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Renewable Energy and Economic Growth Nexus: A Case of United Arab Emirates

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ABSTRACT

The study empirically examined the relationship between renewable energy consumption and economic growth in case of United Arab Emirates (UAE). We took annual time series data for the variables that include renewable energy consumption, GDP per capita, capital formation, employment, and trade openness for the time period ranging from 1996 to 2018. Initially, we applied the autoregressive distributed lag (ARDL) model for assessing the long-run relationship among the variables. We got confronted with the issue of Multicollinearity as we found the intercorrelations among the independent variables. Therefore, we adopted the alternative approach of Oridnary Least Square technique (OLS) for guaging the relationship between renewable energy and economic growth. We ran two different OLS equations, in the first equation we took renewable energy as dependent and economic growth as independent varibiable. In the second equation, we took economic growth as dependent and renewable energy as independent variable. In both of the cases, the results confirm that there is insignficnat realtionship between renewable energy consumption and economic growth. The reason could be that UAE is primarily dependent upon avaiation, tourism, hotelling, construction and real estate industries for revenues generation.

Keywords: Renewable Energy, Sustainable Development, Economic Growth, Fossil Fuels, United Arab Emirates
JEL Classifications: Q01, Q4, Q42

1. INTRODUCTION

According to the 2009 International Energy Outlook by the Energy Information Administration, "Renewables are the fastest growing source of world energy with consumption increasing by 3.0 percent per year." Energy is required in each and every sector and segment of our lives (Ogunjobi et al., 2021). We need it at our homes, offices, schools, colleges, Universities, light and heavy Indutries, for transporting goods from one city to another city or from one country to another country (Adebola, 2011). It is an established fact or reality that access to energy is the basic right of every human being but unfortunately millions of people are still suffering from energy shortage and poverty. The people in poor and developing countries dont have even access to energy for basic purposes like cooking, lighting, heating, cooling etc. But energy generation by fossil fuels is leading to incresaed carbondioxide emissions and thus adding further fuel to alarming global warming (Batool et al., 2021). Generating energy through firewood and charcoal seriously causes the respiratory and eye diseases. Use of wood is also causing deforestration and harming the natural environment. Conventional or traditional energy patterns are environmentally unsustainable. Concerns over global warming has highlighted the environmental unsustainability of fossil fuels. The prolonged reliance upon conventional sources of energy could lead to energy disruptions and climate concerns (Apergis and Payne, 2010).

Developing countries are facing two-faceted challenge in the ongoing 21st century; on one side the needs of billions of people regarding the basic energy services are to be met and on the other side they have to participate in the global transition towrads clean and low carbon energy systems or models. The both challenges are to be addressed at war footings as by adressing the first challenge, countries would be able to mitigate the poverty and meet the developmental goals of the society. While sitching towards clean energies would help the countries to achieve the quality air and environment, thus leading to higher productivity by attaining the good health of the citizens. Traditionally and historically, increased energy use has lead to economic development and increase in greenhouse gas emissions (GHG). Energy consumption and production activities contribute two-thirds of global GHG emissions (Surroop and Raghoo, 2018). But through renewable energy economic growth can be achieved along with the reduction in GHG.

A global turaround is taking place as countries are switching towards renewable energy from fossil fuels. The whole world is undergoing through a gigantic and unprecedented energy transition from high carbon intensive fuels to low carbon renewable energies with twin objectives of acheieving economic prosperity and mitigating the climate change. This can be achieved by producing clean energy throgh renewablbe sources like solar energy, wind energy, hydro energy, geothermal energy and sustainable biomass energy. Countries are trying to transit from fossil fuels to renewablbe energies but this would not happen overnight. Delibrate decisions and consistent policy making is required in order to reduce carbon emissions and to control global warming. Increased dependency upon renewable energy would help to achieve environmental sustainability by protecting the environment, resources and the global climate. The reasons for under utilization of renewable energy are parhaps the heavy initial investments. Furthermore, the updated, modern and efficient electricity grids are required for delivering the energy to the counsumers through wind, water, sun, biomass and geothermal sources (Haseeb et al., 2019).

