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THE ROLE OF GOVERNMENT IN SUSTAINABLE DEVELOPMENT: A CASE STUDY FOR ALBANIA

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Abstract

The purpose of the study is to examine the impact of various factors, such as Political Stability, Government Effectiveness, Control of Corruption, Voice and Accountability, Regulatory Quality, and Rule of Law, on the Sustainable Development in Albania. The study aims to identify the short-term and long-term impacts of these factors, to identify the challenges faced by Albania in achieving sustainable development goals, and provides recommendations to the Albanian government on how to promote sustainable economic growth. The study used a combination of desk-literature review, descriptive statistics, and regression analysis methods to identify relationships between changes in the Well Governance Index (WGI) and the Sustainable Development Index (SDI). The Koyck distributed-lag model was used to establish the dynamic link between various factors. The models analyzed the impact of various factors, including Political Stability (PS), Government Effectiveness (GE), Control of Corruption (CC), and Voice and Accountability (VA) on SDI. The short-term and long-term effects of these factors on SDI were also discussed. The study found that political stability and government effectiveness have a negative impact on sustainable development in Albania. However, regulatory quality and *the rule of law have a positive impact on sustainable development. To promote sustainable development, the government should prioritize policies that promote sustainable economic growth and protect the environment.*

Keywords: Sustainable development, index, government, regression, indicator

INTRODUCTION

Economic measurements have a long history dating back centuries, but their modern versions trace their origins to the Great Depression of the 1920s and 1930s. In the subsequent decades, economists engaged in debates and discussions regarding the original concept. Notable figures like Kuznets, Leontief, and Stone made significant contributions to the development of national accounts. Additionally, other researchers such as Hicks and Frisch played important roles in refining the system, as evidenced by Studenski's work in 1958 [18]. Over time, GDP estimates have been calculated for nearly every country worldwide. The concept of sustainable development entails pursuing development that fulfills the present needs without jeopardizing the ability of future generations to fulfill their own needs. The Brundtland definition, proposed by G.H. Brundtland (1987) [5], serves as the foundation for measuring sustainable development. According to this definition, sustainable development is the type of development that addresses the current needs of society while safeguarding the ability of future generations to meet their own needs. The well-being of both present and future generations is heavily reliant on how society manages its resources. These resources encompass not only tangible items like machinery, equipment, energy, and mineral resources but also extend to intangible ones such as knowledge, the quality of the natural environment, and the effectiveness of social and institutional structures. The capital approach lies at the core of understanding these resources, comprising economic, human, natural, and social capital. These forms of capital are measured in terms of stocks, which are accumulated through investments. Within this broader concept of human well-being, consumption plays a role as a subset. It represents the satisfaction individuals derive from using goods and services and centers on people's ability to access commodities. However, it's important to note that merely possessing certain commodities is insufficient to generate overall well-being. Sen.'s approach, as presented in Seen (1993; 2000), [16] [17], highlights the significance of freedom in determining the extent of people's opportunities and their overall quality of life. The more freedom individuals have, the broader their range of possibilities, leading to an enhanced quality of life. Society possesses various resources that are essential for sustaining human well-being over time. These resources can be categorized as economic, natural, human, and social capital, as described by UNECE

(2009) [19].In the context of sustainable development, particular attention is often given to the unique nature of natural capital. This form of capital is crucial for the survival of humanity, as it provides essential ecological services. This perspective on natural capital is anthropocentric, as its value is primarily linked to the benefits it offers to humans. Nevertheless, certain types of natural capital, such as biodiversity, hold intrinsic value regardless of their utility to society. This concept is referred to as "ecological well-being." Some argue that natural capital is the most comprehensive and vital asset, with other capital stocks and human existence being subordinated to the functioning of the ecological system.

From an intergenerational perspective, sustainable development refers to the type of development that guarantees future generations a level of human well-being that is at least as good as the current level. To achieve this, it is essential that the per capita stock of wealth does not diminish, which necessitates the replacement or conservation of the components of that wealth, including economic, natural, human, and social capital, while considering the time dimension: the present ("now") versus the future ("later").Consequently, the most effective way to assess the degree to which today's society is following a sustainable path is by monitoring the volume of assets and ascertaining whether resources are being preserved for the benefit of future generations. Simultaneously, population dynamics play a vital role in sustainable development and must be taken into consideration when formulating strategies and policies for achieving sustainability.

The Brundtland definition not only offers a conceptual framework for sustainable development but also provides tools to assess how sustainable development affects cross-border interactions and to what extent countries contribute to the well-being of their populations. When nations aim to enhance human well-being, they can utilize their own resources, but they also have the option to import resources from other countries. Hence, it is crucial to pay close attention to international transfers of different types of capital, particularly how economic activities in one country impact the natural capital available in other countries and on a global scale. A country's human well-being can be influenced by both imports and exports of economic capital, such as machinery and equipment, and by imports and exports of human capital, which includes the transfer of knowledge associated with migration. The concepts of human well-being and sustainability have a deep-rooted history, having been developed in various disciplines like philosophy, economics, and the natural sciences. Governance, on the other hand, refers to the traditions and institutions through which authority is exercised within a country. It encompasses the processes of selecting, monitoring, and replacing governments, as well as the government's capacity to effectively formulate and implement sound policies. Additionally, governance involves the respect shown by both citizens and the state for the institutions that regulate economic and social interactions among them. The Worldwide Governance Indicators (WGI) provide a comprehensive report on six broad dimensions of governance, which helps in assessing the governance quality in different countries.

