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Investigating the effect of energy consumption on Iran's economic growth by Panel Data

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Abstract
The energy use of the global economy is comprehensively examined using a system input / output analysis based on 2010 statistics. Focusing on primary energy sources, the imbalance of international trade in energy consumption through global supply chains, examining the behavior of energy consumption in different sectors, is a fundamental and important step for energy planning. Most economists see the industrial sector as the engine of economic growth. It appears that almost a third of the world's energy is made up of energy used in interregional net trade. In terms of the close relationship between energy and the daily lives of people and societies, as well as the lives of countries and governments, it has always been a concern for applicant and producer governments, and therefore energy plays a decisive role in national and international policies. The importance of energy is such that consuming governments, energy generating sites, and generating governments, energy consuming locations, and both transmission routes and energy-related technologies are among their national goals and national security. Therefore, this study intends to investigate the impact of energy consumption on the economic growth of Iran using composite data from 2000 to 2015. The issue of access to energy resources, including fossil, nuclear, solar, etc., as well as the transfer of energy from places with places or spaces without energy or need, as well as control of production sources and energy transmission routes, as well as technologies and tools of production, processing and The transfer and even consumption of energy for global and regional sovereignty and the challenge of competitors in the international arena, all have spatial, spatial or geographical dimensions, and therefore the validity of energy has become an important geopolitical issue.

Keywords: Economy, Panel Data, Energy Consumption, Economic Growth.

Introduction:

Despite its rich oil and nuclear energy resources, Iran has the highest energy intensity. High energy consumption intensity indicates more energy consumption in each country, for example, if the energy intensity in country A is twice as much as country B, it means that country A has consumed twice as much energy to produce goods and services as countries B [1]. Many factors are effective in determining the intensity of energy consumption in each country. The intensity of energy consumption can be affected by the level of living standards, climatic factors or the economic structure of a country. For example, countries that have a higher standard of living consume more, and as a result, this affects their energy intensity. Optimization of buildings, equipment, modes of transport, public transport capacity, natural disasters and war, which affect each country's energy resources, and even the distance between geographical locations are factors that affect the intensity of energy consumption [2]. Considering that the average intensity of energy growth in the world is about 0.4, this figure in Iran is estimated to be more than 0.6, ie the intensity of energy consumption in our country is almost twice the intensity of energy growth in the world and the potential for optimization And there is an improvement in the pattern of energy consumption in various sectors up to one third (33%), the revenue from which is estimated at about $ 5 billion annually, which is equivalent to the entire development budget of the country [3]. The results also show about 65% of Emissions of greenhouse gases in the country are only due to the production or consumption of energy, so energy consumption must be reduced to prevent the entry of these gases and pollutants into the environment [4]. Accordingly, the intensity of energy consumption in the country is not only higher than in many developed countries such as the United States, France, Germany, Canada, etc., even higher than oil-rich countries such as Saudi Arabia, Qatar and Kuwait [5]. Therefore, appropriate policies should be implemented to reform energy prices and reduce energy subsidies, access to nuclear energy to benefit from the most appropriate renewable energy (solar, wind, etc.) as well as increase technology improvement and modernization of production equipment to reduce energy consumption and improve Efficiency should be used in Iran, because if we cannot reduce the intensity of energy consumption in the country by 50%, it can be predicted that in the coming years all energy produced in the country will be consumed and we will not have oil and gas for export and environmental pollution [6].

Importance of Issue:

Iran is one of the richest countries in the world. Iran ranks third in the world in terms of oil reserves and second in terms of gas reserves [7]. This country annually exports a large share of its oil and gas to domestic consumption, which is common not only in Iran but also in other oil-rich countries in the Middle East [8]. In Iran, as in other rich countries of the world, subsidies have been provided for the consumption of energy resources, so that people can use their national wealth at a lower cost. The same subsidies have led to an increase in consumption in these countries, as reports have shown an increase in demand for energy resources in these countries in recent years [9]. The lowest per capita energy consumption in the world is in Bangladesh, Eritrea, Senegal, Haiti and Congo. Qatar has the highest per capita energy consumption in the rich and sparsely populated country [10]. Per capita energy consumption in this country in 2019 was equal to 21 thousand 395 kg. The five countries with the highest per capita consumption are Qatar, Iceland, the United Arab Emirates, Bahrain and Luxembourg. US per capita consumption is estimated at 7,800 kg [11]. Although the United States is the world's largest consumer of energy, its per capita energy consumption is much lower than that of Qatar, which tops the list. Statistics show that the per capita energy consumption in the United States is about one third of the per capita consumption in Qatar, and the distance with Iran is very large [12]. Per capita energy consumption in Iran is one tenth of Qatar and one quarter of the United States. In the past decades, traditional planning, which was based more on definite predictions, has been largely successful for organizations, but now this method has lost its effectiveness [13]. Definite predictions may be true in the short and long term, but in the medium and long term, with the emergence of unforeseen and surprising events such as the coronavirus outbreak, consistent changes in national, regional and international policies, and most importantly the incompetence of managers and to understand emerging changes [14]. This inability causes the strategies formulated based on definite predictions to fail and become unusable. In the current situation, there are many plans that are designed without considering the profound changes in the future, and as a result, do not achieve the goals set in the plan. In a field study of the Oil and Gas Exploration and Production Monthly, the future is seen as the result of four constructive actions, including trends, events, images, and actions [15].

Future research in the field of energy:

The process and the event focus on two future features. Because the trend refers to historical and temporal continuity, the event emphasizes historical disintegration. Trends are regular changes in data or phenomena over time that begin in the past and continue into the future; but events, unlike trends, are the result of an event or incident that greatly affects trends and the future in general [16]. Images are the result of perceptions or requests of various individuals and groups about the future, and ultimately actions that are formed based on images of different actors from the future. What the author focused on in the future challenges in the field of energy should be said that the first step of future research studies in the field of energy will be to identify emerging trends in the energy market; But at the same time, it is one of the basic requirements in formulating macro and long-term plans in this area [17]. The varieties of trends are:

1. Emerging trends in the world energy market with fundamental changes in the markets even before the financial and international crisis and the global economic performance caused by the corona that is taking place. It goes without saying that the growth in energy demand over the decade has led to greater exploitation of market capacity, so that any disruption in energy supply due to climate change or geopolitical developments has led to a sharp rise in oil and gas prices [2]. Infrastructural and technical constraints, increasing geopolitical and investment risks, price and cost fluctuations, and environmental regulations for the use of fossil fuels have added to the complexity of the world's future picture, with the emergence of new global players influencing energy and geopolitical conditions [5]. It is new for the current players in the global energy market, including the United States, in terms of reducing their influence and playing a role in shaping their future international energy system. On the other hand, in the coming decades, the world's population will increase from 7 billion to 9 billion [6]. As the population grows, economic growth and the standard of living in densely populated areas will increase, and as a result, society will need food, water, land, and raw materials, especially more energy, to sustain this economic growth [9]. The struggle to meet needs will lead to the formation of new trends and stimuli and, in the future, will shape the energy of the world. As a result, even before the recent coronary rise and fall, oil prices in the world were on the path to energy instability [11]. Therefore, it is time to design a new system and formulate new strategies to simultaneously address economic, environmental and foreign policy conditions and, most importantly, security challenges related to energy production, transportation and

consumption [14]. The changing future of energy for oil-based economies has five trends: drivers for changing demand patterns, changing supply options, price fluctuations and investment delays, emerging actors, new arrangements and new laws, and climate change. Changing the demand pattern According to most forecasts, the growth of energy demand in the next 25 years is estimated to be between 40 and 60% [15].

2. But now it is not only the amount of energy needed by the world, but also the combination of the main applicant countries and changing demand patterns. In this regard, it is worth mentioning that in the past decades, OECD or developed countries have played a major role in increasing energy demand, but in recent years, with the emergence of emerging economic powers in the world and the relatively high economic growth of developing countries, The main increase in energy demand is allocated to these countries, so that more than 75% of new energy demand growth will be formed based on the choice of these countries and the type of future need of these countries for energy carriers will change the share of each energy source in the energy basket [16]. The world will. These changes, while changing energy demand patterns, will create new geopolitical links based on current consumption patterns, as well as increase fossil fuel consumption and the resulting climate effects [17].

