Presentation of the model direction determining effective economic variables on the multidimensional poverty index in Middle East countries in time (1995-2017)

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Abstract

The purpose of this study is to provide a model to determine the economic variables affecting the multidimensional poverty index in the Middle East in the period (1995-2017). The method of the present research is descriptive-analytical. The statistical population of this study is Middle Eastern countries. Data collection has been done using official statistical centers in different countries in cooperation with the Statistics Center of Iran. Data analysis was performed using Eviews and SPSS software version 21. Various variables were effective in estimating the multidimensional poverty index in Middle Eastern countries. But the variables of human capital, capital formation, foreign trade, inflation rate due to terrorist threats, gross domestic stability) were analyzed as the most important influential variables. The generalized torque (GMM) method was used to analyze the proposed model and tests such as Sargan, regression coefficient, Jarco-Braha test, Watson camera statistics were used. The results of multidimensional poverty index analysis in the Middle East using the period from 1995 to 2017 in terms of manpower index (balanced fluctuations), gross domestic stability (constant fluctuations), inflation due to terrorist threats (high fluctuations with steep slopes into increase poverty), capital formation (poverty reduction fluctuations), foreign trade (very large fluctuations to reduce poverty). The results of estimating the research model in the form of a dynamic model by the generalized torque (GMM) method showed that the probability value related to the validity of the null hypothesis that the coefficient of variables FI (t-1), foreign trade (trade), inflation) is zero. Due to terrorist threats (IN), CF capital formation, Gross Domestic Stability (INV), and Human capital (H), the fixed value of the model is equal to 0.062, 0.042, 0.025, 0.046, 042, respectively. 0.8, 0.844, is smaller than the probability of the first type error 0.05. Therefore, at this level of error, the significance of the effect of these variables and the presence of a constant value in the model is not denied. The explanation coefficient of the model is equal to 0.738 and is larger than the standard limit of 0.7. Therefore, predicting the multidimensional poverty variable in Middle Eastern countries according to the independent variables considered in the model has relatively high accuracy.

Keywords: multidimensional poverty, economic variables, middle east countries, time period (1995-1997)

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1 Introduction

Poverty is one of the most dangerous social phenomena, which means human need. Economists consider poverty to be the level of income that does not allow people to buy and consume the minimum necessities for living. They consider the per capita income as an index to measure the poverty and wealth of the people of a society [16]. Today, the phenomenon of poverty is one of the most important economic and social issues in countries, especially in the Middle East. Poverty means the inability to provide the basic needs of life such as food, clothing, housing, etc. is. The concept of basic needs varies according to time and place and includes the minimum needs for survival to the average level of living [9]. One of the important factors in reducing poverty is economic growth. A group argues that economic growth will automatically benefit the poor and save them from poverty; But, on the other hand, another group believes that economic growth alone is not enough to eliminate poverty and how the benefits of growth are distributed is also important. This group believes that reducing inequality is as effective as economic growth to eradicate poverty [15]. Based on this, although some groups of people may benefit from economic growth; However, it is also possible that the situation of some groups of people will worsen due to economic growth. This group of researchers believe that inequality, in addition to directly increasing the poverty rate, also indirectly affects the rate of poverty reduction due to economic growth [13]. The phenomenon of poverty is a problem that all human societies have faced in some way in all periods of history [17]. In fact, poverty is a situation in which the well-being of the individual or household is below the standard level. History has witnessed economic growth in the world, but economic poverty still exists as an undeniable fact in human life [18]. Today, empirical and theoretical studies in the Middle East countries have shown that the low-income and poor groups of these countries have not benefited from the benefits of the growth of the past years. Poverty has been defined in various ways and its concept has changed over time and due to economic, political, social and cultural changes. Poverty can be defined and divided in various ways. In Tansand's definition, attention has been paid to the lack of resources to obtain various types of diets, participation in activities, and the conditions and facilities of normal life. It considers the age of poverty as deprivation of basic capabilities and emphasizes the relativity of the concept of poverty in different places and times [11]. According to Asian Development Bank, poverty is deprivation of assets and opportunities that every person deserves. Boot and Rowantari paid attention to poverty from the perspective of absolute and relative poverty and distinguish between the two. Absolute poverty is defined as the inability to obtain a minimum standard of living, and relative poverty is defined as the inability to obtain a certain level of living standards that is recognized as necessary or desirable in the current society [8]. Poverty from an international perspective means not having enough money to meet basic needs such as food, clothing and shelter. However, poverty is not only about not having enough money, but it goes beyond that [5].