INDICATORS USED FOR THE STUDY

The Human Development Index (HDI). The Human Development Index (HDI), developed by the United Nations Development Program, serves as an assessment tool to gauge human development, well-being, and quality of life across various dimensions within societies. It offers a slightly broader indicator based on widely available population measures and evaluates development along two social dimensions and one economic dimension. According to a study conducted by Churilova et al. (2015) [6], the HDI was compared to other variables of well-being and demonstrated strong correlation as an indicator of human development. Despite having limitations in capturing the comprehensive measure of population well-being and overlooking various other dimensions, the HDI has become the most widely used and accepted international measure of development. The HDI consists of three components: per capita gross national income, which serves as a proxy for material or economic well-being. Life expectancy at birth, acting as a crude proxy for general health and bodily wellness, and education index based on averaging the mean years of schooling for adults aged 25 and over and expected years of schooling for school-aged children, representing a crude proxy for the mental development of human capabilities. To calculate HDI values, two steps are followed: setting minimum and maximum values to transform the indicators expressed in different units into indices ranging between 0 and 1. This normalization process allows for the comparison of different countries and their respective HDI scores.

Table 1. Indicators for calculation of HDI

Dimension Indicator	Indicator	Minimum	Maximum
Health	Life expectancy (years)	20	80
Education	Expected years of schooling (years)	0	18
	Mean years of schooling (years)	0	15
Standard of living	GNI per capita (2017 PPP$)	100	75000

Source: United Nations Development Programmer, 2019

Having defined the minimum and maximum values, the dimension indices are calculated as:

$$\text{Dimension index} = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}} \quad \text{....(1)}$$

The HDI is the geometric mean of the three-dimensional indices, Anand & Sen (2000)[2]:

$$\text{HDI} = (I_{\text{Health}} * I_{\text{education}} * I_{\text{income}})^{1/3} \quad \text{....(2)}$$

Sustainable Development Index (SDI). The Human Development Index (HDI) has faced criticism for its failure to incorporate ecological sustainability, a pressing concern amidst the challenges posed by climate change and ecological degradation. Notably, countries with high HDI scores often exhibit significant ecological impact, resulting in adverse consequences for both human economies and natural ecosystems. This paradox creates a scenario where development in some nations comes at the expense of restricting progress in others. To tackle this issue, the Sustainable Development Index (SDI) was introduced to assess the ecological efficiency of countries in achieving human development. The SDI builds upon the components of the HDI but factors in ecological overshoot, which quantifies the degree to which consumption-based CO2 emissions and material footprint exceed per-capita planetary boundaries.

By doing so, the SDI promotes advancements that align with ecological sustainability. Developing nations are challenged to enhance human development while adhering to planetary boundaries, while developed nations must reduce their environmental impact to sustainable levels while preserving or elevating human development. The sufficiency threshold aligns the income index with other human development indices, while simultaneously discouraging countries from pursuing ecologically harmful economic growth. The data used for the SDI components are obtained from the United Nations Development Program and are based on the same dataset employed for calculating the HDI. The average overshoot is determined by dividing the values of material footprint and emissions by their per capita planetary boundary, which varies yearly based on population size, and then averaging the outcomes using the geometric mean.

$$\text{AO} = \sqrt[2]{\left(\frac{\text{MF}}{\text{Boundary}}^{3}\ 1\right) * \left(\frac{\text{CO2}}{\text{Boundary}}^{3}\ 1\right)} \quad \text{....(3)}$$

The approach for determining whether a country exceeds or falls below the limit for material and emissions is to divide the country's amount of material and emissions by its per capita planetary boundary, which changes according to population size. This ensures standardized units of measurement. If the result of this division is less than 1, it is treated as 1, to indicate that the country is falling short of the limit. A geometric mean is then used to average the results to ensure that a country cannot offset exceeding one limit by falling below the other. If a country exceeds either limit, its average overshoot will be greater than 1. For successful participation in the SDI, developing nations must improve human development while keeping ecological impact within planetary boundaries. Developed nations, on the other hand, must maintain, or improve human development while significantly reducing their environmental impact to sustainable levels. Income is also an important factor in human development as it gives people a sense of agency, choice, and security. To align the income index with other human development indices such as education and life expectancy, a sufficiency threshold is used to ensure that countries do not have to pursue ecologically damaging levels of economic growth to score well. The United Nations Development Program provides the data for the components of the development index and the ecological impact index, using the same dataset used for HDI.

$$EII = 1 + \frac{e^{AO} - e^{1}}{e^{4} - e^{1}} \quad ....(4)$$

Overshoot of either boundary will yield an average overshoot of greater than 1.

$$AO = \sqrt[2]{\left(\frac{MF}{Boundary}\ 3\ 1\right) * \left(\frac{CO_2}{Boundary}\ 3\ 1\right)} \quad ....(5)$$

$$\text{If } AO\ f\ 4, \text{ Then } EII = AO - 2 \quad .....(6)$$

The calculation of planetary boundaries involves various steps. To determine the sustainable limit for material usage, a value of around 50 billion tons per year is considered aceptabile, according to Bringezu et al. (2015) [4]. This value is divided by the global population in a given year to obtain the per capita threshold, which for 2019 was 6.52t per person. Similarly, for CO2 emissions, the IPCC's 2018 SR15 report, (Intergovernmental Panel on Climate Change, 2018) [10], can be used to estimate the carbon budget that has a 67% probability of keeping the global temperature rise between 1.5C and 2C. This budget is then converted into per capita terms, resulting in a boundary of 1.58t per person per year for 2019.The ecological impact index utilizes the natural exponential scale to measure AO, with a minimum result of 1 representing no overshoot. If a country exceeds the planetary boundary, the ecological impact index registers 2, resulting in the development index being cut in half. It is important to note that a country cannot use low ecological impact to offset poor human development or strong development performance to offset the high ecological impact.

