Inclusive Growth in an Era of Global Instability

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Abstract: Inclusive growth has been a well-researched topic in economic science, contributing to economic and social stability and predictable development conditions in developed and developing economies. However, as the world faces the prospect of prolonged political, economic, and social instability, with potential regional and global conflicts, it becomes crucial to re-examine the existing approaches to studying inclusive growth in these changing and unfavorable conditions. This study aims to identify the impact of economic instability on inclusive growth through the implementation of two consecutive stages: 1) the formation of an inclusive growth integral index based on the indicators of household consumption, domestic credit to the private sector, Gini index, etc., using principal component analysis, ranking, and Fishburne approach; 2) modeling the impact of economic stability indicators on the Inclusive growth index using regression modeling of panel data (GLS regression with fixed effects). The regression analysis results show that the growth of GDP per capita, the increase of general government expenditures, and the rise in the country's fiscal balance positively affect inclusive growth, while inflation reduces it. This analysis is essential for achieving the Sustainable Development Goals (SDGs), as inclusive growth directly supports multiple SDGs, including reducing inequality (SDG 10), eradicating poverty (SDG 1), ensuring decent work and economic growth (SDG 8), and fostering sustainable communities (SDG 11), etc. Understanding inclusive growth mechanisms will help authorities and stakeholders develop strategies aligned with the Sustainable Development Goals, ensuring equal opportunities and economic resilience.

Keywords: inclusive growth, sustainable development, economic instability, inequality, Inclusive growth index.

1 Introduction

Traditional economic growth often emphasizes the increase in gross domestic product and several macroeconomic indicators, which don't always reflect the improvement of the population's well-being. This approach can lead to an uneven distribution of wealth [1], when the benefits of growth are concentrated in the hands of a small part of the population, and a large part of society remains in poverty or with limited opportunities [5]-[6]. Inclusive growth, in contrast, focuses on ensuring an equal distribution of economic benefits among all members of society, including vulnerable groups. This approach contributes to social stability, reducing inequality and creating a fairer society.

Research on inclusive growth [7]-[14] is also extremely important for achieving the goals of sustainable development [15]-[19], as they help provide an integrated approach to solving economic, social [20]-[22] and environmental [23]-[24] problems faced by society. In addition to addressing the previously mentioned problems of poverty and inequality (CDG 1, 10, respectively), inclusive growth stimulates the creation of new jobs and supports social security (CDG 8), contributes to increasing labor productivity due to the involvement of more people in economic processes, which in turn stimulates the development of innovations (CDG 9) and general economic development [25]-[27]; takes into account environmental sustainability and long-term conservation of natural resources, which is critically important for future generations. At the same time, the inclusive approach emphasizes the importance of access to quality education (SDG 4) and health care (SDG 3), identifying barriersthat complicate equal access to these services and should become the basis for developing policies to overcome them.

However, as the world faces the prospect of prolonged political, economic, and social instability with potential regional and global conflicts, it becomes imperative to review existing approaches to studying inclusive growth in these changing and adverse environments.

Investigating the impact of economic stability factors on inclusive growth helps shape policies to ensure sustainable development and social justice and reduce social inequality in a critical period of economic hardship. Such research helpsunderstand how macroeconomic instability affects inequality, access to opportunity, and social justice. It also helps toconsider the global dimension of economic turbulence. Studying this impact is essential for international cooperation to consider inclusive aspects while developing economic and social policies to reduce inequality, social injustice, and the limited access of specific population

groups to the "social elevator". Researching the relationship between macroeconomic instability and inclusive growth helps create rational and effective approaches to overcoming economic difficulties and ensuring sustainable development that considers the interests of all population segments.

2 Literature review

A more detailed literature review is necessary to quantitatively assess inclusive growth and determine the influence of economic stability factors on it.

First, it should be noted that the approaches to the quantitative measurement of inclusive growth are quite differentiated due to the object of evaluation and/or the problem the author aims to solve.

