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Article

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International Journal of Energy Economics and Policy

Provided in Cooperation with:
International Journal of Energy Economics and Policy (IJEEP)

Reference: AlZgool, Mahmoud Radwan Hussein/Shah, Syed Mir Muhammad et. al. (2020). Impact of energy consumption and economic growth on environmental performance : implications for green policy practitioners. In: International Journal of Energy Economics and Policy 10 (5), S. 655 - 662. https://www.econjournals.com/index.php/ijeep/article/download/10222/5332. doi:10.32479/ijeep.10222.

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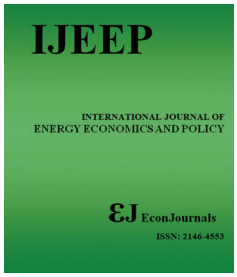

International Journal of Energy Economics and Policy

ISSN: 2146-4553

available at http: www.econjournals.com

International Journal of Energy Economics and Policy, 2020, 10(5), 655-662.

Impact of Energy Consumption and Economic Growth on Environmental Performance: Implications for Green Policy Practitioners

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Received: 06 May 2020 **Accepted:** 22 July 2020 **DOI:** https://doi.org/10.32479/ijeep.10222

ABSTRACT

Different approaches are required to forward evidence for green policy practitioners to make decision about employee, organizations and future course of actions to improve environmental performance. In this study, we analyzed the Environmental Kuznets Curve (EKC) hypothesis in the context of Bahrain in the presence of financial development. For this purpose, this study developed the quadratic model where carbon emission depends on economic growth (GDP), a square of economic growth (GDP^2) and supporting variables are energy consumption, financial growth and trade Liberalization. For this purpose, using the annual time series data of Bahrain from 1980 to 2018 taken from the World Bank database. The Autoregressive distributive lag (ARDL) approach has been used. The results indicate that the EKC hypothesis is valid for the case of Bahrain because the positive relationship exists between economic growth and carbon emission and a square of economic growth poses a negative effect on carbon emission. While energy consumption is the primary source of boosting the carbon emission level. Both the short and long-run estimates confirm that there exists a positive relationship between economic growth and financial development and also energy consumption boosts carbon emission in Bahrain.

Keywords: Energy Consumption, Financial Development, Trade, Carbon Emission, EKC Hypothesis
JEL Classifications: N7, B26

1. INTRODUCTION

Economic growth (EG) and environmental quality (EQ) assume a significant role in human welfare and development (Farhani et al., 2014). Environmental pollution is estimated to cause social and economic problems. Over the most recent three decades, the nexus among environmental norms and the EG of social orders have been the principal focus of the research community. A dangerous atmospheric deviation influenced by CO_2 emission and has the most extreme part of ozone-depleting substances. CO_2 emissions are one of the most fundamental components of ozone-depleting substances. The majority of the CO_2 emissions of ozone-depleting substances is because of the burning of non-renewable energy sources. EQ and energy consumption causes each other (Wiese et al., 2018). The nexus among energy consumption and environmental quality is studied by various scholars (Liu et al., 2019). The 5 years average data for carbon emissions, EG and energy use is presented in Table 1 and Figure 1, which affirms that over time there is an increasing trend in the carbon emission, energy use and economic growth of Bahrain. Besides, it clarifies that energy use is higher in proportion when compared with carbon emission.

Besides, a voluminous literature can be found in examining the relationship of CO_2 emission through the Kuznets curve. To test the theory, the Kuznets curve is fundamentally used for examining the association among EG and inequality of income as purposed by (Kuznets, 1955). In his study, he maintained that after a particular