To incorporate international trade, material footprint, and CO2 emissions are expressed in consumption-based terms. This approach considers the materials and emissions involved in producing and shipping imported goods while subtracting the embodied materials and emissions in exports. The material footprint measures a nation's total consumption and extraction of materials, such as biomass, minerals, fossil fuels, and construction materials. This is a significant indicator as it affects land-use change, chemical loading, biodiversity loss, and other important processes outlined in the planetary boundary.

LITERATURE REVIEW

In 1999, Daniel Kaufmann [11] conducted empirical research on governance perception and developed a set of six composite indicators. Kaufmann's studies found a positive correlation between the quality of governance and variables such as GDP growth rate, investment, and human capital development. However, the impact of corrupt governance on the benefits of foreign direct investment (FDI) received by countries is not well-researched. Some studies suggest that poor governance reduces inward FDI, while others show that the risk and political instability of a country are the main determinants of weak FDI. Improving governance has been linked to improved human development, although there is limited agreement on how this relationship works. Fiszbein et al. (2011) [7] propose a methodology combining qualitative and quantitative approaches to measure the outcomes of governance inputs, which is supported by Ottervik, (2011) [15], that good governance is strongly related to human development. Corruption has been found to reduce government spending on education and health, as it offers fewer rent-seeking opportunities for public officials. Studies by Mauro, Mauro, (1998) [14], Gupta & Davoodi (1998) [8], have shown that corruption also fosters education inequality, lowers secondary schooling, and causes inequality.

METHODOLOGY

Data Source

This study provides the results of our empirical work which aims to offer answers to the questions of the relationships between, the Sustainable Development Index (SDI) and six WGI: Voice and Accountability (VA), Political Stability (PS),) Government Effectiveness (GE), Regulatory Quality (RQ), Rule of law(RL) and Control of Corruption (CC), in Albania. The six aggregate WGI indicators are reported in their standard normal units, ranging from approximately -2.5 to 2.5. A country-year time series on WGI is taken from World Bank Indicators. A country-year series of data on the Human Development Index and Sustainable

Development Index is taken from the United Nations Development Program. The variables used in the econometric analysis, their symbols, and data sources are briefly presented in table 2.

Table 2: Variables Used in the Analysis

Variables	Symbol	Unit of measure	Sauce
Human Development Index	HDI	0-1	United Nations Development Programmer, Human Development Reports
Sustainable Development Index	SDI	0-1	United Nations Development Programmer, Human Development Reports 2019
Voice and accountability	VA	(-2.5;+2.5)	World Bank Indicators 2019
Political stability and absence of violence/terrorism	PS	(-2.5;+2.5)	World Bank Indicators 2019
Government Effectiveness	GE	(-2.5;+2.5)	World Bank Indicators 2019
Regulatory Quality	RQ	(-2.5;+2.5)	World Bank Indicators 2019
Rule of Law	RL	(-2.5;+2.5)	World Bank Indicators 2019
Control of Corruption	CC	(-2.5;+2.5)	World Bank Indicators 2019

Regression Analysis and Estimation Method

In the study, method of desk-literature review, descriptive statistics method, and regression method are applied. Among the descriptive statistics, is used statistical ratios and graphical presentation. By the notation x_{tj}, t denotes the period, and j is a label to indicate one of the k explanatory variables. Y_t is the dependent variable, x_{tj} are all independent variables in the equation at time t. X denotes the collection of all independent variables for all periods. It is useful to think of X as being an array, with n rows and k columns. This reflects how time series data are stored in econometric software packages: the t row of X is x_t, consisting of all independent variables for period t. Therefore, the first row of X corresponds to t=1, the second to t=2, and the last to t=n. By combining the time series across a reasonable number of years, are identified relationship between changes in the WGI, and Sustainable Development Index.

The regression analysis commonly makes use of the least-squares (LS). The HAC method heteroscedasticity and autocorrelation consistent, is used for the estimation of model parameters, Andrews, D.W.K. (1991) [3]. HAC standard errors are a type of robust standard errors that take into account the presence of both heteroskedasticity and autocorrelation in the error terms. These standard errors are typically computed using a method called Andrews Kernel estimation, which involves estimating the covariance matrix of the errors in the regression model while accounting for both heteroskedasticity and autocorrelation. HAC standard errors are commonly used in econometrics to provide more accurate estimates of the standard errors of regression coefficients and improve the statistical inference of regression results, Wooldridge, J. M. (2016) [22]. It was applied the so-called Koyck transformation, the geometric distributed lag model to establish the dynamic link between VA and SDI, PS and SDI, RQ and SDI, GE and SDI, RL and SDI, CC and SDI. The Koyck distributed-lag model is based on the assumption that the β coefficients decline geometrically as the lag lengthens, (Koyck, 1954) [12]. The Koyck distributed-lag model is a type of time series analysis that examines the relationship between a dependent variable and its lagged values over time. The model assumes that the impact of a change in the independent variable on the dependent variable diminishes over time, with the impact of each successive lagged value being less than the previous one. This is represented mathematically by a geometric decay function, where the coefficients of the lagged independent variables decline geometrically as the lag lengthens, such that $0 < \lambda < 1$ is known as the rate of decline of the lag.

$$y_t = a(1-\lambda) + b_0 x_t + \lambda y_{t-1} + v_t \text{ where } v_t = e_t - \lambda e_{t-1} \quad \ldots(7)$$

The above model is particularly useful for analyzing the dynamics of economic relationships, as it allows for the inclusion of lagged values of the independent variable in the analysis. It can help to identify how changes in the independent variable affect the dependent variable over time, and to estimate the speed of adjustment to changes in the independent variable. The model is often used in empirical studies of macroeconomic relationships. The h statistic test is performed for detecting autocorrelation in the models. The underlying data and models along with a full range of results are reported in our estimation appendix. We used the gretl program, a cross-platform software package for econometric analysis, Allin Cottrell & Riccardo "Jack" Lucchetti, (2021) [1].

