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The Role of Government Investments in the Sustainable Quality of Rural Life

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Abstract

Purpose: The purpose of this study was to evaluate the sustainable rural quality of life index in Iran during the period of 1991-2016 and to measure the effects of various government investments on this index.

Design/methodology/approach: The data were collected from the Statistics Center, the Central Bank and the World Bank. The value of the quality of life indicator was calculated using the software Eviews during the course of the study. The effect of independent research variables including government investment in agriculture, education, health, and rural development using the ARDL model in Microfit software is estimated.

Finding: The results of the model estimation in the short run indicate that every 1 percent increase in government investment in agricultural sectors was 0.55 percent, health and treatment 0.54 percent, education 31.3 percent, increase the quality of life respectively. But investment in rural development does not affect quality of life in the short term but investment in rural life does not affect in the short term. In the long run, every 1% increase in investment in agricultural sectors is 0.65%, health and treatment 0.64%, education 45.0% and 32% in rural development in improving quality of life and its sustainability respectively.

Research limitations/implications: Access to statistics is very difficult and has been obtained through reviewing all budget rules for the research courses.

Practical implications: Strategy for employment to villagers with the support of public policy, based on qualify for investment, jobs, and services in rural areas contributes to the strengthening of agriculture, the changes in agricultural production and natural resources, the creation of jobs in non-farm income and as a result, the increased demand for local agricultural and non-agricultural products.

Originality/value: Considering sustainable factors in evaluating quality of life and the effect of government investment in rural life by the applied method are the advantages of this study that has not been studied in previous studies.

Key words: Government investment, quality of life, sustainablity, Iran, ARDL.

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1. Introduction

International research shows that better life does not have a linear relationship with higher economic growth. Despite the rapid economic growth over the past three decades, 1.6 billion people in the world, that most of them are from the rural areas (47%), have become poorer.These include small farmers, landless workers, traditional shepherds and fishermen, vulnerable groups, and marginalized groups such as households with a female head (United Nations Development Programme & Malik, 2014). Reduced production and food shortages, increasing rural poverty, low quality of life indicators in rural areas, and migrating rural poeple to large cities have led to numerous social, economic, and environmental problems in rural and urban areas (United Nations Development Programme & Malik, 2014). Improving the quality of life is one of the most important issues of social policy and is one of the main issues of welfare.

The initial theories of quality of life based on individual needs were more limited to medical scopes. But within the development of quality of life theories the subject has entered into socioeconomic issues, including the recognition of the factors of creating a livelier, hilarity life, along with welfare and social security, health, life and satisfaction, and by introducing the theory of sustainable development into the debates of quality of life theories, this subject entrance to the environmental scopes (Aragonés, Amérigo, & Pérez-López, 2017).

The concept of sustainability in quality of life was first introduced by the Netherlands Environmental Assessment Center in 2007. According to this center, sustainability in quality of life means providing socio-economic life acceptable to most members of society, taking into account the environmental and social resources of each country in today's generations and its future changes.

In terms of change, the ability of countries to meet the needs of the next generation is due to changes in the way of life. This theory says that a development theory is acceptable only when meets two conditions: 1) social justice and environmental sustainability, and reconciling socio-economic and environmental policies; 2) improving the quality of life of human beings in the capacity of accepting life support systems (Robeyns & van der Veen, 2007).

Rural areas in Iran have a lower rank in quality of life in comparison with cities, due to the lack of physical facilities, and the health and wellbeing of living conditions (Shahrokhi Sardo & Nooripoor, 2014; Gheydari, 2015; Darban Astane & Mahmoodi, 2015)

One of the reasons for this can be the inappropriate policies of governments to improve the quality of rural life, the implementation of cross-sectional, short-term and hasty policies by focusec on agricultural production mostly. In fact, the main component of the approach of the country's development planners in the last 60 years is mainly pessimistic, rented and charismatic to the rural community and agricultural sector, and is less concerned with the problem of production growth in the agricultural sector and the rural community. In fact, the main component of the approach of the country's development planners in the last 60 years is mainly pessimistic, rented and charismatic to the rural community and agricultural sector, and is less concerned with the problem of production growth in the agricultural sector and the rural community. At the same time, according to the statistics center, there are about 21 million people living in rural areas (Statistics Center, 2015).

In the same way, this issue is not taken into account In the same way, it is not ignored that disregarding quality of rural life or little attention to it is not simply a matter of a set of specific areas or a specific individual, but any kind of rural community misconduct and the agricultural sector will have a devastating effect on the overall destiny of national development, and Will expand the barriers to national development. From the point of view of quality of life theories, development in rural communities is not only due to the motivation for agricultural businesses, and the increase of production or income in rural areas, but also for maintaining the attractiveness of rural life for its inhabitants in all generations to live and earn money (Auh & Cook, 2009). Proper policy-making in these vulnerable areas requires accurate research. However, quality of life research, besides that paying more attention to urban areas and special groups of townspeople, is

more focused on developed societies and does not work in their government policies in rural arreas of developing countries (King & Vullnetari, 2016). In addition, the sustainability debate is seen in few studies of quality of life, especially in rural areas. This is while quality of life assessing the quality of life based on the principles of sustainability and researching the factors affecting on it to provide appropriate policies for maintaining the attractiveness of rural areas as a place of work and life is required.

