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# THE EFFECT OF VAT ON INCOME DISTRIBUTION IN IRAN (1357-1390)

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## ABSTRACT

The government has adopted various policies and efforts for equitable distribution of income to achieve its goals. Income inequality is one of the most unpleasant dilemmas that are in every society. The effect of different variables, VAT, production per capita, unemployment rate, rate of urbanization, inflation rates, other taxes, exchange rates, subsidies and the growth rate of government spending on income distribution is studied.  Study of time-series data for the years 1357 to 1390 that their statistics published by the Central Bank and the Statistical Center of Iran and the World Bank and research model was estimated ARDL method. The results show that the impact of VAT on the Gini coefficient is negative and significant that illustrating that the increase in VAT, higher income and consumption of older people and you will pay more taxes and more equitable income distribution. The significant negative effect of the unemployment rate and increasing rate of urbanization leads to a widening gap and an increase in the Gini coefficient. The results also indicate that this led to a widening gap between the inflation rate and the Gini coefficient.  Exchange rate appreciation could lead to imported inflation and rising inflation and thus increase the Gini coefficient based on the research results, increases in the subsidies contribute to reducing the gap in poverty and reduce the Gini coefficient which shows that inequality leads to a reduction in state aid community and lastly, the increase in the growth rate of government spending leads to a reduction in the Gini coefficient which indicates an increase in the size of government will lead to lower class interval, but this will be done at the cost of reduced productivity in the country.

**Keywords: VAT, Income Distribution, Gini Coefficient, Iranian Economy**

# INTRODUCTION

In relation to interactions between income inequality and economic growth are quite different opinions. Some economists such as Kuznets, Lewis and North believe income inequality is a necessary condition for growth in developing countries and some others that inequality and growth are destructive for each other, but they both agree that in the early stages, growth of income and wealth redistribution policies should be adopted because these policies will lead to lower growth rates and the resulting macro-level and therefore must be pursued economic growth at later stages of development **(Sadeghi *et al.*, 1388)**. In the Kuznets hypothesis, growth and inequality are in an inverted U-curve **(Rajabi *et al.*, 1388: 31)**. One of the most important items that have affected the inequality is tax. Indicator is used to show the extent of income inequality is Gini index. In this study, to assess the impact of the VAT paid on the income distribution in the country that in itself is something new and updated.

## Literature Survey

## Factors affecting income distribution

Income distribution is to explain how people of a country's share of national income devoted and the degree of income inequality between individuals in a country are described. In order to earn the monetary value of the services they offer are individuals, such as wages, salaries, interest on capital, dividends, Michael Todaro simple definition, translate Farjadi the distribution of national income is about who gets how much of what to make. From the early to mid-twentieth century, the most economists focus the attention of the world to increase economic growth rate, but the second half, especially since the 1970s. Considering the increasing income gap between rich and poor to increase public awareness and changes in quality of life is emphasized. The first issue in rich countries is to change laws to favor workers and provide significant welfare workers, raising taxes on the wealthy owners of capital and class and provide a variety of social insurance for low-income people later. The importance of the role of government in distributing income to the extent it is that Western capitalist regime that believes in a complete performance of market mechanisms in the economy, when confronting the issue of income distribution (the invisible hand is not able to fix it) the importance of the role of government in economic affairs are highlighted **(Chen, 1997: 361)**.

Methods of study that seeks to develop the statistical spread of the income distribution, person or some or all individual income distribution is known, that the distribution

of income between units or households of employees and so on. In this way, the way of household income, occupation, source of income, geographical location and the like are not considered. For example, if a family's income comes from hard physical labor 15 hours a day and another family rental buildings, income, this theory differs from the other two families, the same approach will be and if the household's annual income is close together, both put in an income category (Chen, 1997: 361).

## VAT and its Impact on Macroeconomic Variables

France was the first country where VAT is imposed on the basis of GDP consequently, the consumption-based VAT to replace it. After France, other countries have attempted to impose VAT. Thus, the Denmark in 1967, Germany in 1968, the Netherlands and Sweden in 1969, Luxembourg and Norway in 1970;  Belgium in 1971, Ireland in 1972, Britain and Italy Dr1973, VAT came into force in their country. VAT may be levied on the economic consequences to be followed. These impacts are closely related to the establishment of taxes (tax rates, and products that are exempt from coverage) and other conditions in the economy. How to use the revenues collected from VAT, is one of the most influential factors **(Mahmoudi, 1380: 95)**.