Figure 1: Share of energy consumption, carbon emission, and growth

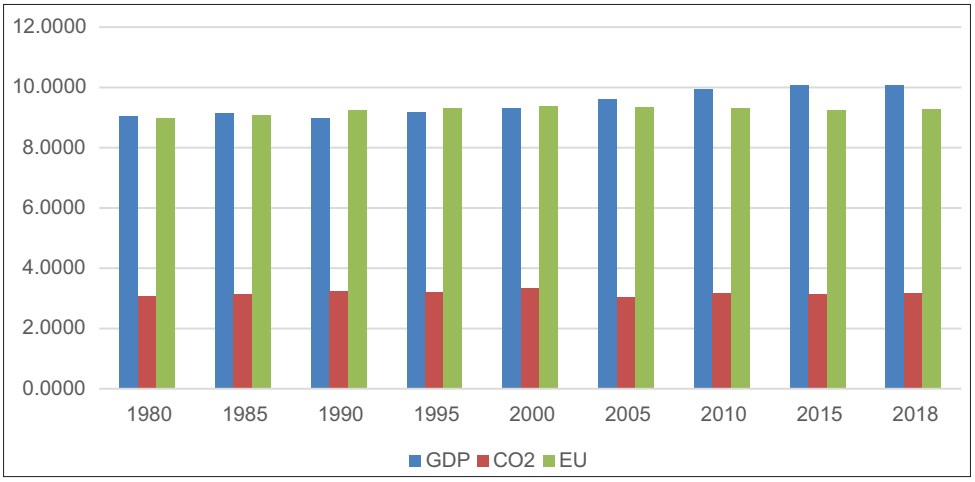


Table 1: Average of 5 years share of carbon emission, energy use, and EG

Years	GDP	CO_2	EU
1980	9.0523	3.0873	8.9612
1985	9.1358	3.1413	9.0946
1990	8.9628	3.2303	9.2311
1995	9.1751	3.2108	9.3055
2000	9.3054	3.3490	9.3842
2005	9.5936	3.0458	9.3484
2010	9.9351	3.1697	9.2989
2015	10.0731	3.1238	9.2314
2018	10.0628	3.1598	9.2631

income level, inequality of income distribution leads due to economic growth, but up to a specific level, this relationship will be changed. In addition, the U-shaped curve, popular by the name of EKC (Environmental Kuznets Curve), is developed on the idea of the Kuznets curve. At first, economic growth degrades EQ in the increasing trend of the curve; and subsequently, it reaches to the peak (the turning point), the nexus among growth and EQ becomes negative. Based on the Environment Kuznets Curve (EKC) assumption, up to a specific level rise in the per capita income, pollution level rises. After that level, the increase in per capita income reduces the pollution levels, thereby improving the environmental quality. In the existing literature of sociology, such investigations can be found by using a long panel with the multi regression modelz. However, such studies are scant in the literature of environmental studies. Existing studies such as (Bollen and Brand, 2010) showed the association among environment and GDP growth. Several approaches have been used in the literature to investigate the issue. However, the present study employs the ARDL technique. This study structure is, in section 2 discussed the existing literature, while methodology is discussed in section 3 and section 4 concludes the results and discussion and finally, the last section is conclusion and policy recommendations.

2. LITERATURE REVIEW

This part compactly audits the studies related to EKC and related issues. Mardani et al. (2019), likewise, inspected the linking amid economic growth and carbon emission (CO_2). Additionally, there exist fewer studies in the literature investigating said issue in case of the MENA countries. As maintained by Sileem (2015) that the MENA region produces approximately 7% of worldwide greenhouse gases. Essentially, over the most recent two decades, carbon emissions from the MENA region have risen by 88%. The quick progression of emissions of greenhouse gases influenced the MENA economy, which is estimated at 9 billion US$ per annum. Similarly, Ozcan (2013) examined the energy growth relationship in the selected 12 MENA countries and concluded that there exits the EKC hypothesis in those selected countries. He accounted for an altered U-shaped curve for the economies selected for research. Additionally, Farhani and Shahbaz (2014) investigated the effect of energy consumption within the context of sustainable and non-renewable energy, which affirmed that they decreed the carbon emission. Farhani et al. (2014) investigated the environmental EKC model of 10 selected MENA countries for the time frame of 1990 to 2010 and (Arouri et al., 2012) inspected EKC existence for 12 MENA countries from 1981 to 2005. Gorus and Aslan (2019) investigated the EKC theory by using the board information of MENA countries over the timeframe from 1980 to 2013. They found an insignificant influence of energy consumption, over the long run, on CO_2 emissions. Fakih and Marrouch (2019) used ten MENA countries for the timeframe from 1980 to 2010 by utilizing a non-parametric model. Their findings demonstrated contradictory results in contrast with previous literature. Fan et al. (2006) investigated the influence of technology, affluence and population on carbon dioxide (CO_2) emission at various economic development levels utilizing the STIRPAT model. Dong et al. (2019) utilized cross-area reliance and slant heterogeneity and STIRPAT model. They investigated a total of 128 economies over the period from 1990 to 2004 using unbalanced panel dataset. The outcomes uncovered the noteworthy implications for EG and CO_2 emissions policies.

