World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 42, January, 2025
ISSN: 2749-3628,

THE PATH TO A SUSTAINABLE AND HAPPY FUTURE: EXAMINING THE INTERPLAY BETWEEN RENEWABLE ENERGY, GOOD GOVERNANCE, AND HAPPINESS INDEX IN G7 COUNTRIES

Muqdad Zaki Hammed Banana
Imam Alkadhim Uniersity College / Business Administration Department
muqdad.zaki@alkadhum-col.edu.iq

Article history:
Received: 20th October 2024
Accepted: 11th November 2024

Abstract:

The interconnection between sustainable development, social well-being, and human happiness is increasingly recognized today. This study represents a significant advancement in understanding this complex relationship by examining the factors influencing the happiness index in the Group of Seven (G7) developed countries, focusing on the role of renewable energy and effective governance. Utilizing a panel data approach (quantile panel regression) spanning from 2012 to 2023, the research investigated the impacts of various factors, including renewable energy consumption (REC), good governance index (GGI), income (GDP), inflation (INFL), and trade openness (TO). Holding other variables constant, an increase of one percent in REC, GGI, GDP, INFL, and TO is associated with happiness index increases ranging from 0.20 to 1.75 percent, 0.13 to 0.19 percent, 0.30 to 1.46 percent, a decrease of 0.05 to 0.09 percent, and an increase of 0.60 to 2.39 percent, respectively. The study's findings demonstrate that elevating renewable energy consumption, enhancing governance quality, fostering economic growth, and expanding trade relations significantly increase happiness levels in G7 countries. Conversely, an uptick in the inflation rate has a negative impact on the happiness index. These results underscore the potential for investments in clean energy, fortifying governmental institutions, and establishing a stable economic environment to enhance quality of life and elevate overall satisfaction.

Keywords: Renewable energy consumption, good governance, happiness index, quantile panel regression, Group 7 countries

JEL Classification: Q40, O17, D72, I31

1) INTRODUCTION

Based on fossil fuels as the primary energy source, there have been numerous negative environmental effects, including air pollution and global warming (Martins et al., 2019). The necessity of transitioning to alternative energy is apparent, as non-renewable energy sources contribute to various external factors that affect the environment, these factors negatively impact the population's health. Since European countries have few resources of fossil fuels, and rely primarily on imports, the system can be employed as a form of political pressure. This system was flaunted by Russia's actions following the implementation of Western sanctions. To increase their leverage, Russia attempted to force consumers to pay for increased costs of energy and a shortage of supply (Timmons et al., 2014; IEA, 2022). Continuing to rely on fossil fuels is also not financially justified. The expense of these sources of energy is typically increasing because of the diminishing resources and the subsequent increase in cost of extraction. This has a negative effect on economic factors that are macro-ordinate (Timmons et al., 2014). Energy fluctuations in European countries also lead to a reliance on global material prices. The energy crisis of 2022 was a widespread and intricate shock that was influenced by the increasing demand following the pandemic. Studies have indicated that the energy shock has been the cause of around 60% of the total inflation (the fourth quarter of 2022) and between 20 and 50% of the core inflation (the model's specifics vary) (Neri et al., 2023).

However, solely focusing on the influence of renewable energy sources on the domestic product would be considered insufficient. While GDP is the most popular measure of economic activity, it isn't the sole indicator of social well-being. It disregards many important aspects, including quality of life, contentment, and happiness. When studying the energy sector, the societal well-being is of paramount importance. Air pollution causes numerous health issues and has negative consequences both social and economic. Increasing the percentage of "clean" energy production leads to a better quality of life by decreasing environmental pollution and educating people on the

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 42, January, 2025
ISSN: 2749-3628,

importance of environmental conservation. As a result, increasing the amount of renewable energy in the society will increase overall happiness. An intriguing concept is attempting to associate the increasing prevalence of renewable energy in the energy composition with the level of happiness in communities. Some research supports this positive association (Payamfar et al., 2023; Kumari et al., 2021; Sun et al., 2022; Aydinbas & Erdinc, 2022).

Conversely, investment in renewable energy often encounters local opposition due to noise, smell, or visual disturbances. Depending on the type of renewable energy source, the spatial approach, and the time frame, it must be acknowledged that this issue still needs to be conclusively resolved (von Mollendorff & Welsch, 2017). Additionally, research indicates that awareness among households in European Union countries regarding renewable energy sources and their needs and expectations for enhancing quality of life is limited (Rosak-Szyrocka *et al.*, 2023). Other studies have indicated that utilizing renewable energy sources is highly costly for low-income households (Szeberényi *et al.*, 2022). Various barriers to the ultimate acceptance of renewable energy sources have also been highlighted by Ferreira and María (2011). There is also research on assessing the emotional evaluation of renewable energy technologies, which is quite intriguing.

Renewable energy technology adoption is affected by various factors, including emotional responses. Studies indicate that the relationship between societal happiness and the acceptance of renewable energy is not simple, as people's perceptions of different technologies can vary widely (Zaunbrecher *et al.*, 2018). Economists increasingly acknowledge the significance of understanding the socioeconomic factors that influence happiness. This shift has expanded the scope of economic investigation beyond traditional utility theory. Research consistently shows that economic conditions significantly shape individuals' overall well-being (Pollak, 1970; Easterlin, 1974; Veenhoven *et al.*, 1993; Clark & Oswald, 1994; Winkelmann & Winkelmann, 1998; Diener & Biswas-Diener, 1999; Frey & Stutzer, 2002). In Figure (1), the world Happiness Score is shown.