In the 21st Century, Sustainable development has got great importance and is considered as new model of development; however the sustainable development has roots being traced back thousand of years. The search for a balance between the demand for raw materials for food, clothing, shelter, energy, and other goods, and the environmental limits of ecosystems is a constant concern throughout human history (Ponting, 2007; Van Zon, 2002). The modern understanding of sustainability started to emerge from 1950s and onwards. After World War II countries started to embark the path of economic growth and development. The concept of sustainable development started to gain significant importance in political and academic fields from 1970s and onwrads with publishing of Fournex and Brundtland reports. Brundtland defined sustainable development as meeting the needs of the present generation without compromising the ability of future generations to meet their own needs (van Beukering and Spaninks, 1997; WCED, 1987).

It paved the way for renewed optimism about the prospects of rising living standards worldwide (Du Pisani, 2006) and during the last decades of the 20th century many countries made remarkable progress in their development (Dalal-Clayton and Bass, 2002; United Nations Development Programme, 2008). It was during this tremendous and unprecedented economic developments along with increased technological innovations along with fast growing population the humanity began to exceed the environmental limits of the Earth (Network, 2012; Rockström et al., 2009). This situation destabilized the environmental state with serious detrimental and actastrophic consequences for the well-being of current as well as the future generations in most parts of the world (Rockström et al., 2009; Saarangapani and Sripathi, 2015). There are hundreds of definitions of sustainability; different researchers have tried their level best to find the most accurate and universally accepted definitions. (Mitchell et al., 1995) have identified four principles of sustainability from literature. Those four principles are shared here; The Futurity Principle, The Environment Principle, The Equity Principle and The Participation Principle.

The Futurity Principle is basically comprising of the most commonly quoted definition of sustainability. It states that present generation should meet their needs without comprimising the needs of future gernerations. The Environment Principle states that countries should make development without affecting the climate and the environment. In this regard often the comparisons between the fossil fuels and renewable energies are made and clean renewable energies are considered superior upon fossil fuels for containing and reducing the pollution. The Equity principle states that finite resources be shared equitably than is being the current case. The energy consumption across the countries and within the countries is extremely inequitable. The low income countries are consuming just 1% of total global energy as per report of World Bank. The equity principle could be achieved when the developed and the industrialzed countries would start reduning their energy consumptions. The Participation Principle states that while devising the energy models for economic develoment, the public opnions should also be given due weightage. Especially while transistion from traditional energy technologies towards renewable energies, the opinion of common masses should also be taken into consideration.

2. UN SUSTAINABLE DEVELOPMENT GOALS (2030)

The 2030 Sustainable Development Goals (SDGs) were launched in year 2015 with the objective to fight poverty and to achieve a more bright, healthy, peaceful, and prosperous world. In total the 17 of SDGs aim to transform the societies economically, politically, and financially to achieve inclusive growth and development. But this all requires a great political will and determination by all the stakeholders. Furthermore, achieving these SDGs have got more challenging and a daunting task because of COVID-19 as the most unprecedented health, economic and social crisis has threatened the lives as well as livelihoods across the globe. The COVID-19 pandemic has also threatened the past achievements and trade, foreign direct investment and remittances are projected to decline.

A large-scale multilateral response is desired to make ensure that poor and developing countries have sufficient resources to protect their households and the businesses. Recovery or stimulus packages must help to facilitate the transformation towards low-carbon and climate resilient economies. Strong leadership is also required for smart decision making based on reports of statistical organizations. In order to curb carbon emissions, heavy taxes needs to be imposed upon energy generation through fossil fuels and to provide incentives to the investors who would invest in renewable energies and technologies. For achieving an innovative sustainable energy system, a multistakeholder approach is needed by involving the innovators, palnners, regulators, investors and the consumers. Furthermore, a complimentary public-private partnership is needed to bring technical and commercial maturity to societies.

The financial support for implementing the SDGs is also quite low especially for the poor and developing countries. COVID-19 has also struck the countries economically as the estimates suggest that world trade will plunge by 13-32%, foreign direct investment will decline by up to 40%, and remittances to low- and middle-income countries will fall by 20% in 2020 (United Nations, 2020). COVID-19 has strongly shaken the 2030 SDGs but at the same time we need to keep in mind that the principles of SDGs would help to build better economies in the post Covid-19 recovery phase. The governments need to take good lessons from this wake-up call that a quick transition is needed towards a healthier, resilient and a sustainable world.