2. Research Theoretical Literature

Aristotle first introduced the term "quality of life" and considered happiness as the ultimate goal of human life (eodymania). Ibn Sina in Ashraat, Mulla Sadra, in Asfar and other Islamic scholars, talked about happiness and bliss. Piaget (1920) discussed the issue of quality of life as a researchable topic.

In 1955, with the establishment of the International Institute for Quality of Life Research, this concept was considered by psychology, economics, politics, and sociology as an interdisciplinary topic, and various definitions of quality of life were presented, such as the bioavailability of a region, happiness and life satisfaction (Aragoniz, Amrigu, & Perizz Lopez, 2017), and general welfare and economic well-being (Savini, 2017). Franz and Power described quality of life as a satisfaction or dissatisfaction with the dimensions of a person's life which is important to him. Sel and Talsky considered quality of life as a person's satisfaction from the level of performance it possesses in comparison with what is ideal. According to Calman, the quality of life is the amount of hope and dreams of each person according to the experiences of his life. Cutter defines quality of life as a person's satisfaction of life and its circumferential environment. According to Philips theory, when the difference between the level of human expectations and the level of the realities is fewer, the quality of life is higher (Phillips & Pittman, 2015).

In the various definitions of quality of life research, three main approaches can be identified: 1. defining the quality of life based on its constituent elements, such as happiness and wealth; 2. defining quality of life by measuring social objective, subjective, and social indicators such as satisfaction, gross domestic product, hygiene and welfare; 3. definition of quality of life based on factors affecting quality of life (Rojas, 2014).

Cooke, Mitrou, Lawrence, Guimond, and Beavon (2007) implicitly pointed to the sustainability of quality of life and believed that the three main axes of sustainable development, including environmental, social, and economic, can be used to assess the bioavailability, sustainability, and quality of life.

Indicators of quality of life assessment have also changed in line with their definitions. In 1979, Morris (1980) introduced the physical index of quality of life as a substitute for GDP per capita, to measure the quality of life of individuals. The physical quality of life index includes life expectancy indicators at age one, infant mortality rate, and literacy rates. Bache (2013) evaluated the quality of life using per capita income, life expectancy at birth, literacy rates for adults, and legal-political indicators such as civil liberties.

The quantity of facilities for human development is one of the basic indicators for assessing the quality of life. These facilities include education, health, nutrition, facilities and social services, environmental conditions, and quality of leisure time.

Quality of life also depends on other parameters such as the distribution of revenues on its production factors, the rate of poverty, real income (after considering inflation), the level of security, people's mental health, and political stability (Bache, 2013). So, two societies that are materially aligned together may have two different qualities of life.

Today, theories of quality of life are of interest to social welfare that can cover several aspects of human life, such as social, economic, and environmental aspects (Costanza, Fisher, Ali, Beer, Bond, Boumans, , ... & Gayer, 2008).

According to the Netherlands Environmental Assessment Center, sustainable quality of life means the link between economic benefits and environmental protection, without reducing economic benefits and environmental degradation. According to this theory, the relationship between quality of life and sustainability can be investigated at three levels: 1. creating the basic conditions of life in a region; 2. protecting the conditions and preventing them from decreasing;

3. improving the quality of life. Each of them is described as follows:

At the first level, the goal is to create living conditions that, in environmental issues, means protecting vital systems and preventing extinction of species; socially, the ability to solve problems such as addiction and divorce by individuals; and economically, Providing vital materials for the lives of residents then reducing hunger, unemployment, and inequality (Robeyns & Van der Veen , 2007)

The second level is related to the establishment of favorable conditions and the prevention of degradation in unstable situations. For environmental purposes, Preventing environmental degradation. Social sustainability means equality of social services (education and health) for all individuals, additionally, Gender equality, political accountability, and social participation in the present and future generation. At the economic level, food security, job security, and Enough income available for the majority of people especially for the poor inhabitants in the margins of cities and rural areas (Robeyns & Van der Veen, 2007).

On the third level, raising the quality of life by setting the conditions of the community is to enable each person's talents to achieve their personal goals. This stage is in accordance with the last stage of the needs in the Maslow Pyramid, which is self-flourishing (Robeyns & Van der Veen, 2007).

In the present study, the theory of sustainable quality of life as described, has been used to raise the issue of sustainability and public investment in assessing the quality of life and improving the living conditions to the flourishing of each individual's specific talent. Improving the quality of life has a direct relationship with government investment in education, health, infrastructure and employment, poverty alleviation, and inequality reduction (United Nations Development Programme & Malik, 2014). Research on quality of life in developing countries reveals that reducing public poverty, providing adequate housing, improving food security, and economic infrastructures are priorities for improving the quality of life in these countries.

In their study, Torkamani and Jamali Moghadam (2006) have shown that investment in rural development, road construction, agricultural research and development, irrigation, and sanitation have the greatest impact on rural poverty reduction. Meanwhile, in developed countries, happiness and life satisfaction, increased mental health in society, civil participation and participation in social activities have a greater impact on the quality of life than other factors (Bień & Bień-Barkowska, 2016).

Some researchers believe that preserving the quality of the rural environment as the main source of income for the rural poeple is one of the most important priorities for improving their lives (Olivos & Clayton, 2017).