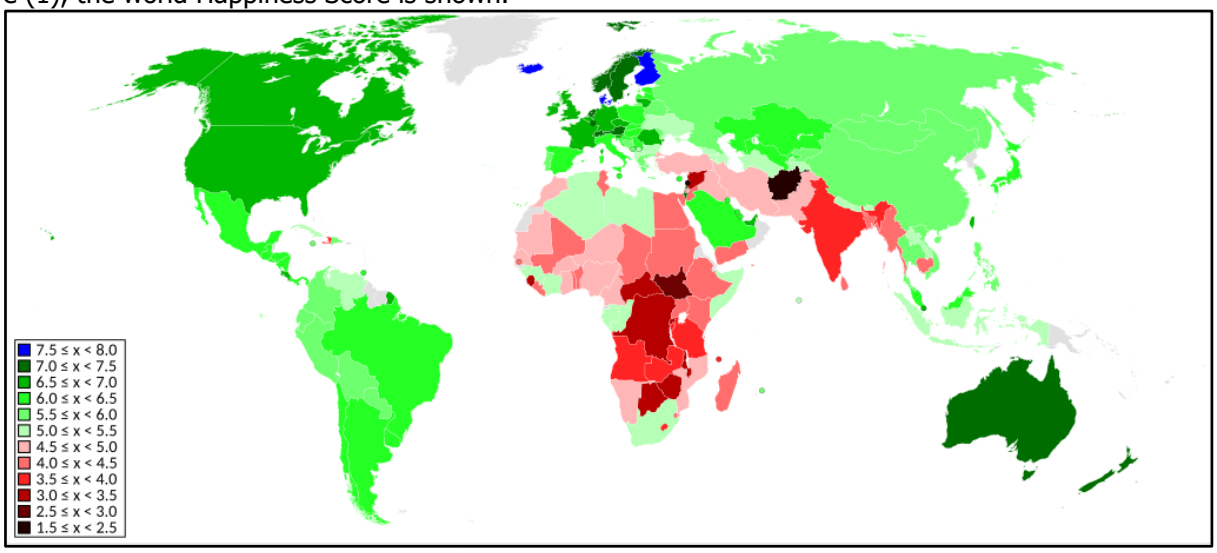

Fig (1): World map of countries by World Happiness Report score (2023[1])

Happiness has become closely associated with wealth and social standing, leading governments to look for ways to assess and enhance quality of life. Studies consistently indicate that economic aspects such as job opportunities and income are strongly linked to happiness (Clark & Oswald, 1994; Winkelmann & Winkelmann, 1998). Additionally, content individuals are likely to be more productive contributors to society (Argyle, 1989; Sgroi, 2010, 2015; Oswald *et al.*, 2015; Bellet *et al.*, 2024). Recognizing the connection between happiness and economic well-being, policymakers have aimed to introduce measures that improve overall well-being (Easterlin, 1974). According to Diener *et al.* (1999), governments should create communities prioritizing freedom and security, as these elements greatly influence individuals' sense of self and overall happiness (LeVine, 2014).

Maslow's hierarchy suggests that human needs progress from fundamental physiological necessities to more complex psychological and spiritual ones. Fulfilling these needs at each stage significantly impacts individuals' well-being (Aydin, 2012). The concept of happiness, as a fundamental idea, is deeply connected to understanding human development. Maslow's hierarchy plays a direct role in promoting happiness by meeting physiological and psychological needs. Consequently, income becomes a crucial economic factor in addressing these needs. Studies by Winters, David, and Scott (2000, 2005) indicate that increased economic exchanges can raise the happiness levels of impoverished communities. This is due to the potential for higher earnings and decreased poverty, ultimately leading

[1] https://en.wikipedia.org/wiki/World_Happiness_Report

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 42, January, 2025
ISSN: 2749-3628,

to greater contentment. Bhagwati and Srinivasan (2002) contend that maintaining macroeconomic stability is crucial for countries heavily dependent on free trade to improve the well-being of their less privileged citizens significantly when prices are stabilized.

In the context of formal organizations, authorities aim to merge resources and enable individuals to accomplish national goals. Thomas Jefferson stressed the significance of protecting human life and well-being (Kim & Kim, 2012), while Ibn Khaldun emphasized the vital role of effective governance in sustaining prosperous civilizations. According to Kiya (2012), research conducted in the United States highlights the substantial impact of government expenditure on life contentment. Institutions enforce measures to safeguard the welfare of citizens, fostering a feeling of freedom and protection (Gropper *et al.*, 2011). This investigation examines the correlation between the use of renewable energy and effective governance on happiness levels within the G7 countries. The subsequent sections will delve into the review of existing literature, the methodology, and the data analysis and will conclude with a discussion of the findings and recommendations.

2) LITERATURE REVIEW

This part will discuss the theoretical foundations and the relationship between research variables separately.

2-1) The Interplay Between Happiness, Economic, and Environmental Factors

This study delves into the intricate relationship between renewable energy and happiness within the broader context of sustainable development. By integrating economic and environmental aspects into the performance analysis of renewable energy companies, we facilitate a more comprehensive exploration of potential findings while mitigating the risks associated with multivariate assessments. This approach allows us to review the existing literature on how happiness interacts with economic and environmental factors. Human health serves as a bridge connecting economic prosperity and well-being (Bhuiyan, 2022). Indeed, mental health is instrumental in achieving life satisfaction and happiness, while physical health facilitates economic outcomes (Baktemur, 2023). Human happiness catalyzes economic growth (Cakmak & Gozen, 2021) and sustainable development (Marques & Fuinhas, 2012).