Objective and Hypothesis of the Study

The study tried to answer some questions, based on macroeconomic data analysis. The data for the desired variables are available for 21 years. The relationship between the

Sustainable Development Index, and WGI is analyzed in terms of the following hypotheses: a) Voice and Accountability (VA) has had a positive impact on the Sustainable Development Index (SDI). b) Political Stability (PS) has had a positive impact on prosperity measured by SDI. c) Government Effectiveness (GE) has had a positive impact on prosperity measured by SDI. d) Regulatory Quality (RQ) has had a positive impact on prosperity measured by SDI. e) Rule of Law (RL) has had a positive impact on the Sustainable Development Index (SDI). f) Control of Corruption (CC) has had a positive impact on the Sustainable Development Index (SDI). e) The impact effect of each of the 6 WGI on the Sustainable Development Index SDI, extends the effect over time, and their effect differ one from the other.

RESULTS AND DISCUSSIONS

Referring to Model 1, Table 3 the Sustainable Development Index (SDI) has had a positive trend over the years, increasing on average by 0.014 every year and an average value for the period of 0.777. The λ coefficient, such that $0 < \lambda < 1$ is known as the rate of decline of the lag, and $1-\lambda$ is known as the speed of adjustment. The implication of this is quite clear. The effect of lag on Y_t becomes progressively smaller. As the value of λ is closer to 1 the slower the rate of decline thus the distant past values of x will have a sizable impact on Y_t. Whereas the closer λ is to zero the more rapid the decline and the influence of x on Y_t dies out quickly. The median lag is the time required for the first half, or 50 percent, of the total change in Y following a unit sustained change in x. The mean lag is the time required for the total change in Y following a unit-sustained change in x.

Figure 1: SDI versus HDI

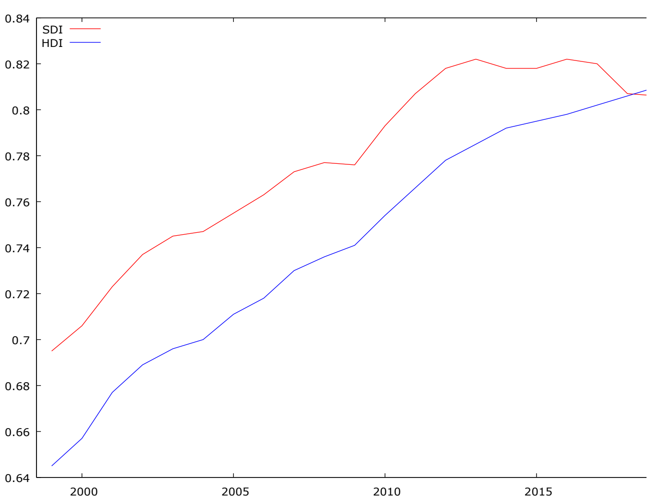


Figure 2: Actual and fitted trend SDI

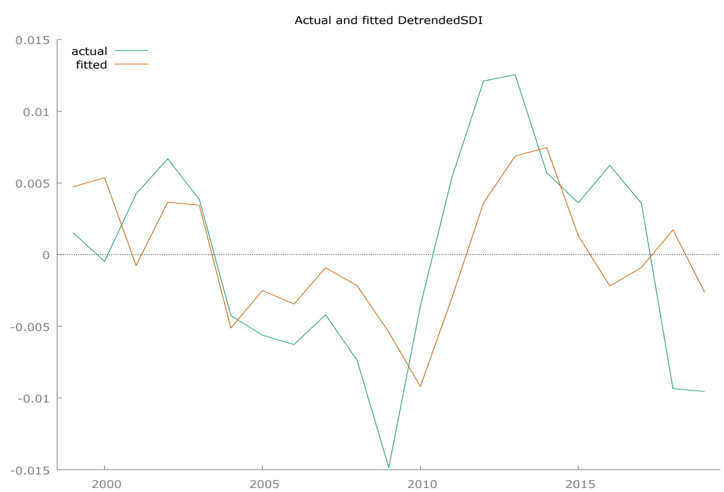


Table 3. Model 1: OLS, using observations 1999-2019 (T = 21)

Dependent variable: SDI

HAC standard errors, bandwidth 2 (Bartlett kernel)

	Coefficient	*Std. Error*	*z*	*p-value*	
const	0.679729	0.00454681	149.5	<0.0001	***
time	0.0141000	0.00139432	10.11	<0.0001	***
sq_time	−0.000363458	6.52617e-05	−5.569	<0.0001	***

Mean dependent var	0.777524	S.D. dependent var	0.040457
Sum squared resid	0.001084	S.E. of regression	0.007759
R-squared	0.966900	Adjusted R-squared	0.963222
F(2, 18)	287.6001	P-value(F)	2.18e-14
Log-likelihood	73.85884	Akaike criterion	−141.7177
Schwarz criterion	−138.5841	Hannan-Quinn	−141.0376
rho	0.710465	Durbin-Watson	0.612282

Note: ***P<0.01, 1%, and **P<0.05, 5%. Figures in parentheses (.) are the p value.

Referring Model 3, Table 4: Y_t=SDI, x_t =VA: Rate of decline λ =0.91 or 91.%;speed of adjustment=(1-λ)=(1-0.91)=0,09 or 9%;Median lag = - (log 2/ log λ)=-(Log2/log 0,91)= 7.34 years; Mean lag=λ/(1–λ)=0.91/(1-0.91)=10.11 years. The full impact of one standard deviation increase of VA on SDI throughout the period was= -0,104. The full effect of VA on SDI appears after 10.11 years, and the short time effect was = -0.00937.