3. Primary energy demand in non-OECD countries will increase from 6,600 million tons in 2010 to about 10,800 million tons in 2035, and this will include 90% of the growth in energy demand by 2035. Overall, non-OECD countries accounted for 54% of global energy demand in 2010, which will increase to 64% in 2035 [18].

4. Increased energy demand in non-OECD countries compared to OECD countries is compatible with factors such as increasing population growth rates and economic and urban activities in these countries. The average annual growth rate of energy, especially crude oil and gas in non-OECD countries in the above outlook period is 9.1 percent [19]. At the same time, the share of the global population in non-OECD countries will increase from 82% in 2010 to 84% in 2035. Also, the proportion of urban people in these countries will increase from 44% to 57% and more. Also, the performance figures for 2015 and the latest estimate of medium-term global crude oil demand from 2016 to 2019 show the significant role of China and India in increasing global crude oil demand [20].

5. Therefore, all the increase in demand will be directed at developing countries and about 10.5 million barrels per day, most of which will be allocated to China and India at the rate of 55 million barrels per day. This confirms the shift in the global crude oil and energy market.

Meanwhile, supply supply options changed in the first decade of the 21st century, despite forecasts about the declining trend of fossil fuel supply and concerns about global energy supply and widespread developments in the field of technologies for extraction and exploitation of unconventional oil and gas resources. It increased the world considerably [21]. At present, access to the production, conversion and delivery of these resources in a safe, cost-effective manner and in accordance with environmental approaches to the destinations that require these resources is very costly. Conventional conventional oil and gas resources are geographically located in the Middle East, Latin America, Central Asia, and the Caucasus. And the refinement of such resources has posed a great challenge, especially in the "carbon constraint" period [22]. It is important to note that the US oil and gas revolution, which has resulted in the start of significant production from unconventional sources in this country, will not occur in other parts of the world for at least the next decade. Of course, the main reasons for this can be the high technological and technical capabilities of American oil companies in the field of unconventional oil production compared to other companies, their efforts to protect intellectual property and not grant oil extraction technology from these fields to other companies, access to facilities and Enumerated the abundant equipment provided by private companies active in this field and active financial markets to support and finance the development of oil fields in North America [23].

6. The International Energy Agency's recent estimate confirms the above analysis and shows that the highest crude oil production from conventional sources between 2020 and 2035 will be in the Middle East and the largest increase in production from unconventional sources will be mainly in North America [9]. Interestingly, the growth and production of crude oil in 2018 has somehow confirmed the beginning of this emerging trend. OPEC member countries had a total production increase of 3.2 million barrels per day in 2019, of which 2.1 million barrels per day were allocated to Saudi Arabia. According to the latest studies conducted by Harvard University on the perspective of crude oil supply, which has been done on a field-by-field basis and by evaluating various oil exploration and development projects in different countries of the world and based on a bottom-up approach, capacity increase in 2030 Crude oil production is estimated at 49 million barrels per day, including crude oil and NGL, which is equivalent to half the current production capacity of 83 million barrels per day [24].

7. In the continuation of this study, risk-related corrections of all factors affecting the implementation of upstream oil sector projects were applied and the rate of increase in world

crude oil production capacity was estimated at 29 million barrels per day [10]. Therefore, one should not worry too much about the supply of oil needed by the world, unless the growth rate of crude oil demand by 2035 averages more than 6.1% per year, which is predicted to be fully time consuming as the economic crisis in the EU continues. The US withdrawal from the Corona recession, as well as the relative slowdown in China and other emerging economies in the medium term, is unlikely to materialize [25].

