UNIVERSITY OF CRAIOVA
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Domain: Economics

Doina **DRĂGOI**

ECONOMIC DEVELOPMENT AND QUALITY OF LIFE - EUROPEAN COMPARISONS

- PhD Thesis Summary -

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Craiova
2021

CONTENTS

SUMMARY

The economic development and the quality of life are complex heterogeneous concepts, which, through economic and social indicators, objective or subjective, measure a country's development, subjective well-being, health, material living conditions, comfort, and wealth of the population. In this doctoral research, entitled **"Economic development and quality of life - European comparisons"**, we used research methods such as quantitative and qualitative analysis, empirical and descriptive research, comparison, interpretation, synthesis, to which are added methods of descriptive statistical analysis. And multivariate, cluster analysis, modeling of data using structural equations (SEM), Gaussian graphical models (GGM), and as an analysis tool, specialized econometric software State 16.

The doctoral thesis is structured in five chapters, balanced and organized so as to capture the theoretical and applied aspects of the research undertaken. The first two chapters focus on theoretical methodological research, and the next three chapters on applied methodological research. Thus, the approach is focused on empirical research, which will also contain theoretical aspects of the concepts used in descriptive and econometric statistical analysis, to provide a better understanding of the concepts and phenomena addressed, which will help shape a clearer picture and complete on the economic and social situation at the level of the European Union (EU), of its member states, but also customized at the level of Romania, in the period 2008-2019.

The originality of the doctoral thesis is represented by the vision and the way of approaching, organizing, structuring the doctoral thesis and the key concepts described - economic development, quality of life and standard of living. The selection of representative indicators, research methods, statistical and econometric analysis models used during the elaboration of the doctoral thesis, as well as statistical data processing and interpretation of results, accompanied by proposed strategies / measures, is a personal contribution, under the guidance of the coordinating professor and of the steering committee.

All this allowed an open and explicit analysis, which led to certain and realistic results, based on which we formulated the conclusions, proposals and research hypotheses.

The topicality and originality of the research topic

The topic addressed in the doctoral thesis, focused on the economic development, the quality of life and the standard of living in the EU, customized in Romania, was a challenge, due to the existence of extensive information in literature, the multitude of approaches of economists who have have been concerned since ancient times until now with this topic, the complexity of the phenomena addressed and the diversity of associated indicators.

Economic growth and development are fundamental concepts of the economy, with profound implications for the economic and social life of nations, especially in increasing the quality of life in a sustainable context at EU level. Thus, the topic of the doctoral research is an important and topical topic, which has concerned economists from ancient times to the present day, but also researchers from various fields of activity, public institutions and governments. The topicality of the research topic and its importance are also reflected in the strategies and policies adopted by the EU in the process of sustainable economic development, increasing the quality of life of the population of the Member States. Achieving growth and economic development contributes to increasing the quality of life and standard of living through multiple influences: the high level of consumption induces a greater prosperity of the population; improving public services - health, transport, education by allocating significant amounts by the state; reducing unemployment and poverty by creating jobs, easing the situation at the social level and ensuring incomes that provide a better quality of life for the population. At the same time, economic growth can negatively affect the environment through the adverse effects of pollution, can increase inequality or exacerbate social problems, increase crime. All these are important aspects that need

to be understood and applied so that we benefit from a high standard of well-being and quality of life in a sustainable context.

The originality of the doctoral thesis is represented by the vision and the way of approaching, organizing, structuring the research content and key concepts - *economic development, quality of life and standard of living*. The selection of representative indicators, research methods, statistical and econometric analysis models used during the elaboration of the doctoral thesis, as well as the processing of statistical data, the interpretation of the obtained results and the proposal of solutions / strategies represent the personal contribution, under the guidance of the coordinating professor and the commission guidance.

The originality of the research topic also results from the research methods used, namely: hypothesis, empirical research, descriptive, quantitative, qualitative, analysis, comparison / benchmarking, interpretation, synthesis, induction, deduction, comparative and multicriteria analysis, econometric modeling.

The objective of the doctoral thesis, structure, content, results

The general objective of the doctoral thesis was achieved by approaching during scientific research, from a theoretical and methodological point of view, the concepts of economic growth and development, quality of life, standard of living, from a historical perspective, by researching specialized literature, by descriptive statistical analysis, multivariate, econometric of the main indicators representative for the economic development and quality of life at EU level, and customized at the level of Romania (national and territorial profile), in the period 2008-2019.

The structure of the doctoral thesis is centered on two axes, one theoretical, consisting of two chapters, and the other applied methodologically, which contains three chapters, organized balanced in terms of the content. The writing of the doctoral thesis was based on both logical and deductive reasoning, which led to the obtaining, on the one hand, of conclusive, explicit results, and, on the other hand, of a synthetic picture, which reflects the level of the economic development, standard of living and quality of life in the EU and, in particular, in Romania.

Research Axis 1 - The evolution of the economic thinking, theoretical and conceptual approach from the historical perspective of economic growth and development, of representative economic growth models, is associated with Chapter 1 - "Economic growth and development - conceptualization, particularities, measurement", and includes the review literature, in a theoretical and conceptual approach, of economic growth and development. The analysis of the representative theoretical growth models - the Harrod - Domar model and the Solow model - was performed through a synthesized exposition, with a comparative analysis, in order to identify the aspects that resemble or distinguish them. The approach is simplistic and leads to an understanding of these theories and models.

The legacy left by classical economists on economic growth and development has been the basis of today's models. There are two major features that go beyond just anticipating a notion or theory. First, the problem of increasing national wealth is the central theme for some of the great economists of the sixteenth to nineteenth centuries, and for most it is a problem. Secondly, the search for rigorous economic explanations goes hand in hand with the belief that social dynamics and institutional change are part of the analysis and prescriptions of politics, so that development is a complex story. The latter feature of the classical approach has resurfaced strongly in the economy of development. The role of institutions in the process of economic development and notions such as those of trust and social capital play a key role in explaining both success stories and development failures. Among the legacy of classical political economy, we find four points of view that are used to a limited extent in the modern development theory, especially in the analytical apparatus, even if they appear quite often in practice and in development policies.