The World Bank organization describes poverty as follows; Poverty means hunger. Poverty is not having shelter. Poverty means not being able to see a doctor. Poverty means not having access to school and not knowing how to read. Poverty means unemployment, fear of the future, living one day at a time [6]. Poverty has many facets, changes from place to place and over time, and is described in many ways. Poverty is often a situation that people want to escape from. So poverty is a call, for the poor and the rich, to do something to change the world, so that many more people can have access to food, proper shelter, education and health, protection from violence, and a voice in what is happening in their communities. In addition to not having money, poverty from an international perspective is about the inability to participate in recreational activities; Not being able to take children on a daily trip with their classmates or to a birthday party; Inability to pay for medicine is also considered for illness. All this means being poor [7]. Those who are barely able to pay for their food and shelter cannot pay for these other expenses. When people are deprived in a society, when they don't study well and in case of disease, there are negative consequences for the society. We all pay the price of poverty. Increasing the costs of the health system, the justice system and other systems that can support the poor in society affects our economy. While many advances have been made in the field of measuring and analyzing poverty, the World Bank Organization is working to identify other indicators of poverty dimensions. This work includes identifying social indicators to track education, health, access to services, vulnerability and social isolation. There is no one cause of poverty and its results are different in each case. Poverty is highly situational. The feeling of poverty in Canada is different from living in poverty in Russia and Zimbabwe. The difference between the rich and the poor within the borders of a country can also be large [4]. In general, the causes of poverty can be divided into two categories: personal and social factors. In fact, some people are unable to compete in the labor market due to inappropriate physical and mental conditions, and others cannot enter the labor market optimally due to lack of various skills; In fact, this issue points to the importance of education in people's income [10]. Economically, the most important factor in poverty is the country's economic growth rate. According to the unemployment queue theory, the position of each workforce in the queue depends on the productivity of that workforce. The workforce with the lowest

level of productivity is at the end of the queue, and the possibility of hiring them depends on the country's economic growth, which subsequently increases the demand for labor. The increase in the country's economic growth has created new jobs, and residents have the opportunity to get jobs, and by earning money, they increase the city's per capita income. Although the country's economic growth is possible. Reducing absolute poverty does not necessarily reduce relative poverty, the existence of various types of discrimination in payments to people with the same productivity is the most important factor in not reducing relative poverty [19].

2 Research background

Seyyed Mehdi Hosseini and Sadegh Khazaei [2], in a study titled "Effects of financial development on poverty and inequality in ECO member countries" investigated the effects of financial development on poverty in ECO member countries based on panel data models over a period of time 2002-2015 has been paid. The results of the first model show that financial development has a negative effect on the investment of households in the studied countries, and in the second model, the credits allocated to the private sector have a negative effect on the state of the human development index. In the third model, the amount of household investment and the increase in household literacy have a direct effect on the poverty index in the countries, and in the fourth model, the index of added value of industries to per capita production for the studied countries has a positive effect, and the index of the foreign trade sector (total exports and imports) It has a negative effect on per capita production.

Salem and Yarmohammadi [14] in a study investigated the factors affecting multidimensional poverty with a panel data approach during the period of 2014-2015. The results of the research show that both the individual level groups and the institutional and macro levels have an effect on the multidimensional poverty index. The number of family members and finally the size of the family. Among macro-level variables, the inflation rate (with an interruption period) is the most important and effective variable (in terms of the magnitude of the coefficient) on the multidimensional poverty index.

Zarei [20], using panel data during the period 1990-2005 of the Middle East and North African countries, shows that the economic growth of these countries during the 15 years ending in 2005 is poverty oriented and the degree of poverty orientation is high, therefore considering the effects of financial development on economic growth and income inequality, it can be concluded that financial development has benefited poor people at macro levels.

