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Measuring The Impact Of The Blue Economy On Economic Growth For The Period 2010-2019, Selected European Countries

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ABSTRACT

The research aims to study the impact of the blue economy variables represented in the total fish production (tons) and the total goods transported through the ports (tons) on economic growth, expressed as a gross domestic product in selected European countries. Although European countries have attached great importance to the blue economy, the His rates are still below the required levels. The research was based on panel data for the period 2010-2019 for eleven countries that provided the data needed for the study (Belgium, Netherlands, Bulgaria, Germany, Estonia, Slovenia, Spain, France, Croatia, Italy, United Kingdom). The research found that the total production of capital (tons) and the total goods transported through the ports (tons) have a positive impact on economic growth in the short term. In the long run, the total fish production will have a negative effect on economic growth, while the total goods transported through the ports will have a positive impact on economic growth.

Keywords: Blue economy, economic growth, fish production, transporting goods through ports, gross domestic product

INTRODUCTION

Achieving economic growth is one of the most challenges facing many countries of the world, and with limited resources and their decreasing and exposure to depletion and continuous sabotage that threatens the future of human beings in achieving economic development, this matter prompted many countries to search for alternatives that combine economic growth and optimal exploitation for resources. The seas and oceans are among the most diverse and productive systems, and recent years have witnessed an increase in the exploitation of these areas to achieve productivity and economic growth. Consequently, the blue economy has emerged as one of the engines of economic growth for countries through the rational and rational exploitation of marine resources, as the value of the economic oceans is estimated at about 6.5 trillion dollars.

In this research, we will test the effect of the blue economy on economic growth in selected European countries using quantitative analysis to prove the hypothesis of the effect of the blue economy variables represented in the production of fish and the total goods transported through the ports on economic growth expressed in gross domestic product. The main research question: What are the determinants of economic growth in European countries? The answer to this question lies in formulating an appropriate economic policy to influence economic growth, linked to the variables of the blue economy.

This research is organized as follows: Section 1 discusses literature references, Section 2 data and methodology, Section 3 Data analysis, Section 4 Standard estimation of the model, and Section 6 summarizes the main findings.

REVIEW OF LITERATURE

The blue economy appeared for the first time in the Pacific island countries in 2011, so the oceans and seas have become an integral part of the lives of individuals and constitute an important economic, social and political system for them. Thus, it is defined as a sustainable ocean economy in which economic activity is balanced with the ocean ecosystems in the long term, which is the sustainable industrialization of the oceans for the benefit of society [1]. It is the good management of water resources and the dependence on the seas and oceans for sustainable development, poverty eradication and sufficiency Self-sufficient food [2].

The blue economy focuses on marine activities. It is necessary to identify the general components of this economy, which can be clarified as follows: [4]:

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A. The sustainable use of natural resources, characterized by economic scarcity and the emphasis on their optimal exploitation.

B. Paying attention to the ecosystem of the oceans and seas because the carrying capacity of the ecosystems suffers from high pressures due to the great global activity in the seas and oceans.

C. Community participation and the high participation rate of rural residents who depend on oceans and seas due to the lack of access to central government systems.

D. Technological and technical capabilities that express the enabling elements of the blue economy, which facilitate the achievement of environmental, economic, and social sustainability when technological and technical progress is linked to effective management. The sectors of the blue economy depend directly or indirectly on the resources of the oceans and seas. The following table shows the sectors of the blue economy.

What economic growth expresses the increase in the flow of economic productivity in a particular country, through an increase in the production of goods and services in a specific period, excluding the effects of economic inflation, economic growth leads to an increase in the profits of companies by increasing the value of their financial shares, which in turn leads to Increasing their investments and increasing their demand for the workforce, which contributes to reducing unemployment rates, raising the income of individuals and improving their standard of living. This leads to an increase in the demand of individuals for goods and services, and thus the increase in spending by individuals leads to economic growth to higher levels [5].

It is the quantitative variable that measures the quantitative changes of the available productive capacity in the economy. The more this energy is exploited, the more the quantities of goods and services that meet the general needs of society [6].