Table 4. Model 3: OLS, using observations 2000-2019 (T = 20)

Dependent variable: SDI Koyk Model

HAC standard errors, bandwidth 2 (Bartlett kernel)

	Coefficient	*Std. Error*	*z*	*p-value*	
const	0.0756771	0.0314574	2.406	0.0161	**
VoiceandAccountability	−0.00937587	0.0104050	−0.9011	0.3675	
SDI_1	0.910324	0.0424194	21.46	<0.0001	***

Mean dependent var	0.781650	S.D. dependent var	0.036695
Sum squared resid	0.000683	S.E. of regression	0.006339
R-squared	0.973300	Adjusted R-squared	0.970159
F(2, 17)	479.6153	P-value(F)	1.12e-15
Log-likelihood	74.46703	Akaike criterion	−142.9341
Schwarz criterion	−139.9469	Hannan-Quinn	−142.3509
rho	0.306557	Durbin's h	1.396320

Referring Model 4, Table 5: Y_t= SD, x_t=PS: Rate of decline λ =1 or 100.%; speed of adjustment=(1-λ)=(1-1)=0; The impact of one standard deviation of PS on SDI was= -0.018.

Table 5. Model 4: OLS, using observations 2000-2019 (T = 20)

Dependent variable: SDI by PS, Koyk Model

HAC standard errors, bandwidth 2 (Bartlett kernel)

	Coefficient	*Std. Error*	*z*	*p-value*	
const	−0.0103222	0.0502554	−0.2054	0.8373	
political stability	−0.0183138	0.00867254	−2.112	0.0347	**
SDI_1	1.01	0.0644919	15.79	<0.0001	***

Mean dependent var	0.781650	S.D. dependent var	0.036695
Sum squared resid	0.000522	S.E. of regression	0.005540
R-squared	0.979604	Adjusted R-squared	0.977205
F(2, 17)	554.2135	P-value(F)	3.33e-16
Log-likelihood	77.16056	Akaike criterion	−148.3211
Schwarz criterion	−145.3339	Hannan-Quinn	−147.7380
rho	0.264549	Durbin's h	1.235608

Referring to Model 5, Table 6: Y_t= SDI, x_t=GE: Rate of decline λ =1 or 100 %; the speed of adjustment= (1-λ)=(1-1)=0 The impact of one standard deviation increase of GE on SDI was = -0.02;

Table 6. Model 5: OLS, using observations 2000-2019 (T = 20)

Dependent variable: SDI by GE. Koyk Model

HAC standard errors, bandwidth 2 (Bartlett kernel)

	Coefficient	*Std. Error*	*z*	*p-value*	
const	−0.0198087	0.0308975	−0.6411	0.5215	
Government effectiveness	−0.0205363	0.00642317	−3.197	0.0014	***
SDI_1	1.01	0.0376238	27.22	<0.0001	***

Mean dependent var	0.781650	S.D. dependent var	0.036695
Sum squared resid	0.000580	S.E. of regression	0.005842
R-squared	0.977321	Adjusted R-squared	0.974653
F(2, 17)	1357.287	P-value(F)	1.78e-19
Log-likelihood	76.09947	Akaike criterion	−146.1989
Schwarz criterion	−143.2117	Hannan-Quinn	−145.6158
rho	0.300088	Durbin's h	1.361445

Referring to Model 6, Table 7: Y_t = SDI, x_t=RQ: Rate of decline λ =0.806 or 80.6.%; the speed of adjustment=(1-λ)=(1-0.806)=0,194 or 19.4%; Median lag = - (log 2/ log λ)=-(Log2/log 0,806)= 3.22 years; Mean lag=λ/(1–λ)=0.806/(1-0.806)=4.15 years. The impact of one standard deviation increase of RQ on SDI throughout the time that the effect lasts was 0.0618, and the short-time effect was = 0.012.

Table 7. Model 6: OLS, using observations 2000-2019 (T = 20)

Dependent variable: SDI by RQ Koyk Model

HAC standard errors, bandwidth 2 (Bartlett kernel)

	Coefficient	*Std. Error*	*z*	*p-value*	
const	0.155718	0.0430574	3.617	0.0003	***
Reguratory Quality	0.0120864	0.00869703	1.390	0.1646	
SDI_1	0.806144	0.0551162	14.63	<0.0001	***

Mean dependent var	0.781650	S.D. dependent var	0.036695
Sum squared resid	0.000654	S.E. of regression	0.006202
R-squared	0.974441	Adjusted R-squared	0.971434
F(2, 17)	564.6538	P-value(F)	2.85e-16
Log-likelihood	74.90390	Akaike criterion	−143.8078
Schwarz criterion	−140.8206	Hannan-Quinn	−143.2247
rho	0.238077	Durbin's h	1.098611

Referring to Model 7, Table 8: Y_t= SDI, x_t=RL: Rate of decline λ =0.852 or 85.2.%; speed of adjustment=(1-λ)=(1-0.852)=0,148 or 14.8%;Median lag = - (log 2/ log λ)=-(Log2/log 0,852)= 4.33 years; Mean lag=λ/(1–λ)=0.852/(1-0.852)= 5.75 years. The impact of one standard deviation increase of RL on SDI throughout the period was 0.0439, and short time effect is =0.0065.