Furthermore, Zhu et al. (2019) examined environmental degradation by employing multiple regression model to analyze carbon emissions. Similarly, Shahbaz et al. (2013) studied EKC theory within the context of financial development (FD), EG and FD on carbon emission for Indonesia from 1975 to 2011. Additionally, Shahbaz et al. (2013) analyzed the EKC existence for the Romanian economy and estimated short and long runs impacts

of energy consumption (EU) and EG on environmental quality. Likewise, Shahbaz et al. (2015) examined the causal relationship among sustainable EU and GDP of Pakistan's economy and demonstrated a positive nexus between a sustainable EU and EG. Similarly, Bekun and Agboola (2019) found the cointegration between carbon emission real GDP per capita and EU, which further clarify the existence of long-run nexus between the two. In the same lines, Bekun et al. (2019) studied the EKC theory and found that there exists an inverted U shaped curve in South Africa by analyzing the long data series from 1960 to 2016. In addition, Bekun and Agboola (2019) used panel data of 16 European countries from 1996 to 2014 to study the impact of renewable and nonrenewable EU and EG on carbon emissions and found a positive impact of selected explanatory variables on carbon emission in-focus area. Saqib (2018) examines the relationship between greenhouse gas (GHG) emissions, energy consumption and economic growth with panel data of the six gulf cooperation council (GCC) countries -Saudi Arabia, Kuwait, United Arab Emirates, Qatar, Bahrain, and Oman over the period 1996-2017. Empirical results show that exists of bidirectional causal relationship between energy consumption and economic growth. However, the results support the occurrence of unidirectional causality from energy consumption to GHG emissions without any feedback effects, and there exists bidirectional causal relationship between economic growth and GHG emissions for the region as a whole. According to the Salahuddin et al. (2015), the results imply that electricity consumption and economic growth stimulate CO_2 emissions in GCC countries while financial development reduces it in GCC countries.

Further, Balsalobre-Lorente et al. (2019) analyzed the existence of EKC (Kuznets environmental curve) to investigate the nexus between agricultural included value and environmental degradation. Similarly, Sarkodie and Strezov (2018) investigated theoretical EKC, which means they investigated the nexus between EG and CO_2 emission. Likewise, Mohiuddin et al. (2016) analyzed the data series from 1971 to 2013 to investigate the relationship as mentioned above in the context of Pakistan. They examined the nexus between power production, EG, EU, and carbon emission emissions.

In this regard, Wagner (2015) maintained that it is inappropriate to employ the cointegration test and the unit root for running regression models and cross-correlations in studying the said issue. Three issues are depicted by Itkonen (2012). In essence, the primary issue is identified with econometric techniques for evaluating nonlinear coefficients, such as the testing of theories in the EKC hypothesis, which makes it unsuitable for autoregressive vector models. The subsequent issue is that from the perspective of energy consumption, carbon dioxide emissions are generally high, which can expand the adjustment in the significance of the parameters. Likewise, the issue is identified with the correlation between the proportion of energy production and energy consumption, which can influence the results of the analysis. In the same line of argument, Jaforullah and King (2017) also discussed and confirmed these critical issues stated by (Itkonen, 2012). There are different techniques and suggestions since few studies have included factors such as capital and work, business practices, democracy and social democracy in principle system of the EKC (Charfeddine and Mrabet, 2017; Fu and Zhang, 2015).