However, the multifaceted relationship between happiness and various factors has been significantly challenged since the COVID-19 pandemic. A post-pandemic assessment (Kumari *et al.*, 2021) reveals a substantial decline in global human health, trust, and happiness due to the crisis. Specifically, the health impacts of the COVID-19 crisis have had a notably negative effect on two of the world's largest economies: the United States (Sun *et al.*, 2022) and the People's Republic of China (Aydinbas *et al.*, 2022). Psychologically, this effect can be best explained by the adverse reactions in individuals' emotions and cognition during and after the pandemic (von Mollendorff & Welsch, 2017). Moreover, the pandemic has severely impacted socioeconomic issues such as unemployment, financial difficulties (Rosak-Szyrocka *et al.*, 2023), and interpersonal beliefs across cultures and communities (Szeberényi *et al.*, 2020).

2-2)The Relationship Between Governance and Happiness

Richard Easterlin, a pioneering economist in 1974, studied happiness levels. Using data from the United States, he made two significant findings. Firstly, his research indicated that individual happiness seemed relatively equivalent across wealthy and poor nations. Secondly, he discovered that economic growth did not necessarily lead to increased happiness. This finding is known in the literature as the Easterlin Paradox. Easterlin suggested that we should consider individuals who compare themselves to those around them as a benchmark for measurement. Diener *et al.* (1985) investigated the happiness levels of wealthy individuals. They compared a group of wealthy individuals to a randomly selected control group from a similar geographic area. By selecting 100 individuals from the Forbes list of the wealthiest Americans and 100 individuals randomly from a telephone directory, they found that while wealthy individuals reported higher levels of financial confidence, their overall happiness levels were not significantly different from the control group. This research suggested that money alone is not the primary determinant of happiness.

Bjornskov *et al.* (2007) conducted a study on 74 developed countries. Using indicators such as social trust, GDP levels, government transparency, and capital investment, they examined the relationship between governance and life satisfaction. They found a negative correlation between government expenditure and life satisfaction. Additionally, their research indicated a negligible impact of investment and welfare spending on human well-being. These studies found a negative correlation between government expenditure and life satisfaction. Additionally, research suggests that the impact of investment and welfare spending on human well-being is negligible. A study focusing on Pakistan, using the inverse of poverty as a proxy for happiness, confirmed that increased trade as a percentage of GDP led to higher happiness levels (Shahbaz & Aamir, 2008). Regarding other macroeconomic factors, national income was found to have a negligible impact on life satisfaction. (Ram, 2009) A large cross-country dataset for African and Latin American countries found a significant positive correlation between government spending and happiness. Furthermore, results indicated a positive and significant relationship between happiness and national income. Abounoori and Asgharizadeh (2013) identified factors influencing happiness in 58 countries between 2003 and 2011.

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 42, January, 2025
ISSN: 2749-3628,

Across 215 observations, they found a significant negative effect of unemployment and a positive relationship with government spending.

Woo (2018) assessed the role of good governance on happiness using perceived happiness calculated by the World Values Survey. This study confirmed that improving good governance does not guarantee higher happiness. Almatarneh and Emaegwali (2019) employed the Social Progress Index to measure well-being. Their findings, based on 107 countries from 2014 to 2017, indicated that an increase in institutional quality significantly impacts social progress. A study on the subjective well-being of 126 countries concluded that increased corruption leads to decreased happiness, arguing that corruption diminishes individuals' control over their rights and resources, diverting them toward a select few (Li & An, 2019). However, more countries might exhibit different psychological, cultural, and religious factors, leading to variations in how institutions define happiness. This study focuses on a limited set of G7 countries.

3) Methodology

This research utilizes panel data and the quantile regression econometric method to explore the influence of renewable energy consumption and the good governance index on the happiness index in the G7 nations. Initially introduced by Koenker and Bassett (1978), Quantile regression provides an alternative to ordinary least squares (OLS) regression and related techniques, which typically assume a consistent relationship between independent and dependent variables at all levels. Quantile regression is not a regression estimated on a single quantity or a subsample of data. In basic OLS regression, the objective is to minimize the distance between the values predicted by the regression line and the observed values. In contrast, quantile regression differentially weighs the distance between the values predicted by the regression line and the observed values and then aims to minimize the weighted distances. The primary advantage of quantile regression is that it allows us to comprehend the relationships between variables beyond the mean of the data. It aids in understanding outcomes that are not normally distributed and have nonlinear relationships with predictor variables. Quantile regression has two advantages over ordinary least squares regression: it does not make assumptions about the distribution of the target variable. It is less sensitive to outliers and non-normality of variables (Cook & Manning, 2013).

Therefore, the complete definition of quantile panel regression is expressed as equation (1):

$$Y_i = X_i \beta_\tau + U_{\tau i} \quad , \quad 0 < \tau < 1 \qquad \textbf{Equation (1)}$$