2.1. Sustainability under Goal 7 of SDGs

Although, the world is advancing towards sustainable energy targets, but the efforts are not of that scale which are required to achieve goal 7 of suitability under SDGs. Some progress has been made in moving towards clean energies and expanding the access to electricity. However, still the millions of people are deprived of basic services and the progress towards clean cooking energies and technologies is stagnated, thus affecting the health of women and children across the world. The unsustainable use of natural resources has accelerated and aggravated over last two decades to meet the basic needs like food, shelter, water, clothing, infrastructure etc. Internationally, the falling oil prices have also affected the efforts for transition towards renewable energy. The share of renewable energy in total final energy consumption reached 17.3% in 2017, up from 17.0% in 2015 and 16.3% in 2010 (United Nations, 2020).

This growth was driven primarily by increased consumption of modern renewables, which rose from 8.6% in 2010 to 10.5% in 2017. The largest increase in the use of renewables has come from the electricity sector, driven by the rapid expansion of solar and wind power. International public financial flows to developing countries in support of clean and renewable energy reached $21.4 billion in 2017. This is 13% more than in 2016 and double the level of 2010. Investment in hydropower projects represented 46% of 2017 flows, followed by investments in solar (19%), wind (7%) and 6 % for geothermal energy (United Nations, 2020).

3. UNITED ARAB EMIRATES'S TRANSFORMATION TOWARDS RENEWABLE ENERGY

Over the last decade, UAE has displayed a great commitment in adopting and promoting renewable energies even the headquarter of International Renewable Energy Agency (IRENA) is also in Abu Dhabi, UAE. IRENA has been founded with the objective to promote renewable energies and to tronsform the global tradtional energy systems. In year 2017, Prime Minister of UAE, His Highness Sheikh Mohammed bin Rashid Al Maktoum shared his vision regarding UAE Energy Strategy 2050.This strategy aims for the U.A.E.'s energy mix in 2050 to comprise 44% renewable energy, 38% gas, 12% clean coal, and 6% nuclear.6 As of early 2017, 90% of the U.A.E.'s energy needs were reportedly met by natural gas (Emirates 247.com). In order to achieve the status of innovative sustainable UAE, more funding needs to be allocated for Research and Development around 3% of GDP.

UAE is transforming itself from traditional energy system towards renewable enegeries because of the following reasons. UAE wants to reduce its dependence upon natural gas imports. Currently UAE is importing natural gas manily from Qatar for electricity purposes. To preserve the oil resources exlusively for exports in order to earn good amount of revenues. Currently, UAE is seventh largest oil producer in the world. UAE wants to diversify its economy and wants to create and provide more employment opportunities to the nationals of UAE. Ever since its idependence, UAE tried its level best in diversifying its economy away from oil by promoting and consolidating travel, tourism, finace, healthcare and educational sectors. UAE is committed to reduce carbon dixoide emissions and to promote the wellbeing and health of the citizens. UAE already ratified Paris Agreement on Climate Change in 2016 being as the first country from Middle East.

The transition from traditional energy systems to renewable energy systems is teachnically a feasible and economically beneficial but it requires substantial investments in low carbon technologies. In total, between 2015 and 2050, the global economy would need average investments of around USD 120 trillion equivalent to some 2.0% of global GDP per year in decarbonisation solutions, including renewable energy, energy efficiency and other technologies. A concern often shared about the renewable energies is that it would lead to msiive job loss in fossil fuel. But in reality, the number of fossil fuel jobs lost by the milestone years 2030 and 2050 would completely be offset by the number of jobs created in renewable energy technologies. By 2050 the energy transition would lead to a loss of 7.4 million direct and indirect jobs in fossil fuels, but a simultaneous gain of 19.0 million jobs in renewable energy, energy efficiency, and grid enhancement would take place. The global renewable energy workforce could rise from just 9.8 million in 2016 to around 23.7 million in 2030 and 28.8 million in 2050 following an accelerated ramp up in deployment of renewables (IRENA Report, 2018).

4. METHODOLOGY AND DATA

We examined the relationship between renewable energy consumption and economic growth in the case of a thriving and a prosperous United Arab Emirates. This study based on prior studies that employed a set of variables that include renewable energy consumption, GDP per capita, capital formation, employment, and trade openness (Can and Korkmaz, 2019; Dogan et al., 2020; Inglesi-Lotz, 2016). The study period is 1990-2018 based on annual data which is obtained from various sources. The data for renewable energy consumption and the economic growth including GDP per capita (constant 2010 US$), capital formation, employment has been extracted from World Bank Indicators and IRENA. Finally, the data for trade openness has been extracted from UNCTAD. The variables have been explained in Table 1 as below.

