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International Journal of Energy Economics and Policy

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

This Version is available at:
http://hdl.handle.net/11159/4909

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# The Role of Financial Management in Testing Environmental Kuznets Curve in Kuwait: Evidence from ARDL Bound Testing Approach

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**ABSTRACT**

The aim of the current investigates the relationship of energy utilization and financial management and expansion in influencing environmental degradation of Kuwait. The current study used time series data from 1981 to 2017. The results of ARDL bound testing confirm that economic growth, square of economic growth, energy consumption and financial management are the valid determinants of environmental degradation in Kuwait. Moreover, the results attest that financial management have a positive outcome on environmental degradation in Kuwait which suggests that the financial management is one of the main sources of increasing environmental degradation in Kuwait over the long run. Likewise, it tends to be discussed that all components including economic growth, energy consumption and financial management assume a noteworthy contributor to worsening the environmental condition in Kuwait and confirm the EKC in Kuwait. The empirical findings of the examination help the policy makers in identification and the awareness regarding the specific link of power consumption with rising ecological adversity in Kuwait. Also, our study elaborates the policy makers in capturing the efficiency of financial management in addressing the critical issue of rising carbon-di-oxide emission in the country.

**Keywords:** Financial Management, Energy Consumption, Environmental Kuznets Curve, Kuwait
**JEL Classifications:** G2, Q5, Q43

## 1. INTRODUCTION

The present environmental condition is witnessing the growing trend of deterioration. In this regard, economies from all around the world, are concerned for adopting methods that can curtail the adversity of the environment (Fei et al., 2011). This led to the acceptance and rising awareness of sustainable development to ensure organizational and economic prosperity without generating threat to future sustainability. Thus economies, at present are keen to accomplish the improvement in environment by initiating effective management that underlies the potential to bring positivity in ecological health by reducing environmental burden (Apergis and Payne, 2010; Henry, 2014; Adebambo et al., 2014; Zomorrodi and Zhou, 2017).

In this regard, the role of energy utilization has been vital to affect country's development (Zhang and Cheng, 2009). Earlier

from the emergence of industrial revolution, the contribution of energy has been regarded substantial to augment mass industrial production, technological advancement, transportation and household development. The relationship of energy utilization with output growth is subjective and vary with country's development stage, income levels, energy dependence, level of urbanization and population growth. Therefore, the association of energy consumption with economic growth has been found to be linked in four diverse ways (Apergis and Payne, 2010; Gideon, 2014; Zomorrodi and Zhou, 2016; Danbaba et al., 2016; Luong et al., 2017; Ozturk, 2010; Bouoiyour et al., 2014). They can be linked in a feedback relationship where change in both factors can simultaneously alter the improvement or decline in the existing levels or the can be neutral in causing any change in each other. Similarly, energy-growth nexus can be resulted in causing growth effect, where the changes in economic growth can alter energy utilization or the conservative effect where the alteration in energy

consumption can influence economic growth of the country. This identified the extensive importance of energy utilization in influencing countries economic, financial and environmental development.

In similar context, the efficient management of firm's resources and managerial practices can enable organizations and economies to accept eco-friendly policies that have the tendency to curtail eco-pressures. In this regard, economies at present have considered several solutions to eliminate and decline the dependence on energy and encourage regulations for generating energy efficient production. Implementation of carbon tax is one of the efficient ways of discouraging negative effects of carbon-di-oxide emission that is regarded as the major negative element of greenhouse gas emanations. The effective management of carbon tax can empower economies to utilize financial management in bringing cost-efficient solution of curtailing carbon-di-oxide emission (Gao and Chen, 2002). Similarly, several studies have identified the substantial role of carbon accounting for ensuring sustainable development (Schaltegger and Csutora, 2012; Hartmann et al., 2013; Ekpung, 2014; Marshal, 2017; Mušić, 2017; Elshamy and Ahmed, 2017; Chen et al., 2018). In this regard, Burritt et al. (2011) reported the productive role of finance and accounting in reporting and managing carbon trends within organizations by establishing that accounting for carbon trends would strengthen financial decision making through permitting proper information gathering and dissemination regarding toxic carbon emission and help the organization's management to gain competitive advantages.