Equation (2) shows the conditional quantile function of the dependent variable (target) conditional on the explanatory variables (x):

$$Quant_\tau (Y_i \mid X_i) = X_i \beta_\tau \qquad \textbf{Equation (2)}$$

Also, according to Equation (3), the following condition holds for the mentioned conditional quantile function:

$$Quant_\tau (U_i \mid X_i) = 0 \qquad \textbf{Equation (3)}$$

In quantile panel regression, the effects of observable variables on the conditional distribution (Relation 2) are estimated by minimizing the absolute value of the errors (u). Thus, according to equation (4), the minimization of the absolute value of the errors with appropriate weighting is used to estimate the coefficients of the model:

$$\text{Min} \sum \tau \, |y_i - x'_i\beta| + \sum(1 - \tau) \, |y_i - x'_i\beta|]$$

$$Y_i > x'_i \beta \quad Y_i < x'_i\beta \qquad \textbf{Equation (4)}$$

According to the results, equation (4) uses linear programming to describe the model's response. To analyze the data and estimate the research model, the E-Views 12 econometric software was utilized, with significance levels set at 95%. The research first assessed the stationarity of the research variables using the Levin, Lin, and Chu (LLC) unit root test. After conducting diagnostic tests, the method for model estimation was determined, followed by coefficient estimation. The research identified quantile regression as the most suitable estimation technique based on the test results, including the normality test. As mentioned earlier, the study focuses on the population of the G7 countries. The 2012 to 2023 data was chosen due to data availability for the research variables. Given the points above, the data analyzed in this study is panel data. To examine the factors impacting renewable energy consumption in the G7 countries and to elucidate their influence on this type of energy consumption, the research model, taking into account previous studies such as Ostrowska *et al.* (2024) and Arshed *et al.* (2020), is presented as equation (5):

$$\ln Happiness_{it} = \alpha + \beta_1 REC_{it} + \beta_2 GGI_{it} + \beta_3 \ln GDP_{it} - \beta_4 \ln INFL_{it} + \beta_5 \ln TO_{it} + \varepsilon_{it} \qquad \textbf{Equation (5)}$$

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 42, January, 2025
ISSN: 2749-3628,

It is noteworthy that Table (1) describes the variables used and the source of each data in relation (5). In the following section, a better description of each variable is discussed.

Table (1): Description of variables and data sources

Variables	Description	Source	Expected Sign
Happiness	The country scores are based on a survey in which respondents evaluated the quality of their current lives on a scale of 0 to 10	World Happiness Report	/
REC	Renewable Energy Consumption (billion kWh)	Energy Information Administration (EIA)	+
GGI	Good Governance Index[2]	The Worldwide Governance Indicators (WGI)	+
GDP	Gross Domestic Product (constant 2015)	World Development Indicators	+
INFL	Inflation, Consumer Prices (annual %)	World Development Indicators	-
TO	Trade (%)	World Development Indicators	+

Source: Research Findings

4) Empirical Results

In this section, we present the descriptive statistics of the research variables and then interpret the results of the econometric model estimation. All statistical analyses were conducted using E-views software.

4.1) Descriptive Statistics

Given the few countries included in the research and the relatively limited sample size, it was determined that only the descriptive statistics of the variables would be reported instead of displaying frequency distribution charts. Based on the data presented in Table (2), it can be observed that the mean of all variables exceeds their standard deviation. This suggests that the variable values have a narrow spread around their mean, indicating minimal variation. Figure (2) also analyses the renewable energy consumption and happiness index variables in the Group of 7 countries for 2023. This data provides a deeper insight into the patterns of the primary variables of interest in the countries under investigation.

Table (2): Descriptive statistics of research variables

	Happiness	LNREC	GGI	LNGDP	LNINF	LNTO
Mean	6.416	8.817	2.874	28.884	1.234	3.974
Median	6.719	8.615	3.027	28.737	1.234	4.095
Maximum	7.477	10.406	4.259	30.687	2.323	4.603
Minimum	3.012	7.812	0.561	28.016	0.569	3.152
Sq. Dev.	1.046	0.702	1.053	0.773	0.405	0.379
Number of observations	76	76	76	76	76	76

Source: Research findings

[2] This variable is created with the average of the following subgroup variables: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption.

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 42, January, 2025
ISSN: 2749-3628,

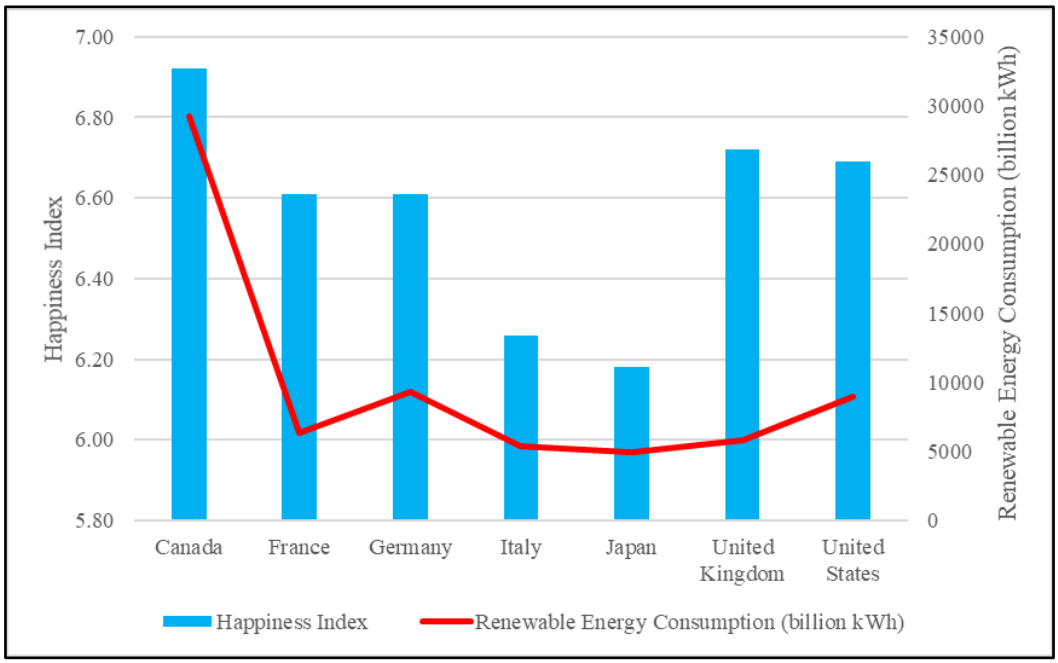

Fig (2): Happiness Index and Renewable Energy Consumption in G7 Countries in 2023. **Source**: Author Drawing