According to one of the approaches, unemployment is the basis for measuring the inclusiveness of economic development [28], [29]. Thus [29], show the influence of resource dependence, financial depth, management of public expenditures, and the choice of production technologies on achieving inclusive growth through the unemployment factor. Ianchovichina E. and Lundstrom S. [28] determine that productive employment is the primary tool for sustainable and inclusive growth. They look for ways to accelerate growth rates by making fuller use of part of the labor force that is trapped in low-productivity activities or is wholly excluded from the process growth.

Research on inclusive growth with a pro-poor focus on growth is proposed by [30]-[33]. The authors [31] propose to define inclusive growth through PEGR ("poverty-equivalent growth rate"), which takes into account both the growth rate of average income and how the benefits of growth are distributed between the poor and the non-poor. According to the proposed approach, the PEGR determines whether growth is pro-poor in relative or absolute terms or is pro-poor "poverty reduction". The maximization of PEGR implies the maximum reduction of the poverty level and, accordingly, the growth of the inclusiveness of economic development. At the same time, in [33], PEGR is used to construct an inclusive growth index of inequality using the Gini index and 60 percent of the lowest population costs.

Inequality as a basis for analyzing the level of inclusive growth is considered in works [34]-[39]. In particular, in the work [39], the determinant of inclusive growth is defined as episodes of increase in GDP per capita without concomitant worsening of the distribution of household disposable income. Ali and Son [36] use the idea of a social opportunity function to measure the inclusiveness of development. In addition, they suggest using an opportunity index to provide a total rating to fill in the deficiency of the opportunity curve, mainly a partial rating. Accordingly, growth is inclusive if it increases the social opportunity function, which depends on the

average opportunities available to the population and how opportunities are distributed among the people.

Some studies [38] use all three indicators of achieving inclusive economic growth: economic growth that reduces inequality, poverty, and unemployment (or increases employment).

Several scientists use unified indicators of inclusive growth to solve the tasks set for them [40]-[42]. In [40] inclusive growth is measured by income growth and distributions, calibrated by combining GDP per capita growth and the GINI income inequality coefficient. The compдlex inclusive growth index, according to [43], includes four groups of components: 1) growth, productive employment, and economic infrastructure; 2) low income and equity (including gender); 3) aspects of inclusiveness of human capabilities; 4) aspects of inclusiveness of social protection; with its help, the authors try to determine country progress. Emphasis is placed on the factors related to the influence of the government and central banks in their study [42], using 42 factors that influence inclusive growth in the economic and financial spheres for evaluation.

Among the factors that have a positive impact on inclusive growth in studies [44], household consumption, export of services/goods, foreign investment, domestic investment, per capita income, and the average length of a year of education are singled out, while the level of open education has a negative impact unemployment and import of services/goods. Khan A., Khan G., Safdar S., Munir, S. and Andleeb Z. [45] emphasize that a significant impact on the achievement of inclusive growth, in particular in the countries of South Asia, have urban population and its level of development. Sajid A. and Ali A. [46] single out income per capita, level of education, macroeconomic situation, population growth, and female labor force as influencing factors on inclusive development. Respectively, in the South Asian countries analyzed by the authors, the first two determinants had a negative impact, while others are exclusively positive. Analysis of the effects of macrostructural factors on inclusive growth and components [37] showed that fiscal redistribution, women's labor force participation, productivity growth, FDI inflows, digitalization [38], [47] and savings to a large extent promote inclusive growth.

According to [40], the basis of inclusive growth is macroeconomic stability and structural changes. The role of the external sector can also be positive, as the terms of trade will facilitate greater inclusiveness, while financial deepening has notable implications for inclusive growth.

It should be noted that the specified factors or groups of factors are relevant in terms of countries and/or regions based on the data on which relevant calculations were made, and conclusions were formed in a specified period. Therefore, it is not expedient to consider this list unified and universal.

At the same time, no studies analyze the impact of economic instability on inclusive growth. Further research on inclusive growth, influencing factors, including crisis

factors, and policy research will be interesting for creating rational and practical strategies to overcome economic difficulties and ensure sustainable development that considers all population groups' interests. Accordingly, the main goal of this study is to check the existence of a direct influence of economic stability factors on the inclusive growth index.

3 Methodology

Fulfillment of the research task involved the implementation of two empirical blocks, namely: (1) formation of an integral index of inclusive growth; (2) modeling the impact of economic stability factors on the Index of inclusive growth.