In the existing literature, there exist contentious debate on the causal connection between financial performance and environmental management. First, there exist some studies that concluded that there is a negative link between organization's adoption of eco-friendly methods and financial development and performance (Busch and Hoffmann, 2011; Tamazian and Rao, 2010; Raza et al., 2012; Leitão, 2013; Al-Mashailie and Al-Karraz, 2015; Muñoz, 2017). This strand of literature believes that organization's and economy's adoption of social responsibilities force them into an adverse financial position related to those that are not socially responsive (Stanwick, and Stanwick, 2013) and therefore brings negative impact on future financial growth. In similar context, Boutabba, (2014) established that increasing trend in financial expansion and growth resulted into enhanced ecological burden and increased carbon-di-oxide emission of the countries and bring negative impact on the environment. On the other hand, many studies reported the positive connection among the environmental and financial management, suggesting that the cost of undertaking the increased corporate responsibilities regarding the society and environment is largely offset by augmented benefits in employee morale and productivity (Stanwick and Stanwick, 1998) and suggest that decline in environmental burdens such as carbon emission, is resulted into improvement in corporate financial performance (Gallego-Álvarez et al., 2015). In similar context, Tamazian et al., 2009), on macro level, reported that the acceptance and implementation of financial openness strategies appeal augmented foreign direct investment and potentially decline ecological degradation.

This enlightens the crucial role of energy consumption and financial management in influencing environmental deterioration in an economy (Zhang, and Cheng, 2009; Busch and Hoffmann, 2011). Hence, the aim of the current investigates the relationship of energy utilization and financial management and expansion in influencing environmental degradation of Kuwait. The empirical findings of the examination would help the policy makers in identification and the awareness regarding the specific link of power consumption with rising ecological adversity in Kuwait. Similarly, the study can elaborate the policy makers in capturing the efficiency of financial management in addressing the critical issue of rising carbon-di-oxide emission in the country.

The rest of the study is outlined as below. Section two will present the overview of the prevailing literature on the nexus of carbon emanation, financial management and performance, and energy consumption. Section three will give insights on the utilized methodology of the study. Section four will demonstrate the empirical findings and interpretation and lastly, section five will conclude the study and provide recommendation and policy implications.

## 2. LITERATURE REVIEW

Numerous empirical and qualitative examinations have analyzed the association of power utilization and financial development with country economy (Shahbaz et al., 2017; Shahbaz et al., 2013; Al-Mulali et al., 2015; Nasreen et al., 2017; Al-Mulali et al., 2016; Rafindadi and Ozturk, 2017; Salahuddin et al., 2018). However, very few have identified the contribution of financial improvement and energy utilization in influencing ecological deteriorations. Among them, Tamazian et al., (2009) investigated the role of economic and financial development in influencing environmental degradation in Brazil, Russia, India and China. In doing so, the authors utilized the panel data from the period of 1992-2004. The empirical outcomes of the analysis suggested that enhancement in country's economical and financial progress led to decrease environmental pressures and therefore reduce ecological degradation.

Attributing to the significance of effective resource utilization and allocation in information management systems, Chavan (2005) analyzed the role of environmental management systems (EMS) in enhancing firm's financial performance. The findings of the study revealed that the adoption of EMS resulted into improved financial management by declining ten percent organizational cost by saving the values of 1.2 million dollars annually. The study also concluded that the business rationale for ecological enhancement has been to a great extent operational and hardly focus the resource management for environmental reasoning. Therefore, an efficient business should utilize its interesting position to create and accomplish carbon and energy management solutions with a mindful and feasible arrangement of ecological administration. In a panel investigation of twenty four economies, Tamazian and Rao (2010) examined the link of economic, financial and institutional progress in enhancing ecological degradation. In doing so, the study used the data from the time period of 1993 to 2004. The evidence from

empirical investigation applying the GMM method suggested that economic growth reduced the carbon emissions in the panel countries. Furthermore, the results for financial management of the economies presented mixed results. The study highlighted that increasing level of foreign direct investment resulted into declined carbon emission, however, financial liberalization may enhance the country's degradation in the absence of institutional framework.