4.2) Inferential Statistics

According to the econometric literature, to avoid the spurious regression problem, it is necessary to ensure the stationarity of the variables before estimating the model. Therefore, the Levin, Lin, and Chu (LLC) unit root test was employed. The null hypothesis of this test states that the variable has a unit root. If the p-value is less than 0.05, the null hypothesis is rejected, and the variable is considered stationary. The results of the LLC test for all variables are presented in Table (3). For variables that were not stationary, the LLC test was conducted again after first differencing the variable.

Table (3): Unit root test

Variables	t-Test	probability value	degree of stationary
Happiness	6.42062	0.9548	(1)
LnREC	-2.94914	0.0016	(0)
GGI	2.58210	0.0951	(1)
LnGDP	-5.43238	0.0000	(0)
LnINFL	-2.27834	0.0114	(0)
Ln TO	-2.87069	0.0020	(0)

Source: Research findings

The Chow test was employed to determine the type of data (pooled or panel) and select the appropriate estimation method (fixed effects or random effects). The null hypothesis of the Chow test states that all intercepts are equal, implying no significant differences between individual effects. The results of the Chow test presented in Table (4) show that the null hypothesis is rejected (p-value < 0.05). Therefore, the data is panel data, with significant differences between individual effects.

Table (4): The estimation results of Limer's F test

Test statistics	The value of the statistic	Probability value
The value of the F statistic	5.291	*0/002
The value of the chi-square statistic	30.614	*0/000

Source: Research findings. * Significance at the 5% level.

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 42, January, 2025
ISSN: 2749-3628,

The results of the Hausman test, presented in Table (5), were used to choose between the fixed effects and random effects models. The null hypothesis of the Hausman test states that the random effects model is more appropriate. Since the p-value is less than 0.05, the null hypothesis is rejected, and therefore, the fixed effects model is more suitable for this data.

Table (5): The estimation results of the Hausman test

Test statistics	The value of the statistic	Probability value
Cross-section random	31.524	*0/000

Source: Research findings * Significance at the 5% level.

The Jarque-Bera test was employed to assess the normality of the dependent variable (happiness index). The results of this test, presented in Table (6), indicate that the null hypothesis of normality is rejected (p-value < 0.05). Therefore, it can be concluded that the dependent variable is not normally distributed. Since one of the critical assumptions of classical regression models is the normality of errors, violating this assumption renders the results of classical model estimation unreliable. Consequently, the quantile panel regression method was employed for a more accurate analysis. Figure (3) visually demonstrates the non-normal distribution of the dependent variable.

Table (6): The results of the normality test of the dependent variable (Happiness Index)

Description	Value
Jarek-bra statistics	281.084
Probability value	*0/000

Source: Research findings * Significance at the 5% level.

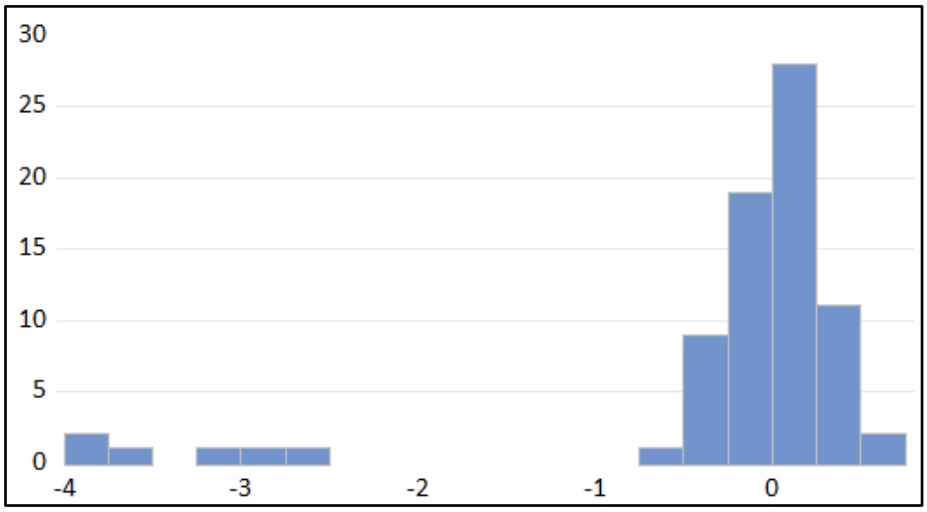

Fig (3): Showing the results of the normality test of the dependent variable (Happiness Index). **Source:** Research findings

To test for autocorrelation in the error terms, the Breusch-Godfrey (BG) test was employed. The results of this test, presented in Table (7), indicate that the null hypothesis of no autocorrelation is rejected (p-value < 0.05). Therefore, it can be concluded that there is autocorrelation in the research data.

Table (7): Checking the correlation between the disturbance components

Description	Value
Brosh Pagan test	176.540
Probability value	*0/000

Source: Research findings * Significance at the 5% level.