3.1 Inclusive growth index

An essential stage in forming the Index of Inclusive Growth (IGI) is determining indicators that most accurately and thoroughly allow us to assess inclusive growth.

Considering the above and the literature review results, we identified four main directions in which we propose to evaluate inclusive growth: income inequality, unemployment, poverty, and access to financial, educational, and medical services. However, given the lack of annual statistical data, we excluded equal access to medical services from the analysis. In accordance seven indicators of inclusive growth were selected, including: Unemployment rate (*Unempl*); Gini income inequality index (*Gini*); Household consumption, billion USD (*Consump*); Domestic credit to the private sector, percent of GDP (*DomCred*); Tertiary school enrolment, percent of all eligible children (*TetSchool*); Share of population in poverty (50 percent of median income), percent (*Pov_Med*); Poverty, percent of population (*Pov*).

Given that most indicators have different units of measurement, it is impossible to form an integral indicator without bringing all indicators to a comparable form. Accordingly, all indicators are divided into stimulators (the growth of which has a positive effect on the level of the integral indicator) and inhibitors (the growth of which leads to a decrease in the status of the critical indicator). In the normalization process, Unempl, Gini, Pov and Pov_Med are considered inhibitors, while the remaining hands are drivers of inclusive growth.

Inhibitors were converted into a comparable form according to formula (1), and stimulants - according to formula (2):

$$x_n = \frac{x_{min}}{x_i}, \tag{1}$$

$$x_n = \frac{x_i}{x_{max}}, \tag{2}$$

where x_{min} – the minimum value of the indicator within the sample; x_{max} – the maximum value of the indicator within the sample; x_n – the normalized value of the indicator; x_i – the value of the indicator during the curtain period.

The application of the method of relative normalization allows you to concentrate the normalized values of indicators in the range [0; 1], where a more significant value of the indicator shows its higher role in ensuring inclusive growth.

For determining the contribution of individual indicators to the formation of the integral index, it is suggested to use the principal component analysis method (using the StataSE 18 software), the Fishburn formula and ranking should be used using the built-in function in the MS Excel software.

The application of the analysis of the main components will allow preliminary determination of the scale of influence of the indicators on the integral indicator. In particular, the importance of the parameters is determined based on a comparison of the averaged eigenvalues of the corresponding individual indicators. The averaged eigenvalue is determined not by the entire set of principal components but only by those that explain more than 70% of the total variation of the selected parameters. At the next stage, all calculated averaged eigenvalues of individual indicators of the formation of the integral indicator of inclusive growth of the country must be ranked. The highest rank will be given to the indicator for which the calculated average eigenvalue is the largest. It is also worth noting that if the averaged eigenvalues of some indicators are close or the same, they can be assigned the same rank. In the next step, the weighting coefficients for each indicator are determined according to the Fishburn formula. The weighting coefficients are determined by dividing the rank of the respective individual indicator by the total sum of the rank estimates of all indicators characterizing the relevant component of the state's national security.

The integral Index of inclusive growth (Inclusive growth index) is proposed to be calculated based on formula (3):

$$IGI = \sum_{i=1}^{n} w_i q_i, \tag{3}$$

where IGI – Inclusive growth index; w_i – the weight coefficient of the individual indicator of measuring inclusive growth; q_i – the actual value of a separate measurable index of inclusive growth.

3.2 The impact of economic instability on Inclusive growth

The next stage of this study is modeling the influence of the economic stability factors on the inclusive growth index.

A unified econometric tool – GLS regression panel data and the Hausman test – is proposed to study the cause-and-effect relationship between inclusive development and economic stability factors. The Hausman test will determine the functional form of the relationship (fixed or random effects model) that best fits the data sample. The dependent variable is the Index of inclusive growth. As independent variables, it is proposed to use the following indicators that characterize economic stability: Gross Domestic Product per capita, EUR (*GDP*); Inflation: percent change in the Consumer Price Index (*Inflation*); Foreign Direct Investment, percent of GDP (*Fdi*); Current account balance, percent of GDP (*Accountbal*); Foreign exchange reserves including gold, billion USD (*Fer*); Government spending, percent of GDP (*Gov*); Fiscal balance, percent of GDP (*Fis_bal*); Gross savings, percent of GDP (*Sav)*.

