

## Agricultural Growth and Income Distribution in Iran

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**Abstract:** Economic growth is defined as development and expansion of resources and economic capacities in a specific time period and income distribution considers the distribution of the same resources among the population of the specific society. After years of emphasis on growth and development, now, the modern economic literature is emphasizing poverty eradication. According to Kuznets hypothesis there is an inverted U shape relationship between index of income distribution and income per capita. According to the resultants of calculation of models and based on available statistical data from 1968-2003, that in Iran rejects Kuznets hypothesis and it could be said that the impact of economic growth of the agricultural sector on income inequality has a negative meaningful impact and its coefficient shows that as the share of the added value of agriculture sector in GDP increases, the inequality of income distribution decreases.

**Key words:** Income distribution • Agricultural sector growth • Ginny coefficient • Kuznets hypothesis

### INTRODUCTION

Economic growth is defined as development and expansion of resources and economic capacities in a specific time period and income distribution considers the distribution of the same resources among the population of the specific society. After years of emphasis on growth and development, now, the modern economic literature is emphasizing poverty eradication. Over past years, poverty has been spreading extensively and there is no indication of its reduction. Socio- economic study of poverty and deprivation is a complex task and the researcher is obligated to consider numerous factors and variables to explore it sufficiently. Yet, in macro studies, at first glance, poverty and deprivation could be attributed to the production per capita and the degree of non equilibrium in the income distribution pattern that the national economy has been suffering from, for over two decades [1]. Although the government, annually, allocates substantial resources to resolve the problem, yet about 20% of Iranian households live under poverty line. This ratio in developed countries is less than 10% [2].

Obviously, in order to increase the level of prosperity in the society and eliminate poverty or at least reduce its intensity, economic growth must be stressed, otherwise,

poverty would be distributed among all. But, this does not mean that economic growth improves the level of prosperity for all. In real environment, at the time of economic growth, the number of the poor population increases. The important point is to choose such a path to growth that simultaneously causes equitable income distribution. One of the essential issues in economic development programs is determining ways to help allocation of the resources so that economic development would not increase income disparity.

Synchronizing income distribution with economic growth is one of the economic concerns of the government in Iran that has received special attention in the Organizing Plan and development programs in years following the Islamic Revolution. According to the Organizing Plan "In addition to creating and expanding social justice, the development plans must provide for production growth." In order to promote human security and social justice the article 152 of the Fourth Development Plan has stated: "in order to institute social justice and stability, reduction of socio -economic inequalities, reduction of 10 percentile income disparities and equal income distribution in the country and also, reduction of poverty and deprivation and empowerment of the poor, through efficient and purposeful allocation of

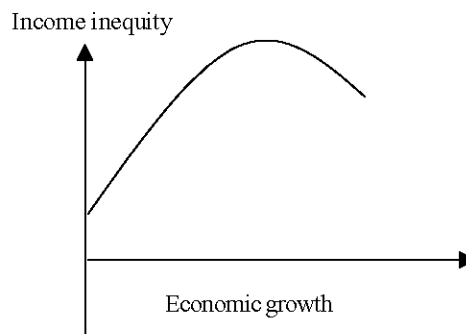
social welfare resources and payable subsidies, the government is liable to prepare and implement comprehensive plans of eradication of poverty and social justice.” Therefore, it is imperative to identify the methods of allocation of resources that lead to reduction of income disparity. In this article the ways to allocate resources among different economic sectors, to reduce income inequality are introduced and some policy recommendations are made.

## MATERIALS AND METHODS

Research method applied to the present study is of analytical-descriptive type. Also, the causal relations between variables are investigated, using data and statistics to adapt economic theories to the social realities and after adapting to the theories, the introduced hypothesis will be tested using inductive statistics and econometrics methods, to test the introduced hypothesis for approval or rejection. To collect statistics, data and historical documentations, library method is used. This article is structured in 3 sections. In the first section the theoretical and empirical basis of the research is reviewed. The second section covers the empirical test of the relationships between Agricultural sector growth and income distribution inequality. The final section includes concluding remarks.

**Theoretical and Empirical Basis:** Kuznets [3] introduced a hypothesis that in the path to economic growth, first, income inequality increases and then it reaches a climax and finally it gradually decreases. Later, this model was known as Kuznets inverted U curve. Kuznets, viewed economic development as a transition process from traditional (rural) economy to modern (urban) economy and he concluded that in primary phases of development income distribution changes for worse, because few people are able to transfer to the new or modern sectors and the gap between wages in two sectors is quite wide. In later phases of development, income distribution improves, because more people are absorbed by the modern sector and gradually because of scarcity of labor force in traditional sector, the level of wages in traditional sector increases and the disparity in wage levels decreases.