Moreover, Liddle and Messinis (2018) studied the connection between estimated direct and indirect models to investigate the links of environmental quality and EG Although the results of previous studies are acceptable, some scholars even imagine that the EKC does not exist in some economies. For instance, (Ozturk, 2010) investigated the Turkish economy, from 1968 to 2005, and revealed that the EKC does not exist in Turkey. Different studies, such as (Dietzenbacher and Mukhopadhyay, 2007) demonstrated in an Indian study; the structure of the EKC is different from the traditional curve. The contemporary studies, in this regard, such as (Sarkodie and Strezov, 2018) suggested an inverted U shaped curve while investigating the relationship of environmental quality with EG in Australia and China. In Ghana, there is a monotonous nexus among CO_2 emissions and EG, in the United States, the curve is in modified. A study by (Zhang, 2011) employed Granger causality and Johnson, and Juselius cointegration approaches to investigate the effect of FD on CO_2 emissions from 1994 to 2009 in China. The findings showed that FD significantly affects greenhouse gas emissions (GHGs) in China. Also, Jalil and Feridun (2011) analyzed that China's condition under the FD and EU, they employed the "Autoregressive Distributed Lag (ARDL)" approach on a data set from 1987 to 2006. The results of their study confirmed the EKC hypothesis is china

3. DATA AND METHODOLOGY

3.1. Methodology

We assume the EKC hypothesis, which is explained in more detail by the quadratic equation for CO_2 emissions.

We want to study the effect of financial expansion, economic per capita growth, EU and trade on the environmental quality so that the overall model is similar;

$$lnENVI = f(lnEU, lnGDP, lnGDP^2, lnFDEV, lnTRADE) \quad (1)$$

When all variables are in the form of a natural logarithm, energy consumption (EU) is measured by energy consumption, per capita GDP is used for economic growth in US dollars and EKC's assumption that there is a nonlinear relationship between environment and economy. Therefore, the equation has included the squared term of GDP to estimate the nonlinear relationship. The CO_2 means carbon emissions measured in metric tons, domestic credit to the private sector is proxied for FDEV, which is measured in %age of GDP and trade is proxied by trade as a percentage of GDP The objective is to make the model more uniform for estimation and to make the data empirically accessible and reliable. Here are the specifications of our empirical model:

$$lnENVI = \vartheta_o + \vartheta_1 lnEU_t + \vartheta_2 lnGDP_t + \vartheta_3 lnGDP_t^2 + \vartheta_4 lnFDEV_t + \vartheta_5 lnTRADE_t + \varepsilon_t \quad (2)$$

When lnEVI is the logarithm of carbon emissions, lnEU includes energy consumption "kg oil equivalent," Economic growth (GDP)

and a square of economic growth (GDP2) are transformed to logarithms of economic growth, lnFDEV is domestic credit for the sector private, trade inhabitant (exports + Import). Where t indicates the period and ϵ_t indicates the term model error. The coefficients ϑ_0, ϑ_1, ϑ_2, ϑ_3, ϑ_4 and ϑ_5 will estimate too. According to the Environment KEC hypothesis using the following positions for the relationship between economic growth and carbon emission. (i) ϑ_2=0 and ϑ_3=0: the gross domestic product does not affect CO_2 emissions, (ii) ϑ_2>0 and ϑ_3=0: GDP growth has a linear effect on emissions, (iii) ϑ_2<0 and ϑ_3=0: GDP growth has a linear and inverse effect on carbon emissions (iv) $\vartheta_2 \neq 0$ and ϑ_3<0: an inverted U nexus among CO_2 emissions and GDP and $\vartheta_2 \neq 0$ and ϑ_3>0: U-shape between GDP There are internal and CO_2 emissions.

3.2. Estimation Procedure

The study has employed the ARDL bound test technique (Pesaran et al., 2001). With this approach, many advantages can be compared with other competing cointegration methods. Furthermore, for cointegration, the present study has applied the error correction model (Acaravci and Ozturk, 2010); therefore, Equation (2) takes the form for vector error correction (VECM) as shown in Equation (3):

$$lnENVI = \vartheta_o + \vartheta_1 lnEU_t + \vartheta_2 lnGDP_t + \vartheta_3 lnGDP_t^2 + \vartheta_4 lnFDEV_t + \vartheta_5 lnTRADE_t + \varepsilon_t \quad (3)$$