An increase in the gross domestic product or the total national income to achieve an increase in the average per capita real income does not mean an increase in the total national product only. Still, it must increase real income, meaning that the growth rate must exceed the population's growth rate. Accordingly, it only increases the GDP without achieving economic growth due to the high rate of population increase than the rate of output growth [7].

economic growth, and works to reduce the repercussions of climate change and eradicate poverty in the world, and it acquires particular importance as water covers 70% of the Earth's area. It is necessary to protect marine organisms to protect the interconnected global economies and achieve long-term sustainability. And that 90% of the worldwide trade movement takes place through the sea, and the oceans also play a significant role in linking countries to each other, which requires harnessing these links to achieve economic growth, and the focus is not limited to making profits [8].

Thus, the blue economy is moving from the ocean-based economy to the traditional economy, which considers the seas and oceans as the extraction of free resources and the dumping of waste. The environmental costs are outside the economic calculations. On the contrary, the commitment in the essence of the blue economy lies in separating economic growth from environmental degradation, By integrating the real value of natural capital with the values and services of the environment in all aspects of economic activity [9].

Therefore, the blue economy is considered a low-cost economy and a resource that depends on consumption and production patterns, enhances human well-being and social justice generates job opportunities, reduces environmental risks and economic scarcity, and includes the continued delivery of goods and services for current and future generations to achieve comprehensive economic growth [10] [11] [12] [13].

The blue economy industry provides livelihoods for more than 820 million people worldwide in various fields such as shipping and related transport, energy generation, mining, construction, trade, tourism, and research, without neglecting other essential services. Fishing and aquaculture are an integral part of the blue economy. Given the wide distribution of opportunities and benefits that it creates worldwide, especially in developing countries, this sector can be considered one of the most important. The world production of fish has increased to nearly 171 million tons, about half of which is from aquaculture, and its value is estimated at 362 billion US dollars. Fish represent almost 20% of the individual intake of animal protein 3.2 billion people and represent the global animal protein food supply with 17% of the global supply of animal protein food [14] [15] [16]. The aquaculture sector continues to grow faster than other core food production sectors, with an annual growth rate of nearly 6%. Almost 60 million people enjoy a primary livelihood through fishing or aquaculture, more than 96% of whom live in developing countries in Asia and Africa [17].

DATA AND METHODOLOGY

The research aims to estimate the impact of the most important variables of the blue economy on economic growth in selected European countries, the independent variables represented in the total fish production in tons and the total goods transported through the ports in tons, while the dependent variable defined in the gross domestic product. The research was based on panel data for the period 2010-2019 for the selected European countries, which amount to 11 countries (Belgium, Netherlands, Bulgaria, Germany, Estonia, Slovenia, Spain, France, Croatia, Italy, United Kingdom) . The data was collected from the World Bank database by the World Development Indicators World 2019 Indicators. The mechanism used in building the model will

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depend on the panel data, which differs from the mechanism of dealing with cross-section data or time-series data models. The statistical software EViews- 12 will be used. The formulas of the standard model to be estimated will take the following form:

$$\log Y \beta = 10+1 \beta \log X1 + \beta 2 \log X2 + Eit \quad (1)$$

The dependent variable Y represents gross domestic product.

The independent variables include

Total fish production in tons X 1, and total goods transported through the ports (tons) X2

And β_0 represents the parameter of the fixed section or term in the model, and the GDP represents the absence of the influence of all independent variables in the model. β 1, β 2. Parameters of the model, which measure the effect of the independent variables consecutively on the gross domestic product. And εit The error variable in the model that represents all the variables Not measured or not entered in the form.

DATA ANALYSIS

A. Chart the time series: the graph at the level of the study sample countries panel data. It is noted that the time series are unstable and have different directions, increasing or decreasing, and they are not fixed over time, see Figure (2).