Considering the exceeding energy dependence and environmental degradation, Zhang and Cheng (2009) examined the association among energy utilization, carbon emission and output development in China. The study utilized the data from the period of 1960 to 2007. The results of the examination found that there exists a uni-directional causal connection between output growth and energy utilization confirming the presence of growth effect. As for environmental degradation, the results of the study established that increased levels of energy utilization enhanced carbon emanations. Similarly, For United States, Soytas and Ewing, (2007) analyzed the relationship among power utilization, output growth and carbon emission. In doing so, the authors utilized the data from the period of 1960 to 2004. The findings of the study established that energy utilization enhanced carbon-di-oxide emissions in US in long run. However, the study failed to find the significance of economic development in enhancing environmental degradation.

In a panel investigation of thirty provinces in China, Fei et al., (2011) inspected the association between energy utilization and output growth. In doing so, the study utilized the data from the period of 1985 to 2007. In order to perform the empirical investigations, the authors applied the statistical measure of panel DOLS to examine the long run relationship among the variables. The findings of the investigation revealed that there exist a significant long run association between energy consumption and output growth in China. The results indicated that increase in economic development enhances the energy utilization of the country in long run. Moreover, Shahbaz (2013) examined the link of financial instability in enhancing ecological degradation in Pakistan. In doing so, the study used the data from the time period of 1971 to 2009. The evidence from empirical investigation applying the ARDL bound testing approach suggested that there exists a significant relationship between country's financial stability and ecological deterioration (Ali and Haseeb, 2019; Haseeb et al., 2018; Suryanto et al., 2018). Furthermore, the results established the positive relationship between financial stability and carbon emission in long-run suggesting that increased instability augmented environmental degradation in Pakistan.

In Indonesia, Shahbaz et al. (2013) examined the link between energy utilization, financial development, output development and environmental degradation. The authors used the data from the period of 1975 to 2011. In order to perform the empirical investigations, the study utilized the econometrics of ARDL bound testing to examine the long run relationship and VECM granger causality to investigate causal connections among the variables. The results of the study highlighted that output development and energy utilization brought positive long run impact on environmental degradation, however, financial development and financial liberalization persist negative association with carbon

emissions in Indonesia. As for Turkey, Ozturk and Acaravci (2013) assessed the link between energy utilization, output development, financial improvements and carbon emissions. In doing so, the authors utilized the data from the period of 1960 to 2007. The outcomes of the empirical examinations confirmed the existence of EKC framework highlighting that increased income brought deterioration in environmental condition but improved environmental condition with the passage of time. On the other hand, the study failed to find the significant link between financial development and carbon emission of turkey. Moreover, the findings of the causal investigation reported that there exists the validation for causal association from energy utilization to income, trade and financial growth development to carbon emanations in long run. As for short run causal connections, the study reported the uni-directional association financial expansion to power utilization and income levels of the country.

For a panel of Sub-Saharan African economies, Al-Mulali and Sab (2012) investigated the association of power utilization, financial progress, economic growth and carbon emanations. In doing so, the authors used the data from the period of 1980 to 2008. The empirical findings of the study reported that power utilization is significant to boost country's financial and economic levels, however, also enhanced carbon emanations. Similarly, Boutabba (2014) also examined the relationship between financial management, power consumption and environmental degradation in Indian. For doing so, the study utilized the data from the period of 1980 to 2008. The results of the study confirmed the presence of long run relationship among the variables. Furthermore, the empirical investigation reported that financial expansion carried the significant positive impact on carbon emission. This implied that increase in country's financial growth resulted into enhanced environmental degradation. The outcomes of the causal examination reported the presence of uni-directional association of financial development with power utilization and carbon emanations where the direction of causality run from financial expansion to energy and emission.