Kuznets hypothesis diagram is an inverted U that expresses the relationship between economic growth and income distribution:



This diagram expresses a second order function that has an extreme point and has the following mathematical function:

$$G = \alpha_0 + \alpha_1 Y + \alpha_2 Y^2 + U_t$$

Kuznets income distribution hypothesis holds true when the Coefficients of  $\alpha_1$  and  $\alpha_2$  are meaningful and their algebraic signs, respectively, are positive and negative.

The literature of economic growth and income distribution, in the world, includes the traditional literature of growth and distribution that studies the impact of economic growth on income distribution. Kuznets is the first researcher in this field who has also founded growth and income distribution literature. Irving Kravis [4], Harvey Oshima [5], Felix Paukert [6], Montek Ahluwalia [7], Gustav Papanek and Kyn Oldrich [8], Rati Ram [9], Anand and Kanbur [10] have also researched the impact of economic growth on income distribution.

The first and most significant study of the issue has been done by Simon Kuznets, in 1955 in his article titled “Economic Growth and Income Distribution”. He used the data and statistics of three countries: England, Germany and United States to empirically estimate the impact of economic growth on income distribution. He concluded that inequality of income distribution increases through the primary phases of economic growth and it reaches a climax and in final stages of economic growth the inequality decreases. The results of these studies were known as Kuznets hypothesis and for four decades were utilized by policy makers and economic program developers as a viable theory of economic growth.

Another study based on more empirical data was done by Kravis [4] that also approves Kuznets hypothesis, for more inequality in developing countries. Kravis studied the share of the 20 percentile income

groups and Giny Coefficients for 10 developed and developing countries at the beginning of 1950's. He took United States as the comparison index and proved that there are less disparity in Denmark, Netherlands and Israel, while there are similar level of inequality in Britain, Japan and Canada as in the USA. But, in Sri Lanka, Puerto Rico and El Salvador income disparity is higher. So, he concluded that the degree of equality has a positive relation to the level of income per capita. Kravis approved of Kuznets hypothesis and stated that the share of lower income groups in the poorer countries is higher in comparison to the developing countries. Therefore, income inequality in developing countries originates from higher share of upper income groups.

Other studies are carried out by Harvey Oshima [5]. He suggests that if all the countries are categorized into four groups (underdeveloped, less developed, developing and well developed) it could be said, in general, that income inequality in underdeveloped countries is insignificant and income distribution increases in proportion to the increase in income per capita. He adds that income disparity, up to the third category (developing countries) keeps increasing and at this point it is maximized, but it decreases along the fourth category.

Paukert [6] investigated 56 countries largely, analyzing statistics in 56 countries show that if -based on income per capita in 1965- we consider countries with income per capita of under \$1000 as developing and above that as developed, it is observed that the average Gini Coefficient is 0.467 for developing countries and 0.392 for developed countries which means a better income distribution for the developed countries.

Ahluwalia [7] has researched the issue using cross sectional data of 60 countries -including 41 developing countries, 13 developed countries and 6 socialist countries and strongly approves Kuznets hypothesis. Later, this study was, often, cited in studies and predictions of the World Bank.

Papanek and Oldrich [8] have carried out both cross sectional analysis and time series analysis. In order to study time series of Kuznets hypothesis and to test if Kuznets curve shifts through time, the time shift variables are added. Adding variables of time shifts show that results of the cross sectional model of the countries must not be used for time prediction of development of a country. This results show a nearly flat curve of the income disparity according to per capita income through time.

Rati Ram [9] has studied Kuznets hypothesis in developing countries and believes that if developed countries and less developed countries are investigated together, Kuznets hypothesis is approved, but if the sample is limited to developing countries, the results change substantially. He states that rejecting Kuznets hypothesis could originate from differences in structures of developed and developing countries or it could be caused by doubtful measuring methods of income per capita. Rati Ram adds that in applying the results from cross sectional studies of different countries, to time series data, in different countries, one must be very cautious.

Anand and Kanbour [10], two Malaysian economists, have indicated the presumptions required to introduce Kuznets hypothesis in a model and the instances that it is imperative to improve and expand Kuznets curve to reach a more complex relationship among indices of inequality and development.

Bakhtiari [11] in his Master degree thesis concludes that income distribution pattern (equal or not) can not articulate the phenomena of economic growth in Iran, because economic growth in this country is largely based on gas and petroleum revenues.

Soheila Parvin [12] in her article titled "Income Distribution and Growth Continuation" has analyzed mutual impact of economic growth and income distribution in Iran's economy. Allowing for restrictions of the statistics and data, she shows that, in Iran, revenues from petroleum sector have caused the possibility of creation of a development process with no regards for unequal income distribution and its consequences. At the same time, unequal income distribution creates restrictions on qualitative and quantitative structure of the market and stresses on duality of economy.