Qanbari et al. [12], in an article entitled "Investigation of the effect of financial development on income distribution in Iran" have investigated the relationship between financial development and inequality in Iran by applying the method of generalized moments and during the period of 1350-85. The empirical results of this research confirm the negative and direct relationship between financial development and income inequality in Iran, and there is not enough evidence on the inverse relationship between financial development and income inequality in Iran.

Imran and Khalil [3] have investigated financial development and poverty in Pakistan in the period from 1010 to 2018. They estimated the model using time series data. The research results show that financial development has had a negative impact on poverty in Pakistan between 2010 and 2018. That is, financial development has reduced poverty in Pakistan.

Ordonez [10], has examined the relationship between financial development and poverty in 147 countries during the period from 1960 to 2008. The results of this research show the negative impact of financial development on poverty. So that it can be said that by improving the state of financial development in countries, poverty can be reduced at the level of society.

Kurniawan [6], in a research, has examined the relationship between the 3 factors of trade liberalization, poverty and inequality. The results of the estimation of models point to the problem that trade liberalization reduces income inequality. This means that improving the business situation and creating the necessary platforms for free trade will reduce poverty and reduce inequality in the society.

Guillaumont-Jeannene and Kpodar [1], in a research in developing countries, have investigated the impact of financial development on poverty in the period from 1996 to 2012. The results obtained from the estimation of the model show that financial development has a negative effect on poverty, so that it can be said that poverty decreases with the increase in financial development.

3 Research method

The present research method is descriptive-analytical. The statistical population of this research is the Middle East countries. The period of analysis is 1995-2017. Data collection has been done using official statistical centers in

different countries with the cooperation of the Iranian Statistical Center. Data analysis was done using Eviews version 21 software. To estimate the multidimensional poverty index in the Middle East countries, various variables were effective. The variables of human capital, capital formation, foreign trade, inflation rate caused by terrorist threats, gross domestic stability) were analyzed as the most important influencing variables. To analyze the proposed model, the generalized moment method (GMM) was used and tests such as Sargan, regression coefficient, Jarko-Bera test, Durbin-Watson's test were used.

The conditions of the following space models are discussed

$$Y_i = \tau Y_{i.t-1} + \rho W Y_{it} + X_{it}\beta + DX_{it}\theta + \alpha_i + \gamma_t + v_{it}$$
$$v_{it} = \lambda E v_{it} + u_{it}$$
$$u_{it} \approx N(0, \sigma^2 I_n)$$

Spatial autoregression (SAR) model

$$\Rightarrow Y_i = \tau Y_{i,t-1} + \rho W Y_{it} + X_{it}\beta + \alpha_i + \gamma_t + u_{it}$$

Space Camera Model (SDM)

$$(\lambda = 0) \Rightarrow Y_i = \tau Y_{i.t-1} + \rho W Y_{it} + X_{it}\beta + DX_{it}\theta + \alpha_i + \gamma_t + u_{it}$$

Spatial error model (SEM)

$$(\rho = 0 = \tau = 0) \Rightarrow Y_i = X_{it}\beta + \alpha_i + \gamma_t + v_{it}$$
$$v_{it} = \lambda E v_{it} + u_{it}$$

Spatial autocorrelation model (SAC)

$$(\theta = \tau = 0) \Rightarrow Y_i = \tau Y_{i,t-1} + \rho W Y_{it} + X_{it}\beta + \alpha_i + \gamma_t + v_{it}$$
$$v_{it} = \lambda E v_{it} + u_{it}$$

Generalized panel random effects model (GSPRE)

$$(\rho = \theta = \tau = 0) \Rightarrow Y_i = X_{it}\beta + \alpha_i + \gamma_t + v_{it}$$
$$v_{it} = \lambda E v_{it} + u_{it}$$
$$\alpha_i = \phi W \alpha_i + u_i$$