8. The wave of political and popular unrest in Libya and other countries in the Middle East and North Africa has once again turned everyone's attention to ensuring the supply of energy from certain areas. The rapid increase in the use of renewable energy sources and new technologies has provided a favorable environment for the replacement of renewable energy with non-renewable sources [26]. The extent of global demand and the cost of building new infrastructure for energy transmission, along with the technical and technological challenges posed by the diversity of renewable energy sources, means that it will take decades to replace low-carbon energy sources without any significant progress or discovery. In addition, sharp fluctuations in the prices of energy carriers, especially crude oil, have led to the sterility of investment in projects or their limitation [10]. This investment delay will provide ample opportunity and time for new energy to enter the market. A clear example of these fluctuations can be seen in the price of Brent crude oil over the past 5 years, which has experienced many fluctuations [12]. According to studies, one of the most important requirements for adequate investment in the upstream part of the oil industry is to keep crude oil prices above $ 70 per barrel in the long run. In fact, given current costs, at prices below $ 70, a maximum of 20 percent of the projected oil production plans in the future will be economical [14].

9. The trend of rising oil prices and revenues has led to an increase in the assets of national funds for owners of natural resources and developing economies, which makes it possible to finance and make new investments in domestic or foreign projects using domestic resources without the need for assistance from lending institutions [3]. International, such as the World Bank, the International Monetary Fund and regional development banks; But government sovereignty and restrictions on access to natural resources have created uncertainty and constrained investment opportunities; But in the distant future, of course, the United States alone will not have enough power to control China; So it is likely to seek alliance with countries that share common values with the United States [18].

Identify environmental challenges:

Fossil fuel pollution has always been an issue since the British Industrial Revolution, which marked the beginning of mass consumption of coal in industry and transportation. As mentioned, clean and renewable energy is generally more expensive than fossil fuels [19]. Since the 18th century, the world has witnessed an increasing consumption of fossil fuels. One of the most important by-products of fossil fuels is pollution. The combustion process pollutes the environment by creating smoke. Although associated pollution can be reduced, it is not just smoke [20]. A bigger problem that has been discussed for many years is the increase in greenhouse gases. Increasing the concentration of carbon dioxide, which is the main product of the combustion process, in the Earth's atmosphere intensifies the greenhouse effect and gradually increases the earth's temperature [21]. Rising temperatures also cause a number of destructive changes in the Earth's ecosystem, the most important of which are the melting of polar ice caps and rising ocean water levels, and the extinction of animal and plant species due to the time consuming process of their adaptation to the environment. Contamination of a public good is also a bad commodity (a commodity whose consumption is associated with a decrease in utility) [23]. For this reason, its supply by polluting industries causes public dissatisfaction. Pollution control is so important in developed economies that a set of rules for pollution control, pollution standards and pollution taxes have been established [24]. In many European countries, each industrial unit is given an authorized quota for carbon dioxide emissions. The penalty for exceeding this quota is so high that industrial units prefer to optimize their production according to their permissible pollution limit with appropriate measures and the use of new technologies [25]. There are also markets in many of these countries for the purchase and sale of pollutant release licenses. For example, if a plant with a license to emit 100 units of carbon dioxide can emit 60 units of pollutants by improving its production method, it can supply 40 units of its unused quota in the market and receive a good amount from the applicants [26].

Energy and economic growth:

Various indicators have been developed to explain the relationship between energy and economic growth. Examining the cause-and-effect relationship between energy and economic growth is also one of the interesting topics in this field [27]. The effect of oil market fluctuations on world economic growth over the past few years is quite evident. Some even link this debate to the political motives of the great powers. A concrete example is the rapid economic growth of China and India in recent years [28]. Many experts believe that a large part of the $ 100 increase in oil prices over the past two years is due to increased demand from the two emerging economies. In other words, China and India, due to the weight of their demand, have been able to unbalance the world oil level and increase oil prices; this reflects the effect of economic growth on energy prices. But there is another political point to this; The United States, for example, has pushed up oil prices on world markets by invading Iraq and destabilizing the Middle East. Rising oil prices are causing US emerging rivals in the global economy to face rising production costs and declining competitiveness in global markets. Thus, the pace of economic growth in this country is slowing down in favor of the old players of the world economy. This is an example of the effect of energy on economic growth [29].