All stages of the research are conducted for a sample of 27 EU countries. The observation period is 2000-2022.

4 Results

The main task of this study was to determine the empirical regularities of the influence of economic stability on inclusive growth. The practical implementation of the task involves two stages, the results of which are presented below.

4.1 Formation of an Inclusive growth index

According to the analysis of the main components, it was found that the three main components explain 71.23 of the variation in the general indicators of inclusive growth. Thus, the importance of individual indicators for forming the Inclusive Growth Index is achieved using the average eigenvalues within these four eigenvectors of the main components (columns Comp_1–Comp_3, Table 1).

Table 1

Weighting coefficients of inclusive growth indicators*

	Comp_1	Comp_2	Comp_3	Average	Rank	WtC
Consump	0.0837	0.5016	0.4646	0.350	4	0.190
Unempl	0.3309	0.1937	0.5157	0.347	4	0.190
Dom_Cred	0.0707	0.6027	0.3544	0.343	3	0.143
Gini	0.5433	0.0024	0.1537	0.233	2	0.095
Pov	0.5136	0.004	0.1126	0.210	1	0.048
School	0.0058	0.5787	0.5965	0.394	5	0.238

Pov_Med	0.5653	0.1123	0.0213	0.233	2	0.095

*Comp – principal component eigenvector; WtC – weighting coefficient.

Source: authors' calculations in StataSE 18 software

This indicator (Average column, Table 1) is the basis for further ranking indicators using the appropriate built-in function of MS Excel (Rank column, Table 1). It was established that two indicators – Gini and Pov_Med have the same average eigenvalues, and also – Consump and Unempl. Therefore, the relevance of these individual indicators was assessed with the same ranks – 2 and 4. The sum of all levels for seven separate inclusive growth indicators is 21. Thus, the weighting coefficients of the Index of Inclusive Growth (column WtC, Table 1) are calculated by the ratio of the rank assigned to a separate indicator to the sum of all ranks.

Table 1 shows that indicators such as Tertiary school enrolment, household consumption, and unemployment rate are most important for ensuring inclusive growth in 27 European countries. In turn, poverty as a percent of the population is the least relevant among the selected indicators in the context of ensuring inclusive growth.

Considering the weighting factors in Table 1 and the normalized values of individual indicators, the inclusive growth index is calculated according to formula 3. The results of the IGI calculation for 27 European countries are presented in Fig. 1.

In 27 selected European countries, the potential of inclusive growth is only half used, as the level of the IGI during 2000-2022 varies in the range [0.141; 0.499] with a maximum value of the indicator of 1. Notably, the minimum IGI level was reached in 2000 in Romania and the maximum in Germany in 2022.

Germany, Denmark, and France boast the highest inclusive growth index scores. This indicates that these countries have not only achieved high levels of economic development but have also managed to ensure a more equitable distribution of benefits among their citizens, create effective social protection systems, and provide broad access to quality education and healthcare.

Romania, Bulgaria, and Croatia are the outliers according to this indicator. This suggests that these countries, despite some economic progress, still face serious challenges in ensuring inclusive growth. They may struggle with high poverty rates, significant income inequality, limited access to quality education and medical services for certain population groups, or underdeveloped social protection systems.

These results underscore the importance of not just stimulating economic growth, but ensuring that this growth is inclusive and beneficial for all segments of society. They also indicate the need for further efforts by European countries, especially those with lower IGI scores, to improve their citizens' quality of life and reduce socio-economic inequalities.

The varying IGI levels across Europe reflect the complex interplay of economic, social, and policy factors that contribute to inclusive growth. While some countries have made significant strides, there is still considerable room for improvement in harnessing the full potential of inclusive growth across the continent.