## Impact on Income Distribution

Many people think that VAT would receive a larger share of low-income people than high earners. For a detailed analysis of the impact of VAT on income distribution, what should be considered if the tax is implemented (Ie, percentage rates for various commodities and how those commodities are exempt). In addition, we should see how the revenues What is this? For example, in Great Britain 10% VAT on most goods and zero rates on certain goods (goods that are zero-rate VAT including food, rent, fuel, energy and transport passengers). 25% rate of VAT for certain luxury goods and for the international sale of goods is more than 10 percent. The impact of taxation on income distribution depends on the how to remove a goods and services tax and other taxes on products react. Often we cannot guarantee that the price of the tax change as well as change.

The use of income by the state (eg whether to reduce or eliminate the income tax, property taxes or increasing government spending is used) can be used to understand the distribution of real income after tax changes to help us. Moreover, in monetary terms, affects the behavior of prices that, in turn, affect the distribution of real income **(Raty, 2007: 919)**.

## Background of Research

**Ayer and Rykrz (2012)** in a study titled "Exponential decay indices of inequality:

Evidence from the income tax system in the United States of America" states an important criterion in the assessment of a tax system. In this study the effects of vertical tax system of income in America during the period 2006-1996 are examined. For this purpose, the Lorenz curve is enjoying. The main results of the study show that the tax reform of income tax, payroll taxes have gradually led to a reduction in income inequality in this country. Additionally, other findings from this study suggest that the assessment of a tax system, inequality must also be considered.

**Gyske and Nahi (2010)** in a study titled "Despite the production of value-added modeling multiple and different breaks in Vietnam" develop a framework for modeling the economic system of VAT paid. Specifically, the model rate of multiple, different breaks and multi-product firms are examined. This model is used to determine the complexity of the VAT system in South East Asia to be identified. The effects of macro-economic, industrial and distribution system of value added tax the country of Vietnam is also evaluated and analyzed.

The main findings of this study suggest that this type of tax increase aggregate economic welfare, the distribution of adverse events to follow. Distributing side effects can be greatly improved with lower cost and lead to increased prosperity general.

**Sadeghi *et al*., (1388)** in another article titled "Exploring the relationship between economic growth and poverty elasticity approach to poverty in Iran (during 1383-1363)" by using Johansen and Juselius cointegration method, analyses the effect of economic growth on poverty reduction with respect to the elasticity of poverty with respect to Iran's economic growth. The results show that during the study of economic growth in Iran had little impact on poverty indicators and poverty elasticity and a poverty index of elasticity is not constant .In addition to economic growth depends on other factors such as initial inequality, even though the calculations, the GDP growth rate was significant, but has a negligible effect on poverty indicators. The findings also indicate that no significant variation related to the aggravation of poverty and inequality.

## MATERIALS AND METHODS

Model used in this study are as follows:

$$Gin = \alpha_0 + \alpha_1 VTAX + \alpha_2 Un + \alpha_3 P + \alpha_4 PGDP + \alpha_5 URP + \alpha_6 Tax + \alpha_7 ER + \alpha_8 Y + \alpha_9 GO + \varepsilon$$

The dependent variable is the Gini coefficient that is a number between zero and one. The independent variables in the model include VAT revenue divided by national GDP per capita, unemployment rates, urbanization rates, inflation, VAT rate minus other taxes on national income, ER

Currency, Y relative to national income subsidies, GO growth rate of government spending. The data for this study has been extracted from the website of the Central Bank and the World Bank and for the period 1357 to 1390 and the ARDL method is used.

**Estimation Model**

**Test Variables Stationary (Table 1)**

The model is used to estimate the stationary all variables tested. For non-stationary variables in the time series data and what about the pseudo-panel data regression is causing the problem.

**Table 2** Summarizes the results of the static variables with a difference.

According to Dickey Fuller test results stationary to the variables in the or have a difference of stationary and according to the different levels of verification is stationary and the method used in this study is the ARDL method. The following results using this method have been reviewed. ARDL estimate the dynamic pattern initially, the optimization model has been interrupted. According to Akaike and Schwarz statistics and the Queen Hanan optimal lag is selected **(Table 3)**.

Since the variables of interest from the time series model estimation, the different levels have been          steady;

Auto Regression model estimation method based on the ARDL was a massive interruption. The descriptor is its component models.