Ejdari Kashani [13] in his MA thesis has tried to pinpoint the impacts of income distribution on economic growth. He has used time series data, in Iran from 1971- 1994 and a pattern of internal growth. The results show that the relation between Gini Coefficient, the ratio of the share of the upper 20 percentile income group to the share of the lower 40 percentile income group; and the ratio of the share of the upper 20 percentile to that of the lower 20 percentile to the growth rate is negative. The relation between the lower 40 percentile and the middle 20 percentile to the growth is positive. Also, education has a positive and meaningful impact on

growth. Moreover, to prevent auto-correlation, cross sectional data of 86 countries (in a 14-year period from 1980-1993) has been estimated. The results show that the impact of the share of lower 40 percentile and middle 20 percentile on growth is positive and the impact of Gini Coefficient and the proportion of the share of upper 20 percentile to the share of the lower 20 percentile on economic growth are negative.

Samadi [14] in his Ph.D. dissertation titled "Poverty Reduction, Efficiency and Equality in Iran" estimated different regression models and concluded that economic growth and improvement of income distribution take the same bidirectional casual path therefore, income distribution hypothesis, in Iran, is rejected. The reason is, basically, the required condition (proper economic growth), to test the hypothesis over the studied time period had not been provided.

## RESULTS AND DISCUSSION

Empirical study of the relationship between income distribution and economic growth could be obtained using two different methods. One could either study the changes in income distribution in a country using longitudinal data, or study income distribution in different countries at different levels of development. In other words the resultants could be obtained using a cross sectional research. But, the number of cross sectional studies is much more than time series studies.

In this article, time series data for the period of 1968-2003 with fixed prices of 1997 is used to test the hypothesis "higher share of agriculture in national products leads to decrease in strength of inequality of incomes in the country". The suggested model is based on the theoretical basis (Kuznets hypothesis) and the empirical models are estimated using the following variables:

### Variable Description:

$G$	Gini Coefficient by percentage (as the measuring index of unequal income distribution)
$Y$	Gross Domestic Products
$Y^2$	Squared Gross Domestic Products
$(Y - A)^2$	Differenced added value of agricultural sector from Gross Domestic Products
$(Y - A)^2$	Squared Differenced added value of agricultural sector from GDP
$A$	Added value of agricultural sector
$A^2$	Squared Added value of agricultural sector
$Doil$	Dummy variable for petroleum positive shock

**A Study of Kuznets Hypothesis in Iran:** In Iran for the years 1382-1347 an OLS model is used to test Kuznets hypothesis.

$$\text{Model} \quad G = C + \alpha_1 Y + \alpha_2 Y^2 + U_t \quad (1)$$

This is a linear pattern and Kuznets hypothesis of income distribution holds true if the coefficients of  $\alpha_1$  and  $\alpha_2$  are meaningful and the algebraic signs are respectively positive and negative.

$$\text{Model} \quad G = C + \beta_1 (Y - A) + \beta_2 (Y - A)^2 + \beta_3 A + \beta_4 A^2 + \beta_5 Doil \quad (2)$$

In this article, considering Model (1), in order to test the hypothesis, we have divided the production structure into two sections: the added value of agricultural sector; and the added value of the other economic sectors, by their impact on inequality of incomes in Iran. The resultants of these models are:

The first model is based on the well known Kuznets hypothesis that he has introduced 50 years ago. Although from a statistical point of view this equation is credible in its totality, but it rejects Kuznets hypothesis in Iran. It should be noted that research done by Nily and Farah-bakhsh [15] also, do not approve of Kuznets hypothesis in Iran. Therefore, time series data reject the view that growth and equality at least in lower level of economic development have a reverse relation.

This expresses the fact that income distribution depends on a growth pattern that its basic components are primary distribution of assets, economic structure and dependency on foreign resources [16]. In most countries, economic growth and rising income per capita are created through increased savings and investments. But, in Iran, the economic structure differs and rising income per capita and economic growth are created through increased petroleum revenue. Therefore, the fluctuation of income distribution, created by fluctuations of income per capita that has a historical record in industrial countries, is not observed in Iran. Also, based on the studies done by Deninger and Squire [17], Kuznets hypothesis is rejected in almost 90% of the cases and is approved only in some countries. Even in these countries, the trend is seldom in total harmony with Kuznets hypothesis.