Energy and development:

Development has a meaning beyond economic growth. Development has different cultural, political, social and economic dimensions. Unfortunately, despite the great and vital value of energy resources and natural resources, the global development plan is slightly in line with the natural resources distribution plan. Many countries rich in energy from natural resources are still selling their natural resources to former colonizers, just as they did during the colonial era [1]. Whether or not abundant natural resources can be the engine of a country's development is an interesting issue that is the subject of the "resource curse" theory. According to this theory (resource curse), the abundance of natural resources in a country does not necessarily contribute to the development of that country and may even hinder development [8]. The economic dimension of this theory is based more on the Dutch disease theory. The cultural dimension of this theory implies that in countries rich in natural resources, the return on investment in education, manpower and culture is achieved over a long period of time, and the huge return on investment in natural resources (especially oil and gas) is quickly reaped by the government [9]. Therefore, investing in education and culture is apparently unprofitable and cultural development is slow. In terms of political development, the "resource curse" theory also makes it clear that the governments of countries rich in natural resources rely on the proceeds from the sale of these resources and not on taxes collected from the people [12]. Therefore, the element of government accountability to society, which is the cornerstone of society's political rights and political development, does not exist nor has little effect. Due to the vital role of energy in the economy of any country, whether it produces energy or consumes it, any country to move in the right direction of growth and development requires energy policy-making and the development of a set of energy policies [18].

Energy policy is a document that the government of each country compiles to determine the requirements of the energy sector in the predetermined path of economic growth and development. Energy policy contains policy instructions and implications in the areas of energy production, distribution and consumption. Implementation of energy policies is reflected in the form of regulations, international treaties, and incentives for investors in the field of energy, the development of energy saving strategies and regulations, the imposition of taxes and other tools for the implementation of government policies [19].

Energy policy usually contains the following sections:

- Explaining and specifying the national policy in the fields of planning, production, distribution and consumption of energy.
- Regulations related to commercial applications and energy production.
- Requirements on government organizations involved in the energy sector.
- Fiscal policies applicable to the energy sector (taxes and subsidies).
- Ensuring energy security through international treaties, trade agreements, and special relations with major energy exporters or importers.

But before formulating an energy policy, a number of questions must be answered as well as a set of assumptions. The most important preconditions before formulating an energy policy are:

- The long-term goal of economic growth.
- The long-term goal of energy self-sufficiency.
- Predicting the composition of energy consumption in different sectors.
- Long-term goals of energy intensity and energy efficiency.
- How to look at the side effects of energy (pollution).
- Explain the goals of energy policy at the city, state, provincial and national levels.
- Existing and required executive tools for implementing energy policy (taxes, subsidies, quotas, etc.)

The method and the model

In the present study, we use the panel data approach to investigate the relationship between energy consumption and economic growth. This study intends to investigate the impact of energy consumption on the economic growth of Iran using composite data from 2000 to 2015. We propose a framework based on the conventional neo-classical one-sector aggregate production function, where we treat Energy Consumption (E), Capital (K) and Total Employment (L), as separate inputs in GDP equation. That is:

$$GDP = f(K, L, E) \quad (1)$$

$$GDP_{i,t} = \beta_0 + \sum_{j=0}^{n} \beta_{1j} K_{i,t-j} + \sum_{j=0}^{n} \beta_{2j} L_{i,t-j} + \sum_{j=0}^{n} \beta_{3j} E_{i,t-j} + \mu_{i,t} \quad (2)$$

Where:

GDP= ln of Gross Domestic Product

K= ln of Gross Fixed Capital

E= ln of Total Energy Consumption

L= ln of Total Employment

The methodology adopted in this study uses a two-step procedure. First, panel unit root tests are applied to test the degree of integration of economic growth and energy consumption. Second, panel least squares method is applied to determine the significant relationships between energy consumption and GDP. The empirical study was made using EViews software. EViews provides convenient tools for computing panel unit root tests.

Test results for unit roots:

Before conducting any further analysis, the applied time series were examined by unit root tests. The tests are needed because the applied panel least squares method assumes the stationery of the analyzed time series. Table 1 reports the results of testing for unit roots in the level variables as well as in their first difference. In the first half of the table the null hypothesis that each variable has a unit root cannot be rejected. However, after applying the first difference, three of the variables meet the requirements of the study. So, we can acknowledge their stationarity for the 95% confidence interval. Only in the case of Total Employment (L) is there no confidence about the lack of unit root, which results in applying the second difference. After applying the second difference we can acknowledge the stationarity for Total Employment, but the economic interpretation of the two times differenced variable is problematic.

