.5 to 0.8 – the constructed trend line forecast has average reliability;

– up to 0.5 – the constructed trend line forecast has low reliability.

† Preliminary analysis of globalization and capitalization trends. Assessment of the relationship between the agriculture sustainable development trend and the policies of globalization and capitalization. Formation of the conclusion on the level of sustainable development and its dynamics. Confirmation of the theory about: direct and inverse dependence of the trend of globalization and capitalization on the integral index of sustainable development.

p Formation of a research hypothesis: is there a theoretical, methodological, and methodological ability of the integral index of sustainable development to predict and solve the problems of globalization and capitalization policy of the agricultural entrepreneurship potential?

5. Results

The analysis of the trend and forecast of the integrated indicator of sustainable development of five countries is presented in Figure 2.

When analyzing identical drawings fig. 2.3 Hungary, fig. 2.4 Germany, fig. 2.5. Ukraine and fig. 2.6 Poland trend lines have a cyclical nature of changes in the integral indicator of agriculture sustainable development until 2020. A particularly tangible indicator of the world turning point was the geopolitical conflict between Ukraine and Russia in 2014 when the trend line of the integrated indicator of sustainable development began to move towards globalization and it sought to increase until 2019. In the period 2014-2019. The globalization directions of the state policy of Ukraine were felt. During this period, Ukraine received significant support in the world arena and the European integration processes intensified. But in fig. 2.3 Hungary, 2.4 Germany, 2.5. Ukraine, and 2.6 Poland in 2020 began the crisis caused by the global pandemic Covid-19. Through a significant impact on individual economic, social and environmental indicators of agriculture sustainable development (their indices began to decline), these countries began to change the globalization policy to capitalize their own resources, accumulate internal potential necessary for a quick exit from the crisis with minimal losses and negative changes in indicators (sustainable development indices). Fig. 2.3, 2.4, 2.5, 2.6 it becomes obvious that until 2024 Hungary will finally change the policy of globalization to capitalization, Germany – until 2028, Ukraine and Poland – until the end of 2022/2023.