## 3. METHODOLOGY

In the current research, we examine the possible connection between financial management, energy consumption and carbon dioxide emission in Kuwait by using Environmental Kuznets Curve function and the empirical framework is as follows:

$$CE = \beta_0 + \beta_1(Y) + \beta_2(Y^2) + \beta_3(EC) + \beta_4(FM) + e_t$$

Where, $\varepsilon_t$ is the error term, $CE$ denotes the carbon dioxide emission which is calculated by the total emission from the burning of fossil fuels (in per capita of metric kilo tons), $Y$ denotes the economic growth which is estimated by finished goods and services (in per capita of GDP), $EC$ explains the energy consumption which is measured by total consumption of energy from the primary energy (in per capita of oil equivalent) and $FM$ is the financial management which is measured the domestic credit to banking sector (in percentage). The data for the present research is collected from the time period of 1981 to 2017. All the data are collected from World Development Indicators (World Bank).

**Table 1: Results of unit root test**

| Variables | ADF unit root test | | | | PP unit root test | | | |
|---|---|---|---|---|---|---|---|---|
| | I (0) | | I (1) | | I (0) | | I (1) | |
| | C | C&T | C | C&T | C | C&T | C | C&T |
| CE | 1.647 | 1.696 | −6.391 | −6.398 | 1.448 | 1.482 | −6.349 | −5.471 |
| Y | 0.427 | 0.527 | −5.156 | −4.993 | 0.417 | 0.530 | −5.505 | −5.427 |
| EC | −0.264 | −0.260 | −5.470 | −5.958 | −0.249 | −0.289 | −5.814 | −5.792 |
| FM | −1.339 | −1.308 | −5.420 | −5.492 | −1.428 | −1.401 | −5.431 | −5.466 |

The critical values for ADP and PP tests with constant (C) and with constant and trend (C&T) 1%, 5% and 10% level of significance are−3.711, −2.981, −2.629 and−4.394, −3.612 and−3.243 respectively. Source: Authors' Estimations

**Table 2: Results of bound testing for cointegration**

| Lags order | AIC | HQ | SBC | F-test statistics |
|---|---|---|---|---|
| 0 | −3.368 | −3.923 | −3.975 | 83.206* |
| 1 | −4.125* | −4.222* | −4.189* | |
| 2 | −3.286 | −3.222 | −3.292 | |
| 3 | −2.279 | −3.165 | −2.561 | |

*1% level of significant. Source: Authors' estimation.

**Table 3: Results of lag length selection**

| Lag | 0 | 1 | 2 | Nominated lags |
|---|---|---|---|---|
| | SBC | SBC | SBC | SBC |
| Y | 2.323 | −2.435 | −1.536 | 1 |
| EC | 1.438 | −3.032 | −2.557 | 1 |
| FM | 1.357 | −4.345 | −2.481 | 1 |

*Indicate minimum SBC values. Source: Authors' estimation.

## 3.1. Unit Root Tests

In the present research initially, we use unit root test to confirm the stationarity features of the considered time series. In doing as such, the present examination uses two famous unit root approaches that are Augmented-Dickey Fuller (ADF) and Philip-Perron (PP) unit root tests. For affirming the stationarity property, we initially inspect the information on level series and afterward of first difference series.

## 3.2. ARDL Bound Testing Cointegration Analysis

For inspecting the job of financial management on environmental Kuznets curve in Kuwait, we examine the auto regressive distributed lag (ARDL) technique of long term linkages which was presented by Pesaran et al. (2001; 2000), Pesaran and Shin (1999), Pesaran and Pesaran (1997). The ARDL technique is connected with the assistance of unobserved vector error correction framework to explore the long-run connection between financial management, energy use and environmental degradation. This strategy has a couple of advantages on past long term affiliation examinations (like J.J Cointegration and ordinary relationship). This procedure may be valuable whether the focus time series information are absolutely I(0), I(1) or comparably co-incorporated. The ARDL structure is recommended for above examination is given beneath:

$$\Delta CE = \varphi_0 + \varphi_1 \sum_{i=1}^{p} CE_{t-1} + \varphi_2 \sum_{i=1}^{p} Y_{t-1} + \varphi_3 \sum_{i=1}^{p} Y^2_{t-1} +$$

$$\varphi_4 \sum_{i=1}^{p} EC_{t-1} + \varphi_5 \sum_{i=1}^{p} FM_{t-1} + \gamma_1 CE_{t-1}$$

$$+ \gamma_2 Y_{t-1} + \gamma_3 Y^2_{t-1} + \gamma_4 EC_{t-1} + \gamma_4 FM_{t-1} + \mu_t$$

Where, $\varphi_0$ is consistent term and $\mu_t$ is background noise period, the error rectification term is disclosed to by the sign of summation however the other proportion of the above equation relates to long-run affiliation. The Schwarz Bayesian criteria (SBC) is utilized to take a gander at the greater lag length selection for each factor. In ARDL method, at first the present examination learns the F-stats significance by applying the fitting ARDL frameworks. At that point, the Wald (F-details) technique is utilized to explore the long-run connection between the variables. In this research the long run connection between CE, Y, EC and FM are evaluated, by then the present examination decided the long run parameter estimations by using resulting method.

$$CE_t = \zeta_0 + \zeta_1 \sum_{i=1}^{p} CE_{t-1} + \zeta_2 \sum_{i=1}^{p} Y_{t-1} + \zeta_3 \sum_{i=1}^{p} Y^2_{t-1}$$

$$+ \zeta_4 \sum_{i=1}^{p} EC_{t-1} + \zeta_5 \sum_{i=1}^{p} FM_{t-1} + \mu_t$$

Initially, in the current study if the long-run association between CE, Y, EC and FM is established with sign then we estimate the beta coefficient of the short-run by focusing the below equation:

$$CE_t = \delta_0 + \delta_1 \sum_{i=1}^{p} CE_{t-1} + \delta_2 \sum_{i=1}^{p} Y_{t-1} + \delta_3 \sum_{i=1}^{p} Y^2_{t-1}$$

$$+ \delta_4 \sum_{i=1}^{p} EC_{t-1} + \delta_5 \sum_{i=1}^{p} FM_{t-1} + nECT_{t-1} + \mu_t$$

Finally, the error correction model (ECM) demonstrate the speed of change permit to gauge the long-run equilibrium because of a short-run variation. The *n* is the estimation of ECT in the system that clarify the speed of change (Afshan et al., 2018; Sharif et al., 2018).

## 3.3. Variance Decomposition Method

In this study, we further apply variance decomposition method (VDM) to confirm the causal relationship between CE, Y, EC and FM in Kuwait. The VDM provides the size of the predicted error variation for an information accountable for originalities by each predictor upon different time frequency.

## 4. DATA ANALYSIS AND DISCUSSION

The present section clarifies about the data examination. Chiefly, we used stationary test to confirm the stationary property of the

**Table 4: Results using ARDL approach (long run)**

| Variables | Coeff. | t-stats | Prob. |
|---|---|---|---|
| C | 0.341 | 4.498 | 0.000 |
| CE (−1) | 0.170 | 8.988 | 0.000 |
| Y | 0.237 | 4.456 | 0.000 |
| Y (−1) | 0.124 | 3.984 | 0.000 |
| $Y^2$ | −0.253 | −3.467 | 0.000 |
| $Y^2$ (−1) | −0.104 | −5.439 | 0.000 |
| EC | 0.447 | 5.093 | 0.000 |
| EC (−1) | 0.032 | 5.368 | 0.000 |
| FM | 0.453 | 9.680 | 0.000 |
| FM (−1) | 0.310 | 3.208 | 0.000 |
| Adj. $R^2$ | 0.902 | | |
| DW stats | 2.124 | | |
| F-stats (Prob.) | 2564.667 (0.000) | | |