These are: the notions of surplus and reproduction, the role of intersectoral analysis, the process of structural change. The development of economic thinking will greatly benefit from their use.

Representative economic growth models - Harrod-Domar and Solow/Swan - were approached from a theoretical perspective, by researching the literature. The Harrod-Domar model was found to be a neoclassical model of economic growth and, according to him, economic growth is influenced by the rate of saving and investment, while the Solow / Swan model belongs to the neoclassical theory of economic growth, according to which the source of economic growth it represents the addition of more capital, labor resources, as well as new ideas and technologies. Both models are still the basis for determining economic growth.

Economic development and growth are not exclusive concepts in the economic evolution of a country, but they alternate. From the research conducted, significant differences were established between these two concepts. Economic growth is seen as a complex dynamic and specific process, which takes place at the level of a country's economy and refers to the improvement of values in different ways, taking into account a number of social, economic and political factors. Economic growth expresses those changes that take place in a certain time frame and in a certain space and is reflected in the increase in the size of macroeconomic results, in close connection with their determinants. National income or product is expressed in terms of measuring the aggregate value added of the national economy - Gross Domestic Product (GDP). When a nation's GDP grows, economists believe that it reflects economic growth. On the other hand, the term economic development covers several aspects related to improvements, which are reflected in a variety of indicators, such as *the human development index, literacy rate, life expectancy, poverty rate*, unemployment or migration. GDP measures economic well-being but does not take into account important elements such as leisure, environmental quality, freedom or social justice.

Economists generally agree that economic development and growth are influenced by four important factors, namely: human resources, physical capital, natural resources and technology. All this translates into economic growth in a positive or negative sense depending on their evolution and the approach of the governments of the countries. Investments and improvements in infrastructure, means of production, factories and technology reduce costs and increase the efficiency of economic production. The refurbishment of the production lines, the endowment with modern production equipment lead to the increase of productivity and, implicitly, to the increase of the economy. The availability of natural resources and their quantity influence the rate of economic growth. *Gross domestic product* is considered the best standard in measuring the size of a country's economy, and its expression in the SPC allows for fair comparisons between countries and the determination of economic development.

We can say, regarding the positive aspects of *the human development index*, through a brief evaluation of it that, among its strengths, there are also the *Global National Product* and the *Gross Domestic Product*. In addition, it offers an easy comparison of the human development index between countries due to its numerical expression. The higher the index of human development, the more developed the country is considered. *The Human Development Index* draws the attention of governments and decision-makers to the social and economic level of the country, providing a multidimensional view of *the quality of life*. Information on health, education and income helps policy makers understand the progress of a country's development and adopt appropriate economic policies.

Although *the human development index* is used nationally and internationally, there are a number of remarks that can be highlighted. *The human development index* is made at the level of a country and does not distinguish between the different rates of development in a country, such as rural, urban and traditional communities. Critics also argue that the equal weighting between the three main components is arbitrary. Economic development is mostly about freedom, but the index does not directly measure this. For example, internet access can be seen as a freedom that improves people's quality of life. The human development index excludes many aspects of

economic and social life that could promote or constrain development, such as crime, corruption or poverty.

Another significant minus of *the human development index* is that the three dimensions it includes (income, knowledge/education and health) are quite confusing. These are related to each other. For example, if the level of education is high, the country will have a higher degree of knowledge. It is quite difficult to identify the factors that have had the greatest influence on the level of development of a country. Another shortcoming of *the human development index* is that data variations are not taken into account. This is the reason why it is difficult to compare the levels of development between countries, for each variable. Moreover, the human development index does not take into account some of the key aspects of development, such as gender equality and respect for human rights and freedoms. Of the three components of the human development index (income, knowledge, health), only the *Gross Domestic Product* is the one that is receptive to short-term policy changes. It is necessary to give importance to the other two components over time.

The standard of living includes various aspects, such as safe drinking water, improved sanitation systems, medical facilities, the spread of primary education to improve the literacy rate, the eradication of poverty, balanced transport networks, increasing the number of jobs. These can be measured by the human development index. Economic growth is necessary, but not enough to achieve economic development. Both economic growth and economic development have different indicators for measuring them. Economic growth can be measured by an increase in per capita income, and economic development by improving the life expectancy rate, infant mortality rate, literacy rate, poverty level and other indicators.

Thus, economic growth is part of economic development, which is a much more comprehensive concept. Economic development uses various indicators to measure progress in an economy as a whole, however, for its measurement, economic growth uses only specific indicators, such as gross domestic product, individual income. Economic growth is often in contrast to economic development, which can be defined as an increase in the economic wealth of an economy or nation, for the well-being of its inhabitants. Thus, economic growth is essential, but not the only condition for economic development.

Research Axis 2 - Presentation of the main aspects of the stage of scientific knowledge in a theoretical and conceptual approach to quality of life and its dimensions, sustainable development objectives, the relationship between quality of life and economic development and the standardization of living standards.

In Chapter 2 - "Economic development and quality of life", we continued to approach the concept of *economic development* in a sustainable context, given the increase in the *quality of life* of the population, in a simple and objective manner, with emphasis on the links between them and their role in the society in which we live. Sustainable development is an opportunity to build a new approach, and the success of these efforts has strong implications for peace and security issues. The term *sustainable development*, instead of development, is increasingly used by researchers. It has become a major topic of discussion among all the social scientists, social organizations, statesmen and nation leaders. The industrial-technological and economic development recorded by mankind has not proved to be a real development, because it has created imbalances both in the environment and between nations. Environmental degradation, resulting from the irrational and excessive exploitation of the planet's resources, has already adversely affected the development of societies. Undoubtedly, industrial and infrastructure projects are a means of development. In the past, the usefulness and feasibility of such projects have been used only in terms of economic gains.