$$\ln(ENVI)_t = \pi_o + \sum_{i=1}^{p} \pi_1 \Delta\ln(EU)_{t-1} + \sum_{i=0}^{p} \pi_2 \Delta\ln(GDP)_{t-1} + \sum_{i=0}^{p} \pi_3 \Delta\ln(\mathrm{GDP})_{t-1}^2 + \sum_{i=0}^{p} \pi_4 \Delta\ln(FDEV)_{t-1} + \sum_{i=0}^{p} \pi_5 \Delta\ln(TRADE)_{t-1} + \pi_7 \ln(ENIV)_{t-1} + \pi_8 \ln(EU)_{t-1} + \pi_9 \ln(GDP)_{t-1} + \pi_9 (\mathrm{GDP})_{t-1}^2 + \pi_{10} \Delta\log(FDEV)_{t-1} + \pi_{10} \Delta\log(TRADE)_{t-1} + \varepsilon_t \quad (4)$$

Where, CO_2 emissions are represented by the environment and are dependent variables, and the exogenous variables have CO_2 lag, domestic credit to the private sector (financial evolution), GDP growth per capita, EU (energy utilization) and the percentage of GDP trade

3.3. Data Source

Annual data of Bahrain of the period of 1980-2018 has been taken from the WDI (World Bank, 2020).

4. RESULTS AND DISCUSSION

Table 2 summarizes the statistical results used to describe the main characteristics of the statistics. The mean was found for each variable. As the table shows, the mean deviation and the standard deviation in both cases are less than the deviation of each variable with a relatively normal distribution. This means that not all observed variables have a significant deviation from the mean. Because the probability value of Jarque Bera is significant, which means all variables follow the normal distribution, and after that, the standard deviation can provide the most complete and precise calculation of diversity. Likewise, the minimum and maximum values of each variable are defined; the lowest and highest values are given.

Table 2: Summary statistics

Variables	CO_2	EU	FDEV	GDP	TRADE
Mean	3.1774	9.2621	3.8725	9.4909	5.0897
Median	3.1627	9.2641	3.7775	9.2754	5.0446
Maximum	3.4009	9.4260	4.3002	10.1262	5.5260
Minimum	2.9779	8.9612	3.3959	8.8596	4.7704
Std	0.1084	0.1071	0.2553	0.4235	0.1872
Skew	0.0844	−0.9333	0.3813	0.2656	0.3677
Kurtos	2.2112	3.5860	1.9507	1.4840	2.4984
Jarque-Bera	1.0574	6.2200	2.7343	4.1929	1.2879
Probability	0.5894	0.0446	0.2548	0.1229	0.5252
Observations	39.0000	39.0000	39.0000	39.0000	39.0000

Table 3 shows the PP and ADF unit root test levels and the results of the first differences. Data taken from the World Bank, FDEV, GDP, and trade shows that they are not stationary at level, whereas they become stationary at the difference at the degree of the significance of 1% according to the PP and ADF tests. Go On the other hand, CO_2 emissions through the ADF are stationary at the 5% significance level and according to PP, have a significance level of 10%. Hence concluded that just carbon emission (CO_2) in statistically stationary at a level and other which are EU, financial development, EG and trade are stationary at first difference according to both PP and ADF test which are means that there exists mix order of integration I(0) and I(1).

The bound test indicates that at the 10% significance level rejected the null hypothesis of no cointegration in the model. The results of Bound test reported in Table 4. Therefore, results indicate that there exists the long-run nexus in the model. We also accomplish that there occurs a long-run nexus among CO_2 emission and other explanatory indicators. In addition, the results of short run estimates are reported in Table 5. Its show that most of the variables are significant even in the short run.

Based on the ARDL cointegration test, long-term relationships exist between variables, so we can calculate equations without worrying about spurious regression. Table 6 shows the results of long-term estimates and diagnostic test statistics.