Source: Authors' estimation

**Table 5: Results using ARDL approach (short run)**

| Variables | Coeff. | t-stats | Prob. |
|---|---|---|---|
| C | −0.211 | 4.092 | 0.000 |
| ΔCE (−1) | −0.063 | 1.801 | 0.074 |
| ΔY | 0.302 | 4.357 | 0.000 |
| ΔY (−1) | −0.048 | −1.598 | 0.170 |
| $ΔY^2$ | −0.272 | 4.234 | 0.000 |
| $Δ Y^2$ (−1) | −0.141 | 0.287 | 0.774 |
| ΔEC | 0.354 | 5.571 | 0.000 |
| ΔEC (−1) | 0.013 | 1.182 | 0.238 |
| ΔFM | 0.227 | 6.358 | 0.000 |
| ΔFM (−1) | 0.120 | 4.786 | 0.000 |
| ECM (1) | −0.281 | −5.425 | 0.000 |
| Adj. $R^2$ | 0.843 | | |
| DW stats | 1.850 | | |
| F-stats (Prob.) | 969.574 (0.000) | | |

Source: Authors' estimation

**Table 6: Results of variance decomposition approach**

| Period | CE | Y | EC | FM |
|---|---|---|---|---|
| Variance decomposition of CE | | | | |
| 1 | 100 | 0.000 | 0.000 | 0.000 |
| 2 | 98.389 | 1.436 | 0.134 | 0.041 |
| 3 | 95.105 | 4.598 | 0.124 | 0.173 |
| 4 | 89.858 | 8.228 | 0.387 | 1.526 |
| 5 | 84.036 | 10.786 | 0.671 | 4.507 |
| Variance decomposition of Y | | | | |
| 1 | 9.295 | 90.705 | 0.000 | 0.000 |
| 2 | 15.994 | 66.333 | 15.712 | 1.962 |
| 3 | 33.985 | 47.936 | 11.885 | 6.194 |
| 4 | 30.365 | 43.048 | 21.080 | 5.507 |
| 5 | 27.807 | 38.489 | 26.234 | 7.470 |
| Variance decomposition of EC | | | | |
| 1 | 4.715 | 1.558 | 93.727 | 0.000 |
| 2 | 37.135 | 1.373 | 51.246 | 10.247 |
| 3 | 55.531 | 0.835 | 35.989 | 7.646 |
| 4 | 61.752 | 2.477 | 29.108 | 6.663 |
| 5 | 63.120 | 4.969 | 26.102 | 5.809 |
| Variance decomposition of FM | | | | |
| 1 | 9.278 | 0.008 | 0.657 | 90.057 |
| 2 | 14.756 | 2.562 | 2.857 | 79.825 |
| 3 | 15.472 | 4.675 | 14.719 | 65.133 |
| 4 | 11.200 | 6.521 | 21.334 | 60.945 |
| 5 | 8.338 | 6.614 | 26.240 | 58.808 |

Source: Authors' estimation

considered variables. The results of unit root test are represented in Table 1. We utilized two distinctive unit root tests to be explicit (ADF and PP) test to affirm the stationary features of the variables. The results confirm that CE, Y, EC and FM at first are not stationary at level and ends up stationary at first difference series. Generally, from the consequences of unit root test, we can conclude that series of the various number of variables demonstrate the stationary properties and allow for continuing to the long term investigation.

In addition, to explore the long-run connection between CE, Y, EC and FM in Kuwait, the ongoing exploration utilized the unique methodology of ARDL. In doing so, the underlying step is to indicate the maximum lag length of entire factors selection for this investigation. The order of maximum lag length is chosen by the standards of SBC as referenced before. Along these lines, the aftereffects of the ARDL long-run affiliation results are exhibited in Table 2.

The results of Tables 2 and 3 insist the $H_0$ stating that not cointegration between the variable is rejected. This is a direct result of the coefficient of the F-Stats is greater than UBC coefficient at 1% criticalness level. Therefore, it is in the help of acknowledgment of the $H_1$ which suggest that there is a valid long-run affiliation present among CE, Y, EC and FM in Kuwait.