In 2011, the Statistics Department of the Organization for Economic *Co-operation and Development* (OECD) developed a quality-of-life measurement framework, designed in consultation with Member States, taking into account the recommendations of the Committee on Measuring Economic Performance and Social Progress at National and international Level. This framework defines 11 basic dimensions of people's lives, starting from health, education, to the

quality of the local environment, personal safety and quality of personal life, as well as to physical dimensions, such as income, wealth, housing, etc.

Developing quality of life initiatives and sets of indicators is a general step towards building the evidence base and developing a common understanding of what contributes to a better life. However, gathering enough information about people's lives is not enough to achieve the ambition to improve policies and decision-making. Compiling data, continuously measuring people's quality of life and then publishing them is a prerequisite.

Economic development and quality of life play an important role in a country's economy. Jobs, income, level of education, housing accessibility and health outcomes are important for improving the quality of life of a country's population. Some potential value-added aspects of taking quality of life indicators into account in the policy context include:

• providing a complete picture: drawing particular attention to the results that are important for people's living conditions and quality of life and that are not normally taken into account in the routine analysis of public policies;

• supporting the strategic alignment of results across the government: cooperation and coherence between different parts of government are essential at all stages of the political cycle. Government agencies usually work in the form of independent units, where they focus on the resources and results for which they are directly responsible and, without referring to the wider impact of their actions, tend to focus on the results for which they are directly responsible. ;

• highlighting disparities and diversity of experiences by providing data on individuals: unlike many aggregate values that focus on the performance of economies as a whole, focusing on people and outcomes at the individual and household level can contribute more effectively to improving their quality of life;

• sustainable development is one of the most significant criticisms of domestic production. Without the environmental or social costs that offset the benefits, economic growth would undermine the stability of future growth. For this reason, economic, environmental and social coverage through quality-of-life measures has a major advantage;

• Improving the assessment of the impact of public policy programs on people's lives: encouraging different government departments to take into account a wide range of quality of life outcomes contributes to clarifying policy trade-offs and side effects; an agreement on dimensions and indicators that reflect people's quality of life simplifies external accountability measures, such as parliamentary oversight, oversight agencies and civil society, by creating a common language and consensus on measured results.

Achieving the *17 Sustainable Development Goals* (SDGs), adopting normative documents governing how to achieve them at country level, is a goal for all EU-27 countries to follow and implement.

The dimensions of quality of life are multidimensional and take into *account material living conditions, productive or main activity, health, education, leisure and social interactions, economic and physical security, governance and fundamental rights, natural and living environment, general life experience*. All these are essential in ensuring the quality of life, they are complementary and there is a causal relationship between them, with direct and indirect influences, positive or unfavorable, depending on their evolution.

Poverty reduction cannot be effective only through anti-poverty programs but will require democratic participation and structural economic change to ensure access to all basic resources, opportunities and services. Therefore, poverty alleviation policies, which are based on the quality-of-life perspective, will obviously be achieved through access to food security, access to resources, access to basic services, access to institutional facilities, access to employment opportunities and, finally, access to nutritional programs. Thus, poverty can only be tackled effectively if an integrated approach is highlighted.

Poverty eradication requires universal access to economic opportunities, which will promote sustainable livelihoods and basic social services. Extensive mitigation efforts include ensuring food security, land rights, education, employment, primary health care services, including

reproductive health care, safe drinking water and sanitation. If the quality of life of the poor is not improved, social development cannot be achieved. The goal is not a reality, but rather a myth. This is only possible through participatory poverty reduction. The quality of life, which underlies the perspective of poverty, includes both the rights and the duties of the poor.

Research Axis 3 - Descriptive statistical analysis of the economic development, the quality of life and the standard of living by promoting decent work and quality education, using their representative indicators, in order to outline the economic and social welfare, the poverty, the income distribution and inequality, at EU-27 level, in the period 2008-2019.

In *Chapter 3 - "Analysis of indicators of the economic development and quality of life in the European Union, in 2008-2019"*, empirical research was conducted using descriptive statistical analysis, comparison, economic and social situation based on representative indicators of the *economic development*, the *quality of life*, and the *standard of living* at EU level in the period 2008-2019. The analysis of the *economic development*, the *quality of life* and, implicitly, of the living standards, was made in terms of the main indicator of economic growth, GDP, its components, by promoting decent work and quality education, based on specific relevant indicators. The selection, presentation and analysis of representative indicators that complement those of the previous section (a number of 10 indicators), was made in order to outline a dashboard and a clear, complete and balanced picture of the level of the *economic development*, of the *quality of life* and of the *standard of living* at EU level. Based on the descriptive, multivariate and comparative statistical analysis, the results obtained based on the economic and social performance obtained by the EU-27 Member States in the analyzed period, 2008-2019 were interpreted.

In the first section, *Economic Development in the European Union in terms of Gross Domestic Product and its components, we analyzed the main indicators of economic development* in 2008-2019. We found that the *Gross Domestic Product* at EU level had a favorable evolution, including in Romania, except for the recession period, 2007-2008 and even 2009. The EU provides over 20% of the *Gross Domestic Product* worldwide. The highest values of the Gross Domestic Product were registered by Germany, France and Italy, and with the lowest, by Cyprus, Estonia and Malta.

Another macroeconomic indicator analyzed was *final consumption*. Its evolution strongly influences the Gross Domestic Product. The highest share of final expenditures in *Gross Domestic Product* at EU level, of 77.69%, was registered in 2009 and had a fluctuating evolution in the analyzed period, registering in 2019 the lowest value of 73.84%. The countries with the highest and lowest *final consumption expenditures* are the same as for *Gross Domestic Product*. At the level of Romania, the *final consumption expenditures* have a high share in the *Gross Domestic Product*, which indicates the fact that a large part of the registered economic growth is based on consumption. The increase in consumption is due to the increase in public wages, the minimum wage in the economy, imports, but also the budget deficit.