According to some previous studies (Akbota and Baek, 2018), the EKC hypothesis is supported. In long-run estimates, the GDP coefficient in ARDL estimates revealed that a 1% positive impact from GDP to environment degradation; therefore, if GDP growths by $1, CO_2 emissions grow by 1.74%. Likewise, the square of economic growth (GDP) can significantly reduce CO_2 emissions to 5%, so for every additional dollar, GDP will decrease by 0.06%. At the same time, society is improving through the use of green technologies and significant investments. This approves the presence of an inverted U-shaped nexus in Bahrain, thus reducing the increase in real income by exceeding the threshold for environmental degradation. In other words, this means that increasing real income levels will, to some extent, boost carbon emissions, and after attaining a certain level of growth, reduces the pollution level, thereby enhancing the environmental quality.

Table 3: Unit root tests

Tests	Augmented Dickey-Fuller (ADF)			Phillips-Perron (PP)		
	Critical	Calculated	Prob.	Critical	Calculated	Prob.
CO_2	−3.5331	−3.5420**	0.0490	−3.5331	−3.5319*	0.0501
D(CO_2)						
EU	−3.5331	−2.4911	0.3305	−3.5331	−2.4661	0.3421
D(EU)	−3.5331	−7.7271***	0.0000	−3.5366	−8.1230***	0.0000
FDEV	−3.5331	−2.1563	0.4992	−3.5366	−2.2681	0.4403
D(FDEV)	−3.5331	−5.5529***	0.0003	−3.5366	−5.5493***	0.0003
GDP	−3.5331	−2.0897	0.5348	−3.5366	−2.0897	0.5348
D(GDP)	−3.5331	−5.6712***	0.0002	−3.5366	−5.6719***	0.0002
TRADE	−3.5331	−2.3899	0.3787	−3.5366	−2.3863	0.3804
D(TRADE)	−3.5331	−5.7741***	0.0002	−3.5366	−6.3935***	0.0000

***,** and * show 1%,5% and 10% level of significance, respectively

Table 4: Bound test

	Value	k
t statistic	3.186599	5
Significance	I_0 bound	I_1 bound
10%	1.81	2.93
5%	2.14	3.34
2.50%	2.44	3.71
1%	2.82	4.21

Table 5: Short-run ARDL estimates

Indicators	Coef.	Std.	t-stat.	Pro.
D(EU)	0.8179***	0.1915	4.2713	0.0002
D(GDP)	0.6870	0.4845	1.4180	0.1665
D(GDPSQ)	−0.0574**	0.0242	−2.3709	0.0244
D(FDEV)	0.5951***	0.1239	4.8013	0.0000
D(TRADE)	0.0045	0.1379	0.0325	0.9743
ECM(−1)	−0.8366***	0.1312	−6.3780	0.0000

***,** and * show 1%,5% and 10% level of significance respectively

Table 6: Long run ARDL estimates

Indicators	Coef.	Std.	T-stat	Prob.
EU	0.9777***	0.2384	4.1017	0.0003
GDP	1.7414**	0.6115	2.8477	0.0079
GDPSQ	−0.0687**	0.0316	−2.1746	0.0377
FDEV	0.7114***	0.1459	4.8768	0.0000
TRADE	−0.3278***	0.1369	−2.3939	0.0231

***,** and * show 1%,5% and 10% level of significance respectively

Table 7: Model diagnostics

R square	0.6616
Adj. R square	0.5827
DW stat	1.7906
LM test	0.7236
Heteroskedasticity test: Breusch-Pagan-Godfrey	0.7879
Ramsey RESET test	0.8341

Furthermore, the results of the present study confirm the positive nexus between EU and environment, which affirms that EU deteriorates the environmental quality with the speed of 0.977% annually, which means that there exists a positive nexus between EU and environmental degradation in Bahrain. This supports the proposal to use energy for environmental degradation. This result is confirmed and in line with the results of other studies in the literature. Since the production process requires energy, it may not be anything but complicated to stop consumption in Bahrain. However, as energy consumption increases environmental pollution, it is an adequate response to limit its effect on the environment.

The study found that when there is a connection between FD and CO_2 emissions at 1% level of significance. Therefore, if the other conditions remain unchanged, a 1% increase in Bahrain's FD will result in a corresponding increase of 0.7114% in carbon dioxide emissions. These empirical tests support the findings expressed in other studies (Shahbaz et al., 2013; Shahbaz et al., 2012).