These studies emphasize the improvement of the quality of agricultural production process to improve and sustain rural quality of life according to the principles of sustainability such as controling pest and insect without pesticides, the absence of pollutants in the environment and the preservation of groundwater resources (Rieger, Holm, & Sheridan, 2016).

Some researchers know the agricultural sector as the most important factor of income for rural residents and have suggested to increase the government's investment in it to improve the quality of rural life (Kashwan, 2017).

Some other studies (e.g., Shahrokhi & nouripour, 2014; Pashazade & Reiahi, 2011) focus on reducing poverty and increasing rural incomes as the first step towards improving quality of life

Sajjadi Gheydari (2015) indicated that government investment in agricultural sector is a very important factor in adding the value of the agricultural sector and reducing rural poverty, especially since the provision of subsidies in cash has no effect on the quality of life of rural households.

Some researchers (e.g., Vera-Toscano, Rodrigues, & Costa, 2017) believe that education is the most important factor in improving the quality of rural life and empowerment of marginalized people.

Some researches (e.g., Babaee Fini, Touhidlo, & Hazrati, 2014; Hogan, Foreman, Naghavi, Ahn, Wang, Makela, & Murray, 2010) and international organizations consider improving the public health and public hygiene as the most important factor in improving the quality of rural life.

In addition to the factors affecting the quality of life of the rural poeple, assessing the level of

quality of life is the subject of research by researchers.

The aim of most of the quality of life research has been to measure the degree of rural residents' satisfaction from life based on objective or subjective indices in a small community of rural people in Iran (Ghanbari, Rahimi & Ahmadian.,2013; Khorasani, Hajiloo & Valizade., 2015; Onnabestani, 2015). There are four main problems in subjective quality of life measuring. First, to save money and time, a small group of researchers chooses options for a larger group (Statistical Society) that may not have taken their priorities into consideration, and participation poeple are forced to choose researchers priorities. Second, the items are easily deleted from the list if they are not appropriate and are not answered well. But it is almost impossible for respondents to add their desired items to the list, and then all respondents will comment on this revision list. Third, it seems that the generalization of the results of research findings outside the original research group cannot be possible with populations of different cultural or socio-economic structures. Researchers like Welzel (2010) pointed out that based on personal judgments, one cannot determine the level of community's quality of life. The final problem with subjective quality of life assessments is ignoring the long-term needs and priorities by respondents and its long-term effects. People tend to consider their momentary needs, and therefore, some of the most important national-level problems related to sustainable development are eliminated.

Objective studies are also divided into two main categories: evaluation of the quality of life level in order to identify the basic needs of the studied regions compared with different regions in terms of quality of life in order to identify socio-economic inequalities to help policy makers decide and allocate resources.The major problem of quality of life objective studies, that is, having a repetitive and theoretical framework, is mainly based on basic needs, but this theory is incapable of predicting long-term socio-economic needs of the society and providing a solution to reduce inequalities.

As can be seen, a few studies have been done on all the villages in Iran. In addition to the inclusion of all villages of the country, the present study, while assessing the quality of life, has investigated the impact of government investments on the quality of rural life. In this regard, using 25-year time series data and the government's investments in the rural life have been examinated by means of Autoregressive Distributed Lag (ARDL) model.

3. Research Methodology

3.1 Geographical Scope of the Research

The scope of this research includes all villages in the country, which is based on the political division in 31 provinces. Data is collected at the rural level for each province.

Research methodology

In this paper, in order to measure the development of sustainable rural quality of life, the selection of variables was firstly based on three principles of futurism, social justice, and environmental protection, using Mitchell, May, and McDonald's (1995) model. These variables analyze all agricultural issues of a canopy, such as crop, ecological, economic, social, and applied factors, and describe each and every one in a quantitative manner, as described in Table (1).

After collecting the data from the past 25 years from the villages of the country, the amount of various government investments was measured using a series of budgets in the agriculture, health, rural education, and rural development sectors based on the indicators of sustainable quality of life.

Table 1. Selected Indicators for Rural Quality of Life Assessment

Source: Research findings, 2016

Sustainable dimensions		
economic	**environment**	**social**
	variables	
agriculture value added per worker	Discharge of groundwater resources	rural life expectancy
Food Production Index	The amount of pesticide use	Rural population

Table 1.

Sustainable dimensions		
economic	**environment**	**social**
	variables	
Gini coefficient	The amount of chemical fertilizer	rural mortality
Rural Household Income	Area of forests and pastures	Rural Infant mortality rate
The share of 10% of the poorest to the top ten richest	Generate energy from renewable sources	The number of rural mothers' deaths
arable land per person	The amount of nitrate emissions in the agricultural sector	Number of deaths under the age of five
	Amount of CO2 emission	The literacy rate of a population of six years and more
	Annual precipitation	Number of rural householder
		Number of rural with electricity, gas piping, telephone, kitchen, bathroom, internet, sanitary water and sanitation

This time study is a trend study using existing secondary data for the years 1991 to 2016**.**

After collecting data from the Center for Statistics, the Central Bank, and the World Bank for calculating the quality of life index, the researchers continued as follows in Excel software**.**