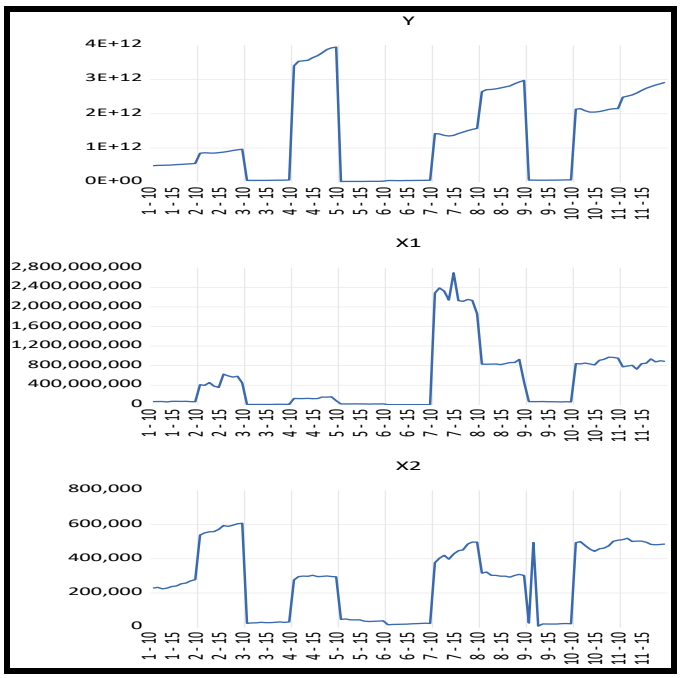

Figure 2: Plotting the search variables

B. A quiescence test for the research variables : According to (Levin, Lin & Chu t) test and (PP – Fisher CHI) Chi(test, some of the variables are static in the level, and others are after the difference, meaning that they have a unit root. Therefore, the stability rank is a mixture of 1(0), as well as 1(1), which can be It, is accompanied by the application of the(PMG/ARDL) model for the variables of the Standard Model, see Table (2).

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Table 2: Unit Root test

panel unit root test					
		Levin, Lin & hu t* -Individual intercept and trends		PP - Fisher Chi-square -Individual intercept and trends	
		t-Statistic	Prob.	t-Statistic	Prob.
Y	At Level	2.78	0.99	2.11	1.000
	At First Difference	-1.90	0.028	56.52	0.000
X_1	At Level	0.173	0.568	25.24	0.285
	At First Difference	-1.637	0.050	44.n7	0.002
X_2	At Level	-289.39	0.000	48.10	0.001
	At First Difference	-96.8	0.000	115.18	0.000

C. Cointegration Test (Pedroni Residual Cointegration Test) we test the co-integration relationship. It is noted through the results of the Pedroni test that four of the seven tests confirm the existence of a long-term co-integration relationship between the study variables at a significant level (5%) at the individual intercept and trends, see Table (3).

Table 3: Co-integration test (Pedroni Test)

individual intercept and individual trend				
Alternative hypothesis: common AR coefs . (within-dimension)				
Test	Statistic	Prob	Weighted Statistic	Prob
Panel v-Statistic	18.61311	0.0000	-0.000973	0.0004
Panel rho-Statistic	2.459096	0.9930	2.747633	0.9970
Panel PP-Statistic	-0.486418	0.3133	-3.027661	0.0012
Panel ADF-Statistic	-0.796416	0.2129	-3.498731	0.0002
Alternative hypothesis: individual AR coefs . (between-dimension				
Test	Statistic	Prob		
Group rho-Statistic	4.155767	1.0000		
Group PP-Statistic	-0.431627	0.3330		
Group ADF-Statistic	-1.854744	0.0318		

STANDARD ESTIMATION OF THE MODEL

A. Estimation of the long and short-term relationship PMG The results of the long-term relationship showed the following:

- The sign is positive, which means that the relationship is direct between total fish production tons and GDP and that the increase in total fish production tons by 1%, this leads to an increase in GDP by 0.208 %.

- The sign is positive, which means that the relationship is direct between the total goods transported through the ports tons and the GDP and that the increase in the total goods transported through the ports tons by 1%, this leads to an increase in GDP by 0.965%. As for the short-term relationship: the estimated relationship showed that the unconstrained error correction coefficient ECM amounted to -0.072 negative and at a significant level of 5%. This reflects the existence of an equilibrium relationship in the short term between the study variables towards a long-term equilibrium relationship and that. The value of the error correction factor means that 7% of the equilibrium imbalance, i.e., the short-term imbalance in Y in the previous period t-1 can be corrected in the current period t towards the long-term equilibrium relationship e due to any shock Shock. Or a change in the independent variables, and the results showed the following:

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- The sign is negative, which means that there is an inverse relationship between total fish production tons and GDP and that an increase in total fish production tons by 1%, this leads to a decrease in GDP by -0.026 %.

- The sign is positive, which means that the relationship is direct between the total goods transported through the ports tons and the GDP and that the increase in the total goods

- The sign is positive, which means that the relationship is direct between total fish.