The results of ARDL bound testing cointegration test, in this way, set up the robustness of obtained results. It is demonstrated that a stable long-run relationship presented between CE, Y, EC and FM in Kuwait. Likewise, after establishing the sign of a long-run relationship between the engaged variables, the subsequent stage of the examination is to recognize the ARDL framework with the purpose of finding the beta estimation of long-short run time. For this reason, the present examination appraises the maximum length order of all the considered factors by the base estimation of SBC.

The consequences of long run estimations are shown in Table 4. The outcomes confirm that economic growth, square of economic growth, energy consumption and financial management are the valid determinants of environmental degradation in Kuwait. Moreover, the results attest that financial management have a positive outcome on environmental degradation in Kuwait which suggests that the financial management is one of the main sources of increasing environmental degradation in Kuwait over the long run. Likewise, it tends to be discussed that all components including economic growth, energy consumption and financial management assume a noteworthy contributor to worsening the environmental condition in Kuwait and confirm the EKC in Kuwait.

The results of short run coefficient of ARDL examination is shown in Table 5. The outcomes affirmed a considerable short-run association between CE, Y, EC and FM in Kuwait. The proportion of error correction term is implying near -0.281 suggest that practically 28.1% of unsteadiness is change in the ongoing year. Additionally, the outcomes likewise recommend the vital impact of economic growth, energy consumption and financial

management on environmental degradation in Kuwait in short keep running also.

The consequences of Table 6 demonstrate the causal relationship among CE, Y, EC and FM. The results of CE demonstrate characterize that in first stage, the variations in CE is articulated 100% absolutely by its enhancements. In the second year, 98.389% presentation by own upgrades, 1.436% by Y, 0.134% by EC and 0.041% by FM. In 3rd year, time frame the adjustments in CE characterize 95.105 % by its very own enhancements, 4.598% by Y, 0.124% by EC and 0.173% by FM. In the 5th year, the varieties in CE characterize 84.036% by its own improvement, 10.786% by Y, 0.671% by EC and 4.507% by FM. The consequences of Table 6 further prescribe the bi-directional causal connection between all the variables in Kuwait.

## 5. CONCLUSION AND DISCUSSION

The present environmental condition is witnessing the growing trend of deterioration. In this regard, economies from all around the world, are concerned for adopting methods that can curtail the adversity of the environment. This led to the acceptance and rising awareness of sustainable development to ensure organizational and economic prosperity without generating threat to future sustainability. Thus economies, at present are keen to accomplish the improvement in environment by initiating effective management that underlies the potential to bring positivity in ecological health by reducing environmental burden.

On the other hand, many studies reported the positive connection among the environmental and financial management, suggesting that the cost of undertaking the increased corporate responsibilities regarding the society and environment is largely offset by augmented benefits in employee morale and productivity and suggest that decline in environmental burdens such as carbon emission, is resulted into improvement in corporate financial performance. In similar context, the acceptance and implementation of financial openness strategies appeal augmented foreign direct investment and potentially decline ecological degradation.

This enlightens the crucial role of energy consumption and financial management in influencing environmental deterioration in an economy. Hence, the aim of the current investigates the relationship of energy utilization and financial management and expansion in influencing environmental degradation of Kuwait. The results of ARDL bound testing confirm that economic growth, square of economic growth, energy consumption and financial management are the valid determinants of environmental degradation in Kuwait. Moreover, the results attest that financial management have a positive outcome on environmental degradation in Kuwait which suggests that the financial management is one of the main sources of increasing environmental degradation in Kuwait over the long run. Likewise, it tends to be discussed that all components including economic growth, energy consumption and financial management assume a noteworthy contributor to worsening the environmental condition in Kuwait and confirm the EKC in Kuwait. The empirical findings of the examination help the policy makers in identification and the awareness regarding

the specific link of power consumption with rising ecological adversity in Kuwait. Also, our study elaborates the policy makers in capturing the efficiency of financial management in addressing the critical issue of rising carbon-di-oxide emission in the country.

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