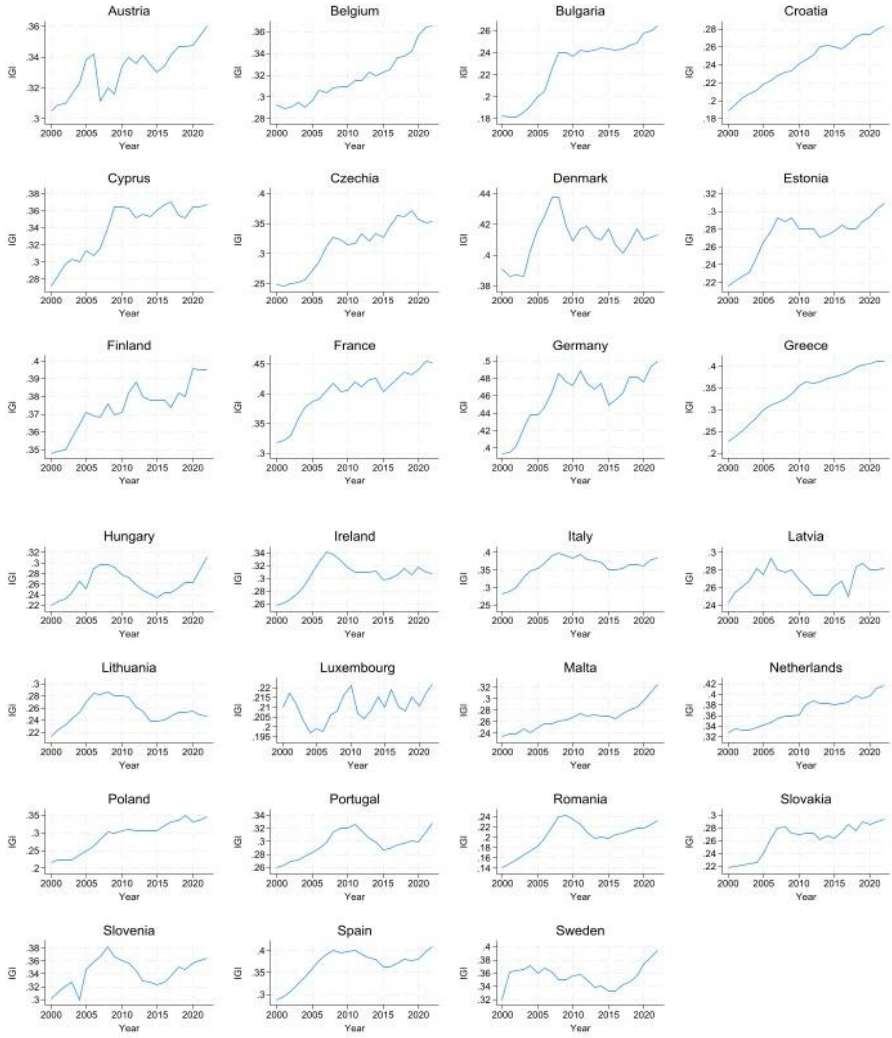

Figure 1

Inclusive Growth Index for 27 European countries in 2000–2022

Source: authors' calculations in StataSE 18 software

4.2 The impact of economic instability on Inclusive growth

To reduce the risk of obtaining unreliable results in creating a regression model, we first carried out a check for multicollinearity (Table 2), which prevents obtaining reliable modeling results and performing an analysis of functional relationships. According to the results, multicollinearity is not a significant problem in this model. VIF values for all variables are below the threshold value of 10, indicating an acceptable level of multicollinearity. It means that the independent variables in the model do not have a significant correlation with each other, and the results of the regression analysis can be considered reliable.

Table 2
Results of the model testing for multicollinearity

	VIF	1/VIF
accountbal	2.104	0.475
sav	1.853	0.540
gdp	1.518	0.659
fis bal	1.302	0.768
gov	1.183	0.846
inflation	1.170	0.854
fer	1.140	0.877
fdi	1.055	0.948
Mean VIF	1.416	

Source: authors' calculations in StataSE 18 software

As part of the second research block, a regression model was built (Table 3), which characterizes the impact of factors representing economic crises on inclusive growth in 27 European countries. The Hausman test made it possible to determine the impact of economic stability factors on the country's inclusive growth; the model with fixed effects is more effective.