In the second model of the hypothesis, different effects of economic sectors (combined economic growth) on income distribution have been tested. This model,

also, in statistical terms, in its totality is credible. As it is observed, algebraic signs of all the coefficients of all the variables in terms of statistics are meaningful and according to the anticipated results. Since it is possible that the first petroleum positive shock of 1352 and the war has effected the country's economy, the Dummy Variable (*Doil*) is added. Taking the Coefficients of the model into account, it could be said that the impact of economic growth of the agricultural sector (*A*) on income inequality has a negative meaningful impact and its coefficient shows that as the share of the added value of agriculture sector in GDP increases, the equality of income distribution decreases.

It should be noted that obtained Gini Coefficient belonging to self-employment in agriculture and non-agricultural sectors, also, approves the hypothesis that obtained revenues from agriculture is distributed among different income classes more appropriately [18].

Attending to the growth of labor intensive activities especially in agricultural sector, (which at the same time, it can increase exports) has a desirable impact on income distribution [19]. The poor even in rural areas shop for foodstuff and their prosperity depends on local supply of labor force. But, in order to organize industries, often, the agricultural sector has been discriminated against. This is done through both insufficient investments in rural areas and also through commercial support, as negatively effective tariffs on the agricultural sector. Typically, the losers of this discrimination practices are the poverty stricken people who have little employment opportunity elsewhere.

To follow-up on growth does not mean to follow up, just, any type of growth. Some approaches to growth leads to substantial improvement in living conditions of low income groups. Clearly, using Pro Poor Growth as "Poverty Equivalent Growth Rate" that both the degree of the growth and the benefits that poor gain from the growth are considered, it is proven that the relative reduction of poverty is a rising and parallel function of "Poverty Equivalent Growth Rate". It is reasoned that for a quick reduction of poverty, the "Poverty Equivalent Growth Rate" must be maximized, not economic growth. [20]. This means to shift the focus to the rural areas that are under more pressure due to poverty and have higher concentration of the poorest of the poor [21]. Increased income level of the poor, increases the demand for necessary commodities that are locally produced, such as food and clothing. Therefore, the increased

income level of the poor provides the context for quick economic growth and participation of the masses in the economic growth [22].

The effect of economic growth of the other sectors ( $Y - A$ ) on income inequality is positive and meaningful and its coefficient expresses the fact that as the share of the added value of the other sectors in GDP is increases, the income inequality is increased.

## CONCLUSION AND RECOMMENDATION

Articulating the mutual relations between economic growth and income distribution is a very challenging area of economic theories. One of the most significant hypotheses about the impact of economic development on income distribution is Kuznets hypothesis. According to Kuznets hypothesis there is an inverted U shape relationship between index of income distribution and income per capita. In other words, Kuznets hypothesis states that at early phases of development the income disparity increases but in later phases of development the inequality decreases. Considering the conclusion of this study and based on available statistical data from 1968-2003, the suggested pattern to investigate the factors that have an impact on income distribution and the level of economic inequality in Iran, is Model (1) that rejects Kuznets hypothesis in Iran (Table1).

According to the resultants of calculation of model 2 from Table 1, it could be suggested that to reduce the level of economic inequality in Iran, economic policies must be directed to the agricultural growth, the sector that includes the less skilled and low income segments of the population. The empirical observations imply that in the development process, the industrial sector has a pioneer role and the role of agriculture is reduced. This has pushed many countries of the world to accept policies that have negative impacts on agriculture and emphasize on transferring investment resources from agriculture to industries and general sector. (Not that the development policies in 1950s and 1960's, favored 'taking the excess capital from the agricultural sector' and investing it in other developing sectors of economy).

One the major factors of unequal income distribution in Iran is the presence of sectoral duality. Implementing policies to create an economic balance among existing sectors, not only could reduce the present income inequality, but also could create a sustainable economic growth. These policies could cover areas such as

Table 1: The resultants of the estimation of impacts of structure of economic growth on income distribution in Iran

Model	Estimation Method	Dependent Variable	Independent Variable							
			C	Y	Y <sup>2</sup>	(Y-A)	(Y-A) <sup>2</sup>	A	A <sup>2</sup>	Doil
1	OLS	G	0.42 (9.4)							
2	OLS	G	0.46 25.7	4.23 (0.8)	-1.16 (-0.9)	1.32 (3.9)	-2.7 (-2.9)	-8.5 (-4.4)	8.8 (2.9)	-0.04 (-5.4)

research, irrigation and agricultural development, rural education, creation of rural infrastructures (roads, electricity, communications) and could reduce of rural poverty and regional inequality (Shifting geographical concentration). On this basis, in present conditions of our country that income distribution is imbalanced and the level of national income is below average, the distribution model along with growth or pro poor growth is strongly suggested, because poverty reduction and income growth, not only are compatible, but also are related in practice. The important point is such a path to growth must be chosen that it synchronize income distribution. One of the basic problems in economic development plans is indicating methods that the government allocates public resources so that the economic growth does not intensify income inequality in the society.

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