Table 1. Test results for unit roots

	GDP			ΔGDP		
Method	Statistic	Prob.	Obs	Statistic	Prob.	Obs
Null: Unit root (assumes common unit root process)						
Levin, Lin & Chu t*	-1.59356	0.0555	132	-5.50780	0.0000	120
Null: Unit root (assumes individual unit root process)						
Im, Pesaran and Shin W-stat	1.91260	0.9721	132	-2.25823	0.0120	120
ADF - Fisher Chi-square	11.2021	0.9875	132	39.1055	0.0266	120
PP - Fisher Chi-square	8.25611	0.9988	144	49.1941	0.0018	132
	E			ΔE		
Method	Statistic	Prob.	Obs	Statistic	Prob.	Obs
Null: Unit root (assumes common unit root process)						
Levin, Lin & Chu t*	-1.29987	0.0968	132	-1.91937	0.0275	120
Null: Unit root (assumes individual unit root process)						
Im, Pesaran and Shin W-stat	1.96734	0.9754	132	-1.85920	0.0315	120
ADF - Fisher Chi-square	10.8342	0.9901	132	36.4487	0.0496	120
PP - Fisher Chi-square	27.6316	0.2759	144	130.068	0.0000	132
	K			ΔK		
Method	Statistic	Prob.	Obs	Statistic	Prob.	Obs
Null: Unit root (assumes common unit root process)						
Levin, Lin & Chu t*	-2.91024	0.0018	132	-5.27010	0.0000	120
Null: Unit root (assumes individual unit root process)						
Im, Pesaran and Shin W-stat	0.76137	0.7768	132	-2.54684	0.0054	120
ADF - Fisher Chi-square	21.1991	0.6270	132	44.2347	0.0072	120
PP - Fisher Chi-square	12.6627	0.9714	144	49.3894	0.0017	132
	L			ΔL		
Method	Statistic	Prob.	Obs	Statistic	Prob.	Obs
Null: Unit root (assumes common unit root process)						
Levin, Lin & Chu t*	-2.36603	0.0090	132	-2.89529	0.0019	120
Null: Unit root (assumes individual unit root process)						
Im, Pesaran and Shin W-stat	0.84303	0.8004	132	-1.12588	0.1301	120
ADF - Fisher Chi-square	25.1078	0.3999	132	31.8784	0.1300	120
PP - Fisher Chi-square	6.53630	0.9998	144	35.0939	0.0670	132
	ΔΔL					
Method	Statistic		Prob.		Obs	
Null: Unit root (assumes common unit root process)						
Levin, Lin & Chu t*	-5.78786		0.0000		108	
Null: Unit root (assumes individual unit root process)						
Im, Pesaran and Shin W-stat	-3.14789		0.0008		108	
ADF - Fisher Chi-square	50.8112		0.0011		108	
PP - Fisher Chi-square	124.732		0.0000		120	

The results of the estimation of GDP equation appears to be a little confusing. Notice that there are two sets of tests made by modeling. The first set consists of two tests - Cross-section F and Cross-section Chi-square - that evaluate the joint significance of the cross-section effects using sums-of-squares (F-test) and the likelihood function (Chi-square test). The two statistic values (3.743511 and 39.804727) and the associated p-values strongly reject the null hypothesis that the cross-section effects are redundant. A central assumption in case of random effects estimation is the assumption that the random effects are uncorrelated with the explanatory variables. One common method for testing this assumption is to employ a test to compare the fixed and random effects estimates of coefficients. The good practices in such situations says that when we have a model, where we are seeking some dependences in countries level then we should choose fixed cross-section effects. Second we should take the statistics of evaluated models into account. When we do this it becomes obvious that the first equation of GDP is the right one.