Step One: The quality of life sustainability index and its components were calculated by aggregation.This requires all variables to be normally distributed. To this end, the skewness test was first tested. Any variable that was not significant at 5% was converted to normal distribution by using logarithm or the root of the unit. In the next step, to sum up the changed numbers, it was necessary to control the differences in the mean and variance, which was carried out using the following formula**:**

(1) $z_i = \frac{x_i - \max(X)}{\max(X) - \min(X)} \qquad X = [x_1, x_2, .., x_7]$

In which i represents different variables in year X, t represents a variable in three environmental, social, and economic criteria. X is a normalized parameter obtained by using normal distribution**.**

In the final calculation of the sustainabe quality of life, any indicator that earns a higher score is in a better position. It should be noted that any variable that has a negative effect on the quality of life, such as mortality and morbidity indexes, is introduced into the formula by applying a negative coefficient**.**

Step two: After calculating the z score and all the variables for twenty five years, the z score of all variables was summed up using the following formula where w_m is the weight of each variable in m:

(2) $$I_{i_t}^{m} = \sum j_m \, w^m z_{i_t}^{j_m}$$

In this research, based on the theory of sustainable development, equal weight is given to each of the variables. As an example, the environmental sustainability component consists of eight variables with a weight of each variable of 1/8**.**

Step Three: The final indicator of sustainable quality of life for the year i is the average of three social, economic, and environmental components with equal weights. For each weight component it is 1/3**.**

(3) $$SI_{i_t} = \frac{\sum_{m \in M} I_{i_t}^{m}}{3}$$

In this research, after estimating the value of the sustainable quality of life index in the period of 25 years, the structure of the government investments in quality of life, based on theoretical foundations

and empirical studies, was formulated as a logarithmic relationship.

(4) $SQOL = \alpha_0 + \alpha_1 AGRI + \alpha_2 EDUI + \alpha_3 HEAI + \alpha_4 CIVI$

In the above relationship:

SQOL Rural Sustainable Quality of Life: The natural logarithmic variable of rural quality of life, whose statistics are derived from the summation of the variables listed in Table 1 with the described method.

AGRI: Government investment in the agricultural sector (billion Rials, at constant prices in 2004);

EDUI: Government investment in the rural education sector (billion Rials, fixed price in 2004);

HEAI: Government investment in the rural health sector (billion Rials, fixed price in 2004);

CIVI: Government Investment in the civil and rural development division (billion Rials, at constant prices in 2004).

Each of the above variables is equivalent to the natural logarithm of the the government's budget payments to the target sectors. The amount of these variables was compiled through an annual budget review.

3.2. Model estimation method

For estimating model 4, the Autoregressive Distributed Lag (ARDL) model provided by Pesaran and Pesaran (2010) was used.

This method allows for the examination of short-term and long-term relationships. One of the advantages of using this pattern is that short-term fluctuations of variables are linked to their long-term equilibrium values.

The progress made in this method allows static variables to be used in addition to non-static variables and does not require the same degree of aggregation of variables.

Pesaran and colleagues showed that if the number of interruptions of the self-explanatory method with explanatory interruptions is correctly identified, the estimation of the parameters will be consistent and efficient using this method. This model is described as follows (pesaran & pesaran, 2010).

(5) $Q(L,P)Y_t = \sum_{i=1}^{k} \beta_i(L,q_i)X_{it} + \delta' w_t + u_t$

Where Q is a constant, and y_t is a dependent variable. L is an interrupt operator such that LX = x_ (t-1), W_t is the vector of definite (non-random) variables such as the width of the origin, the virtual variables, or the externals with constant interruptions. X_it is the vector of the explanatory variables of the model, q is the number of optimal interruptions associated with each explanatory variable, and P is the optimal interruption related to the dependent variable. In pattern 5:

(6) $Q(L,P) = (1 - Q_1 L - Q_2 L^2 - \cdots - Q_p L^p$

(7) $\boldsymbol{\beta}_i(L,q_i) = \beta_i + \beta_{i1} L + \beta_{i2} L^2 + \cdots + \beta_{iq} L^{qi}$

The above relations were estimated using the Ordinary Least Squares method (OLS) for all the values of P = 0,1,2, ..., m and q_i = 0,1,2, ..., m, that is, the number k + 1 (m + 1) of the ARDL model was estimated.

The maximum number of interruptions was initially determined by the researcher. All models were estimated at time (t = m + 1, ..., n).

In the next step, the number of optimum interruptions for each explanatory variable was selected using one of the criteria of R2, Akaic, Schwarz Baysin, and Hanan Quinn.

Usually in samples less than 100, the Schwartz-Bayesian criterion is used, because this criterion saves the number of interruptions, so that the degree of freedom is not lost. The dynamic model has been used to calculate long-run coefficients.

The long-term coefficients of the explanatory variables were derived from equation (8).