4 Determining the influencing factors on the index of the next vertebrae in height using time series data

1. Determining the impact of the human capital variable on the multidimensional poverty index in the Middle East countries
   As you can see in figure 1. The variable impact of human capital on the multidimensional poverty index in the Middle East countries has had balanced fluctuations from 1995 to 2017. That is, there has not been a strong planning to empower human resources and direct them to sustainable jobs in order to reduce poverty.
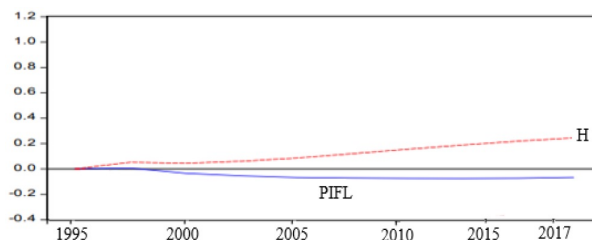

Figure 1: The logarithmic effect of the human capital variable on the multidimensional poverty index in the Middle East countries

2. Determining the impact of the variable of gross domestic stability (INV) on the multidimensional poverty index in the Middle East countries

   As you can see in Figure 2, the multidimensional poverty index in the Middle East countries has had constant fluctuations from 1995 to 2017 under the influence of the Gross Domestic Stability (INV). That is, the growth of GDP has not had a significant impact on the multidimensional poverty index in the Middle East countries. These changes are clearly evident according to the time series analytical data extracted from the official centers of the Middle East countries.
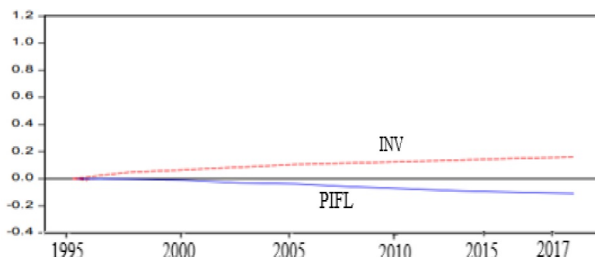

Figure 2: The logarithmic effect of the variable effect of gross domestic stability (INV) on the multidimensional poverty index in the Middle East countries.

3. Determining the impact of the inflation variable caused by terrorist threats on the multidimensional poverty index in the Middle East countries
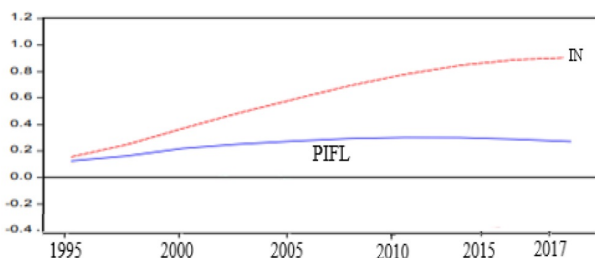

Figure 3: The logarithmic effect of the variable effect of inflation (caused by terrorist threats) on the multidimensional poverty index in the Middle East countries (calculation sources; Eviews).

As you can see in Figure 3, the inflation variable caused by terrorist threats has had relatively large fluctuations from 1995 to 2017. So that in the last 4 years, the multi-dimensional poverty index has increased significantly in the Middle East countries. In other words, with the increase in inflation (caused by terrorist threats), the unemployment rate has increased and the minimum household income has decreased relatively. Therefore, it can be said that the variable of inflation has had a great impact on the increase of poverty in the Middle East countries.

4. Determining the impact of the capital formation variable on the multidimensional poverty index in the Middle East countries

   As you can see in Figure 4, the capital formation variable from 1995 to 2017 has relatively balanced fluctuations. It can be said that with the increase in capital, the poverty index will also decrease relatively.
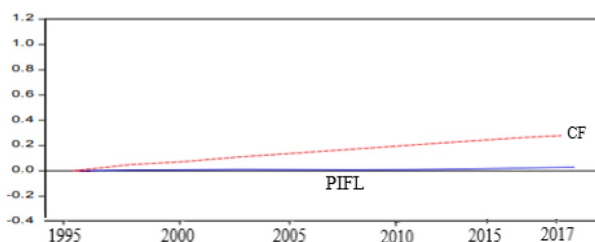

Figure 4: The logarithmic impact of the capital formation variable on the multidimensional poverty index in the Middle East countries.

