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Article

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Does Financial Development Really Improve Environmental Quality in Al-Jouf Region? Empirical Contribution to the Environmental Politics

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ABSTRACT

This study examines the dynamic impact of financial development, trade openness, and economic growth on carbon dioxide (CO_2) emissions in Saudi Arabia. We applied the autoregressive distributed lag bound testing technique for the period of 1990-2019. The empirical results show a long-run cointegration relationship among the variables. The long-run estimation results, however, reveal that, economic growth, and trade openness have a positive and significant impact on carbon dioxide emissions, whereas all variables have a negative and significant impact on carbon dioxide emissions, in the short-run. The findings suggest that the government should emphasize programs and policies that reduce carbon dioxide emissions by opening the trade sector, considering the roles that openness plays in reducing environmental degradation in the country, which directly enhances environmental quality.

Keywords: ARDL, Economic Growth, Financial Development, Trade Openness, Saudi Arabia
JEL Classifications: E44, E58, F36, P26

1. INTRODUCTION

In recent years, global warming and climate change have constituted serious problems that affect all nations. In this regard, according to Danlami et al. (2018), many sources represent the major contributor related to global warming and climate change such as CO_2 emission that was recognized as a threat to human life, economic growth and development. So, to ameliorate the quality of human life and solve the environmental problem, it is important to reduce this effect. To do so, it is indispensable to identify factors that determine CO_2 emission. In this way, this study will concentrate on three factors, which are financial development, trade openness and renewable energy.

Many empirical studies tried to identify the relationship between CO_2 emission and financial development. For example, Zhang (2011) argue that financial development increases the CO_2 emission. In 2013, the empirical results of the studies conducted by both Shahbaz et al., and Acaravci recognized a negative effect of financial development on CO_2 emission. Recently, many studies conducted in different counties have recognized a positive relationship between financial development and CO_2 emission, such as the empirical studies presented by Bekhet and Othman (2017), Amri (2019) and Pata (2018). On the other hand, based on different research conducted on the linkage between trade openness and environmental quality, it was found that the increase of trade openness causes the increase of the pollution. This result is proved by studies presented by (Al-Mulali et al., 2016; Jun et al., 2020; Lin, 2017; Wen and Dai, 2020). However, others argue that the increase in trade openness contributes to the decrease of pollution (Ghazouani et al., 2020; Kohler, 2013; Shahbaz et al., 2017). Concerning renewable energy and its relationship with CO_2 emissions, the result was proved by several empirical research.

In this regard, some studies confirmed the decrease of CO_2 emissions caused by renewable energy such as Mert and Bölük (2016), Heryadi and Hartono (2017), Saidi and Mbarek (2017), Dogan and Ozturk (2017), Paramati et al. (2017), Charfeddine and Kahia (2019), Majeed and Luni (2019), and Bargaoui and Amamou (2020). However, others prove the opposite linkage between CO_2 emissions and renewable energy, for example, Jebli and Youssef (2017).

In this paper, we try to explore the relationship between these variables and the environmental quality, especially in Al Jouf region. Hence, the rest of the paper is organized as follows: the first section presents a literature review, then we display our empirical results, and the final part concludes our paper.

2. LITERATURE REVIEW

To conduct a meaningful study, it is important to present a literature review for the empirical studies related to the present subject. Hence, this study reviews literature in order to identify how financial development, renewable energy and trade openness affect environmental degradation.

As far as the relationship between financial development and CO_2 emission is concerned, some studies investigating this linkage demonstrated that the financial development affects negatively and positively the CO_2 emission; while other studies evaluated this relationship neutrally. In this regard, some empirical studies argue that the financial development increases CO_2 emission (Boutabba, 2014; Sehrawat et al., 2015; Shahbaz et al., 2016; Saidi and Mbarek, 2017; Zhou et al., 2018; Charfeddine and Kahia, 2019, Samreen and Majeed, 2020, Abbasi et al., 2022). In the same vein, some empirical studies show that the financial development has a negative effect on the CO_2 emission (Al-Mulali and Ozturk, 2015; Abid, 2016; Tsaurai, 2019; Phong, 2019, Manta et al., 2020, etc.). Others identify that financial development has no impact on CO_2 emission (Ghorashi and Rad, 2018; Ayeche et al., 2016; Ozturk and Acaravci, 2013, etc.).