Trade liberalization reduces significantly effects CO_2 at a substantial level of 1%. In addition, keeping the other conditions unchanged, a 0.3278% decrease in Bahrain's CO_2 emissions is related to a 1% upsurge in trade openness. According to (Adom, 2015), the enormous contribution of trade opening is considered to have a double impact on the economic system, and its conceptual forms are: "the result of attracting trade opening" and "the conclusion to endorse trade openness." The host country can use it when designing these assistances to recognize present gaps in worldwide products, then, therefore, reproduce it by knowledge its structural composition and improvement.

Error correction term verifies that there exists a long-run nexus in the model because it fulfils all three conditions, which are statistically significant, <1 in magnitude and a negative coefficient. Along these lines, ECM is high at a 1% significance level, and its coefficient is −0.8366, which further clarifies that the model will converge to its long-run equilibrium condition with the speed of adjustment equals to 83.66% annually.

Energy consumption and FDEV have statistically significantly affected the CO_2 emission in the short-run in Bahrain and GDP and Trade insignificantly affect CO_2 emission in the short-run while GDP square has a negative and critical impact to CO_2.

The model diagnostics are reported in Table 7. Model diagnostics demonstrate that there is no problem of Autocorrelation and Heteroskedasticity because their probability values are >5%, which implies that we accept the null hypothesis stating no autocorrelation and no Heteroskedasticity in the model, respectively. While, according to R square and Adjusted R square, are also significantly high. The value of the Durbin Watson statistic, additionally, shows that the model is the best fit without autocorrelation. Likewise, the value of the Ramsey test statistic demonstrates that the model is valid

Figure 2: CUSUM stability test

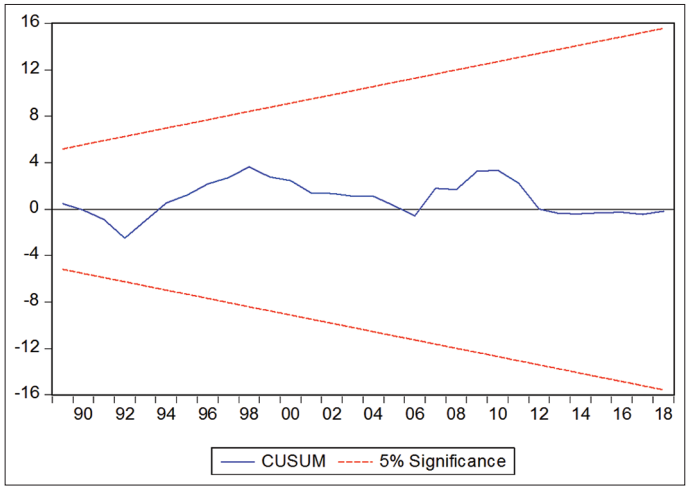
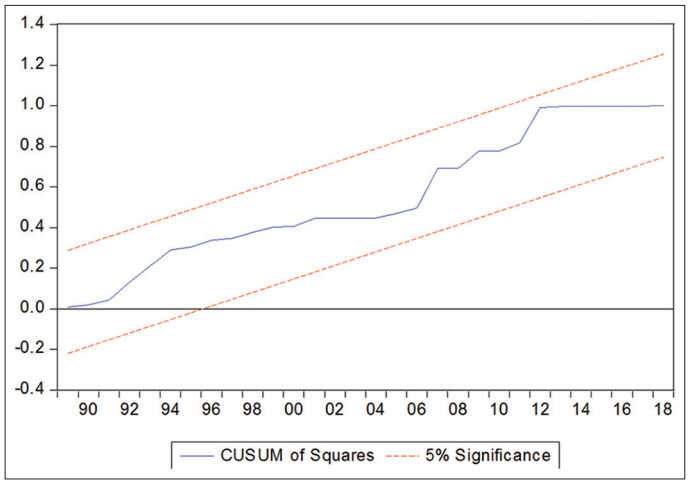


Figure 3: CUSUMSQ stability test



and without any kind of specification error. Along these lines, the overall diagnostics indicate that the model is stable, valid and reliable.