5. Determining the impact of the foreign trade variable on the multidimensional poverty index in the Middle East countries

As you can see in Figure 5, the growth of foreign trade from 1995 to 2017 has relatively fluctuated a lot. Perhaps one of the most important commercial factors in Middle East countries is the growth of oil and petrochemical products to other parts of the world. Despite the very high trade balance in the Middle East countries, the poverty index is still declining. So that in the last 5 years, the steep slope of the multidimensional poverty index of the Middle East countries has increased significantly.
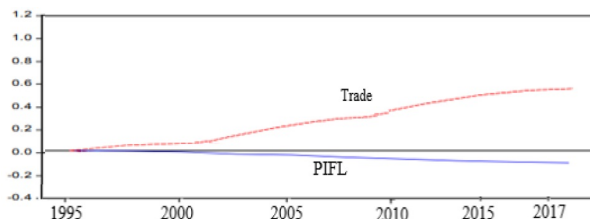

Figure 5: The logarithmic effect of the variable effect of foreign trade on the multidimensional poverty index in the Middle East countries.

Estimation of the research model in the form of a dynamic model using the generalized moment method (GMM):

$$FI_t = \alpha + \mu FI_{t-1} + \beta_1 H_t + \beta_2 INV_t + \beta_3 IN_t + \beta_4 CF_t + \varepsilon_t$$

in this FI_t model, the poverty index in the year t (from 1995 to 2017), FI_{t-1} multidimensional poverty in the Middle East countries with a break (dynamic factor of the model), other independent variables of the model related to the poverty index in the year t, and ε_t, the total disturbance of the model in I_t is my year. To analyze this model, the generalized moment method (GMM) has been used. In order to determine the appropriate variables to replace the variables with collinearity among the independent variables of the model, in this method, the third power of the independent variables gave a more favorable result in terms of the Sargan test. Therefore, it was used as a tool. The results related to the analysis of the research model are presented in Table 1. In this table, the regression coefficients, the standard deviation of the regression coefficients estimator, the t-statistic, and the probability value of assuming the regression coefficient to be zero are discussed.

Table 1: Testing the significance of regression coefficients of independent variables with t-statistics in the research model.

coefficient of explanation R^2	Probability value of Sargan test	Probability value of Sargan test	probability value	Standard deviation of Grayson coefficient estimator	regression coefficient (B)	Factor
		0.0187	−7.125	0.805	−0.37	Fixed value
		0.0362	−9.220	0.423	−0.36	FI_{t-1}
		0.0942	2.153	1.764	3.25	foreign trade
0.738	0.162	0.0425	−7.520	1.014	−0.325	Inflation caused by terrorist threats
		0.0346	3.176	1.025	0.512	Capital formation
		0.042	−3.274	0.573	−0.542	Gross domestic stability
		0.0844	−3.241	0.547	−0.549	human capital

The results of the findings in table 1 show that the value of the probability related to the validity of the zero hypothesis based on the zero coefficient of the variables FI_{t-1}, foreign trade (Trade), inflation caused by terrorist threats (IN), capital formation (CF), gross domestic stability (INV), human capital (H), the constant value of the model is 0.0362, 0.0942, 0.0425, 0.0346, 0.042, 0.844, smaller respectively. The probability of the first type of error is 0.05, therefore, at this level of error, the significance of the effect of these variables and the presence of a constant value in the model cannot be rejected. The probability value related to the validity of the null hypothesis based on the zero coefficient of human capital (H), foreign trade (Trade) variables is equal to 0.0844 and 0.0942, respectively, and is smaller than the probability of the first type error of 0.1 be Therefore, at this level of error, the significance of the effect of these variables cannot be rejected. The probability value of the null hypothesis based on the validity of the independent variables in the case of a collinear relationship between them is equal to 0.162 according to the Sargan test and is greater than the probability of the first type error equal to 0.05. Therefore, at this level, the possibility of error is not rejected and the tools used have the required validity. The explanation coefficient of the model is equal to 0.738 and is greater than the standard limit of 0.7. Therefore, the prediction of the multidimensional poverty variable in the Middle East countries according to the independent variables considered in the model has relatively high accuracy.