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 42, January, 2025
ISSN: 2749-3628,

The Johansen cointegration test was employed to examine the existence of a long-run relationship between the variables. The results of this test, presented in Table (8), indicate that the null hypothesis of no cointegration is not rejected (p-value > 0.05). Therefore, it can be concluded that there is no long-run relationship between the variables in the study.

Table (8): Checking the correlation between the disturbance components

Description	Value	probability level
ADF test statistic	0.987	0.838

Source: Research findings

Based on the results of the conducted tests, especially the rejection of the normality assumption and the presence of cointegration, the quantile panel regression method was deemed appropriate for data analysis. Therefore, the quantile regression model was estimated in this section, and the results are presented in Table (9).

Table (9): Estimation of the Quantile model

Variable	Quantile	Coefficient	T statistic value	probability level
LREC	10	1.752418	2.377795	0.0202
	20	0.633514	4.209698	0.0001
	30	0.644996	5.123572	0.0000
	40	0.572439	5.142971	0.0000
	50	0.438615	4.502130	0.0000
	60	0.372760	3.010706	0.0036
	70	0.298887	3.046081	0.0033
	80	0.274411	3.628460	0.0005
	90	0.207138	3.355168	0.0013
GGI	10	0.524801	-1.457770	0.1494
	20	0.007841	0.136450	0.8919
	30	0.049829	0.844341	0.4014
	40	0.076675	1.299133	0.1982
	50	0.135340	2.230355	0.0289
	60	0.132055	1.752900	0.0840
	70	0.189051	3.069326	0.0031
	80	0.153521	2.656265	0.0098
	90	0.190852	4.165865	0.0001
LnGDP	10	1.462146	2.172823	0.0332
	20	0.590068	4.534288	0.0000
	30	0.494465	3.893827	0.0002
	40	0.471496	4.054940	0.0001
	50	0.389802	3.275792	0.0016

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 42, January, 2025
ISSN: 2749-3628,

Variable	Quantile	Coefficient	T statistic value	probability level
	60	0.307884	1.848960	0.0687
	70	0.227007	1.508568	0.1359
	80	0.144528	1.259413	0.2121
	90	0.091096	1.000988	0.3203
LnINFL	10	-0.534659	1.574191	0.0864
	20	-0.097059	2.492094	0.0242
	30	-0.070846	2.350615	0.0269
	40	-0.050878	1.772743	0.0859
	50	0.021583	0.163223	0.8708
	60	0.065143	0.521783	0.6035
	70	0.044050	0.414632	0.6797
	80	0.036121	0.408829	0.6839
	90	0.050025	0.714384	0.4774
LnTO	10	2.390866	2.057052	0.0434
	20	0.840522	4.922645	0.0000
	30	0.672338	3.922507	0.0002
	40	0.687104	3.936752	0.0002
	50	0.604552	2.563299	0.0125
	60	0.469609	1.245533	0.2171
	70	0.209391	0.582945	0.5618
	80	0.067440	0.249143	0.8040
	90	-0.039151	-0.183409	0.8550

Source: Research findings

Table (9) presents the results of the quantile regression analysis. The findings reveal that Renewable Energy Consumption (LnREC): Across all deciles, LnREC exerts a positive and statistically significant impact on the happiness index. A 1% increase in LnREC is associated with a 0.20% to 1.75% rise in the happiness index, assuming other factors remain constant. These results align with Ostrowska *et al.* (2024), emphasizing the pivotal role of renewable energy in enhancing societal well-being. Good Governance Index (GGI): While GGI demonstrates a positive correlation with the happiness index across all deciles, statistical significance is primarily observed in deciles 6-10. A one-unit increase in GGI is linked to a 0.13% to 0.19% increase in the happiness index. This suggests that good governance, by stimulating economic growth and GDP, contributes to higher happiness levels, corroborating the findings of Arshed *et al.* (2020).

Gross Domestic Product (LnGDP): LnGDP exhibits a positive relationship with the happiness index in all deciles, with statistical significance for most deciles. A 1% increase in LnGDP is associated with a 0.30% to 1.46% rise in the happiness index. These results support the notion that higher income levels are positively correlated with greater happiness, consistent with the findings of Arshed *et al.* (2020). Inflation (LnINFL): In the first four deciles, LnINFL negatively and statistically significantly impacts the happiness index. A 1% increase in inflation is linked to a 0.05% to 0.09% decrease in the happiness index. This indicates an inverse relationship between inflation and happiness in the studied countries, aligning with the results of Ostrowska *et al.* (2024). Trade Openness (LnTO): LnTO positively and

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 42, January, 2025
ISSN: 2749-3628,

statistically significantly impacts the happiness index up to the fifth decile. A 1% increase in LnTO is associated with a 0.60% to 2.39% increase in the happiness index. These findings suggest that trade liberalization, by facilitating the flow of goods, services, and knowledge across borders, can enhance national happiness, consistent with the findings of Arshed *et al*. (2020).

Notably, the lack of significant coefficients for some variables in certain deciles might be attributed to factors such as a limited number of observations, the weak influence of variables in specific distribution points, or natural variations in the distribution of the dependent variable.

5) CONCLUSION AND POLICY SUGGESTIONS

This study, utilizing panel data and quantile regression, investigates the impact of renewable energy consumption and good governance on happiness in the G7 countries. The analysis from 2012 to 2023 reveals that all examined variables significantly and theoretically consistently influence the happiness index across most deciles. Notably, an increase in renewable energy consumption positively correlates with happiness across all income deciles in the G7, suggesting that transitioning to cleaner energy sources enhances overall well-being. Moreover, the study underscores the crucial role of strong institutions in fostering trust, thereby contributing to higher happiness levels. This finding offers reassurance and confidence in the potential of governance to shape a more harmonious society.