Graphic representations and structural analysis of the *GDP growth rate* in the period 2008-2019 at the level of EU Member States highlighted the countries with the highest and lowest average *real GDP growth rate*: Malta, 4.8%, Ireland, 4.4%, Poland, 3.6%, respectively, Finland, 0.4%, Italy, -0.3%, Greece, -2.1%. Romania recorded an average *GDP growth rate* of 2.9%, preceded by Slovakia by 2.5% and followed by Poland by 3.6%.

Imports and exports of goods and services within the EU developed progressively between 2008 and 2019. Exports were higher than imports, with the EU registering a *trade surplus*, ranking first in the world. The countries with the highest values of exports at EU level are Germany, France and the Netherlands, and the highest values of imports belong to Romania, Portugal and Greece.

GDP per capita at EU level had a tumultuous evolution over the analyzed period, 2008-2019, with large differences from one year to another. The indicator is very useful in the comparative analysis of the level of development of EU states, which highlights the *standard of living* and *quality of life*. Thus, the highest average *GDP per capita* in the EU-27 countries was recorded by Luxembourg, Ireland and the Netherlands, developed countries with a high standard

of *living* and *quality of life*. The lowest values of *GDP per capita* in the period 2008-2019 belong to Croatia, Romania and Bulgaria.

The study and analysis of *GDP per capita* provides concrete information on labor productivity and contributes to decisions on fiscal and monetary policies. High values of *GDP per capita* in a country with a stable population are stimulated by technological progress which also leads to higher production. Countries with a small population achieve a high *GDP per capita* and generally have a self-sufficient economy, which is based on fully existing resources. A low level of *GDP per capita* is the result of a constant erosion of living standards.

The inflation rate is another indicator that, depending on the values achieved, influences economic growth in a positive or negative sense and is directly related to GDP and the *unemployment rate*. At EU level, the evolution of *the inflation rate* in 2009 compared to 2008 is in the "V", with a sharp decrease, followed by upward trends. The lowest values of *the inflation rate* in the period 2008-2019 at the level of EU states were registered by Ireland, Cyprus and Greece, and the highest by Romania, Estonia and Hungary. In Romania, there were periods when high *inflation rates*, as well as inflationary measures, led to a decrease in *Gross Domestic Product*.

There are also significant correlations between the *inflation rate* and the *unemployment rate*, in the sense that lower inflation generates high unemployment rates. Increasing employment may also lead to a relative increase in demand and, consequently, inflation. The Romanian labor market at one time had inflationary characteristics, which led to the migration of labor to agriculture, where payment was also made in products, thus supporting inflation. The ratio between the employed and the assisted labor force determined the emergence of a solvent demand that does not have a correspondent in the labor supply.

The ongoing concern of EU member states for the improvement of national welfare systems, coupled with European integration, together forms a convergence coalition. At EU level, there has been a decline in inequality between 2008 and 2019, due to the convergence of Member States' average incomes. Average disposable income has increased in developing countries compared to richer countries. Inequality at EU level, as measured by the *Gini coefficient*, increased marginally until 2014, after which it began to decline, which is in line with the trend of poverty indicators. *The rate of material deprivation* had a downward evolution after 2012, when it reached the minimum value of 9.9%, and at the end of 2019, 8%.

Inequality in EU-27 countries has declined globally, and the effects are being felt even if economic developments have not reached high levels of development. For example, in Spain and Greece, during periods of economic expansion, inequality has not increased. This happened during the economic crisis.

The relationship between the two concepts of *economic growth* and *inequality* manifests itself differently, through positive influences on economic activity, given that income differences reward personal effort and risk-taking. It can also lead to increased savings and the accumulation of savings, but it can also contribute to financial instability, reduced productivity or access to education.

The production automation process contributes to accentuating the inequality of income distribution, with a major impact on the labor market, by reducing *employment* and increasing the *unemployment rate*, especially the technological one. Highly qualified employees have a high productivity compared to those with low qualification in automated production processes. This generates both an inequality in the dispersion of *employment* and *wages*, with direct repercussions on the *labor market*. In this case, it is necessary to retrain the workforce, in trend with the existing requirements on the labor market and to adapt the educational offer to its conditions.

At EU level, during the period 2008-2019, a series of labor market policies were developed, following a structural analysis of it, in order to ensure a fair and balanced transition to an inclusive society, taking into account the current and future transformations, increasing employment opportunities and the social progress. Competitive employment policies have a positive role to play in lowering the *rate of people at risk of poverty and social exclusion*, contributing to a better *quality of life* at the European level. The objectives on social policies and the labor market set by

the EU are taken over and adapted by each state to its concrete conditions, and also become national objectives.

The standard of living and quality of life at EU level, in the period 2008-2019, had a positive evolution. Developed countries with modern and highly industrialized economies, such as Sweden, Germany, the Netherlands, Denmark, have recorded the highest values of the *human development index*. On the other hand, countries with emerging and developing economies, such as Croatia, Romania and Bulgaria, were ranked last. There is a close link between the *human development index* and the *Gross Domestic Product*, in view of the fact that the *Gross Domestic Product* is included in the *human development index* and represents an element to support it. At EU level, the living standards of the population differ significantly. The EU is making substantial efforts to reduce disparities in living standards, eliminate social exclusion through economic, fiscal and social policies, which will be adapted to the specific conditions of each country.

The life expectancy index completes the picture of *living standards* at EU level. Its evolution was ascending in the period 2008-2019. The highest values of the *life expectancy index* were recorded by Germany, Denmark, the Netherlands, Finland, Ireland, Belgium, with values between 0.936 and 0.918. Romania ranked penultimate, followed by Bulgaria.

The at-risk-of-poverty rate is different for the EU-27 - developing countries in Eastern Europe are high compared to Western or Nordic countries. High rates of long-term poverty are a rather high problem, as is long-term unemployment, which increases the *risk of social exclusion*.

The quality of life is also analyzed in the light of its representative indicators. Regarding the education index, the countries with the highest values are represented by Germany, Sweden, Denmark, Finland, the Netherlands, located at small, insignificant differences from each other. Romania is below the EU average of this indicator.