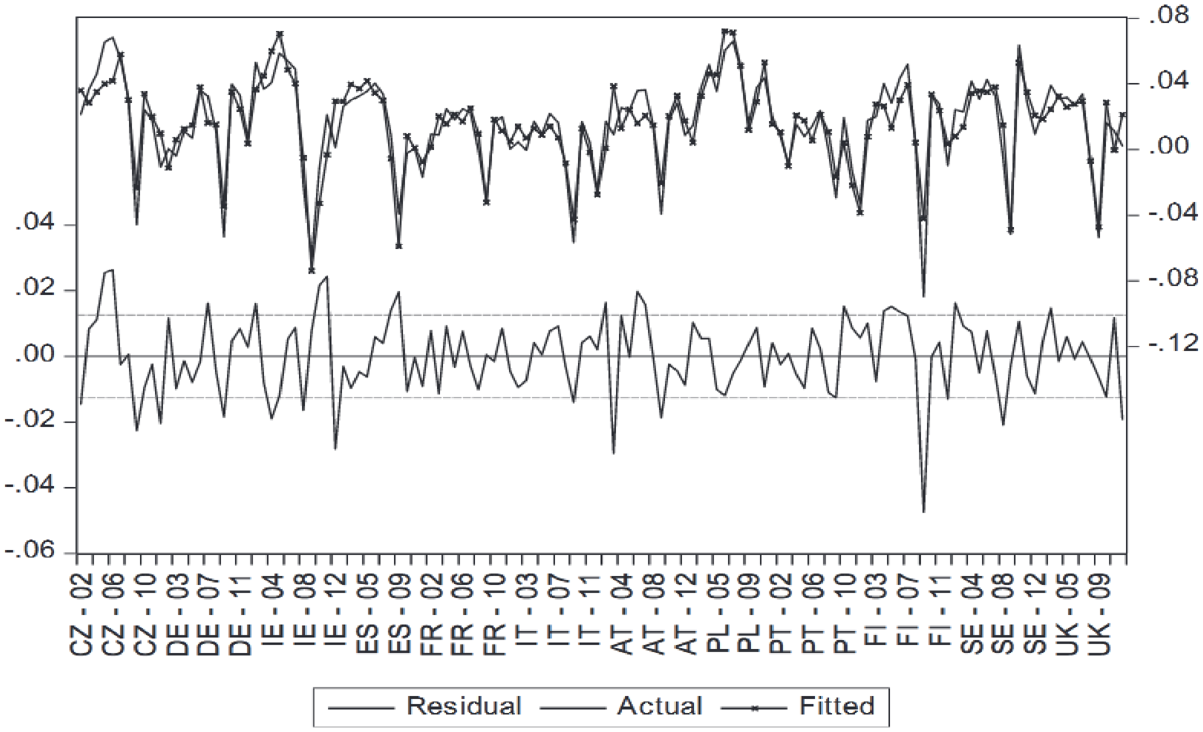

Diagram 1. Residuals, actual and fitted data by ΔGDP Model 1

The calculation of confidence intervals and various significance tests for coefficients are all based on the assumptions of normally distributed residuals. Sometimes, the residual distribution is distorted by the presence of a few large outliers. Since the parameter estimation is based on the minimization of squared error, a few extreme observations can exert a disproportionate influence on parameter estimates. If the error distribution is signicantly non-normal, confidence intervals may be too wide or too narrow. For this reason, we conducted a test for the normality of residuals (Diagram 2).