Table 8. Model 7: OLS, using observations 2000-2019 (T = 20)

Dependent variable: SDI by RL Koyk Model

HAC standard errors, bandwidth 2 (Bartlett kernel)

	Coefficient	*Std. Error*	*z*	*p-value*	
const	0.123901	0.0912314	1.358	0.1744	
RuleofLaw	0.00657304	0.0196487	0.3345	0.7380	
SDI_1	0.852298	0.104040	8.192	<0.0001	***

Table 8…

Mean dependent var	0.781650	S.D. dependent var	0.036695
Sum squared resid	0.000693	S.E. of regression	0.006386
R-squared	0.972905	Adjusted R-squared	0.969718
F(2, 17)	503.6907	P-value(F)	7.41e-16
Log-likelihood	74.32042	Akaike criterion	−142.6408
Schwarz criterion	−139.6537	Hannan-Quinn	−142.0577
rho	0.336405	Durbin's h	1.699629

Referring Model 8, Table 9: Y_t= SDI, x_t = CC: Rate of decline λ =0.928 or 92.8%; speed of adjustment = (1-λ) = (1-0.928)=0,072 or 7.2%; Median lag = - (log 2/ log λ)=-(Log2/log 0,928)= 9.27 years; Mean lag=λ/(1–λ)=0.928/(1-0.928)=12.88 years. The impact of one standard deviation increase of CC on SDI throughout the period was -0.204, and the short-time effect was = -0.0147.

Model 8: OLS, using observations 2000-2019 (T = 20) Table 9

Dependent variable: SDI

HAC standard errors, bandwidth 2 (Bartlett kernel)

	Coefficient	*Std. Error*	*z*	*p-value*	
Const	0.0514177	0.0378297	1.359	0.1741	
ControlofCorruption	−0.0147034	0.0109572	−1.342	0.1796	
SDI_1	0.928036	0.0410515	22.61	<0.0001	***

Mean dependent var	0.781650	S.D. dependent var	0.036695
Sum squared resid	0.000662	S.E. of regression	0.006242
R-squared	0.974108	Adjusted R-squared	0.971062
F(2, 17)	626.4446	P-value(F)	1.19e-16
Log-likelihood	74.77437	Akaike criterion	−143.5487
Schwarz criterion	−140.5615	Hannan-Quinn	−142.9656
Rho	0.264035	Durbin's h	1.201219

Political Stability (PS) and Government Effectiveness (GE) are factors that have given an effect on the sustainable development index. Their short-term impact on SDI was respectively VA=-0.0183 and GE=-0.02. The Control of Corruption CC long-term impact has lasted 12.8 years, and one standard deviation unit increase in CC has given half of the effect on SDI up to the first 9 years. The measure of contribution to SDI of one standard deviation increase of CC after 12.8 years has been= -0.204. The short-term effect of CC on SDI was =-0.0147, but insignificant. The Voice and Accountability (VA) long-term impact has lasted 10.11

years, and one standard deviation unit increase in VA has given half of the effect on SDI up to the first 9 years. The full effect of VA on SDI has appeared after 10.11 years and the impact of one standard deviation increase of VA on SDI throughout the period was= -0,104. The short-term effect was = -0.00937, but insignificant.

The Regulatory Quality (RQ), has given half of the effect on SDI up to 3.22 years. The impact of one standard deviation increase of RQ on SDI throughout the time effect that lasts 4.15 years, was 0.0618, and the short time effect was = 0.012. The Rule of Law (RL), gives half of the effect on SDI up to 4.33 years. The impact of one standard deviation increase of RL on SDI throughout the time effect, that lasts 5.75 years, was 0.0439, and the short time effect was = 0.0065.

Figure 3: Actual and fitted SDI by RQ.