(8) $\hat{\theta}_i = \frac{-\hat{\beta}(1,q_i)}{1-\hat{Q}(1,P)} = \frac{\hat{\beta}_{i0}+\hat{\beta}_{i1}+\cdots+\hat{\beta}_{i\hat{q}_i}}{1-\hat{Q}_1-\hat{Q}_2-\hat{Q}_{\hat{p}}}$ $i = 1,2,\ldots.K$

If the sum of the coefficients of the interrupted variables related to the dependent variable is smaller than one ($\sum_{i=1}^{p} \alpha_i < 1$), then the dynamic model will tend toward the long term model. Therefore, for the co-integration test, it is necessary to test the following hypothesis:

$H_0 = \sum_{i=1}^{p} \alpha_1 - 1 \geq 0$ $H_1 = \sum_{i=1}^{p} \alpha_1 - 1 < 0$

The null hypothesis indicates that there is no accumulation or long-term relationship, since the condition that the short-term dynamic relationship is oriented toward long-term equilibrium is that the sum of the coefficients is less than one. In order to perform the test, number 1(one) the sum of the coefficients with the interrupt of the dependent variable was deducted and the result was divided into the total standard deviation of the coefficients mentioned.

(9) $t = \frac{\sum_{i=1}^{p} \alpha_i - 1}{\sum_{i=1}^{p} S_{\alpha_i}}$

Based on the above equation, if the absolute value t is obtained from the absolute value of the critical values given by Banerjee, Dolado, Galbraith, & Hendry (1993), then the hypothesis is rejected and the existence of a long-term relationship is accepted.

The coexistence between a set of economic variables provides a statistical basis for using error correction models. The error correction pattern corresponding to the ARDL model is as follows:

$$(10)\quad \Delta y_t = \delta' \Delta W_t - \sum_{j=1}^{p'-1} Q^* \Delta y_{t-j} + \sum_{i=1}^{k} \beta_i \Delta x_{it} - \sum_{i=1}^{k} \sum_{j=1}^{qi-1} \beta_{ij}^* \Delta x_{t,i-j} - Q(l,p) ECT_{t-1} + u_t$$

$$(11)\quad ECT = y_t - Q^* - \sum_{i=1}^{k} \hat{\beta}_i \Delta x_{it}$$

In which, Δy_t, Δx_it, ΔW_t are the interrupted values of dependent variables, explanations and definite vectors, and the coefficients β_ij ^ * and Q ^ * are the coefficients of the error correction model.

This error correction model is used to investigate the relationship between short-run variables and their long-term equilibrium.

The error correction sentence (ESTt-1) is the same as the error estimating of the long-term relationship, which is considered with a time lag in the model.

Q (L, P) is the coefficient of error correction component, which indicates the adjustment of speed to long-term equilibrium. This coefficient shows that in each period, several percentage of the dependent variable is corrected and close to the long-term relationship. The sign of this variable is expected to be negative and its value from negative one to zero.

4. Research findings

In the time series data, before analyzing and estimating the model equations, a single root test was performed to determine the variance of the time series of the variables.

Stationary test indicated that the t and F statistics (which show the significance of each coefficient and the simultaneous meaning of the coefficients respectively) and the model are estimated without bias.

The most commonly used method for testing the variables of time series variables is generalized Dickie Fuller. Table 2 shows the results of the variance test.

Table 2. Root test results for the Augmented Dicky Fuller (ADF)

Source: Research findings, 2017

Variable of Government Investment in Sections	ADF	Critical amounts at levels		Degree of stability	Situation
		1 %	5%		
Sustainable quality of life	-3.9	-3.8	-2.02	I(0)	Constant
Agriculture	-6.46	-3.75	-2.99	I(0)	Constant
Education	-5.9	-3.73	-2.99	I(1)	Constant
Health	-5.97	-3.75	-2.99	I(1)	Constant
Rural Development	-7.47	-3.73	-	I(1)	Constant

Regarding Table 2, it can be stated that the variables of government investment in rural development, education, health, and treatment are Stationary f with a single degree of differentiation. But the variable of government investment in agriculture is Stationary, i.e., I (0). So, a long-term relationship exists between variables and variables have accumulated

Therefore, due to the existence of a combination of aggregate variables from zero to one in the model, the method of Autoregressive Distributed Lag (ARDL) was used.

In this study, the highest interruption was considered one, for estimating the above model because a one-interruption resulted in a better estimation of the model.

Also, given that the number of data analyzed was less than 100, the Schwartz-Bayesian criterion was used to ensure that no degree of freedom was lost. In the following, the results of estimating the dynamic, long-term model, and the error

correction of sustainable quality of life ARDL model are presented. In Table 3, the results of estimating the short-run dynamic model of the factors affecting the sustainable quality of life are presented.

Table 3. Results of the Estimation of Short-term model of Sustainable Quality of Life
Source: Research findings, 2016

varirables	coeffience	t	
Sustainable quality of life with an interruption	0.94	***7.98	
Investing in agriculture	0.55	***4. 01	
Rural education	0.31	*1.81	
Rural health	0.54	**1.78	
Development and Rural Development	0.005	Us 0.26	
Fixed coefficient	2.54	***4.57	
Durbin's h= 1.54[0.1]	F= 111.17[0.00]	R2= 0.95	R2=0 .94