Furthermore, the study finds a positive correlation between GDP growth and happiness, suggesting that economic growth and increased per capita income improve living standards and satisfaction. Conversely, inflation negatively impacts happiness, particularly for lower-income groups, as rising prices erode purchasing power and contribute to insecurity. Finally, the results show that increased trade openness positively influences happiness, indicating that trade liberalization and greater economic integration enhance economic growth, job creation, and overall welfare.

Based on these findings, the following policy recommendations can be made: Promote sustainable energy: Governments should incentivize investments in renewable energy through tax incentives, financing, and research and development support. Strengthen democratic institutions: Improving transparency, accountability, and public participation in decision-making can enhance public trust and happiness. Foster inclusive economic growth: Economic policies should aim for sustainable growth and job creation for all segments of society. Reducing economic inequality and supporting vulnerable groups should be a priority. Promote free and fair trade: Governments should pursue free trade agreements and reduce trade barriers. Control inflation and maintain economic stability: Monetary and fiscal policies should focus on controlling inflation and maintaining economic stability, primarily to protect lower-income groups. In conclusion, this study highlights the crucial role of renewable energy, good governance, economic growth, trade openness, and price stability in promoting happiness among G7 citizens.

Future research could delve deeper into the following areas: Heterogeneous effects: Exploring how the impact of these variables varies across different income deciles and countries. Additional factors: Investigating the role of other factors, such as social capital, cultural values, and health, in influencing happiness. Long-term impacts: Examining the long-term effects of policies promoting renewable energy, good governance, and economic growth. Causal mechanisms: Delving into the causal mechanisms underlying the observed relationships between variables.

Declaration of competing interest

The authors declare that they have no competing interests.

RESOURCES

[1] Abounoori, E., & Asgarizadeh, D. (2013). Macroeconomic factors affecting happiness. *Journal of Business and Development Studies*, *5*(1).
[2] Afonso, T. L., Marques, A. C., & Fuinhas, J. A. (2017). Strategies to make renewable energy sources compatible with economic growth. *Energy Strategy Reviews*, *18*, 121-126. https://doi.org/https://doi.org/10.1016/j.esr.2017.09.014
[3] Almatarneh, N., & Emeagwali, O. (2019). Does institutional quality matter in fostering social progress: A cross-national examination. *Management Science Letters*, *9*(7), 1037-1046.
[4] Argyle, M. (1989). Do happy workers work harder? The effect of job satisfaction on work performance. *How harmful is happiness*, pp. 94-105.
[5] Arshed, N., Arif, A., Abbas, R. Z., & Hameed, K. (2021). Comparing quality of institutions with happiness of Asian people. *Studies of Applied Economics*, *39*(3).
[6] Aydin, N. (2012). A grand theory of human nature and happiness. *Humanomics*, *28*(1), 42-63.
[7] Aydinbaş, G., & Erdinç, Z. (2022). Panel Data Evidence on Factors Associated with Happiness in the Context of Society 5.0. *ODÜSOBİAD*, *12*, 2081-2104.

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 42, January, 2025
ISSN: 2749-3628,