Concerning the influence of trade openness and CO_2 emission, the empirical findings of the study presented by al Ozturk and Al-Mulali (2015) reveal that trade openness is positively related to the CO_2 emission, which means that trade openness increases environmental degradation. In the same vein, Jamel and Maktouf (2017), in their study, examine this relationship and find that trade openness has a positive impact on CO_2 emission. The outcomes found in Chen et al. (2019) indicate that trade of GPD accelerates CO_2 emission. The same result was found by Saboori et al., (2014). They demonstrate that a positive link exists between trade of GPD and CO_2 emission. However, some empirical findings argue a negative effect of trade openness on the CO_2 emission (Zafar et al., 2019a; Liobikienė and Butkus, 2019 etc.).

For the linkage between environmental degradation and renewable energy, several studies examined this relationship. Cai et al. (2018) reveal, in their study, that the adoption of RE is important to enhance environmental quality. Similarly, Ito (2017) argues that the use of RE helps reduce the pollution and increase the environment quality. Recently, Cheng et al. (2019) and Chandio et al. (2020b, 2020a) examined that the use of RE diminishes CO_2 emission. Lastly, Sharif et al. (2020) and Destek et al. (2020) found that clean energy constitutes a major source which improves the environmental quality.

In the path of the literature review, the next section will try to present the empirical model we used in this research in order to study these different linakges.

3. DATA AND METHODOLOGY

3.1. Data

In the light of the above review of the carbon dioxide emissions function in applied studies, and after attempts that involved the inclusion of many relevant explanatory variables, the following variables were selected as explanatory variables to estimate the basic model of the carbon dioxide emissions determinants in Saudi Arabia, which takes the following form:

$$CO2_t = f\left(GDP_t, DC_t, TR_t\right)$$

Where:

CO_{2t} is the dependent variable and represents carbon dioxide emissions in metric tons.

GDP_t represents Saudi Arabia's real GDP in billion dollar (GDP base year 2015).

DC_t represents domestic credit to the private sector in Saudi Arabia measured as a percentage of GDP.

TRt represents trade which is the total exports and imports of goods and services measured as a proportion of GDP.

As for the functional formulation for estimating the determinants of carbon dioxide emissions, most studies used the linear formulation and assumed that it is the most appropriate formulation. Therefore, the previous formulation becomes as follows:

$$CO2_t = \beta_0 + \beta_1.GDP_t + \beta_2.DC_t + \beta_3.TR_t + \varepsilon_t$$

On the other hand, since these variables are not stable - as we will see later - studying the relationship between them in the long term puts us in front of a problem represented in the fact that the regression we obtain is often a false regression (the relationship between the variables is a correlation relationship – i.e., the convergence between the time series paths - and not a causal relationship). This was shown by the study of Newbold and Granger (Granger and Newbold, 1974). This represents an inconvenience if our interest is limited to the long-term relationship. In this case, the cointegration test introduced by Granger (1981) is used, which allows studying the long-term relationship between unstable and integrated time series of the same order. It also allows to overcome the problem of false regression that can appear between unstable time series. The most important models that deal with this problem are Engle and Granger (1987), Johansen (1988), and Johansen and Juselius (1990).

The latest and most famous models in this regard are characterized by a set of advantages. Indeed, they can be applied regardless of whether the time series under study are stable at level I (0) or integrated of the first degree I (1) or even a mixture of both. The results of their application are more appropriate to a small sample size (e.g., our case where the sample size is 32 views [from 1990 to 2021]), unlike most traditional cointegration tests that require a large sample size so that the results are more efficient. The estimates resulting from this model are characterized by impartiality and efficiency. In addition, it helps to get rid of the problems related to deleting variables and the problem of autocorrelation.