Table 4: The results of the long- and short-term relationship.

Panel PMG				
Long Run Equitation				
Variable	Coefficient	std. Error	t-Statistic	Prob.*
LOG(X1)	0.208364	0.041180	5.059846	0.0000
LOG(X2)	0.965188	0.106069	9.099665	0.0000
Short Run Equation				
COINTEQ01	-0.072729	0.054765	-1.328036	0.0089
DLOG(X1)	-0.026328	0.014593	-1.804232	0.0359
DLOG(X2)	0.0200455	0.101028	1.984158	0.0215
C	0.797157	0.616149	1.293774	0.004

B. As for the results of the short-term relationship at the level of countries:

Belgium: the sign is positive, which means that the relationship between the total fish production tons and the GDP, and that the increase in total fish production tons by 1%, this leads to an increase in the gross domestic product by 0.011%. The sign is negative this means that there is an inverse relationship between the total goods transported through the ports tons and the GDP and that the total goods transported through the ports tons increased by 1%, which leads to a decrease in GDP by 0.019%.

The Netherlands: the sign is negative, which means that the total fish production tons and the GDP are inversely related and that the total fish production tons increases by 1%, which leads to a decrease in GDP by 0.09 %, and the sign is positive. This means that there is a direct relationship between the total goods transported through the ports tons and the GDP and that the increase in the total goods transported through the ports tons by 1%, this leads to a decrease in GDP by 0.97%.

Bulgaria: the sign is positive, which means that the relationship between the total fish production tons and the GDP, and that the increase in total fish production tons by 1% leads to an increase in the gross domestic product by 0.002 %, and the sign is negative This means that there is an inverse relationship between the total goods transported through the ports tons and the GDP and that the total goods transported through the ports tons increased by 1%, which leads to a decrease in GDP by 0.04 %

Germany: the sign is positive, which means that the relationship between the total fish production tons and the GDP, and that the increase in total fish production tons by 1%, this leads to an increase in the gross domestic product by 0.048 %, and the sign is positive This means that there is a direct relationship between the total goods transported through the ports tons and the GDP and that the increase in the total goods transported through the ports tons by 1% this leads to a decrease in GDP by 0.45 %

Estonia: the sign is negative, which means that the total fish production tons and the GDP are inversely related and that the increase in total fish production tons by 1% leads to a decrease in GDP by 0.009 %, and the sign is positive This means that there is a direct relationship between the total goods transported through the ports tons and the gross domestic product and that the increase in the total goods transported through the ports tons by 1%, this leads to a decrease in the gross domestic product by 0.132 %

Slovenia: the sign is negative, which means that there is an inverse relationship between the total fish production tons and the GDP and that the increase in total fish production tons by 1% this leads to a decrease in GDP by 0.021 %, and the sign is negative. Which means that there is an inverse relationship between the total goods transported through the ports tons and the GDP and that the increase in the total goods transported through the ports tons by 1%, this leads to a decrease in GDP by 0.085 %.

Spain: the sign is negative, which means that the total fish production tons and GDP are inversely related and that the increase in total fish production tons by 1%, this leads to a decrease in GDP by 0.057 %, and the sign is negative. Which means that there is an inverse relationship between the total goods transported through the ports tons and the GDP and that the increase in the total goods transported through the ports tons by 1%, this leads to a decrease in GDP by 0.024 percent.

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France: the sign is negative, which means that the total fish production tons and the GDP are inversely related and that the increase in total fish production tons by 1% leads to a decrease in GDP by 0.013 %, and the sign is positive. This means that there is a direct relationship between the total goods transported through the ports tons and the GDP and that the increase in the total goods transported through the ports tons by 1%, this leads to a decrease in GDP by 0.206%. .

Croatia: the sign is negative, which means that the relationship between the total fish production tons and the GDP is inverse and that the increase in total fish production tons by 1%, this leads to a decrease in GDP by 0.083 %, and the sign is positive. This means that there is a direct relationship between the total goods transported through the ports tons and the GDP and that the increase in the total goods transported through the ports tons by 1%, this leads to a decrease in GDP by 0.011 %.