Based on this, the multidimensional poverty model in the Middle East countries for the year t is presented as follows.

$$FI_t = -0.37 - 0.36FI_{t-1} + 3.25T_t - 0.352IN_t + 1.512CF_t - 0.542INV_t - 0.592H_t + \varepsilon_t$$

As mentioned, these presuppositions have been proposed regarding the residuals of the regression model, which is obtained by calculating the difference between the observed values of the multidimensional poverty dependent variable in the Middle East countries and estimating it according to the variables affecting it according to the model. Other names of model residuals are also called disturbance or model error. Default assumptions include zero mean, non-correlation and normal probability distribution of the variable related to the residuals of the model.

Table 2: The results related to the analysis of the presuppositions related to the residuals of the regression model of the first research model.

index size	Index title
0.00264	Average
425.1	Jarko statistics - for
0.5638	The probability value of the Jarko test - for
2.38	Watson camera statistics

According to the results of table 2, the average of the residuals of the model is equal to 0.00251 and is approximately equal to zero; The probability value of Jarko-Bara test statistic is equal to 0.5638 and greater than 0.05. Therefore, at the level of probability of type 1 error equal to 0.05, the normality of the variable distribution of the residuals cannot be rejected. Also, Durbin Watson's statistic related to the independence of the residuals is equal to 2.38 and ours is between 1.5 and 2.5. Therefore, it is accepted that the residuals are uncorrelated. These results indicate that all the presuppositions considered regarding the residuals of the model are established.

5 Induction

The phenomenon of poverty as an economic and social phenomenon is undesirable. Poverty is one of the most important consequences of unfair and unequal economic distribution in society among people. The existence of poverty shows the incorrect functioning and mechanisms of income and wealth distribution within the economic and social structure. which, in turn, causes inappropriate effects in this structure. The continuation of this process will lead to severe economic and social tensions. which includes the whole society and it is very difficult to deal with it, poverty and inequality cause economic, social, cultural and political problems. The high level of inequality and poverty weakens human capital and social capital; In such a way that income inequality increases suspicion and stress among people in the society, reduces social participation and also causes people to react angrily to the events around them. The countries of the Middle East have abundant oil and gas reserves, but many of their people live in poverty. Perhaps the main reason for this poverty is due to the type of their political and economic system, which does not have proper planning for the fair distribution of wealth. or because of foreign wars that have ruled these countries. It has led to their poverty. According to the statistics published by the official centers of the Middle East countries as well as international statistical centers in 2017, about 25% of the people of the Middle East countries are in the middle poverty category and 22% are in the low poverty category. In total, it can be said that 47% of the people of the Middle East countries live in poverty. While due to the increase in population in these countries, it is expected that the number of poor people in the Middle East countries will increase significantly. Various variables had an impact on the poverty index of the Middle East countries. But in this research, we analyzed the most important variables affecting poverty. Among these variables are human capital variables, capital formation, foreign trade, inflation rate caused by terrorist threats, gross domestic stability). The results of the multidimensional poverty index analysis in the Middle East countries using the analysis of the time period from 1995 to 2017 in terms of the human power index (balanced fluctuations), gross domestic stability (constant fluctuations), inflation caused by terrorist threats (high fluctuations with a steep slope in In order to increase poverty, capital formation has been the fluctuations of reducing poverty), foreign trade (high fluctuations in the direction of reducing poverty). The results of the estimation results of the research model in the form of a dynamic model using the generalized moment method (GMM) show that the probability value related to the validity of the null hypothesis based on the zero coefficient of the FI_{t-1} variables, foreign trade), inflation caused by terrorist threats (IN), capital formation (CF), gross domestic stability (INV), human capital (H), the constant value of the model is 0.0362, 0.0942, 0.0425, and 0.0346 respectively. 0, 0.042, 0.844 are smaller than the probability of the first type error 0.05, therefore, at this level of error, the significance of the effect of these variables and the presence of a constant value in the model cannot be rejected. The explanation

coefficient of the model is equal to 0.738 and is greater than the standard limit of 0.7. Therefore, the prediction of the multidimensional poverty variable in the Middle East countries according to the independent variables considered in the model has relatively high accuracy.

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