[8] Baktemur, F. İ. (2023). Renewable Energy Consumption and Economic Growth Relationship in Developing Countries [Gelişmekte Olan Ülkelerde Yenilenebilir Enerji Tüketimi ve Ekonomik Büyüme İlişkisi]. *Kent Akademisi*, *16*(4), 2779-2788. https://doi.org/10.35674/kent.1349469
[9] Bellet, C. S., De Neve, J.-E., & Ward, G. (2024). Does employee happiness have an impact on productivity? *Management science*, *70*(3), 1656-1679.
[10] Bhagwati, J., & Srinivasan, T. N. (2002). Trade and poverty in the poor countries. *American Economic Review*, *92*(2), 180-183.
[11] Bhuiyan, M. A., Zhang, Q., Khare, V., Mikhaylov, A., Pinter, G., & Huang, X. (2022). Renewable energy consumption and economic growth nexus—a systematic literature review. *Frontiers in environmental science*, *10*, 878394.
[12] Çakmak, N., & Gözen, M. (2021). An Analysis of Systematic Risk Factors Associated with Renewable Energy Support Mechanism Applied in Turkey. *Journal of Business Innovation and Governance*, *4*(1), 57-81.
[13] Clark, A. E., & Oswald, A. J. (1994). Unhappiness and unemployment. *The economic journal*, *104*(424), 648-659.
[14] David, M., & Scott, A. (2005). Macroeconomics: Understanding the wealth of nations, A Handbook. *New York: John Welly & Sons*.
[15] Diener, E., & Biswas-Diener, R. (1999). *Income and subjective well-being: Will money make us happy? Department of Psychology, University of Illinois*.
[16] Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological bulletin*, *125*(2), 276.
[17] Easterlin, R. (1974). Does economic growth improve the human lot? Some empirical evidence. *Nations and Households in Economic Growth: Essays in Honor of Moses Abramovitz*.
[18] Frey, B. S., & Stutzer, A. (2000). Happiness, economy and institutions. *The Economic Journal*, *110*(466), 918-938.
[19] Gropper, D. M., Lawson, R. A., & Thorne Jr, J. T. (2011). Economic freedom and happiness. *Cato J.*, *31*, 237.
[20] IEA. (2022). *World Energy Outlook 2022 Executive Summary*. https://www.iea.org/reports/world-energy-outlook-2022
[21] Kim, S., & Kim, D. (2012). Does government make people happy?: Exploring new research directions for government's roles in happiness. *Journal of Happiness Studies*, *13*, 875-899.
[22] Kiya, K. (2012). Life satisfaction and public finance: Empirical analysis using US micro data. *Available at SSRN 2126357*.
[23] Koenker, R., & Bassett Jr, G. (1978). Regression quantiles. *Econometrica: journal of the Econometric Society*, 33-50.
[24] Kumari, N., Kumar, P., & Sahu, N. C. (2021). Do energy consumption and environmental quality enhance subjective wellbeing in G20 countries? *Environmental Science and Pollution Research*, *28*(42), 60246-60267. https://doi.org/10.1007/s11356-021-14965-5
[25] Le Cook, B., & Manning, W. G. (2013). Thinking beyond the mean: a practical guide for using quantile regression methods for health services research. *Shanghai archives of psychiatry*, *25*(1), 55.
[26] LeVine, R. A. (2014). Attachment theory as cultural ideology. *Different faces of attachment: Cultural variations on a universal human need*, 50-65.
[27] Li, Q., & An, L. (2020). Corruption takes away happiness: Evidence from a cross-national study. *Journal of Happiness Studies*, *21*, 485-504.
[28] Martins, F., Felgueiras, C., Smitkova, M., & Caetano, N. (2019). Analysis of Fossil Fuel Energy Consumption and Environmental Impacts in European Countries. *Energies*, *12*(6).
[29] Neri, S., Busetti, F., Conflitti, C., Corsello, F., Delle Monache, D., & Tagliabracci, A. (2023). Energy price shocks and inflation in the euro area. *Bank of Italy Occasional Paper*(792).
[30] Ostrowska, A., Kotliński, K., & Markowski, Ł. (2024). Does Renewable Energy Matter for Economic Growth and Happiness? *Energies*, *17*(11), 2619.
[31] Oswald, A. J., Proto, E., & Sgroi, D. (2015). Happiness and productivity. *Journal of labor economics*, *33*(4), 789-822.
[32] Payamfar, M., Seyed Shokri, K., Shojaei, M., & Mohammadzadeh Asl, N. (2023). The Impact of Renewable Energy Consumption on Sustainable Economic Welfare Index in Selected Countries (1990-2020). *Journal of Renewable and New Energy*, *10*(1), 46-69. https://doi.org/10.52547/jrenew.10.1.46
[33] Pollak, R. A. (1970). Habit formation and dynamic demand functions. *Journal of political Economy*, *78*(4, Part 1), 745-763.

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 42, January, 2025
ISSN: 2749-3628,

[34] Ram, R. (2009). Government spending and happiness of the population: additional evidence from large cross-country samples. *Public Choice*, *138*, 483-490.
[35] Regueiro Ferreira, R. M. (2011). The Contribution Of Renewable Energy To Wellness. Not Yet A Lesson Learned. *Revista Galega de Economía*, *20*(ex).
[36] Rosak-Szyrocka, J., Allahham, A., Żywiołek, J., Turi, J. A., & Das, A. (2023). Expectations for renewable energy, and its impacts on quality of life in European Union countries. *Management Systems in Production Engineering*, *31*(2), 128-137.
[37] Sgroi, D. (2010). Happiness economics in reverse: Does happiness affect productivity. *Recuperado de http://voxeu. org/article/does-happiness-affect-productivity*, *26*.
[38] Sgroi, D. (2015). Happiness and productivity: Understanding the happy-productive worker. *SMF-CAGE Global Perspectives Series*, 2-20.
[39] Shahbaz, M., & Aamir, N. (2008). *Macroeconomic determinants of the happiness of the poor: a case study of Pakistan*. The Centre for Bhutan Studies.
[40] Sun, Z., Wu, Y., Sun, H., Zhou, D., Lou, Y., & Qin, L. (2022). The Impact of Building Clean Energy Consumption on Residents' Subjective Well-Being: Evidence from China. *Buildings*, *12*(11), 2037. https://www.mdpi.com/2075-5309/12/11/2037
[41] Szeberényi, A., Rokicki, T., & Papp-Váry, Á. (2022). Examining the Relationship between Renewable Energy and Environmental Awareness. *Energies*, *15*(19).
[42] Timmons, D., Harris, J. M., & Roach, B. (2014). The economics of renewable energy. *Global Development And Environment Institute, Tufts University*, *52*, 1-52.
[43] Veenhoven, R. (1993). Happiness in nations: Subjective appreciation of life in 56 nations 1946-1992. *Erasmus University Rotterdam*.
[44] von Möllendorff, C., & Welsch, H. (2017). Measuring renewable energy externalities: Evidence from subjective well-being data. *Land Economics*, *93*(1), 109-126.
[45] Winkelmann, L., & Winkelmann, R. (1998). Why are the unemployed so unhappy? Evidence from panel data. *Economica*, *65*(257), 1-15.
[46] Winters, L. A. (2000). *Trade liberalisation and poverty*.
[47] Woo, C. (2018). Good governance and happiness: does technical quality of governance lead to happiness universally in both rich and poor countries? *Journal of International and Area Studies*, *25*(1), 37-56.
[48] Zaunbrecher, B. S., Arning, K., & Ziefle, M. (2018). The Good, the Bad and the Ugly: Affect and its Role for Renewable Energy Acceptance. SMARTGREENS; ISBN 978-989-758-292-9; ISSN 2184-4968, SciTePress, pages 325-336.