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Studying the Relationship Between Financial Development and Emissions of Carbon Dioxide in Iran: Using Autoregressive-Distributed Lag

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ABSTRACT: The emissions of air pollutants and its consequences, particularly in the present conditions that the volume of these pollutants is increasing with an upward trend have drawn more attentions to dealing with its destructive effects. In this regard, financial development serves as a channel for modern technology compatible with environment. Financial development is capable of having direct role in energy consumption and consequently emissions of CO2. Accordingly, this research deals with the examining of financial development's effects on emissions of CO2 during 1973-2009 in Iran. In order to achieve the main objective of research, ARDL is used. The results of estimation prove the negative long term relationship between financial improvement and emissions of CO2. In addition, the results also show that there is a positive long term relationship between GDP, Energy intensity and the degree of economic openness with emissions of CO2.

KEYWORDS: Financial Development, Development Economics, Environmental Economics, Economy of Iran, ARDL.

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1. INTRODUCTION

The emissions of greenhouse gases resulting from fossil fuels and other human activities are serious threats to the issue of global warming. Changes in weather patterns may impair the environment and human activities. Atmosphere is a global property. So the decrease in emissions of greenhouse gases in each country brings about global foreign interests. CO2 is the main greenhouse gas. The issue of the emissions of CO2 is directly related to energy consumption and there exists a close correlation between consuming fossil fuels, emissions of CO2 and economic activities. On the other hand, some of the emissions of CO2 are due to economic activities which cannot be decreased, because as a result of its decrease, the running technology, production level and consequently welfare of the citizens will be affected. This is the main reason of some countries' unwillingness for association in decreasing CO2. Thus the issue of CO2 decreasing lays in lack of motivation for energy saving and consuming clean and renewable energies (Azomahou et al., 2005).Now decreasing the emissions of greenhouse gases and atmosphere pollutants are the major goals of environmental policies and energy policies in the world. Many factors such as economic factors, population, technological changes, institutional framework, lifestyle and international trade may affect the emissions of CO2. More than 80 percent of greenhouse gases is due to energy consumption like transportation, production process and consuming different types of energy forms. Besides, regarding the importance of consuming energy for the sustainable development, a serious question is how to achieve a separation of the emissions of greenhouse gases from economic growth and energy consumption. Energy and environmental policymakers, therefore, should examine factors affecting CO2 emissions.

Based on Human Development Index in 2011, CO2 emissions per capita in the world are 4/6 metric tons and the growth rate of its emissions is 36 percent. The related statistics to Iran signifies a more serious condition. The statistics demonstrate a high per capita of emissions and also an increasing growth rate of emissions. As the per capita of CO2 emissions in Iran is 7 metric tons which is much higher than its global average. On the other hand, we can see that during 1997-2007, the emission rates of this gas grew more than twice rate of the global emissions to 118/3 while this number is 36 percent for the world (World Bank Report, 2011). Thus experimental study of effective factors in CO2 emissions is urgently necessary. Financial development is the variable the impact of which in recent years is measured. Financial development can lead to the economic growth besides environmental pollution reduction. As Frankel and Romer (1999) pointed out, a developed financial market helps foreign direct investment and consequently it increases the rate of economic growth. Financial growth serves as a channel for modern technology compatible with environment. Recent studies have shown that financial development has a direct role in energy consumption and consequently emissions of CO2 (Tamazian et al., 2009).According to the presented data, the objective of this research is to examine the impact of financial development on emissions of CO2. For this purpose, annual data of 1973 to 2009 and ARDL have been used.

2. LITERATURE REVIEWS

2.1 Foreign Studies

Soytas et al. (2007) have studied the relationship between energy consumption, income and emissions of CO2 in America. In addition to the mentioned variables, they entered two other variables, manpower and capital as production inputs in their model and concluded that there is a positive significant relationship between emissions of CO2 and energy consumption while they didn't find such relationship between income and emissions of CO2. Hence they stated that revenue growth in America singly is not an appropriate solution for environmental problems in this country.