The ARDL methodology relies on estimating the long- and short- term relationships together at the same time in one equation instead of two separate equations.

The ARDL methodology allows the inclusion of dummy variables in the cointegration test, reference: Nkoro and Uko (2016). The ARDL model (Autoregressive Distributed Lag) that refers to Pesaran et al., 2001, whose estimation requires going through the following four basic steps (Baharumshah et al., 2009).

1. Testing the stability of the study variables
2. Cointegration test (bounds test)
3. Estimating short- and long-term relationships
4. Diagnostic tests for the model, as follows.

4. EMPIRICAL RESULTS AND DISCUSSION

4.1. Unit Root Tests

The stability of the study variables is studied based on the tests of Dickey-Fuller (ADF) and Phillips-Peron (PP), whose results can be obtained directly at the same time and for all variables based on the software specially prepared in Eviews 12.0 and summarized in Table 1:

It is clear from Table 1 that all variables are not stable in level depending on the results of the ADF and PP tests. However, it is noted that the values of the statistics calculated for the ADF and PP tests are smaller (in absolute terms) than the tabulated statistics in the three models at the 5% significance level. Hence, we accept the hypothesis $\left(H_0:\lambda=0\right)$ or $\left(H_0:\varphi_1=1\right)$, in addition to the non-significance of the general trend in the third model for all series. This means that these series are unstable of type DS, while the calculated values $\tau_{\hat{\varphi}_1}$ for these tests for the separated series of the first degree become greater than the tabular ones in the three models at the 5% significance level, and therefore it is stable of first order I (1).

4.2. The Bounds Cointegration Test (Bounds Test)

At this stage, the existence of cointegration between the variables is verified by applying the bounds test, which is based on the Wald test to reveal the equilibrium relationship between the variables in the long term. To do so, it is required to convert the previous general model into an Unrestricted Error Correction Model (UECM), which takes the following form:

$$\Delta CO2_t = a_0 + \sum_{i=1}^{p} b_i \Delta GDP_{t-i} + \sum_{i=0}^{p} c_i \Delta DC_{t-i} + \sum_{i=0}^{p} d_i \Delta TR_t \qquad (1)$$
$$+\delta_1 CO2_{t-1} + \delta_2 GDP_{t-1} + \delta_3 DC_{t-1} + \delta_4 TR_{t-1} + \varepsilon_t$$

The cointegration between the variables in equation (1) is tested through the following hypotheses:

Null hypothesis: $H_0:\delta_1=\delta_2=....\delta_4=0$ (no cointegration)

Alternative hypothesis: $H_1:\delta_1\neq\delta_2\neq....\delta_4\neq 0$ (cointegration).

This test follows a non-standard F distribution so the rejection or acceptance of the null hypothesis depends on the comparison of the calculated F value - which takes the following form:

$$F = \frac{\left(SSER - SSEU\right)/m}{SSEU/\left(n-k\right)} \qquad (2)$$

SSEU: the sum of squares of the residuals for the unconstrained model (original, alternative hypothesis)
SSER: the sum of squares of the residuals of the restricted model (null hypothesis)
m: The number of constrained model parameters
k: The number of variables
n: The number of views

The tabular values are within the critical limits proposed by Pesaran et al., 2001 at a certain significance level, where the table consists of two limits:

Lower Critical Bounds value that assumes that the variables are integrated of order I (0);

Upper Critical Bounds, which assumes that the variables are integrated of order I (1).

If $F_{cal}\rangle F_{upper\ critical}$, then in this case the null hypothesis is rejected and the alternative hypothesis (i.e., the existence of cointegration) is accepted;

And if $F_{cal}\langle F_{lower\ critical}$, the null hypothesis (no cointegration) is accepted;

But if $F_{lower\ critical}\langle F_{cal}\langle F_{upper\ critical}$, in this case, the test is considered inconclusive (doubt zone).