Another representative indicator of *quality of life* is *life expectancy*. Its evolution was upward at EU level in the analyzed period, 2008-2019. *Life expectancy* in 2019 increased compared to 2008 by 2 years at EU level. The countries with the highest *life expectancy* were represented by Italy, France, Spain, Sweden and the smallest, Latvia, Lithuania and Romania, in the period 2008-2019. Romania registered in 2019 compared to 2008 an increase of 2.1 years in life expectancy.

Healthy life expectancy at birth in the EU has decreased, but not significantly, in the period 2008-2019. At the level of EU Member States, the highest values of this indicator were recorded by Bulgaria, Malta, Sweden, Ireland, and the lowest by Finland.

Solutions for the economic recovery of the EU-27 can focus on fiscal, economic, monetary, labor, social, elimination of social exclusion and poverty reduction policies, tailored to the specifics and particularities of each country. These activities are complemented by actions taken on the labor market. Innovation affects employment leading to technological unemployment, which contributes to increasing income inequality. The technologizing and innovation of production lines within companies determines the saving of labor, which is a favorable aspect for companies. Product prices will be lower, and demand will increase, which will lead to a large market segment.

As such, *economic growth* has a number of benefits embodied in: high level of consumption of goods and services; improving the quality of public health and education services; reducing poverty and unemployment, less structural poverty, creating jobs; reducing low incomes. It also contributes to reducing absolute poverty and increasing life expectancy in less developed countries, but it will only be able to contribute to people's happiness when the poverty line is exceeded. It has a positive impact on the development of new technologies and can increase inequality and social problems.

Research Axis 4 - Econometric analysis based on indicators representative of economic development and quality of life (construction of graphical representations in the form of maps, correlation matrix, cluster analysis, structural equations - SEM, and Gaussian graphical network model, GGM) in order to achieve concrete comparative results, with a view to formulating policies

and strategies that will contribute to increasing the economic and social performance of the EU-27 Member States in the period 2008-2019.

Chapter 4 - "Econometric analysis based on the economic development and the quality of life in the Member States of the European Union", focused on the econometric modeling of data provided by the representative indicators described above, for the period 2008-2019, and completes their descriptive statistical analysis.

The concepts approached of *economic growth* and *development, quality of life* and *standard of living* at EU level, were assigned representative indicators that were analyzed using descriptive, comparative and multicriteria statistical analysis, graphical representations, econometric analysis - hierarchical analysis of clusters using the method Ward, SEM equations, Gaussian graphical models, which complemented a complete picture of this research.

The hypotheses from which we started in conducting the research within this axis, have been largely confirmed. The evolution of economic and social indicators in the period 2008-2019 contributed to the economic development, to the increase of the quality of life and standard of living of the EU-27 states, all these being confirmed by the results obtained from data processing, obtaining results and discussions and proposals.

Thus, regarding the results of the cluster analysis by the Ward method, the EU-27 states were grouped into 4 clusters, depending on the economic and social performance.

For the detailed analysis of the evolution of the economic and social situation at EU level, we used the graphical representation with the help of maps in State 16, of the ten representative indicators of economic development and quality of life, 2008 and 2019, to make comparisons and formulate proposals of strategies and policies tailored to each group of EU Member States.

The evolution of *GDP per capita*, in 2019 compared to 2008, has evolved upwards in developing countries (such as Bulgaria, Czech Republic, Croatia, Estonia, Latvia, Lithuania, Malta, Poland, Romania, Hungary), but also at the level of developed countries (represented by Belgium, Denmark, Germany, Ireland). *GDP per capita* was lower in 2019 than in 2008 in countries with dominant economies, as well as countries with emerging economies, such as Austria, Finland, Sweden, Luxembourg, France, the Netherlands, Italy, Spain, Cyprus, Greece, Portugal, Slovenia and Slovakia.

The *inflation rate* experienced a downward trend in 2019 compared to 2008, which means an improvement in the situation in the economies that fall into this trend. In 2008, Latvia recorded the highest value of the inflation rate of 15.3%. The lowest values of the inflation rate were between 0.3% and 0.8% in 2019 and belonged to Portugal and Croatia.

The *Gini coefficient* had a marked evolution of increases for some countries, and for others of decreases in 2019 compared to 2008. Compared to 2008, in 2019, the composition of the group with the highest values of the *Gini coefficient* remained largely the same as in 2008, except for Greece, which saw a decrease in the value of the *Gini coefficient* from 33.4 to 31.0. The lowest values reached in 2008 were between 23.4 and 25.2 and belonged to the Czech Republic, Croatia, Slovakia, Slovenia and Ireland. For 2019, the values are between 22.8 and 27.5, which shows a downward trend. This group included Sweden, Denmark, Austria, the Netherlands, Finland, Belgium, Croatia, Slovakia and Slovenia. The downward trend in the *Gini coefficient* marks the reduction of social inequalities at EU level and the reduction of *poverty and social exclusion*.

Employment in the EU-27 in 2019 compared to 2008 was favorable for most EU-27 countries, except for Greece, Cyprus and Spain. The countries with the lowest *employment* values for 2019 were between 61.2% and 71.5%, which indicates an increase in the minimum value recorded, compared to 2008, when the minimum values ranged between 59.2% and 66.3%, which represents a positive evolution of the labor market. Sweden has the highest *employment* value of 82.1% in 2019, and the lowest, 61.2%, belongs to Greece. The positive *employment* trend is based on the efforts of governments that have developed policies and implemented clear, precise measures at national level, in line with current labor market conditions.

Increasing *employment* positively influences *economic development* and people's *quality of life*, due to the effects generated on other indicators. As a result, high employment values imply

lower *unemployment* rates, higher incomes and a higher standard of living. The priority is also to obtain a high level of qualification of the population active in the labor market by involving the population in participation in qualification, retraining and advanced training courses and the introduction of new trades required at the time of reference on the labor market.