Ang (2008) has studied the long term relationship between product, emissions of pollutants and energy consumption in Malaysia during 1991-1999. After long term convergence analysis, casual relationship of variables is investigated by using causality test vector error correction. The results showed that pollution and energy consumption are positively related to the product in long term and also causality of economic growth and growth in energy consumption in long and short term is confirmed.

Soytas et al. (2009) studied the causality relationship between three variables, energy consumption, economic growth and emissions of CO2 for Turkey. They used variables such as manpower, capital, economic growth and emissions of CO2. The results signify that there is a one-sided relationship between emissions of CO2 and energy consumption in Turkey. However such a relationship was not confirmed between emissions of CO2 and national income and accordingly, it was concluded that CO2 emissions reduction doesn't lead to economic growth reduction in Turkey.

Shahbaz et al. (2013) studied the impact of financial development on emissions of CO2 in Malaysia during the period of 1970-2010 in their essay. The results of estimation demonstrate that financial development negatively affected the emissions of mentioned air pollutants.

2.2 Internal Studies

Most of internal studies carried out on emissions of air pollutants are devoted to the impact of emissions on variables such as national income, energy consumption, business etc. Yet no study has been carried out on the impact of financial development on the emissions of air pollutants.

Saleh et al. (2007) have studied the relationship between CO2 emissions and gross domestic product during 1960-2008 in Iran. In this paper the Granger causality test and the Hsiao causality test is used and the environmental Kuznets curve is estimated using OLS method. The result of this paper suggests that there is a one-sided relationship between CO2 emissions and gross domestic product. In this research the expected form of EKC curve about Iran's setting is not corroborated.

Sharzehi and Haghani (2009) studied the Granger causality relationship between energy consumption, national income and CO2 emissions beside factors such as manpower and capital during 1974-2005. The results suggest that there is a causal one-sided relationship from national income to energy consumption. However, the causal relationship between income and CO2 emissions is not confirmed.

Mohammad Bagheri (2010) studied long term and short term relationship between gross domestic production, energy consumption and CO2 emissions in Iran. In order to examine the relationship between variables, he used ARDL method. The results suggest that CO2 emissions are tensionless toward gross domestic product, and also its volume in long term is more than its volume in short term. Additionally, inverted U-shape of EKC about Iran's settings is not confirmed.

Lotfalipour and Ashna (2010), studied the effective factors on the change of CO2 emissions in Iran's economy especially for major economic sectors during 1994-2007. For this purpose, the change of CO2 emissions is analyzed in four main respects of energy intensity, pollution index, structural changes and economic activity. The results in the overall analysis show that the main factor of CO2 emissions is economic growth (scale effect) and the economic structure slightly effective in CO2 emissions reduction. In component analysis, according to the characteristic of each economic sector, variant results have been found for each economic sector. The role and influence of economic activity is positive for all of the sectors and those sectors the share of

which was reduced in production have negative structural effects and as a result of that, have reducing effect on CO2 emissions.

3. THEORETICAL FRAMEWORK

3.1 The Definition and Classification of Air Pollution

Air pollution has various definitions. Based on the simplest definition, it is the presence of contaminating substances in the air to an extent that at any given time, air quality will be harmful to humans, animals, plants and objects. Natural air pollutants are volcanoes, dust coming from natural erosions, pollination of plants and spoilage and fermented organic gases. But the sources of artificial pollutants are vehicles, industries, business and service units that in this part, secondary pollutions also occur. Because some of polluting substances, after releasing into the air, are combined with other substances and are transformed to new destructive substances like Ozone and Smog, we call them secondary pollutants (Karim et al., 2008, 170).

3.2 Functional Indicators of Air Pollutions

CO2 and sulfur are the two pollutants which have been more used in economic studies. CO2 has an important role in the discussions related to supporting environment and sustainable development, and also it is recognized as the main cause of global warming. These two gases are directly related to energy consumption which is the main factor in global economy for production and consumption. Hence economic growth and emissions of these two gases have significant functions in economic and environmental policies.