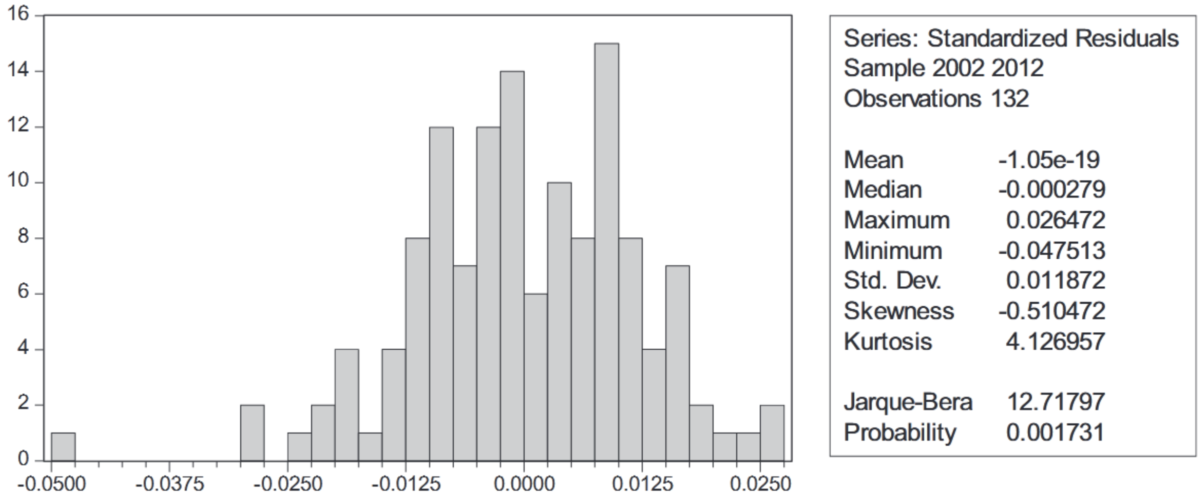

Diagram 2. Normality of residuals

The estimated DW test statistic for the model is 1.877, so we can state that the residuals are uncorrelated and the heteroscedasticity of residuals is not present. Furthermore, the residual PAC correlogram was made taking 4 quarters lag into consideration. The results are presented in Table 5. The analysis confirms that the residuals are uncorrelated.

Table 2. ΔGDP equation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.015703	0.000902	17.41344	0.0000
ΔE	0.118406	0.031500	3.758902	0.0003
ΔK	0.283793	0.018172	15.61693	0.0000
ΔΔL	0.080887	0.064835	1.247576	0.2147
	Effects Specification			
Cross-section fixed (dummy variables)				
	Weighted Statistics			
R-squared	0.863944	Mean dependent var		0.017426
Adjusted R-squared	0.847663	S.D. dependent var		0.031861
S.E. of regression	0.012444	Sum squared resid		0.018119
F-statistic	53.06698	Durbin-Watson stat		1.877418
Prob(F-statistic)	0.000000			
	Unweighted Statistics			
R-squared	0.822329	Mean dependent var		0.015784
Sum squared resid	0.018746	Durbin-Watson stat		1.807358

In conclusion, the most likely future for the oil-based economies that could shape the geopolitical future of the world is intercontinental union. Over the next two decades, the two major powers in the Atlantic, the European Union and the United States, will use their regional powers to consolidate their authority to avoid any challenge to the intercontinental authority. Of course, other emerging powers such as China, Japan, Russia and India have also been the most tolerant scenarios for mutual cooperation, which will show strength over the next two decades; But overall, over the next two decades, one of the two powers, China or the

United States, will dominate the world, responsible for the pulse of oil-based economies and the challenges they face, and to attract other world powers in terms of energy influence in operational and operational direction. They will act on their own. The world depends on fossil fuels to supply more than 80 percent of its energy demand, and reducing that dependence requires new investments and the use of advanced and expensive technologies.

Conclusion:

In the present study, we use the panel data approach to investigate the relationship between energy consumption and economic growth. This study intends to investigate the impact of energy consumption on the economic growth of Iran using composite data from 2000 to 2015. The results of the estimation of GDP equation appears to be a little confusing. Notice that there are two sets of tests made by modeling. A central assumption in case of random effects estimation is the assumption that the random effects are uncorrelated with the explanatory variables. One common method for testing this assumption is to employ a test to compare the fixed and random effects estimates of coefficients. However, despite some developments in recent years, it has been effective in improving the trend of the world towards low-carbon energy. According to forecasts, the total pollution from various energy carriers in the next 15 years will be equal to three-quarters of the total pollution generated in the last 110 years. In other words, in the present era, any long-term planning with an introverted approach and denying the role of other actors is unsuccessful and doomed to failure, and will have significant negative consequences for the oil and gas industry and, consequently, the country's economic development. It is important to note that some Western countries seek to map the possible future of the energy market in such a way that Iran plays a small and marginal role in balancing the medium and long-term supply of world oil and gas demand; Therefore, we must take steps from now on by studying and studying the future and emerging trends of the world energy market and formulating appropriate strategic plans to build a favorable future for the oil and gas industry and finally the energy sector and its expansion in the country.

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