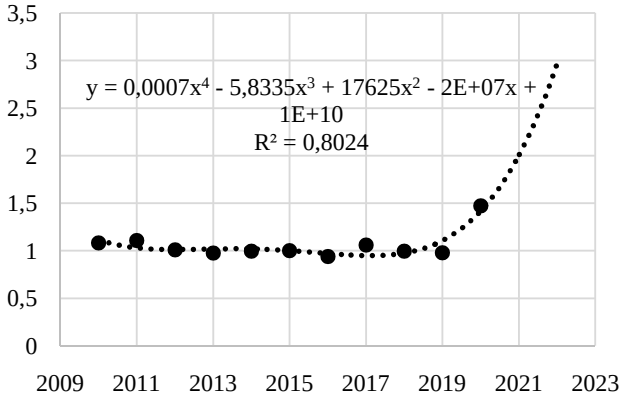

Fig. 2.1. Belarus

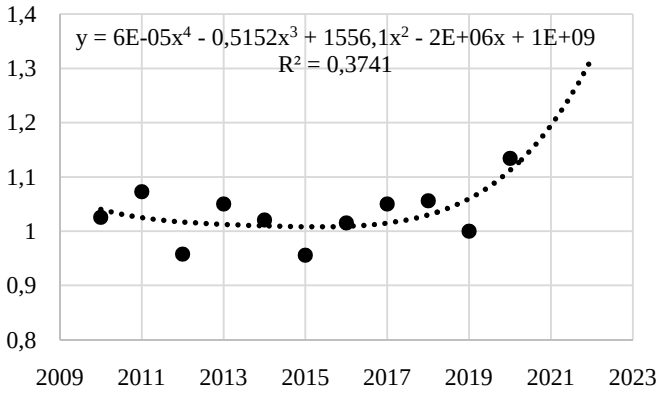

Fig. 2.2. Romania

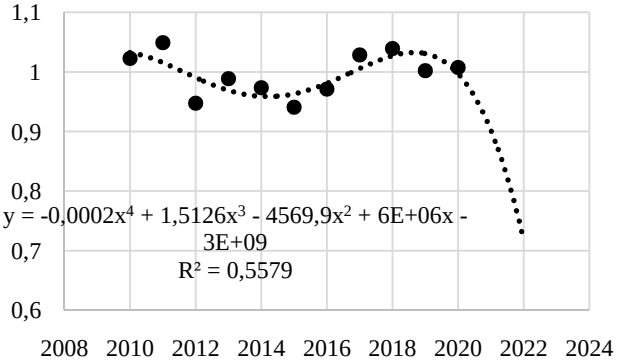

Fig. 2.3. Hungary

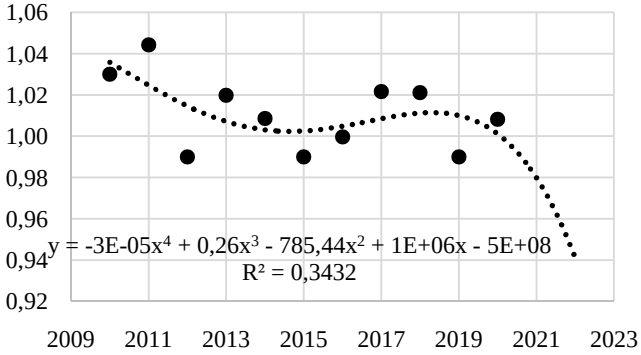

Fig. 2.4. Germany

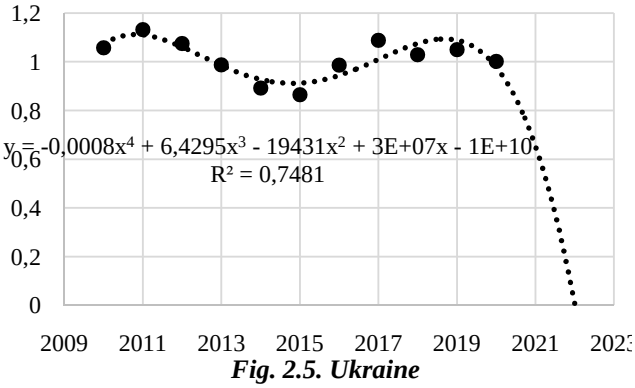

Fig. 2.5. Ukraine

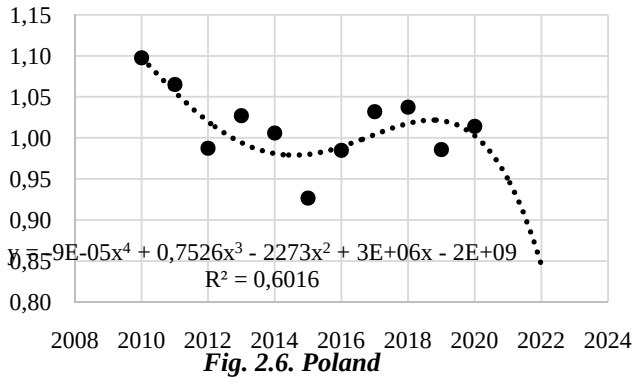

Fig. 2.6. Poland

Figure 2. **Trend line of the integrated indicator of agriculture sustainable development and forecast of globalization/capitalization of five European countries**

Source: author calculations.

Analyzing the data in Fig. 2.1, 2.2 Belarus and Romania had the largest negative dynamics of agriculture sustainable development indices among the analyzed countries, where the increase in positive economic indices was several times less than the increase in negative indices caused by the consequences of the pandemic. Because of this, the forecast for the trend of the indices of agriculture sustainable development and globalization tends to increase in the future. Therefore, for these countries, it is especially important to analyze the annual indicators of sustainable development and build on this basis a new forecast to track the pace of the ratio of globalization and capitalization.

The value of the reliability of approximation R^2 for calculating the trend of the integral index of agriculture sustainable development and the forecast of the globalization/capitalization policy for Ukraine and Belarus, (over 0.7) are quite high and their forecasts are the most reliable. Hungary and Poland have average result of approximation (0.55-0.6). For Romania and Germany, the reliability is on the verge of 0.34-0.37. These data may indicate the inaccuracy of the onset of the final transition from globalization to capitalization, but these values are enough to assert the direction of increase or decrease.

6. Conclusions

As mentioned at the beginning of the work, to identify the impact on the behavior model of globalization/capitalization, 7 factors-indices of sustainable development were taken, including 3 economic and 2 indices of social and environmental nature. All factors are reduced to an index value and an

integrated indicator is determined. This made it possible to unify all indices and indicators for comparison and analysis, not only for aggregation into an integrated index but also for comparing it between countries.

Now we will consider each component of sustainable development, the change in its index, and the principle of referring to the signs of globalization or capitalization:

1. The economic component includes GDP indices, agriculture export and import volumes. If these indices have annual positive dynamics, this indicates the openness of the economy, the growth of external economic relations, and, as a result, the strengthening of globalization processes in the economy. And if this aggregate index goes down it is a sign of internal capitalization.