Before running any kind of baseline regression analysis its important to run basic diagnostic tests on data set (Kayani et al., 2020) for assessing whether the basic assumptions of the Classic Linear Regression Model are fulfilled or not (Kayani et al., 2018; Mills, 2014). These basic data tests on the data set include unit root test for stationarity, Pearson correlation test for multicollinearity, Bruesch-Pagan/Cook-Weisberg for heteroscedasticity and the Wooldridge test for autocorrelation. This study aims to examine a long-term relationship among the variables. For examining the issue of stationarity in the regression various unit root tests are available from literature. The levels or differences of the variables that are stationary are investigated by augmented Dickey–Fuller (ADF), Philips– Perron (PP) and KPSS unit root tests openness (Can and Korkmaz, 2019; Dogan et al., 2020; Inglesi-Lotz, 2016). In light with prior studies, this study also applied ARDL bound test developed by (Pesaran et al., 2001) for testing co-integration while examining the long-term relationship between variables (Can and Korkmaz, 2019; Kayani and Kayani, 2017; Khobai and Le Roux, 2017). The following ARDL model is applied for estimating the relationship:

$$^{p}\Delta LGDPt = \alpha_1 + {}^{q}\alpha_T T + \alpha_{GDP} LGDP_{t-1} + {}_{\alpha RE} LREC_{t\text{-R}} + {}_{\alpha TR} LTO_{t-1} + {}_{\alpha EM} LEMP_{t-1} + {}_{\alpha K} LCF_{t-1} + \Sigma_{\alpha i} \Delta LGDP_{t-i} + \Sigma_{\alpha j} \Delta LREC_{t-j} + \Sigma_{\alpha k} \Delta LTO_{t-k} + \Sigma_{\alpha L} \Delta LEMP_{t-l} + \Sigma_{\alpha m} \Delta LCF_{t-m} + \varepsilon_{1t-s} \quad (1)$$

i=1 j=0 k =0 l=0 m=0

Table 1: Variable descriptions

Variable	Abbr.	Description
Renewable energy consumption	REC	This indicator includes energy consumption from all renewable resources: hydro, solid biofuels, wind, solar, liquid biofuels, biogas, geothermal, marine, and waste
GDP per capita (constant 2010 US$)	GDP	GDP per capita is gross domestic product divided by midyear population. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2010 U.S. dollars
Capital formation	CF	Gross fixed capital formation includes land improvements, plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Data are in constant 2010 U.S. dollars
Employment	EMP	Employment is number of labor force working based on agriculture, manufacturing, and services industry
Trade openness	TO	Th extent to which any country is open to trade with other countries

Source: The definitions for economic indicators are and renewable energy consumption is based on the world bank indicators and trade openness is based on UNCTAD

$$^{p}\Delta LRECt = \alpha_1 + {}^{q}\alpha_T T + \alpha_{GDP} LGDP_{t-1} + {}_{\alpha RE} LREC_{t-1} + {}_{\alpha TR} LTO_{t-1} + {}_{\alpha EM} LEMP_{t-1} + {}_{\alpha K} LCF_{t-1} + \Sigma_{\alpha i} \Delta LGDP_{t-i} + \Sigma_{\alpha j} \Delta LREC_{t-j} + \Sigma_{\alpha k} \Delta\text{-}LTO_{t-k} + \Sigma_{\alpha L} \Delta LEMP_{t-l} + \Sigma_{\alpha m} \Delta LCF_{t-m} + \varepsilon_{2t-s} \quad (2)$$

i=1 j=0 k = 0 l=0 m=0

$$^{p}\Delta LTOt = \alpha_1 + {}^{q}\alpha_T T + \alpha_{GDP} LGDP_{t-1} + {}_{\alpha RE} LREC_{t-1} + {}_{\alpha TR} LTO_{t-1} + {}_{\alpha EM} LEMP_{t-1} + {}_{\alpha K} LCF_{t-1} + \Sigma_{\alpha i} \Delta LGDP_{t-i} + \Sigma_{\alpha j} \Delta LREC_{t-j} + \Sigma_{\alpha k} \Delta\text{-}LTO_{t-k} + \Sigma_{\alpha L} \Delta LEMP_{t-l} + \Sigma_{\alpha m} \Delta LCF_{t-m} + \varepsilon_{3t-s} \quad (3)$$