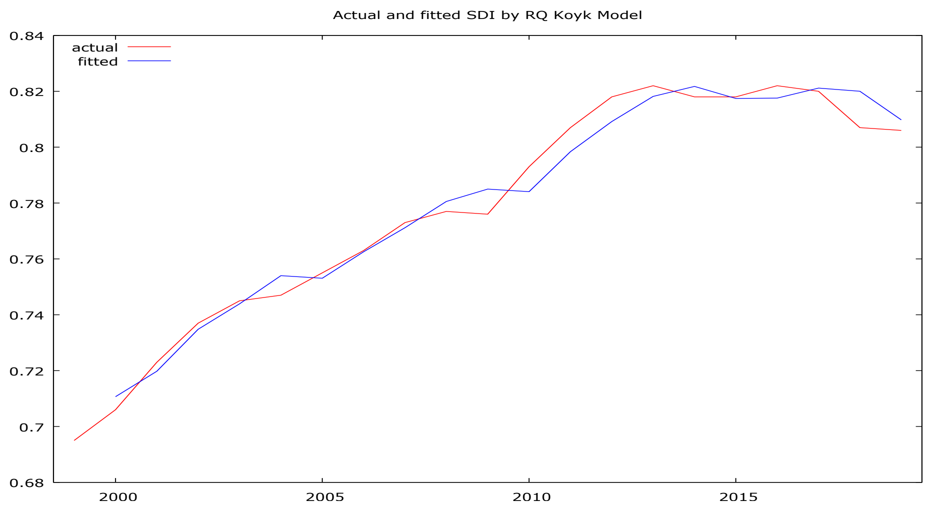


Figure 4: Actual and fitted SDI by VA

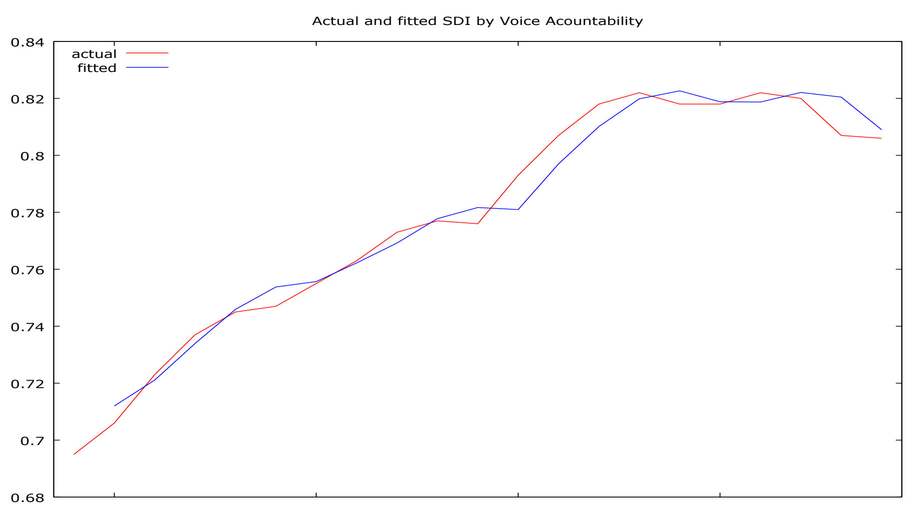


Figure 5: Actual and fitted SDI by PS

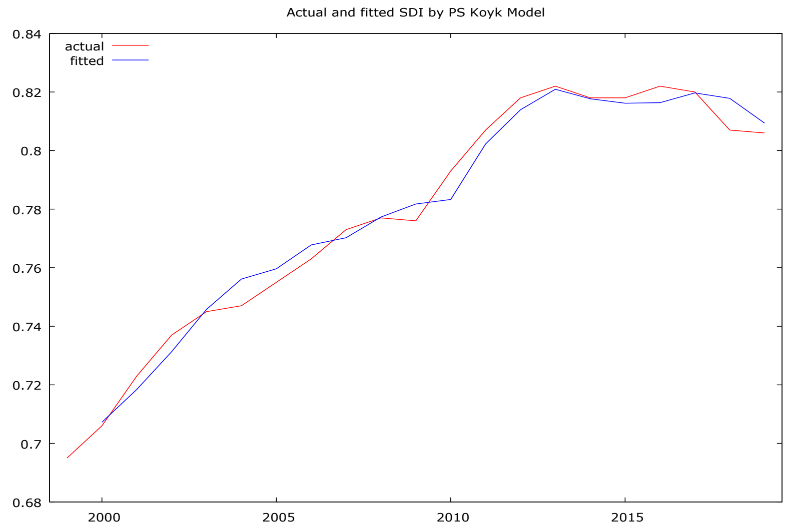


Figure 6: Actual and fitted SDI by RL

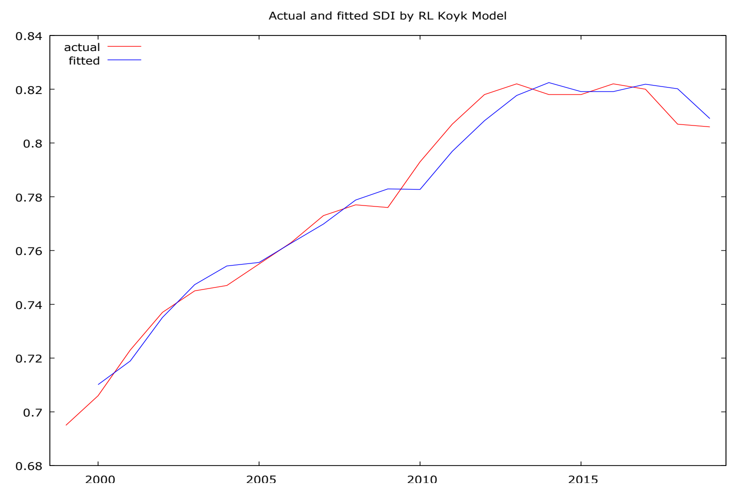


Figure 7: 6 WGI Index

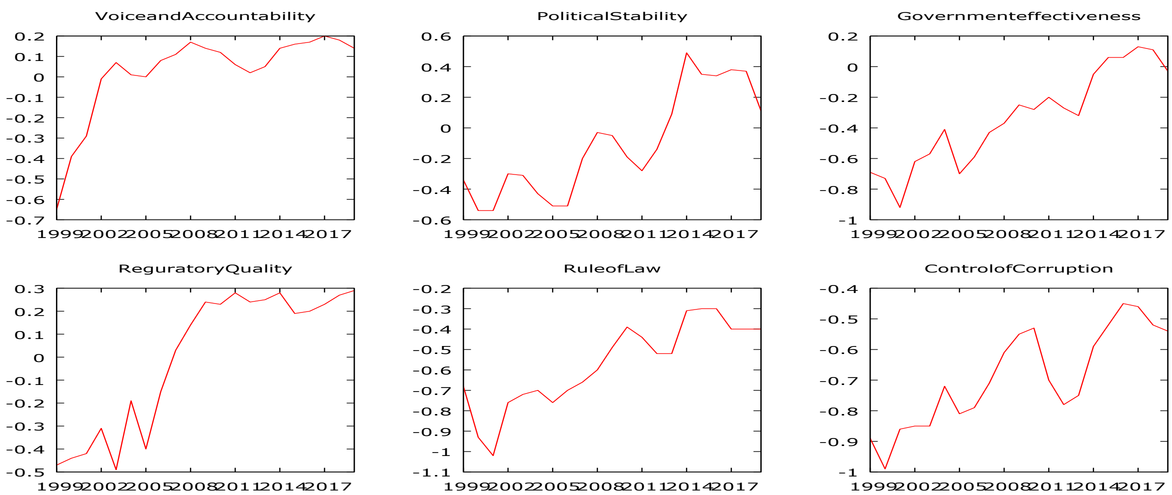
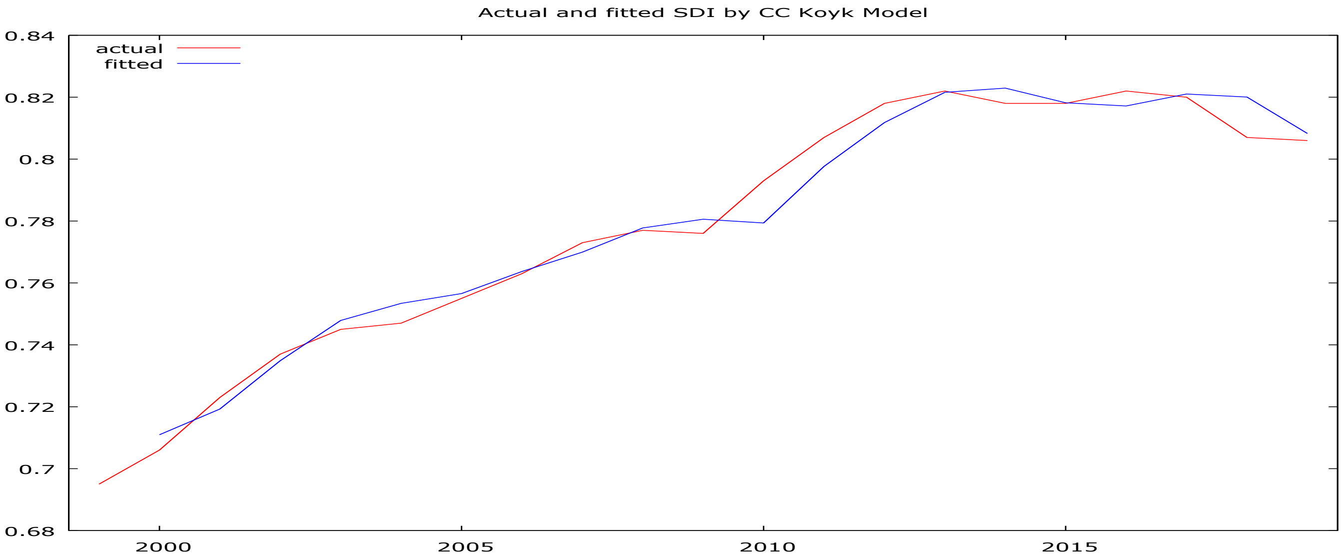


Figure 8: Actual and fitted SDI by CC



CONCLUSION

In summary, it is evident that there is a positive correlation between Regulatory Quality and Rule of Law in Albania and the Sustainable Development Index. Albania has made notable advancements in enhancing its regulatory framework and strengthening the Rule of Law, resulting in increased investments, innovations, and economic growth. These factors have also contributed to social stability, safeguarded human rights, and reduced inequality, all of which are vital components of sustainable development. However, it is important to acknowledge that the relationship between corruption, money laundering, and sustainable development is intricate and multifaceted. Different studies examining specific contexts and variables may yield varying outcomes. Further research is necessary to determine the precise ways in which money laundering affects sustainable development in Albania. Although corruption is widespread in the country, it can create opportunities for money laundering activities, which, in turn, can hinder sustainable development. Contrary to expectations, the negative association between Albania's Control of Corruption Index and the Sustainable Development Index could be attributed to money laundering. Money laundering involves disguising the proceeds of illegal activities, such as corruption, drug trafficking, and organized crime, to make them appear legitimate. This illegal practice can disrupt the economy by distorting financial systems, fostering the growth of the informal economy, and reducing tax revenues that are essential for funding public services. Political stability and government effectiveness are crucial for sustainable development in Albania. However, several factors may contribute to the negative relationship between these factors and the sustainable development index in the country, contrary to expectations. Albania faces numerous challenges that make achieving sustainable development goals difficult.

RECOMMENDATIONS