The *unemployment rate* had a downward trend in the vast majority of EU-27 countries in 2019 compared to 2008, which is a positive aspect of the *labor market*, with direct consequences on *economic development* and *quality of life* of the population. The highest values of the unemployment rate in 2008, between 7.6% and 11.3%, belonged to the countries: Spain, Slovakia, Croatia, Greece, Hungary, Latvia, Portugal and Germany. In 2019, the highest values of the unemployment rate were between 6.5% and 17.3%. Greece, Spain, Italy, France, Cyprus, Sweden, Finland, Croatia and Portugal were part of this group. They registered a decrease in the unemployment rate in 2019 compared to 2008.

The highest values of the *rate of young people neither in employment nor in education or training* were between 14.8% and 19.3% at the level of 2008, being registered in: Italy, Bulgaria, Hungary, Ireland, Slovakia, Spain and Greece. In 2019, the highest values of the *rate of young people neither, in employment nor in education or training* were between 14.2% and 22.2%, being found in: Italy, Greece, Romania, Bulgaria, Spain, Slovakia and Croatia. The lowest values of the *rate of young people neither in employment nor in education or training* at the level of 2008 were between 5% and 9.1% in Austria, Finland, Sweden, Slovenia, Denmark and the Netherlands, and for 2019, between 5.7% and 8.8%, in Slovenia, Austria, Malta, Germany, Luxembourg, Sweden and the Netherlands.

The values of the *early school leaving rate* decreased in 2019 compared to 2008 in the vast majority of EU-27 countries. The only countries that recorded growth were Spain, Romania and the Netherlands. The year 2008 had a maximum value of 19.3% and was registered by Italy, and the minimum of 5% belonged to the Netherlands.

The highest values of the *human development index* were recorded by the same countries in 2008 and 2019: Ireland, Luxembourg, the Netherlands, France, Finland and Sweden. It is noteworthy that no country recorded decreases in the *human development index* in 2019 compared to 2008, which means a positive evolution of *living standards and quality of life* in EU-27 countries.

The highest values of the *at-risk-of-poverty rate*, 2008 and 2019, belonged to Latvia, Romania and Bulgaria, and the lowest to France, Hungary, Denmark. The evolution of the *at-risk-of-poverty rate* has been downward, which is a significant improvement in the *quality of life*. For 2019, the group with the lowest values included Luxembourg, Sweden and the highest values belonged to Romania and Latvia.

The cluster analysis allowed the grouping of EU-27 countries according to *economic performance* and the indicators described above, in 2008 and 2019. Thus, if we refer to the *medium-performance* cluster, it consists of the Nordic countries, to which are added France, Austria and Germany. The *low-performance* cluster includes the countries of southern and eastern Europe, to which are added Italy, Spain and Portugal. The cluster represented by Ireland represents the country with very *high performance*. The cluster represented by Luxembourg represents the *medium to high performance* cluster.

EU Member States, components of clusters 1, 3 and 4, can be good practice models for the other countries that make up cluster 2, as there is a significant difference between *the economic performances* of the countries that are part of cluster 2. Increasing the economic performance of the states in cluster 2 can be achieved by attracting European funds to develop infrastructure, stimulate private initiative in order to create jobs, reduce social exclusion, the risk of poverty.

After dividing into groups of countries (clusters), in order to evaluate and validate the results obtained, we applied the Calinski Harabasz (CH) criterion, which is a criterion of the variation ratio, which confirmed the validity of the 4 clusters.

The analysis based on the structural equations of the SEM complemented the picture of the economic and social situation at EU level. Two models of SEM equations, SEM 1 and SEM

2, were constructed based on the ten indicators representative of economic development and quality of life and hypotheses were formulated and verified.

The analysis of the first model of structural equation, SEM 1, highlighted, on the one hand, *the unfavorable employment, and favorable influences* of *rate of young people neither, in employment nor in education or training* and the *inflation rate* on *GDP per capita*. The values of the other macroeconomic variables did not indicate a significant influence on *GDP per capita*. On the other hand, all the influences on *GDP per capita* were also under the *indirect influence* of the *human development index*, which, in turn, had direct effects on *the at-risk-of-poverty rate* and the *coefficient of human inequality*. Thus, hypothesis I_1 was confirmed: *Quality of life has a significant direct influence on human inequality and the poverty rate*.

Following the application of post-estimation (Goodness on fit) for all component variables of the SEM model, it was found that the values of the comparative fit indices correspond and the model is appropriate. The SEM 1 model was tested using the Wald test, which led to the rejection of the null hypothesis and the validation of this model of structural equations.

From the analysis of the second model of structural equations, SEM 2, it was found that the human development index is favorably influenced by the human inequality coefficient and the at-risk-of-poverty rate, thus confirming hypothesis 1, I_1: *The quality of life in Romania is directly influenced by the human inequality and the poverty rate*. The quality of *life index* had a favorable influence on the *inflation rate*, *employment* and *unemployment rate* and hypothesis 2, I_2: *The quality of life in Romania has a significant direct influence on the main macroeconomic variables*. *GDP per capita* was favorably influenced, under the indirect influence of the *quality of life index*, by the *inflation rate*, *employment* and *early school leaving*, being confirmed hypothesis 3, I_3: *The economic development in Romania is globally influenced by the life quality, under the impact of the influence of representative economic and social factors*, is confirmed.

Thus, the research hypotheses were confirmed. The verification of the fit of the SEM 2 model was also performed using post-estimation (Goodness on fit) for all component variables of the SEM 2 model and resulted in a perfect agreement between the observed and expected frequencies. The Wald test confirmed the acceptance of the SEM 2 structural equation model.

The Gaussian - GGM graphic network model completed the empirical analysis performed in this research axis. Thus, the intensity of the connections between the variables and the meaning of the connection between them were observed. The hypotheses were confirmed, and, for a better representation of the results obtained, graphs were made that showed the measurement of the grouping on variables and the centrality of the GGM model at EU level, in the period 2008-2019.