***, **, * are significant at levels of 1, 5 and 10% respectively.

According to the results of the estimation of the above model, the coefficient of goodness of fit was 95% that is indicative of the explanatory power of the variables used in the model.
Estimate statistic F for the whole model was statistically significant at 99% confidence level. The value of the H-Durbin-Watson statistic was 1.45, Due to the distance of (± 1.96), the assumption of self-correlation is rejected.
The quality of life index is meaningful at 1% level and shows that the quality of life in each year is largely dependent on the living conditions in the previous year.
Government investments in the agricultural sector had a significant effect on the rural quality of life and it was meaningful at 1% level.
The effect of government investment on quality of life in rural healthcare was significant at 5% level. Government investment in rural education also was significant at 10% level on the rural quality of life. Government investment in rural development was not significant in the short run.
In the short term, every 1% increase in government investment in agriculture will increase the quality of rural life by 0.55%. Also, a one percent increase in investment in rural education improves rural quality of life by 0.31 percent. This amount of investment in rural health services increases the quality of life by 0.54%.
Diagnostic tests including the heteroscedasticity, normality of errors, and autocorrelation also confirmed the establishment of all classical assumptions for the model in question.
Therefore, there are no problems of autocorrelation, heteroscedasticity, and the correct form, i.e., correctness and error sentences are normally distributed. As a result, the validity of the results of the model was verified correctly.

Table 4. The results of diagnostic tests of the sustainable quality of life model
Source: Research findings, 2016

Classical assumptions	LM	F
Constant correlation test of waste sentence	0.83(0.36)	0.65(0.42)
Test code to correct wrong of Follow pattern	0.79(0.37)	0.62(0.43)
Test of normal distribution of waste sentences	0.77(0.68)	.....
Anisotropy variance test	1.05(0.3)	1.01(0.32)

In order to study the long-run relationship, the combined composition of the calculated t-statistic (3.70) is greater than the absolute value of the critical quantity provided by Banerjee, Dolado, Galbraith & Hendry (1993) at a confidence level of 90% (-3.28). Therefore, it can be concluded that there is a long-term equilibrium relationship between variables.

Table 5 shows the long-term coefficients of the sustainable quality of life model. Among the explanatory variables, government investment in agriculture and rural development has an impact on the sustainable quality of rural life.

In the long run, all of the studied factors affected the sustainable quality of life. As a result, every 1% increase in investment in the agricultural sector will increase 0.65% of the quality of life in the long run. This amount of investment is 0.45% for rural education, 0.64% for health education, and 0.32% for rural development.

Table 5. Results of estimation of long term sustainable rural quality of life

Source: Research findings, 2016

Variable name	Coefficient	t
Investing in agriculture	0.65	* **601
Rural education	0.45	* *21
Rural health	0.64	* 178
Development and Rural Development	0.32	* 181
Fixed coefficient	1.54	* **531

***, **, * are significant at levels of 1, 5 and 10% respectively.

Corresponding to any long-term relationship, there is an error correction pattern that correlates the short-run fluctuations of variables with their long-term equilibrium values.

The results of the estimation of the error correction model are presented in the following table. It is noted that the error correction factor ECM (-1) which indicates the speed of modulating the model to the equilibrium is significant and has been obtained between zero and negative one and equals to -0.72.

This indicates that 72.2% of each short term imbalance is adjusted to achieve long-term equilibrium in each period (each year).

Table 6. Results of the error correction model of sustainable rural quality of life model

Source: Research findings, 2016

Variable	Coefficient	t
Difference of investing in agriculture	0.4	***2.63
Rural education	0.28	*1.85
Rural health	0.56	**1.41
Development and Rural Development	0.31	*1.67
Difference of Fixed coefficient	-1.73	***-2.52
Error correction factor	-0.72	***-4.31
	DW= 1.82	R2= 0.59

***, **, * are significant at levels of 1, 5 and 10% respectively.

5. Discussion and Conclusion

In this research, factors affecting the sustainable quality of rural life have been investigated. So, first, the theory of sustainability was introduced in quality of life. Then, using this theory, the variables of the sustainable rural quality of life index were extracted and calculated for the whole country.

Then, the status of government investment factors in the fields of agriculture, rural education, health, and rural development was estimated using ARDL during the period of 1991-2016.

The findings showed that in the first step, the quality of rural life in each year was subject to the conditions of previous years. Therefore, programs such as paying subsidies during its implementation had not yet been able to have a lasting impact on improving the quality of rural life**.**

Of course, in the short term, all of the above mentioned factors, apart from rural development, had a significant role in determining the sustainable quality of rural life**.**

As a result, every 1 percent increase in government investment will affect agriculture, rural health and hygiene, and education, respectively**.** The most commonly rural development applications were spatial, economic, rural population and facilities, and welfare services available in the form of a spatial division-body system that its impact cannot naturally be shown in the short term.

The results of this research showed that in the long run all the studied factors affect the rural quality of life**.** So that, each percentage of the increase in government investment in agriculture, health care, rural education, and rural development has a direct impact, respectively.

The implementation of the employment strategy for rural poeple by supporting public policies based on investment absorption, employment, and services to rural areas has led to the strengthening of agriculture, the transformation of agricultural production and natural resources, and the creation of non-agricultural employment rising incomes and increasing demand for local agriculture and non-agricultural products.

In this regard, on the one hand, the benefits of agricultural development, in addition to farmers themselves, will benefit other non-farmer rural poeple**.** In other words, rural development and rural services sectors will also benefit from higher income and production of farmers, under the surplus of income to improve other farmers' living conditions and they will invest in improving their quality of life.