Generally, there have been used four indicators for various pollutants or environmental destruction: emissions per capita, emissions per units of gross domestic product or pollution severity, widespread pollution levels (as the amount or concentration of emissions) and total emissions.

First, the objectives of Kyoto Protocol relating to emission reduction are associated with the percent of reduction in annual per capita greenhouse emissions. Hence CO2 emission is of the most important indicators discussing in here. Second, as it has been shown in some studies, per capita emissions may increase even during the emission of each unit of product. More precisely, the effect of the scale of economic growth has more weight comparing to the effect of technology resulting from higher production efficiency and combination effect. Third, although dividing the total emissions by population may result in the reduction of the scale (and it doesn't result in remarkable changes in Econometric results), it pretermits the effect of population which is a main variable in causing total pollution.

3.3 SOME FACTORS AFFECTING POLLUTION

3.3.1 Population Growth

The fast growth of population is the key determining factor of many environmental issues. Environmental issues may not be solved unless human population problems to be solved. Although technology has probably delayed the population crisis, it has eventually increased the human impact on the environment. Technology has not only increased the use of resources, but also it has caused the modern human to affect the environment in various ways. Hence we can conclude that the growth of population in industrial countries has caused more severe environmental impacts in comparison to the growth of population in poor and underdeveloped countries.

As what has been said about population growth, this factor may have positive and negative effect on development and the environment. On one hand, population growth may enforce a technical and compliant change which helps the development. On the other hand, population growth results in the discharge of natural resources which consequently prevents the development and the quality of environment.

3.3.2 Trade

The relationship between the international trade and the quality of environment raises the question whether free trade is necessarily good or not? There are different opinions in this case. The first is that free trade is conceived as a destructive factor for the environment. Because of environmental reasons, therefore, trade liberalization should not be emphasized (trading tropical forests' wood e.g.). Second, it is stated that supporting domestic markets is a destructive factor for the environment. Thus liberalizing the trade is fruitful for environment. Third, it is claimed that in regarding its destructive aspects, trade should be limited in those aspects. For instance, importing those goods which cause pollution in the importing country (indirect external impact) or encouraging the production of goods which are destructive for the importing and also exporting countries should be limited. Fourth, it is expressed that the presence of environmental strong standards in importing country is a sort of tariff less barrier which is employed for supporting domestic markets and all the countries should coordinate their environmental standards. Since rich countries have higher environmental standards, it often seems standards should fall to a lower level in order to provide development for poor countries. On the other hand, it seems countries with lower environmental standards allocate full subsidies to their export because the costs of the destruction of environment are not considered in exporting goods prices. Thus the need to promote environmental standards is provided in poor countries. Fifth, it is stated that other environmental policy tools like environmental taxes or subsidies cause chaos and disorder in trade (Pearce & Warford: 422, ۱۳۷۷).

3.3.3 Energy Consumption

Energy is the fundamental basis of development; and one of the most important today's issues in human societies is energy and how to provide its requirements. Actually, because of large reserves of fossil fuels, thinking of saving energy in Iran is not well-paid attention. Thus paying attention to energy conversion and energy consumption, especially because of abnormal environmental effects of different levels of production, is inevitable.

Economic development is closely related to energy consumption because higher economic development is expected to be closely knitted to more energy consumption. There is the possibility that efficient consumption of energy (which leads to reduction of energy consumption), needs higher development level. Thus economic performance can speed up the improvement of energy efficiency better (Ang: 271, 2001).

Population changes and urbanization growth, in addition to weakness in efficiency of the production process, transfer, distribution and lack of dependence to clean energy resources, is led to the increase of demands for fossil energy and its fast consumption. The way of producing and using energy carriers in different segments of consumers is the effective factors of polluting the environment in local, regional and international scale. In addition, the duration of depletion of non-renewable energy resources and the increase of pollutions have become the energy and environment crises. Accordingly, regarding the emissions of polluting and greenhouse gases and studying their change process, provide good tools for planning and policy-making to reduce energy consumption and its consequences.

3.3.4 Economic Growth

In recent years, remarkable advances have been gained in field of the way of communication between financial development and economic growth. These advances are the cause of the formation of new economic theories in one way and are also the outcome of the presentation of new econometric techniques.