A number of policies and strategies has been outlined that ensure the interconnection of quality of life with economic development, which can thus contribute to sustainable development. Particular attention is being paid to employment policies, strategies at EU level, *unemployment* relief programs, *lifelong learning programs for adults*, *reducing the number of unemployed young people, and early retirement from education*, *poverty and economic and social inequality*. All these are objectives contained in the documents prepared at European level by the European Commission, UNDP, UN. The efforts made and the measures taken at the level of the EU-27 countries were analyzed, in order to ensure an *economic development* in a *sustainable context* and to improve the *quality of life*.

In the current context, which is quite uncertain globally, and due to the COVID-19 pandemic, however, economic growth is projected in the EU-27 countries, based on refurbishment, modernization of economies and strengthening their resilience. The European Council also pays particular attention to the Eurozone in order to address existing issues and include the proposals in the recommendations of each EU-27 country. Eurozone countries have economies based on stability programs, while non-euro area countries have convergence programs.

Research Axis 5 - Econometric analysis of economic development and quality of life in Romania, at territorial and national level (construction of graphical representations in the form of maps, correlation matrix, cluster analysis, structural equations, SEM, and Gaussian graphical network model, GGM), in order to determine the evolution of the economic and social situation of

Romania, but also of the place occupied by it within the EU-27 member states, in the period 2008-2019.

In Chapter 5 - "The Econometric analysis of the economic development, quality of life and standard of living in Romania, in territorial and national profile", the analysis of the economic and social situation in macro-regions and development regions of Romania, according to the Common Nomenclature of Units territorial statistics (NUTS 2), following the evolution of the *Regional National Accounts,* in the light of the same 10 indicators representative of economic development and quality of life, used in the previous chapter.

From the analysis of statistical data at the level of Romania's macro-regions, its development regions and at the national level, we highlighted that growth and economic stability were obtained, but not enough to be able to talk about significant economic development and a high quality of life in 2008. -2019. In order to obtain a more accurate picture of the economic and social situation, economic development, standard of living and quality of life at national and territorial level (macro-regions and development regions), we used in the descriptive statistical analysis, multivariate, econometric, the same ten representative indicators also used at EU level.

At the level of the 4 macro-regions and 8 development regions of Romania, the results were conclusive and visible through the graphical representation using the maps in State 16, at the level of 2008 and 2019, in addition to the descriptive statistical analysis performed in the first part of the chapter, which allowed the comparison of processed data and the determination of the economic and social performance obtained.

Macro-region One reached: average values of *GDP per capita, employment*, high *unemployment rates*, *rate of young people neither, in employment nor in education or training*, *early school leaving*; low values of the *unemployment rate*; average values of *the at-risk-of-poverty rate as a function of the poverty line*.

Macro-region Two recorded: the lowest values of *GDP per capita, employment, rate of young people neither, in employment nor in education or training, early school leaving*; low values of the *unemployment rate*; high values of *the at-risk-of-poverty rate by poverty threshold*.

Macro-region Trei registered the highest values of GDP per capita, the lowest values of the *unemployment rate*, *rate of young people neither, in employment nor in education or training*, being the most developed of the 4 macro-regions of Romania. *The at-risk-of-poverty rate according to the poverty line* registered average values, *employment*, high values, and *early school leaving*, low values.

Macro-region Four reached: average values of *GDP per capita*, *rate of young people neither, in employment nor in education or training, the at-risk-of-poverty rate according to the poverty line*; the highest value of the *unemployment rate*; the lowest values of *early school leaving and employment*.

The evolution of the representative indicators of the economic development and quality of life of Romania's macro-regions was, in general, positive at the level of the period 2008-2019. The development regions of Romania, in the period 2008-2019, registered an exponential evolution of the indicators representative of the economic development and quality of life.

The econometric analysis continued with the realization of the correlation matrix of the indicators at the level of the development regions of Romania, then the cluster analysis - Ward method, which led to the obtaining of 4 clusters for framing the regions, made both for 2008 and 2019 The validation of the results obtained was achieved by applying the Calinski Harabasz criterion.

The classification of the development regions within the clusters, for 2008, was the following: cluster C1 included the North-West Region, the Center Region and the West Region; cluster C2 - North-East Region and South-West Oltenia Region; cluster C3 - South-East Region and South-Muntenia Region; cluster 4 - Bucharest-Ilfov Region. If we consider the economic performance of the indicators, the situation of the clusters is as follows: cluster 1- average performance, by: average value of *GDP per capita*; the lowest labor supply; high *unemployment rates*, *rate of young people neither, in employment nor in education or training*; low value of *early*

school leaving; cluster C2 - low performance, through: the lowest *GDP per capita*, average values of *employment, unemployment rate* and *rate of young people neither, in employment nor in education or training*; high values of *early school leaving*; the highest *rate of at-risk-of-poverty rate according to the poverty line*, cluster C3 - very low performance, highlighted by: lowest *GDP per capita*, low value of *employment*, highest *unemployment rate*, the highest values of *rate of young people neither, in employment nor in education or training*, the highest value of *early school leaving*, high values of *the at-risk-of-poverty rate by poverty threshold*; C4 cluster - very high performance, resulting from: the highest *GDP per capita*, the highest *employment rate*, the lowest *unemployment rate*, the lowest value of *rate of young people neither, in employment nor in education or training*, early school leaving and *at-risk-of-poverty rate by poverty threshold*.

For 2019, the classification of development regions by clusters was as follows: cluster C1 - North-West Region, West Region and Center Region; cluster C2 - North-East Region; cluster C3 - South-East Region, South-Muntenia Region and South-West Oltenia Region; cluster C4 - Bucharest-Ilfov Region. Depending on the economic performance of the indicators, the situation of the clusters is as follows: cluster C1 - high performance, by: average value of *GDP per capita*, average *employment rate*, lowest value of unemployment rate, high value of *rate of young people neither, in employment nor in education or training*, the highest value of *early school leaving*, *the at-risk-of-poverty rate according to the poverty line*; cluster C2 - low performance, by: the lowest *GDP per capita*, the highest *employment rate*, the lowest *unemployment rate* and *rate of young people neither, in employment nor in education or training*, high value of *early school leaving*, high values of *the at-risk-of-poverty rate by poverty threshold*; cluster C3 - average performance, resulting from: average value of *GDP per capita* and *employment*, the highest value of the *unemployment rate, rate of young people neither, in employment nor in education or training*, high value of *at-risk-of-poverty rate by poverty threshold*; C4 cluster - very high performance, highlighted by: the highest *GDP per capita*, high *employment rate*, low *unemployment rate*, low *rate of young people neither, in employment nor in education or training*, the lowest value of *early school leaving*, average value of *at-risk-of-poverty rate by poverty threshold*.