It is necessary to pay attention to the fact that increasing agricultural efficiency reduces the need for human resources (at least in the long run), which reduces the employment of the rural poeple and subsequently, increases their poverty and migration towards cities**.**

Therefore, it is worth considering the issue of investing in both agricultural and non-agricultural sectors and the development of agricultural and non-agricultural economics in villages in order to achieve the required balance and prevent undesirable outcomes**.**

Nowadays, the creation of new employment opportunities in rural areas of the country is very important. Because in addition to the high unemployment rates in the villages (over 550 thousand new workers come to the rural labor market each year), the country faces the problem of migrating villagers to cities, especially to big cities, which has a lot of negative consequences. In fact, it has various economic, social, environmental, and security backgrounds**.**

a village is a community that has different social dimensions and requires comprehensive development, not just business and system development in the name of agriculture. However, it should be noted that successful agriculture development does not necessarily lead to rural development**.**

In most cases, the farmer is interested in earning money and invests in other parts of the country, and the government is aware of this situation, and usually deals with investment in these areas with particular sensitivity**.**

Regarding the existing situation in rural areas, it seems that the exact recognition of any program and management decision is a condition for their sustainability and success, since rural areas should not be considered in completely interdependent development programs**.** Contrary to the beliefs of most practitioners, though within a village, there is a possible unity and harmony between people and conditions, in reality there is a clear heterogeneity between the villages in different regions. This is a matter of more precision and more precise planning in the relevant programs, and it deserves to be decided by decision makers.

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نقش سرمایه‌گذاری‌های دولت بر کیفیت زندگی پایدار روستایی

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چکیده مبسوط

۱. مقدمه

در دهه های اخیر با وجود افزایش مهاجرت مردم روستایی به شهرها، هنوز هم بیش از ۲ میلیارد نفر در روستاهای کوچک در سراسر جهان زندگی می‌کنند. کمک به چنین جمعیت بسیار بزرگی برای داشتن به زندگی رو به رشد هنوز هم یک چالش مهم در توسعه روستایی است. بهبود کیفیت زندگی روستایی یک عامل مهم در دستیابی به توسعه روستایی است که در اکثر کشورهای آسیایی پایین‌تر ازکیفیت زندگی شهری است. شناخت عوامل موثر بر بهبود کیفیت زندگی روستایی برای توسعه جامعه ضروری است و به عنوان معیاری برای ارزیابی اثربخشی سیاست‌ها، و کمک به درک اولویت‌های سیاست گذاران به سمت توسعه پایدار روستایی است. سیاستمداران اغلب به ایجاد زیرساخت در مناطق روستایی مانند دسترسی به مراقبت های بهداشتی، آموزش و پرورش، توسعه کشاورزی، و فرصت های شغلی غیر کشاورزی با هدف بالا بردن شاخص‌های کیفیت زندگی روستایی، توصیه می‌نمایند. تمرکز این تحقیق برای ارزیابی کیفیت پایدار از زندگی روستایی در ایران در طول دوره ۱۳۷۰-۱۳۹۵، و سپس ارزیابی تاثیر سرمایه گذاری‌های دولت بر روی آن است.

۲. مبانی نظری تحقیق

در ادبیات کیفیت زندگی تفاسیر و تعاریف مختلفی از این مفهوم ارائه شده است. اصطلاح "کیفیت زندگی" دارای چندین بعد است که با کلمات مشابه و عباراتی ماند "رفاه"، "شاخص‌های اجتماعی" و "راه زندگی" در میان محققان بحث شده است. بسیاری از محققان در این زمینه عبارت "سطح رفاه" به عنوان خلاصه‌ترین مفهوم کیفیت زندگی بیان می‌نمایند. در این تحقیق از کیفیت زندگی پایدار استفاده شده است. کیفیت زندگی پایدار اینگونه تعریف می‌شود: کیفیت زندگی پایدار در یک محیط ملی کیفیت زندگی توسط مردم در داخل قلمرو ملی برخوردار است، سطح که است که (۱) برای نسل فعلی، با توجه به منابع طبیعی و اجتماعی فرماندهی ملت، تجدید پذیر باشد و (۲) هزینه‌های کیفیت زندگی قابل قبول باشد برای (**A**۲) نسل حاضر در خارج از کشور و (**B**۲) اعضای نسل های بعدی در داخل و (**C**۲) نسل‌های بعدی در مکان‌های دیگر.

۳. روش شناسی

روش‌های بسیاری برای مطالعه کیفیت زندگی در هر جامعه وجود دارد. مقاله حاضر از داده‌های ثانویه برای سال ۱۳۷۰-۱۳۹۵ استفاده کرده و جامعه‌ی آماری شامل تمام مناطق روستایی کشور است. اطلاعات لازم از مرکز آمار، بانک مرکزی و بانک جهانی به دست آمده است. شاخص کیفیت زندگی در طول دوره با استفاده از نرم افزار Eviews محاسبه شد. روش (ARDL) در این مقاله جهت بررسی تاثیر سرمایه گذاری-های دولت در کیفیت زندگی در مناطق روستایی ایران به کار گرفته شد. روش مدل سازی ARDL از مزایای متعددی نسبت به انواع معمولی آن برخوردار است: اول اینکه از آن در مطالعه حجم نمونه کوچک استفاده می شود و بنابراین برای انجام مطالعه حاضر مناسب بود. ضریب تعیین تعدیل شده نیز در نمونه‌های کمتر از ۱۰۰، از معیار شوارتز- بیزین استفاده می‌شود، تا درجه آزادی زیادی از بین نرود. این