Some empirical evidence shows a hump-shape relationship between destructing environment and economic growth. In other words, first environmental destruction increases with the increase of economic growth. This destruction continues until reaching to the back-point of the curve. After back-point of the curve, environmental destruction decreases with the increase of economic growth.

3.3.5 Financial Development

In addition to the mentioned factors, financial development may affect emissions of pollutants and greenhouse gases; by the improvement of financial sector, we will definitely see numerous technical advances in different sectors especially energy sector which decreases missions of pollutants in return. Thus working on financial sector may prevent the emissions of pollutants (that are affected by using old time-worn carriers). Financial development generally leads to the increase of research and development activities and also makes economic activities more efficient. As a result, it significantly helps in maintaining the quality of environment (Frankle & Romer, 1999). Hence the elimination of financial development from the study of effective factors in financial development may cause the elimination of an important variable in regression.

According to the presented theoretical framework, the following template is devoted to examining the impact of financial development on emissions of CO2.

$$LCO_{2t} = \beta_0 + \beta_1 LF_t + \beta_2 LE_t + \beta_3 LY_t + \beta_4 LTR_t + \beta_5 T + \beta_6 D57$$

(Relation 1)

LCO_{2t}: logarithm of per capita emissions (World Bank data)

LF_t: Financial development indicator. In this research, the share of private sector in banks' credit is used as financial development indicator (source: World Bank data).

LE_t: logarithm of energy intensity has come with relation of energy consumption divided by gross domestic product (Source: World Bank data).

LY_t: Gross domestic product logarithm (Source: World Bank data).

LY_t: Logarithm of economic opening degree which is calculated of the relation of total export and imports share from gross domestic product (Source: World Bank data)

T: Time

D_{57}: Dummy variable for occurring Iran's Islamic revolution.

Expecting marks of coefficients are as follows:

$\beta_1 = \frac{\partial LCO2}{\partial LF} < 0$: Based on what has been said, a negative long term relation is expected between financial development and CO_2 emissions.

$\beta_2 = \frac{\partial \mathrm{LCO2}}{\partial LE} > 0$: It is claimed that the more energy intensity increases, the more CO_2 increases.

$\beta_3 = \frac{\partial \mathrm{LCO2}}{\partial LY} > 0$: In studies, a positive relation between gross domestic product and CO_2 emissions is reported.

$\beta_4 = \frac{\partial LCO2}{\partial LTR} > 0$: It is expected the economic opening degree variable directly relates to CO_2 emissions.

4. ECONOMETRIC ESTIMATION OF THE MODEL AND ANALYSIS OF THE RESULTS

4.1 Choosing the Model

In order to examine the impact of financial development on per capita CO2 emissions, the ARDL model is used. This method, without considering the model's variables as being I (0) or I (1), is usable. In addition, by performing this method, we can do the economic analysis in long term and short term periods. Using this method in size of small samples is more efficient due to short-run dynamics between variables.

4.2 Unit Root Test

Since using unsteady time series in usual econometric methods is possible, it may cause false regression. Before having any estimation, it is necessary to make sure of the reliability of time series used in estimation of model parameters. Hence Augmented Dicky - Fuller Unit Root Test is used. In this paper, the optimal lag length is chosen based on Schwarz – Bayesian criterion. This criterion, regarding the small sample size**,** cuts down on the number of lags to lose fewer degrees of freedom.

The results of ADF test on the level of variables are shown in the following table:

Table 1. ADF Test on the level of variables

Variable	Intercept without trend		Intercept with trend	
	Test statistics	Critical Quantity	Test statistics	Critical quantity
LCO_2	-0/25471	-2/9558	-3/2093	-3/5562
LF	-0/59897	-2/9558	-0/91258	-3/5562
LE	1/0138	-2/9558	-3/3643	-3/5562
LY	-2/1148	-2/9558	-3/0659	-3/5562
LTR	-4/0683	-2/9558	-3/5239	-3/5562

Source: Research Calculation

Considering the above table, we understand that all of the model's variables are unsteady. Hence it is necessary to employ ADF test on the variables' invariance of the first difference.