Italy: the sign is negative, which means that the total fish production tons and GDP are inversely related and that the increase in total fish production tons by 1% leads to a decrease in GDP by 0.09 %, and the sign is positive. This means that there is a direct relationship between the total goods transported through the ports tons and the GDP and that the increase in the total goods transported through the ports tons by 1% this leads to a decrease in GDP by 0.58 %.

The United Kingdom: the sign is positive, which means that the total fish production tons and the GDP are positive and that the increase in total fish production (tons by 1% leads to a decrease in GDP by 0.018 %, and the sign positive. Which means that the relationship is direct between the total goods transported through the ports (tons) and the GDP and that the increase in the total goods transported through the ports tons by 1%, this leads to a decrease in GDP by 0.014 % see Table (5).

Table 5: The results of the short-term relationship and at the level of countries

(BELGIUM)

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.111861	0.001232	-90.78678	0.0000
DLOG(X1)	0.011992	0.000115	104.1887	0.0000
DLOG(X2)	-0.019074	0.001841	-10.36048	0.0019
C	1.269680	0.247824	5.123303	0.0144

THE NETHERLANDS

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.346152	0.004346	-79.64358	0.0000
DLOG(X1)	-0.094599	0.000160	-591.5711	0.0000
DLOG(X2)	0.973114	0.022776	42.72530	0.0000
C	3.646379	1.291733	2.822859	0.0666

BULGARIA

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.071653	0.006060	-11.82426	0.0013
DLOG(X1)	0.002978	0.000560	5.317795	0.0130
DLOG(X2)	-0.040537	0.003837	-10.56337	0.0018
C	0.856854	0.844444	1.014695	0.3850

GERMANY

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	0.152749	0.011281	13.54095	0.0009
DLOG(X1)	0.048211	0.000759	63.50697	0.0000
DLOG(X2)	0.450277	0.017290	26.04306	0.0001
C	-1.950154	1.907480	-1.022372	0.3819

ESTONIA

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.006807	0.000543	-12.52571	0.0011
DLOG(X1)	-0.009663	0.005307	-1.820639	0.1662
DLOG(X2)	0.132204	0.003017	43.81399	0.0000
C	0.110087	0.056442	1.950462	0.1462

SLOVENIA

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.219731	0.008826	-24.89584	0.0001
DLOG(X1)	-0.021858	0.006869	-3.182398	0.0500
DLOG(X2)	-0.085326	0.018049	-4.727379	0.0179
C	2.702095	1.519605	1.778157	0.1734

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SPAIN

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.374848	0.010985	-34.12501	0.0001
DLOG(X1)	-0.057165	0.001519	-37.62619	0.0000
DLOG(X2)	-0.024762	0.016429	-1.507239	0.2289
C	4.114345	2.128586	1.932900	0.1487

FRANCE

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.019633	0.000708	-27.74190	0.0001
DLOG(X1)	-0.013338	7.10E-05	-187.8831	0.0000
DLOG(X2)	0.206233	0.001553	132.8016	0.0000
C	0.252662	0.106403	2.374573	0.0981

CROATIA

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	0.016417	7.33E-05	223.9112	0.0000
DLOG(X1)	-0.083601	0.017445	-4.792407	0.0173
DLOG(X2)	0.011602	2.56E-05	452.9504	0.0000
C	-0.173737	0.010447	-16.62985	0.0005

ITALIA

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	0.194014	0.013942	13.91553	0.0008
DLOG(X1)	-0.090980	0.005408	-16.82203	0.0005
DLOG(X2)	0.587187	0.021562	27.23190	0.0001
C	-2.223236	2.119267	-1.049059	0.3712

UNITED KINGDOM

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.012515	0.000736	-17.01319	0.0004
DLOG(X1)	0.018412	0.000587	31.36743	0.0001
DLOG(X2)	0.014087	0.011838	1.189975	0.3196
C	0.163751	0.100758	1.625186	0.2026

Source: Prepared by the researcher based on the statistical program (EVIEWS 12)

CONCLUSION

The main objective of the research is to estimate the effect of the blue economy variables on the economic growth of selected European countries, using the multiple regression method and panel data for the period 2010-2019. We found that the total production of capital tons and the total goods transported through the ports tons have a positive impact on economic growth in the short term. In the long run, the total fish production will have a negative impact on economic growth, while the total goods transported through the ports will have a positive impact on economic growth.

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