As far as the stability test of the model is concerned, Figures 2 and 3 show the "cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ)" plots in line with the recommendations of other studies (Brown et al., 1975). The values of the CUSUM and CUSUMSQ plots are inside the 5% critical range. Therefore, the model coefficients are stable.

5. CONCLUSION

The CO_2 emissions are one of the most critical issues of future climate change, provoking normal and economic disasters. Keeping in view the findings of present research, it can be concluded that the environment will face a continuous degradation that will crease the natural disasters in the coming time. The EU causes CO_2 emissions and worsen the problem. The analysis of present study bifurcated the effects of EG on EU and CO_2 emissions in Bahrain from 1980 to 2018. The EKC hypothesis showed that when economic growth showed up at an essential point, growth in per capita income would improve the environment due to inverted U-shaped Kuznets curve. The negative square term of GDP exhibits that EG assumes a critical role in determining the quality of the environment. As demonstrated by the outcomes, Bahrain has an inverted U-shaped curve. For example, for countries whose GDP is smaller than that of the developed countries, economic growth expands carbon dioxide emissions. Regardless, when the GDP exceeds a particular point, the quality of the environment starts improving. Consequently, it is prescribed that Bahrain actualize proper economic and social ways to deal with increasing carbon emissions while improving EG. Keeping in view the findings of this research, it is recommended to utilize a cubic formula to upgrade natural resources and to increase economic growth so it may passes that particular threshold point where economic growth reduces the carbon emissions, which in turn, will enhance environmental quality in Bahrain.

Considering EKC hypothesis, the Bahraini government must seek arrangements that lead to expand economic growth to tackle environment degradation. These approaches may include but not limited to incentives for industrial growth, which may support in overall growth of the Bahrain's economy. This can either be done through tax reductions or through lowering loan fees in key divisions; and nearby insurance. Since the contractionary policies, either fiscal or monetary, leads to the contraction of the economy, such policies may not help. If Bahrain want to overcome the environmental quality problem, it has to grow at a significant rate to reach the turning point of the EKC. This will help Bahrain to reduce the carbon emissions with other expansionary economic benefits for the economy. Furthermore, energy consumption being a significant polluting factor, the government of Bahrain must introduce the environmental friendly technologies, which helps to improve the environmental quality even before reaching the threshold turning point of the EKC. This refers to the utilization of emission reduction technology to build the utilization of sustainable power source to lessen the pollution. Additionally, Bahrain should forest the urban zones for reducing the negative effect of urbanization on environmental quality.

5.1. Implications for Green Policy Practitioners

HRD professionals in responsive economies and businesses have a moral responsibility these days to serve as green policy practitioners. The findings forward notable implications for such individuals. Therein, the green policy practitioners ought to consider looking at ways trough which environmental degradation could be avoided both at the national level as well as individual business level. For example, through launching pro-environmental practices in businesses whereby, government authorities may offer incentives to business responsively practicing in an environment friendly way. Equally, businesses as well as public authorities can join hands to mutually agree and implement policies that would help reduce carbon footprint. Since Bahrain has a small geographic area, it is essential for it to take this matter seriously to avoid any unintended consequences in this regard.

Moreover, initiatives regarding spread of awareness about responsible energy consumption is much needed. Therein, businesses as well as public authorities have to do their part to achieve objective results for better environmental performance.

Accordingly, businesses in Bahrain and public authorities require placing much attention on the overall work practices and the sourcing of materials. Therein, practices ranging from staffing to procurement, manufacturing to supply chain require to be made sustainable in order to improve environmental performance whilst ensuring that they do not affect the GDP of the country.

5.2. Limitations and Future Research

Like all other studies, the present research is not free from limitations. The data availability is the main limitation in this research. Future studies may use a longer time series to identify the patterns of nexus of EU, urbanization, EG and environmental quality in the context of Bahrain. Moreover, this research can be used as a guide for future researchers to replicate this study in the context of other Gulf countries and developing economies. In addition, further research can also be carried out using a new methodological approach for examining the said relationships. Likewise, these relationships can be studies in panel setting including other gulf countries to develop a uniform policy for the gulf economies.

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