In order to test the extent to which there is a long-term equilibrium relationship (the existence of a cointegration relationship) between foreign direct investment and the explanatory variables, the (F) statistic was calculated through the bounds test, and the results were as shown in Table 2:

We notice from Table 2 that the value of the calculated F statistic of (3.97) is greater than the upper tabular Fisher values at a significant

Table 1: Unit roots tests

Variables	ADF		PP	
	Level	First difference	Level	First difference
Co_2	−1.4722	−1.4862	−1.4707	−4.6346***
GDP	−0.2258	−4.8570***	−0.2846	−4.8757***
DC	−1.0943	−5.2872***	−1.0383	−5.3685***
TR	−1.2010	−4.3398***	−1.3706	−4.2613***

Co_2: Carbon dioxide, ***indicate significance of the coefficients at 1% levels.

Table 2: Cointegration test results using the bounds test of the (unrestricted error correction model- autoregressive distributed lag) model

Results of Bounds test for cointegration							
Fisher tabular values				Decision (%)	Fisher's calculated value F_{cal}	Degree of freedom	Significance level
$F^{**}_{critical}$		$F^{*}_{critical}$					
5.88	4.31	4.84	3.42	1	3	3.97	Accepting the alternative hypothesis of cointegration
4.53	3.23	3.63	2.45	5			
3.94	2.75	3.1	2.01	10			

Source of critical values: *Refers to Fisher's critical values of Pesaran et al., (2001), and **Fisher's critical values of Narayan (2005). We notice from the figure that the calculated F value is completely greater than the upper tabular F values at a significant level, which indicates the rejection of the null hypothesis and the acceptance of the alternative hypothesis of the existence of a cointegration between carbon dioxide emissions and the explanatory variables

level of 5% in relation to the distribution of Pesaran et al. (2001) and Narayan (2004).

This implies that the alternative hypothesis ($H_1 : \delta_1 \neq \delta_2 \neq ....\delta_4 \neq 0$) is accepted and the null hypothesis ($H_0 : \delta_1 = \delta_2 = ...\delta_4 = 0$) is rejected. This means that there is a long-term equilibrium relationship between carbon dioxide emissions and the explanatory variables, and thus the existence of a cointegration relationship between the variables of the research model.

4.3. Estimation of Model Parameters in the Long and Short Term

After confirming the existence of a long-term equilibrium relationship between the variable carbon dioxide emissions and its explanatory variables (i.e., the existence of cointegration between the variables), the third stage includes estimating the parameters of the ARDL model for the long and short terms. Yet, before adopting this model for use in estimating the long- and short-term effects, the quality of the performance of this model should be confirmed. To do so, we conduct the following diagnostic tests:

1. Normal residual distribution test: Jarque-Bera test
2. Test for a residual correlation of degree greater than one: Breusch-Godfrey Serial Correlation LM Test
3. Error Variance Homogeneity Test (ARCH Test)
4. Testing the suitability of defining or designing the estimated model in terms of the functional form of this model (Ramsey RESET Test) "Regression error specification test"
5. Testing the structural stability of the model along the period (CUSUM and CUSUMSQ test)
6. Testing the predictive performance of the estimated model

- Since the ARDL model requires the introduction of time-delayed variables as explanatory variables, the optimal ARDL model in terms of the number of delays for the variables included in the model is the ARDL (3,3,3,0). Thanks to the Akaike criterion, it is possible to obtain directly using the "Eviews 12" program the results of estimating the long-term parameters of the (ARDL) model summarized in the table hereunder (the ARDL model was used given the absence of the constant and the general trend because they were not significant. Also, the model without the constant and the general trend is the best, i.e., with the least value for the statistical criteria: AIC, SC, HQ):

Table 3 indicates that the variables selected from applied and interpreted studies of the volume of CO_2 emissions were positive and significant, except for the variable volume of credit for the private sector, which was negative but not significant. Based on the results of the above table estimates, the equation of the ECT error correction limit will take the following form:

Table 3: Long-run estimation

The results of estimating the long-term equation of the ARDL model are as follows: Dependent variable: LIMP				
Variable	**Coefficient**	**SE**	**T-statistic**	**Probably**
GDP	0.02	0.008	2.23**	0.04
DC	−0.065	0.085	−0.76	0.45
TR	0.1	0.025	3.97***	0.00
Diagnostic tests	**JB**	**LM**	**ARCH**	**RESET**
Statistic	χ^2=1.31	$F_{(3,14)}$=0.14	$F_{(3,22)}$=1.01	$F_{(3,14)}$=0.67
Probability	0.51	0.93	0.4	0.58

*Significant at 10%, **Significant at 5%, ***Significant at 1%. SE: Standard deviation, ARDL: Autoregressive distributed lag

$$CoinEq = CO2 - (0,02 \cdot GDP - 0,065 \cdot DC + 0,1 \cdot TR) \quad (3)$$

The results of the short-term parameters (ARDL estimates results) were as follows in Table 4:

4.4. Diagnosis and Evaluation of the Estimation Results

In light of the results of the long- and short-term equations of the previous ARDL model, we find that the limit of the error correction parameter (ECT_{t-1}) was significant at the level of 1% with the expected negative sign. This result supports the long-term equilibrium between variables, and this parameter reflects the rapid adaptation of the model to shift from short-term imbalances to long-term equilibrium. The value of the error correction limit coefficient, which is (−0.26) indicates that the volume of carbon dioxide emissions adjusts towards its equilibrium value in each time period by a percentage of the remaining imbalance of the period (t-1), which is equivalent to 26%. This means that when the volume of carbon dioxide emissions deviates during the short period (t-1) from its equilibrium values in the long term, the equivalent of 26% of this deviation is corrected in the period (t). It can also be said that the volume of carbon dioxide emissions takes about $\frac{1}{0,26} = 3,84$ year to adjust towards its equilibrium value, i.e., after a shock in the model as a result of changing the explanatory variables. The estimation results also showed that most of the estimated parameters were statistically significant at varying levels of significance.

- It is also clear from the table that the value of the corrected coefficient of determination reached 0.73, which indicates

Table 4: Short-run estimation

The results of estimating the short-term equation of the ARDL model are as follows:

$$d(CO2_t)=\sum_{i=1}^{p}a_i\cdot d(CO2_{t-i})+\sum_{i=0}^{p}b_i\cdot d(GDP_{t-i})+\sum_{i=0}^{p}c_i\cdot d(DC_{t-i})+\sum_{i=0}^{p}e_i\cdot d(TR_{t-i})-\lambda\cdot ECT_{t-1}+\varepsilon_t$$

$$d(CO2_t)=\underset{(0{,}74)}{0{,}09}\cdot d(CO2_{t-1})+\underset{(4{,}01)^{***}}{0{,}61}\cdot d(CO2_{t-2})+\underset{(3{,}21)^{***}}{0{,}01}\cdot d(GDP_t)\underset{(-2{,}44)^{**}}{-0{,}009}\cdot d(GDP_{t-1})-\underset{(-2{,}9)^{***}}{0{,}01}\cdot d(GDP_{t-2})+\underset{(1{,}04)}{0{,}015}\cdot d(DC_t)+\underset{(2{,}84)^{***}}{0{,}05}\cdot d(DC_{t-1})$$

$$-\underset{(-2{,}02)^{**}}{0{,}03}\cdot d(DC_{t-2})-\underset{(-4{,}32)^{***}}{0{,}26}\cdot ECT_{t-1}\quad \bar{R}^2=0{,}73\quad Loglikelihood=-1{,}89\quad DW=2{,}06\quad n=29$$

The index (*d*) attached to all variables represents the difference of the first order ECT_{t-1}: error correction limit $(\hat{\varepsilon}_{t-1})$ *, **, *** are statistically significant at 10.5 and 1%, respectively. (.): The values in parentheses represent Student Stat. values. Since the variable (ECT_{t-1}) is statistically significant and negative, this confirms the existence of a simultaneous integration relationship between the variables and the use of the ARDL model in the estimation