Table 2 shows the results of this test on the invariance of the first difference.

Table 2. ADF Test on the invariance of the first difference

Variable	Intercept without trend		Intercept with trend	
	Test statistics	Critical quantity	Test statistics	Critical quantity
$DLCO_2$	-4/4682	-2/9591	-5/0509	-3/5615
DLF	-4/5567	-2/9591	-4/7884	-3/5615
DLE	-8/9300	-2/9591	-8/9784	-3/5615
DLY	-5/3999	-2/9591	-6/5486	-3/5615
DLTR	-6/7892	-2/9591	-6/6479	-3/5615

Source: Research Calculation

As it is demonstrated, all the variables are integrated of I (1).

4.3 Research Model Estimation

As it is mentioned, in order to estimate the specified model in research, ADRL is used. The maximum lags of model is considered 2 and the software Microfit4.1 (1, 0, 1, 0, 0) version, chooses ADRL in accordance with Schwarz – Bayesian Criterion, as the best estimating model. Table 3 shows the estimated mentioned model.

Table 3. The results of the estimation of dynamic ARDL model

Variable	Estimated Coefficient	Criterion Deviation	t Statistics
LCO_2 (-1)	۰/۳۵۳۶۰	۰/۱۱۷۲۳	۳/۰۳۹۳
LF	-۰/۱۷۴۲۸	۰/۵۸۶۸۳	-۲/۹۶۹۹
LE	۰/۱۲۳۷۱	۰/۲۰۲۵۹	۰/۶۱۰۶۱
LE(-1)	-۰/۴۰۲۵۱	۰/۱۴۹۷۱	-۲/۶۸۸۵
LTR	۰/۱۵۲۵۱	۰/۷۰۱۷۱	۲/۱۷۳۴
LY	۰/۴۲۷۵۰	۰/۷۰۱۷۱	۲/۱۷۳۴
C	-۱/۲۳۷۳	۱/۱۲۹۶	-۱/۰۹۵۳
T	۰/۰۲۷۷۶۲	۰/۰۰۷۲۰۴۰	۳/۸۵۳۶
D57	۰/۱۱۷۷۶	۰/۰۶۵۶۴۶	۱/۷۹۳۹
R^2= ۰/۹۶		$\bar{R}^2$= ۰/۹۵	

Source: Research Calculations

As the above table demonstrates, the estimated model has a high R2 and $\bar{R}^2$ which means that 96 percent of dependent variable changes are explained by explanatory variables.

The other information related to the estimation of model is as follows:

$X^2_F = ۰/۳۱(۰/۵۷)$

$X^2_N = ۰/۶۱(۰/۷۳)$

$X^2_{SC} = ۲/۲۱(۰/۱۳)$

$X^2_H = ۰/۶۴(۰/۴۲)$

X_H^2, X_F^2, X_N^2, X_H^2 are the statistics of Lagrange coefficients in Diagnostic Tests that test serial correlation, justification of functional form, normality and heteroscedasticity**.** According to them, the estimated model provides classic assumptions.

After estimating the dynamic model, the hypothesis of the presence or absence of co-integration between variables in the model is tested. In Banerjee, Dolado and Master Tests (1992), if total coefficients and the lag of smaller dependent variable be less than one, the dynamic model tends to long-run balance. Hence for this test, following hypotheses should be tested:

$$H_0 : \sum_{i=1}^{p} \alpha_i - 1 \geq 0$$

$$H_1 : \sum_{i=1}^{p} \alpha_i - 1 < 0$$

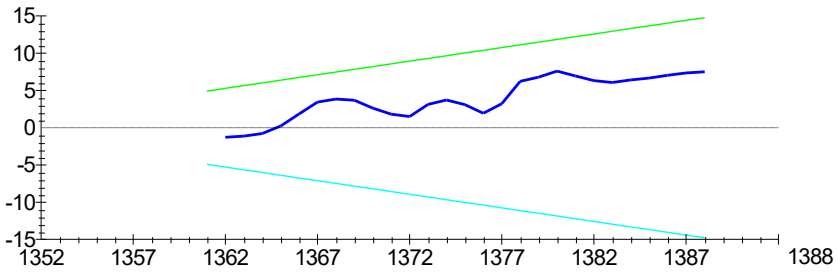
The statistical amount of t required for the above test is calculated in this way:

$$t = \frac{\sum \widehat{\alpha_i} - 1}{\sum S_{\widehat{\alpha_i}}} = \frac{0/35630 - 1}{0/11723} = -5/4909$$

The presented critical quantity by Banerjee et al. for intercept model with trend is -4/43. Thus the assumption of 0 is declined and the presence of a long-run relation between the model's variables is confirmed.

To verify that the model has structural stability, CUSUM and CUSUMSQ Tests should be performed. Thus test which was presented by Hansen (1992), suggests that the estimated parameters of a time series may change during the time and unsteady parameters may lead to wrong diagnosis. Therefore, performing this test seems to be necessary. For this purpose, CUSUM Test and CCUSUMSQ Test presented by Brown et al. (1975) are used.

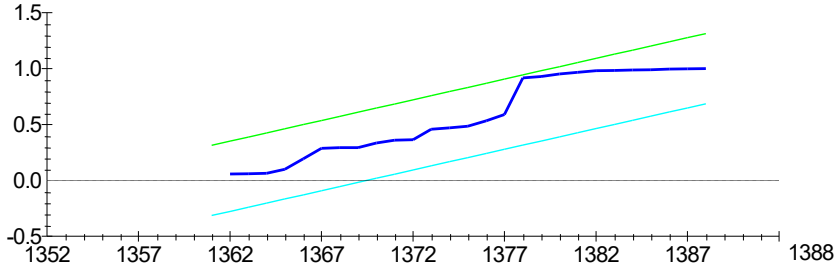
Diagram 1. CUSUM test related to structural stability of model
Plot of Cumulative Sum of Recursive Residuals



The straight lines represent critical bounds at 5% significance level.

Source: Findings of Research

Diagram 2. CUSUMSQ Test related to structural stability of model
Plot of Cumulative Sum of Squares of Recursive Residuals



The straight lines represent critical bounds at 5% significance level.

Source: Findings of Research

As it is obvious, both diagrams are between two lines that have determined the critical area at error level of 5 percent. Hence with 95 percent of confidence we can say the model has structural stability.

After making sure of the presence of long-run relationship, we can estimate the long-run model. Table 4 shows the results of this estimation.

Table 4. The results coming from estimation of co-integrated vector model

Variable	Estimated Coefficient	Standard Deviation	t Statistics
LF	0/27075	0/10544	-2/56
LE	0/43312	0/19917	2/1746
LTR	0/23693	0/11378	2/0824
LY	0/66412	0/22124	3/0018
C	-1/9221	1/6361	-1/1748
T	0/043128	0//010708	4/0278
D57	-0/18294	0/097721	-1/8721

Source: Research Calculations

The coefficient obtained for logarithm of financial development indicator (-0/27) shows that financial development has a positive impact on the environment. Since the coefficients of variable that have been used as logarithm represent their traction, by one percent financial development increase, -0/2 percent of CO2 emissions is reduced.

The coefficient of energy intensity variable (energy consumption logarithm divided by gross domestic product) which is shown as LE, is 0/43. This means that if the energy intensity increases emissions of CO2 increases likewise. Since this coefficient represents the long-run traction, per one percent increase of energy intensity, less than this amount, to 0/43 percent it leads to increase of greenhouse gas indicator.

The coefficient of variable degree of homogeneity (the logarithm of the share of total export and imports from gross domestic product) is positive. It suggests that if the degree of economic liberalization increases 10 percent, assuming that other conditions are constant, it causes the increase of CO2 emissions to 0/2 percent.