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معیار در تعیین وقفه‌ها صرفه جویی می‌نماید و در نتیجه، تخمین از درجه آزادی بیشتری برخوردار خواهد بود. دوم، دوره‌های کوتاه مدت و بلند مدت بطور همزمان در مدل تخمین زده می‌شود. سوم، در مطالعات سری زمانی هرگاه مجموعه‌ای از متغیرهای مورد نظر براساس آزمون‌های ریشه واحد رفتار دو گانه ایی داشته باشند به این صورت که برخی از آنها در سطح ایستا باشند و برخی دیگر از متغییرها با یکبار تفاضل گیری ایستا گردند استفاده از آزمونهای هم انباشتگی معمول از جمله انگل- گرانجر برای بررسی وجود ارتباط بلندمدت بین متغیرها دیگر کارساز نخواهد بود. در این قبیل موارد استفاده از روش ARDL پیشنهاد می‌گردد. چهارم، این تکنیک امکان بهره‌گیری تخمین بدون سوگیری از مدل بلندمدت و آماره معتبر**t** را فراهم می-کند.

۴. یافته‌های تحقیق

هنگامی که وجود رابطه همجمعی بین متغیرهای تایید شد، معادلات برای ضرایب کوتاه مدت بر اساس معیار شوارتز بیزین انتخاب شده (۱، ۱، ۱، ۱، ۱) و تخمین زده که نتایج در مقاله ارائه شده است. نتیاج نشان می‌دهد که ضریب برآورد سرمایه‌گذاری کشاورزی مثبت و در سطح یک درصد معنی دار است، سرمایه‌گذاری سلامت مثبت و در سطح پنج درصد معنی‌دار است، سرمایه‌گذاری آموزش و پرورش مثبت و در سطح ده درصد معنی‌دار است، سرمایه‌گذاری‌های عمرانی، در کوتاه‌مدت اثر قابل توجهی بر کیفیت زندگی ندارد. نتایج برآورد مدل در کوتاه‌مدت نشان می‌دهد هر یک درصد افزایش سرمایه‌گذاری دولت به ترتیب در بخش‌های کشاورزی ۰/۵۵ درصد، بهداشت و درمان ۰/۵۴ درصد، آموزش و پرورش ۰/۳۱ درصد، کیفیت زندگی را افزایش می-دهد. اما سرمایه‌گذاری در عمران روستایی در کوتاه مدت تاثیری ندارد. در بلندمدت هر یک درصد افزایش سرمایه‌گذاری در بخش‌های کشاورزی ۰/۶۵ درصد، بهداشت و درمان ۰/۶۴ درصد، آموزش و پرورش ۰/۴۵ درصد و ۰/۳۲ درصد در توسعه و عمران روستایی در بهبود کیفیت زندگی و پایداری آن، تاثیر دارند. ضریب جمله‌ی تصحیح خطا معنی‌دار و بین اعداد صفر و منفی یک بوده و برابر ۰/۷۲- است.

۵. نتیجه‌گیری

شواهد تجربی از این مقاله تایید می‌کند که سرمایه‌گذاری در کشاورزی، آموزش، بهداشت تاثیر مثبت بر روی کیفیت زندگی در مناطق روستایی ایران در بلند مدت دارد. نتایج ضریب پویا کوتاه مدت در ارتباط با رابطه بلندمدت به دست آمده از روش ARDL-ECM ارائه شده است. طول وقفه بهینه برای انتخاب تصحیح خطا نمایندگی از مدل توسط شوارتز بیزین معیار (SBC) تعیین می شود. همچنین در بلند مدت با فرض ثابت بودن عوامل دیگر، اگر سرمایه‌گذاری بر روی عمران روستایی و کشاورزی یک درصد افزایش یابد، باعث افزایش کیفیت زندگی به ترتیب به میزان ۰/۳۲ درصد خواهد شد. در بلند مدت تمام عوامل بررسی شده در پایداری کیفیت زندگی تاثیر دارد بطوریکه هر یک درصد افزایش سرمایه‌گذاری در بخش کشاورزی به میزان ۰/۶۵ درصد کیفیت زندگی را در بلند مدت افزایش می‌دهد. این میزان سرمایه‌گذاری برای آموزش و پرورش روستایی ۰/۴۵ درصد، بهداشت و درمان ۰/۶۴ درصد و در توسعه و عمران روستایی ۰/۳۲ درصد می‌باشد. نتایج برآورد مدل تصحیح خطا در جدول زیر ارائه شده است. ملاحظه می‌شود ضریب جملهٔ تصحیح خطا ECM(-1) که نشان‌دهنده‌ی سرعت تعدیل مدل به سمت تعادل است، معنی‌دار و بین اعداد صفر و منفی یک بوده و برابر رقم ۰/۷۲- به دست آمده است. این عدد بیانگر آن است در هر دوره (هر سال) ۰/۷۲ درصد از عدم تعادل کوتاه‌مدت، برای رسیدن به تعادل بلندمدت تعدیل می‌شود.

کلیدواژه: سرمایه گذاری دولت، کیفیت زندگی، پایدار، ایران، ARDL.

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