Figure 1: Graphs of CUSUMSQ

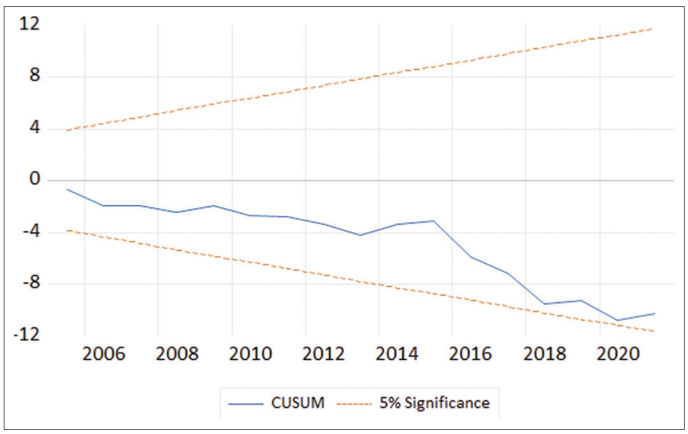
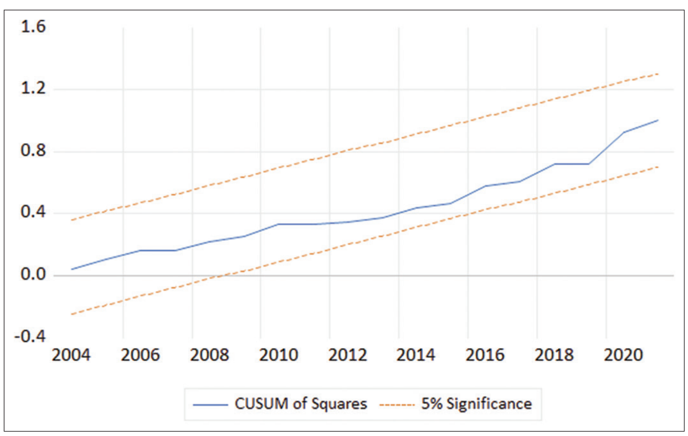


Figure 2: Graphs of CUSUM statistics



a good model fit and its ability to account for the changes that occur in the volume of carbon dioxide emissions. The changes in the independent variables account for more than 73% fluctuations in the volume of CO_2 emissions. Durbin-Watson's statistic does not suggest a subjective correlation between first-order errors.

Table 3 shows the following:

1. The JB test statistic indicates that the hypothesis that random errors are naturally distributed in the estimated model is not rejected
2. The Breusch-Godfrey test statistic indicates that the model is free from the residual correlation problem of a degree greater than one
3. The ARCH test statistic indicates that the null hypothesis that the variance of the random error limit is constant in the estimated model is not rejected (Homoscedasticity)
4. The RESET test statistic indicates the validity of the functional form used in the model
5. The structural stability test of the model along the period:

This form shows that the estimated transactions of the model are structurally stable over the study period, as the Figures 1 and 2 form of the two statistic tests mentioned for this model fell within critical boundaries at a 5% significance level.

4.5. Analysis and Interpretation of the Results

Based on the long- and short-term results of the ARDL model estimation, the following inferences can be drawn:

For the long-term relationship:

- There is a positive and statistically significant effect of the volume of GDP on the volume of CO_2 emission. Indeed, the long-term impact is 0.02, which means that an increase of $1 billion in GDP will lead to an increase in CO_2 emissions by 0.02 metric tons.
- There is a positive and statistically significant effect of the volume of trade on the volume of carbon dioxide emissions. Indeed, the long-term impact is 0.1, which means that a 1% increase in trade volume as a proportion of GDP will lead to a 0.1 metric ton increase in carbon emission.
- There is no significant relationship between the volume of credit granted to the private sector and the volume of carbon dioxide emissions.