2. The social component includes general mortality and agricultural unemployment rates. The positive dynamics of these indices testifies to the negative consequences of demographic and social crises and pandemics. The increase in mortality indicates open borders, ineffective quarantine measures, and lockdowns, etc. Accordingly, the positive dynamics of social indices of sustainable development indicates the presence and predominance of globalization over capitalization.

3. The environmental component includes indices of agriculture CO2 emissions and volumes of waste. The positive dynamics of these indicators, even under the conditions of world quarantine, testifies to globalization sentiments, the expansion of production, or the reduction of measures to reduce emissions and waste.

So, we can visualize two options for the flow of events in which the following scenario development is possible. The first scenario is when we have a gradual decrease in the predicted integral index of agriculture sustainable development, which after some time reaches zero (point n Fig. 3). This point in time is the end of the dominant globalization and the beginning of an expanded capitalization of resources and means of preserving the sustainable development of the country agriculture as a whole and overcoming the consequences of the pandemic crisis with minimal losses. (Fig. 3.1).

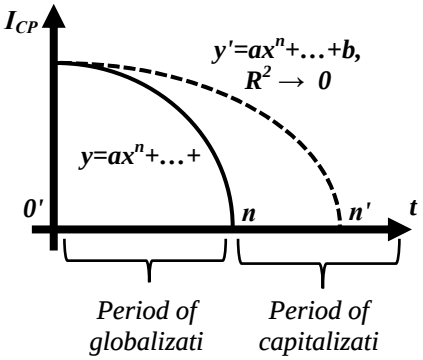

Fig 3.1

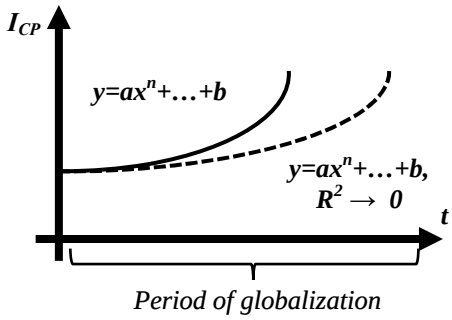

Fig 3.2

Figure 3. **Model of the transition of national politics of globalization and capitalization**

Model fig. 3.1 typical for Hungary, Germany, Ukraine, and Poland, which were calculated in the previous paragraph. These experimental calculations indicate that the lower the value of the approximation reliability R^2, the later the maximum capitalization occurs (line $y'=axn+\ldots+b$, in Fig. 3) and, accordingly, the transformation point *n'* shifts to the right.

At the same time, analyzing the calculations and graphical representation of the integral index of agriculture sustainable development of Belarus and Romania, it becomes possible to present the following theory (Fig. 3.2).

In this theory, the level of reliability of approximation R^2 also has a significant impact on the elasticity of the agriculture integrated index and, accordingly, on the policy of globalization. If R^2 tends to zero, then the globalization process has features of its own experience and careful adaptation to external factors. But in the end, this model is devoid of capitalization principles. Although, as we have already noted, annual analysis and recalculation of the forecast will be the best method to reduce risks and increase the accuracy of forecasts.

The pandemic of acute respiratory disease COVID-19 caused by the SARS-CoV-2 coronavirus has become the factor that forced the whole world to revise not only its development forecasts, its short-term economic and social policy, but also to approach the formation of its own priorities for the long-term in a different way. The lessons learned by humankind from this pandemic can change not only governance models in the future but also the social behavior of humankind from globalization to capitalization.

With our calculations, we tried to prove that the global trend of globalization is losing its positions among countries and especially those that are actively developing and/or are at an active stage of internal changes and reforms.

Summing up, it becomes possible to summarize the following:

– The Institute of Accounting with the help of accounting and analytical support tools is an effective forecasting tool and, accordingly, a means of building an effective model of sustainable development of agriculture.

– An integral indicator of agriculture sustainable development, which combines economic and eco-social indicators, is a useful source of information on the dynamic development and direction of agrarian national policy.

– Correlation-regression analysis, trend line construction, and forecasting can be a confirmation of the concentration of globalization or the moment of capitalization.

– The 2020 crisis caused by the COVID-19 pandemic has become a powerful catalyst for change and the transition from globalization to resource capitalization, effective policies, and a focus on self-interest within the country.

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