The government must prioritize the implementation of policies and regulations that foster sustainable economic growth, protect the environment, reduce poverty and inequality, invest in education, healthcare, and infrastructure, and enhance human development and well-being. Strengthening institutions and ensuring accountability, transparency, encouraging private sector development and innovation, and participation in decision-making processes are crucial. Government must put in place and enhance robust environmental laws and regulations to safeguard the natural environment. Encouragement should be provided by governments for the adoption of renewable energy sources. This would facilitate the transition away from fossil fuels. Economic incentives, such as tax breaks, grants, and subsidies, should be introduced by government to reward businesses and individuals for adopting sustainable practices. Government should prioritize waste management strategies that emphasize recycling, composting, and waste reduction to minimize environmental impact. Government must collaborate on a global scale to address challenges like climate change and biodiversity loss and should support research and development in environmentally friendly technologies and solutions to drive green innovation.

SCOPE FOR FURTHER STUDIES

For this study, development is defined as the progression towards improved well-being in society over time. However, the concept of well-being itself raises questions about its elements. Sustainable development depends on the ongoing and dynamic process of time. The ability to maintain a development path over an extended period is crucial, but it's challenging to determine the sustainability of a specific development at any given point, as various alternative paths can emerge. Some of these paths may be sustainable, while others may not, and sustainability alone does not guarantee a desirable development. Practically, significant efforts have been made to promote short-term development by governments, communities, and individuals. Official statistics mainly focus on measuring the success of these efforts. However, there is not enough emphasis on ensuring the long-term sustainability of development, as evident from the lack of such efforts in policy and official statistics. On the other hand, there is a well-established body of thought concerning long-term sustainable development that can guide measurement procedures. In contrast, measuring current well-being remains contentious with no unified perspective. Many factors influence sustainable development, but the role of government is the most important. Analyzing it dynamically through quantitative indicators can enhance our understanding of this role. Further studies are needed in this field in the future.

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