For the short-term relationship:

- There is a positive and statistically significant effect of the two-year late carbon dioxide emissions on the volume of current gas emissions, since the effect value in the short term was 0.61. This means that an increase in the volume of the two-year late carbon dioxide emissions by 1 metric ton will lead to a rise in the volume of carbon dioxide emissions by 0.61 metric tons.
- There is a positive (negative) and statistically significant effect of the size of the current GDP (which is one and two years late) on the size of carbon dioxide emissions, where the effect value in the short term was 0.1 (−0.009, −0.01, respectively). This means that an increase in the current GDP volume (which is a year and two years late) by $1 billion

will lead to a rise (decrease) in the volume of carbon dioxide emissions by 0.1 (−0.009, −0.01 respectively) metric tons in the short term.

- There is a positive (negative) and statistically significant effect of the one-year late (two-year late) credit volume provided to the private sector on the volume of carbon dioxide emissions, since the short-term impact was 0.05 (−0.03).

5. CONCLUSION AND POLICY IMPLICATIONS

The main objective of this study is to investigate the short- and long-term relationship as well as the relationship between financial development and environmental quality in the Kingdom of Saudi Arabia during the period 1990-2021. Financial development indicators were GDP, trade volume and private sector credit volume. The results revealed that there is a cointegration between the volume of carbon dioxide emissions and financial development indicators. The results of the cointegration test also highlighted the existence of a long-term relationship between the volume of carbon dioxide (CO_2) and financial development indicators. Also, by estimating the long-term model of the ARDL model, the results revealed that the increase in financial development indicators, measured using the gross domestic product and the volume of trade, led to an increase in CO_2 emissions. However, the volume of credit provided to the private sector does not affect the size of Saudi Arabia's CO_2 emissions, which means that there is no relationship between the two variables in the short term. The obtained results corroborate those of (Boutabba, 2014; Sehrawat et al., 2015; Shahbaz et al., 2016; Saidi and Mbarek, 2017; Zhou et al., 2018; Charfeddine and Kahia, 2019, Samreen and Majeed, 2020), which assert that the financial development increases the CO_2 emission.

Based on our empirical results, it is recommended that Saudi policymakers increase environmentally friendly investments through financial development and its indicators as an important means of reducing gas emissions, thereby contributing to CO_2 emission mitigation.

Also, these results are indispensable to highlight the implementation of correct policies, such as the King Salman Renewable Energy Initiative project in Al-Jouf region (the Sakaka solar energy project and the Dumat al-Jandal wind energy project). Indeed, it is necessary to invest in technology and green energies through financial development in an effort to achieve environmental sustainability. Close monitoring of factories with high carbon dioxide emissions is also mandatory to ensure that efforts to preserve the environment are proceeding properly. Our findings indicate that financial development as measured by rapid economic growth (GDP) and trade volume is at the detriment of environmental quality. These results confirm those obtained by Jamel and Maktouf (2017), Chen et al. (2019) and Saboori et al. (2014), which indicate that the trade of GPD accelerates the emission of CO_2.

Policy makers also need to assess current environmental policy and the extent of CO_2 emissions from plants and operating companies. There is a need for policies to improve the efficiency of environmental policy, promote environmental preservation and reduce CO_2, and clean up economic activities. Despite the exponential increase in GDP per capita in Saudi Arabia, the country is still at a stage where environmental degradation comes at the expense of growth. The negative impacts of economic activities on the environment are also reflected in the relationship between GDP and carbon dioxide, trade volume and carbon dioxide. Besides, Saudi Arabia probably needs to reinvigorate development by encouraging environmentally friendly regulations and policies such as green transportation, environmentally friendly buildings, more sustainable energy consumption in urban areas, and more afforestation. This is because Saudi Arabia, in light of Vision 2030, seeks greater foreign direct investment flows and continues to sign new investment and trade agreements such as the NEOM Agreement targeting environmentally friendly clean activities, providing incentives to direct foreign direct investment and trade into more sustainable activities and cleaning up economic policy and regulations more thoroughly. It is therefore necessary to explore new policies that have sustainability at their core, ensuring that trade-offs derived from foreign direct investment, trade and economic growth can be mitigated through an increased use of renewables, energy efficiency and more. Moreover, shifting to renewable sources of energy, giving incentives to high-tech sectors and reducing natural resources extraction are also potential sources of the country's environmental improvements, as mentioned in previous studies.

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