i=1 j=0 k = 0 l=0 m=0

$$^{p}\Delta LEMPt = \alpha_1 + {}^{q}\alpha_T T + \alpha_{GDP} LGDP_{t-1} + {}_{\alpha RE} LREC_{t-1} + {}_{\alpha TR} LTO_{t-1} + {}_{\alpha EM} LEMP_{t-1} + {}_{\alpha K} LCF_{t-1} + \Sigma_{\alpha i} \Delta LGDP_{t-i} + \Sigma_{\alpha j} \Delta LREC_{t-j} + \Sigma_{\alpha k} \Delta LTO_{t-k} + \Sigma_{\alpha L} \Delta LEMP_{t-l} + \Sigma_{\alpha m} \Delta LCF_{t-m} + \varepsilon_{4t-s} \quad (4)$$

i=1 j=0 k = 0 l=0 m=0

$$^{p}\Delta LCFt = \alpha_1 + {}^{q}\alpha_T T + \alpha_{GDP} LGDP_{t-1} + {}_{\alpha RE} LREC_{t-1} + {}_{\alpha TR} LTO_{t-1} + {}_{\alpha EM} LEMP_{t-1} + {}_{\alpha K} LCF_{t-1} + \Sigma_{\alpha i} \Delta LGDP_{t-i} + \Sigma_{\alpha j} \Delta LREC_{t-j} + \Sigma_{\alpha k} \Delta LTO_{t-k} + \Sigma_{\alpha L} \Delta LEMP_{t-l} + \Sigma_{\alpha m} \Delta LCF_{t-m} + \varepsilon_{5t-s} \quad (5)$$

i=1 j=0 k = 0 l=0 m=0

Whereas, LGDP is natural lograthim of gross domestic product; LREC is natural lograthim of renewable energy consumption; LTO is is natural lograthim of trade openess; LEMP is is natural lograthim of employmnet; LCF is is natural lograthim of capital formation. The time period is denoted by T. It is assumed that the residuals are normally distributed and white noise. The relationship is examined by testing following hypothesis (H0: d 1 = d 2 = d 3 = 0) for measuring whether there is a long run relationship between variables or not and for this purpose the F value (Wald Test) is measured (Balcılar et al., 2014). For applying the causality analysis (Toda and Yamamoto, 1995), it is crucial to identify the optimal length of lags. The optimal number of lags is determined based on Akaike Information Criteria (AIC) and Schwatz Information Criteria (SIC). These criterions are applicable after running unit root test (ADF and PP). Finally, for measuring the causality relationship and the direction, vector error correction model (VECM) model neds to be applied but in case of ARDL multicollienaitry issue, we applied Ordinary Least Square (OLS) regression.

4.1. EMPIRICAL RESULTS AND DISCUSSION

The preliminary results analysis is started with descriptive statistics as reproduced in Table 2 below. The results reflect that the variables have normal distribution. The natural logarithm of the variables

Table 2: Variable descriptions and descriptive statistics

Variables	Mean	Standard deviation	Mini.	Max.
LREC	7.1289	0.5267	6.5301	7.9761
LGDP	10.7729	0.2332	10.4309	11.080
LCF	24.7275	0.3523	24.2184	25.1773
LTO	12.5257	0.3994	11.7126	12.9026
LEMP	4.6051	0.0004	4.6050	4.6052

Table 3: Unit root test

Variable	Levels			First difference		
	ADF	PP	DF-GLS	ADF	PP	DF-GLS
LREC	−1.2312	−1.987	1.0547	−1.5641[b]	−4.2783[b]	−2.1479[a]
LGDP	−2.4532	−1.6324	−1.6314	−1.5412[c]	−5.0837[a]	−3.2140[b]
LCF	−0.9871	−0.3487	−2.5241	−3.4610[c]	−4.4777[b]	−0.2414[a]
LTO	−1.1478	−1.6479	0.9876	−2.6542[a]	−5.1484[c]	−1.9835[c]
LEMP	−0.5489	−1.6314	−1.5480	−3.8793[c]	−4.8175[c]	−1.8940[a]

Source: a, b, c represents 1%, 5% and 10% significance levels, respectively

have been taken in order to minimize the outliers and skewness issues (Charbaji, 2001; Gujarati, 2008).