The positive coefficient of gross domestic product logarithm (0/66412) shows the increase of pollution emissions per each unit of increase in gross domestic product. This coefficient implicitly expresses the fact that the experience of economic growth in Iran shows that it is generally alongside intensification of pollution.

The last stage of ARDL Method is estimating error correction model (ECM). The coefficients relating to ECM represent a short-run relation which is shown in Table 5.

Table 5. Error correction model relating to LLE

Variable	Estimated Coefficient	Standard Deviation	t Statistics
DLF	0/17428	0/058683	-96992
DLE	0/12371	0/10259	1/2058
DLTR	0/15251	0/070171	2/1734
DLY	0/42750	0/17055	2/5065
DC	-1/2373	1/1296	-1/0953
DT	0/02776	0/007204	3/8536
DD57	0//11776	0//06564	1/7939
ECM(-1)	-0/64	0/1172	-5/4910

Source: Research Calculations

The thing which is important about ECM is the coefficient ECM (-1) that represents speed of adjustments of short-term imbalance to long-term balance. This coefficient in the above model is around -0/64 that is significant statistically. The coefficient of the mentioned error correction term shows a high speed of adjustment of short-term imbalance to adjustment of long-term balance. This amount shows that in each period, 64 percent of imbalance is corrected.

Achieved results of the research can be compared with previous inter-researches as follows:

The positive coefficient of gross domestic product logarithm (0/66412) shows increase in pollution level distributed per increase in gross domestic product. This coefficient indirectly says the fact that economy growth experience in Iran expresses that economy growth mainly accompanies with pollution intensification and forming. In this area, Mohammad Bagheri (2010) showed that Dioxide Carbon emission was tensionless in relation to gross domestic product which contradicts this research.

Achieved results of economy opening degree and energy intensification were equivalent to the results provided in Mohammad Bagheri (2010) and Lotfalipour's researches (2010) and proved them.

5. SUMMARY AND CONCLUSION

This research has studied the impact of financial development on gas emissions in Iran during 1975-2009**.** In this regard, ARDL model is used.

The findings of research confirm a long-term relationship between template's variables. Based on the results of financial estimation, financial development leads to CO2 emissions reduction and consequently it helps in improving the quality of environment. In contrast, economic development, energy intensity and the degree of economic liberalization, delay the improvement of Iran's environment.

The positive coefficient of gross domestic product logarithm shows the increase of emissions per each unit of increase in gross product. In other words, the amount of CO2 emissions increase per each unit of income increase has an ascending trend in Iran.

For financial development indicator, the coefficient of -0/17428 is derived which implies CO2 emissions reduction alongside with the increase of financial development indicator.

The positive coefficient of energy intensity variable (0/43312) shows that the more energy intensity increases, the more CO2 emissions increases. In other words, we can say if energy consumption increases per each unit of gross domestic product, it leads to a rise in pollution level.

Ecological traction for the variable of economic liberalization degree shows that 10 percent of increases in this variable, assuming other conditions are constant; it leads to a 0/1 percent increase of CO2 emissions.

Based on results above, applicable recommendations are made as follows:

Regarding the results, financial development is effective on CO2. Thus providing financial resources for industry sector to promote energy consuming facilities and other fields and effecting channels, financial development is suggested.

On the other hand, policies to reduce energy consumption are not the only way to guarantee a certain desired level of environment's quality along with a desired level of economic growth. Based on literature, two strategies may be effective: First, promoting the technology of oil, gas and fossil fuels to increase energy efficiency and reduction of environmental pollutants. Second, more use of renewable energy resources and clean fuels which is more useful if prices of petroleum products are high.

Due to the fact that economic growth leads to pollution and in some ways reducing economic growth is not sensible, the policy of pollution reduction should consider the initial costs and investment efficiency. On this basis, the exact amount of contaminants derived by different sectors and industry to be able to have an accurate and correct conclusion in this field.

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ETHICAL CONSIDERATION

Authenticity of the texts, honesty and fidelity has been observed.

AUTHOR CONTRIBUTIONS

Planning and writing of the manuscript was done by the authors.

CONFLICT OF INTEREST

Author/s confirmed no conflict of interest.

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