The results of the regression analysis based on the data of 27 EU countries show that, in general, inclusive growth is influenced by the following economic stability factors: GDP (Gross Domestic Product per capita, EUR), inflation (Inflation: percent change in the Consumer Price Index), fer (Foreign exchange reserves including gold), government spending (Government spending as percent of GDP), and fiscal balance (Fiscal balance, percent of GDP):

– GDPs growth by 1% will lead to an increase in the Index of inclusive growth by 0.000003 units with a confidence probability of 99%;
– the Index of inclusive growth is also positively affected by the rise in general government spending: an increase in the independent variable by 1% leads to an increase in the dependent variable by 0.0055 units with a confidence probability of 99%;
– an increase in the country's fiscal balance by 1% leads to a rise in the Index of inclusive growth by 0.0007 units with a confidence level of 90%;
– foreign exchange reserves growth by 1% will lead to an increase in the Index of inclusive growth by 0.0004 units with a confidence probability of 99%;

– an increase in inflation hurts inclusive growth: an increase in the unemployment rate by 1% with a probability of 99% will lead to a decrease in the Inclusive Growth Index by 0.0081 units.

Table 3

Regression results on the economic stability factors' impact on the Inclusive Growth Index for 27 European countries in 2000-2022 (fixed effects model)

igi	Coef.	Std. Err.	t-value	p-value	[95% Co	Interval]	Sig
gdp	0.000003	0	8.88	0	0.000002	0.000004	***
inflation	-.000806	0.000281	-2.87	0.004311	-.001358	-.000254	***
fdi	0.000019	0.000027	0.69	0.489657	-.000035	0.000073	
accountbal	0.000044	0.00026	0.17	0.864870	-.000467	0.000556	
fer	0.00044	0.000038	11.51	0	0.000365	0.000515	***
gov	0.005478	0.000944	5.80	0	0.003624	0.007333	***
fis_bal	0.000696	0.000371	1.88	0.060799	-.000032	0.001425	*
sav	-.000621	0.000385	-1.61	0.107176	-.001376	0.000135	
Constant	0.134193	0.023083	5.81	0	0.088858	0.179528	***
Mean dependent var		0.313329		SD dependent var			0.068176
Overall R^2		0.392691		Number of obs			617.0000
F-test		47.040844		Prob > F			0.0
Within R^2		0.392691		Between R^2			0.343740

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

Source: authors' calculations in StataSE 18 software

The remaining indicators that characterize economic stability don't significantly impact inclusive growth. The obtained results form the basis for further research into the ability of countries to maintain and develop a course for inclusive growth in conditions of economic and social instability. This should be done by assessing the impact of individual crisis factors on the current state of inclusiveness of the economy.

Conclusions

The study highlights the need to rethink approaches to inclusive growth due to contemporary political, economic, and social instability. Traditional methods may be inadequate under the constant threat of regional and global conflicts. For inclusive growth assessment, an integrated index was developed based on such indicators as the Unemployment rate, Gini income inequality index, Household consumption, Domestic credit to the private sector, Tertiary school enrollment, Share of population in poverty (50 percent of median income), and poverty using principal component analysis, ranking, and the Fishburne approach. Using regression modeling of panel data, we analyzed economic stability's impact on the inclusive growth index. The results show that increased GDP per capita, higher government spending, and a better fiscal balance positively affect inclusive growth, while higher inflation decreases it. This analysis is essential for achieving the

Sustainable Development Goals (SDGs), as inclusive growth directly supports multiple SDGs, including reducing inequality (SDG 10), eradicating poverty (SDG 1), ensuring decent work and economic growth (SDG 8), and promoting the development of a sustainable community (CSR 11). Understanding how to sustain and promote inclusive growth even in times of fragility helps governments, policymakers, and stakeholders design and implement strategies aligned with the SDGs, ensuring equal opportunities for all and building resilience to economic hardship. The obtained results are the basis for further studies of the ability of countries to maintain and develop a course for inclusive growth in conditions of economic and social instability. It should be done by assessing the impact of individual crisis factors on the current state of inclusiveness of the economy. Such a study will become a scientific basis for building more accurate forecasting models of the potentially accessible level of inclusive growth. The study's practical recommendations highlight the need for policies that ensure equal opportunities and strengthen economic resilience by ensuring better preparedness and response to economic challenges, thus contributing to sustainable and inclusive growth.

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