After the descriptive statitics, another basic test is unit root test for measuring the stationaity issue in data set. For measuring whether data is statioairy or not we applied Augmented Dickey Fuller, Phillips and Perron and Dickey Fuller, Generalised Least Squares unit root tests.

After establishing a stationary relationship between variables, the next phase is to find the existence of long run relationship between independent and dependent variables. But for examining the long run relationship between variables it is important to determine the optimal lag length and for this Schwartz and Akaike Information Criteria are applied. The un-tabulated results confirm that the optimal lag length for this study is "2." For assessing the long-run relationship ARDL bound model is applied. However, it is pertinent to mention that the results indicates an issue of multicollinearity among the variables when we applied the ARDL regression tecnique.

There was no need to run the vector error correction model- Granger-causality approach for exmaining the direction of causlity between varibles in absence of running ARDL regression techqniue. As this is applicable only when an established long run relationship by using ARDL regression is confirmed. But still we applied to find out what would be the results for the VECM. The VECM uses all series endogneously, the results for short run and long run Granger-causality. The results indicate that an inconclusive relationship between renewable energy consumption, economic growth, trade openness, capital formation and employment. This means that the relationship between renewable energy consumption and economic growth cannot be predicted. The results are in line with (Ocal and Aslan, 2013), (Can and Korkmaz, 2019) and (Khobai, 2021).

In such a situation, where the ARDL regression tecniques poses an issue of muticollienairty and VECM test produces an inconclsuive results, we need to look for an alternative apprach for testing the realtionship (Nahar and Arshad, 2017). As an alternative aproached based on (Nahar and Arshad, 2017), we applied ordinary least square (OLS) regression technique for examining the relationship between renewable energy consumption and economic growth. The results are reprodcuced in Tables 4 and 5 as below. The results indicate that there is no signifcant relationship between renewabale energy consumption, GDP, tarde openess, capital formation and employment. We ran OLS for twice, once by considering the GDP as a dependent variable to assess the relationship between econonmic growth and renewable energy cosnumption, in the other case we considered renewable energy as dependent variable to examine the impact of renewable energy consumption on economic growth. The equation for our OLS regression are as below;

Table 4: OLS results (LNGDP – dependent variable)

Variables	OLS Results
LNREC	0.1254 (0.987)
LNCF	−0.5178 (0.193)
LNEMP	0.9874 (0.286)
LNTO	−0.1901 (0.239)
Constant	24.9262** (0.017)
Adj. R^2	0.3126
Prob. >F	0.0026

Robust standard errors are used in parentheses. **P<0.05

Table 5: OLS results (LNREC – dependent variable)

Variables	OLS Results
LNGDP	1.1192 (0.286)
LNCF	0.6467 (0.959)
LNEMP	1.1471 (0.524)
LNTO	1.0734 (0.578)
Constant	−19.089 (0.607)
Adj. R^2	0.5255
Prob. >F	0.0034

Robust standard errors are used in parentheses

$$\text{LNGDP}it = \alpha + \text{LNREC}it + \text{LNCF}it + \text{LNEMP}it + \text{LNTO}_{it} + \eta i + eit \quad (6)$$

$$\text{LNREC}it = \alpha + \text{LNGDP}it + \text{LNCF}it + \text{LNEMP}it + \text{LNTO}_{it} + \eta i + eit \quad (7)$$

In both cases, the results confirm insignficant realionship between renewable energy consumption and economic growth. As a matter of fact, the results seem to be applciable in United Arab Emirates context, as the country is possessing abundant oil resources. Furthermore, it is relying on other various sectors such as reasl estate, construction, hotel and tourism and airline industry for revenues generation.

5. CONCLUSION

This paper attempted to examine the causal relationship between renewable energy and economic growth in case of United Arab Emirates for the time period 1996-2018. The ARDL bond model results confirm an issue of multicollienarity and VECM confirms an inconculsive realtionship between renewable energy consumotion and economic growth. Based on theses challanges, we ran alternative regression technique of OLS to examine the realtinship between renewable energy consumption and economic growth. The results confirm that there is an insignifcant relationship between renewable energy consumption and economic growth in case of United Arab Emirates. It can be inferred that UAE is oil rich country and is primarily dependent upon avaiation, tourism, hotelling, construction and real estate industries for revenues generation.

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