At the Romanian level, after the descriptive statistical analysis and the determination of the economic and social situation in the period 2008-2019, we continued the macroeconomic analysis, of the national level, based on the SEM structural equations model. The model of structural equations consisted of two structural equations and determined, on the one hand, the direct influences of the *human inequality coefficient and the poverty risk rate as a function of the poverty line on the human development index, and on the other hand, on the inflation rate, the Gini coefficient, employment, rate of young people neither, in employment nor in education or training, early school leaving. GDP per capita* has a direct influence on them. *The human development index* and *GDP per capita* have indirect effects on each other. The research hypotheses are evaluated, the model of structural equations is accepted, being statistically significant.

In the first structural equation, located on the left, we placed the *GDP*-dependent variable per capita and the independent variables - *inflation rate, Gini coefficient, employment rate, unemployment rate*, *rate of young people neither, in employment nor in education or training, early school leaving*. On the right, in the second structural equation, we placed the dependent variable *human development index* and the independent variables - the *coefficient of human inequality and the poverty risk rate as a function of the poverty line*.

The hypotheses were confirmed: the quality of life in Romania was directly influenced by *human inequality* and *the poverty rate*; the *quality of life index* had a favorable influence on the *inflation rate, employment and unemployment rate*, and *economic development* in Romania was globally influenced by the *quality of life*, under the impact of the influence of representative economic and social factors. All the component variables of the SEM model for Romania were subjected to post-estimation (Goodness on fit) and it was found that the values of the comparative fit indices correspond, and the model is appropriate. Testing using the Wald test led to the validation of the structural equation model.

Summative assessments

Corroborating the theoretical and empirical investigation carried out in this doctoral thesis, the economic and social phenomena under analysis are quite complex and inter-related, which requires considerable efforts to obtain a clear picture of the *economic and social situation of the economic development and the quality of life*. We used for analysis quantitative methods - descriptive statistical analysis, which was based on collecting data from official databases, on their processing and interpretation. Indicators of variation were used in the statistical analysis, which allowed the comparison of EU-27 countries based on the results obtained by macroeconomic analysis of indicators representative of the 2 dimensions: *the economic development and the quality of life*.

Romania's economy is an emerging economy and is located in the top 20 states of the EU-27 considering the economic performance achieved, according to the results obtained from the analyzes performed (statistical, macroeconomic). Romania has undergone a profound transformation both structurally and functionally, with an oscillating evolution over the analyzed period, with years of wandering and convergence. After the economic crisis of 2008, the process of recovery of the Romanian economy was difficult and difficult, with small steps. However, in the following period, economic growth returned due to massive industrial exports, very good agricultural yields. In 2017, the industry surpassed all other component sectors of the economy. Exports and trade with the EU, which accounts for about 70% of Romania's trade, led to economic growth in 2017. The labor force in Romania is skilled, but is facing its emigration, the population is aging, which affects long-term economic growth and economic stability. To these is added a medical system that cannot cover the demand and the aggressive weakening of the fiscal package.

Many researchers have been concerned and approached the dimensions of economic development and quality of life in various ways and have tried, through research, to help find solutions to ensure growth, economic development, improving living standards and quality of life. Lately, the biggest concern of most researchers is to identify solutions, strategies and policies to overcome the biggest economic crisis of 2008, since the Great Depression (1929-1933). Material, financial well-being, comfort, happiness are desideratum that contribute to the improvement of people's quality of life, and a strong and efficient economy provides the material support that contributes to a better life. Poverty reduction, social inclusion, increasing access to education, reducing early school leaving, creating new jobs and entering the labor market lead to a high standard of living and a quality life.

In the current context of the economic crisis, the COVID-19 pandemic has affected, first and foremost, vulnerable economies, but also stable and strong ones. The strategic measures proposed and adopted by the EU have focused on halting the COVID-19 pandemic and mitigating the impact of its disastrous economic effects. Achieving these goals and putting them into practice depends on the quality of state interventions in their real economy, how they have managed or will manage the economic, financial, labor market, capital and investment sectors.

Limits of research

The topic is particularly complex and broad, with profound economic and social implications, and the emergence of research limitations is imminent. There are many authors who have addressed economic growth and development, and there is a very extensive bibliography, as well as books that explain the economic changes of past centuries. There are also many representative indicators of economic development and quality of life available on Eurostat, and the volume of existing data is particularly large, which has made their selection and analysis somewhat difficult and has required substantial efforts. Macroeconomic analysis could be extended using other econometric models, including variables that include the implications of the COVID-19 pandemic.

Further developments

Further developments in this scientific research will continue with the extrapolation of the research period and a detailed analysis of the main economic and social factors that have influenced *economic development and quality of life* in the EU in the context of the COVID-19 pandemic. How strong was the contraction of the economies and what are the short, medium and long term effects of the crisis. An interesting approach is also the analysis of the policies and strategies adopted by the governments of the EU-27 countries during this period, of the actions they have taken in order to manage and overcome the complex economic situation we are going through. Romania could be treated separately in the research, in addition to the other EU-27 states. The approach could aim at identifying at Romanian level short-, medium- and long-term measures, which would offer solutions for economic recovery and more. The aim could be to carry out a complex analysis also from the perspective of economic development and quality of life, standard of living in the context of the economic crisis triggered by the COVID-19 pandemic and the extension of the indicators used in the analysis.