**Table 4** shows the estimation of the dynamic pattern.

Durbin Watson statistic indicates the absence of autocorrelation and coefficient of determination indicates the explanatory power of the model is 88 percent. The results indicate a pause in their state variables and the variable effects of all variables and the dependent variable is the Gini coefficient (which is a percentage and is a number between zero and one) with a positive and significant impact upon the variable delay is shown.VAT divided by national income, the Gini coefficient is negative and significant. Unemployment rate and the proportion of national income and the rate of growth of government spending on subsidies has significant and negative impact on the Gini coefficient and the rate of urbanization and other taxes minus the inflation rate and the rate of VAT on national income have shown a significant positive impact on the Gini coefficient. The following are the estimated long-run model is studied and then the results of the estimation are analyzed.

**Estimate the Long-Term Pattern (Table 5)**

**Table 5** variables on production per capita, urbanization rate, inflation rate, exchange rate, taxes other than on income net of VAT National differential impact of VAT, divided by national income, unemployment, of subsidies to national income, rate of growth of government spending is negative
 All variables are statistically significant at the five percent level.

**Estimated ECM Model (Table 6)**

Existence of cointegration between a set of economic variables by the use of error correction models provide a statistical basis.
 The vector error correction model combines information from a long-term mechanism of adoption used. In other words, short-term fluctuations are related in the value of a variable term. In this model, the residual terms of the convergence equation is used as a variable. Ratio as the ratio of short-term adjustment is considered. The results of the research model in **Table 6** provided:

These models have been increasingly popular in empirical work. The main reason for its popularity is the ECM models short-term fluctuations in variables that are related to their long-run equilibrium values. Factor Error Correction Model 16/0-that is statistically significant. The probability value is less than 001/0. According to the ECM model can be expressed as error correction coefficient, speed of adjustment towards long-run

equilibrium and low. So that each year about 16/0 errors were adjusted for imbalance and the amount of short term and long term tend toward equilibrium and the lower speed of convergence in the pattern. Finally LM test is done to check for absence of autocorrelation due to the high probability of 5%, which is indicative of the absence of autocorrelation in the model.

LM test can be found in the existence of autocorrelation among the variables where H0 indicates the absence of autocorrelation and because the results are not significant, indicating the absence of autocorrelation in the estimates. Testing the relationship of convergence to prove the convergence of the association, or in other words, to prove the existence of a long-term relationship in time series models, testing and various methods have been proposed. The econometric methods autoregressive Distributed Lag to investigate the relationship between the convergences of two well-known tests that are:

- Test bank, presented by the Boys and Shin (1996). The F-statistic tests based on critical values for the upper and lower bounds is presented.

- Test statistic is based on the integration relation t, Presented by Banerjee, Dulado and Master (1992), skins. Convergence

test proposed by Banerjee, Dulado and Master (1992), we do it.

$$t = \frac{\hat{\alpha}_1 - 1}{S_{\hat{\alpha}_1}} = \frac{0.420 - 1}{0.106} = -5.21$$

Because of the critical parameters suggested by Banerjee, Dvladv and Master (1992), equal to 95 percent (4.05) and the absolute value of the

calculated t-statistic that is greater than the critical value, lack of convergence hypothesis is rejected. It can be concluded that there is a long term equilibrium relation between the research variables. In other words, a long-term equilibrium relationship between the variables is established.

**Table 1: Results of stationary variables**

|  | Without constant and trend | | With constant and trend | | |
|---|---|---|---|---|---|
| result | prob | DF | prob | DF | Variables |
| Non-Stationary | 0.5110 | -1.53409 | 0.2001 | -1.76503 | VAT/NI |
| Non-Stationary | 0.7314 | 0.183701 | 0.5043 | -1.527196 | GDPper |
| Non-Stationary | 0.9339 | -0.951643 | 0.5043 | -1.27196 | Unemployment |
| Stationary | 0.0001 | -11.50180 | 0.0284 | -3.813549 | Gini |
| Non-Stationary | 0.7169 | -1.711772 | 0.0057 | -3.952312 | City- urbanization |
| Non-Stationary | 0.6292 | -0.136883 | 0.5750 | -2.010465 | Inflation |
| Stationary | 0.006 | -5.409152 | 0.0001 | -5.503953 | Exchange rate |
| Stationary | 0.0047 | -4.654131 | 0.0008 | -4.673474 | Subside/NI |
| Stationary | 0.0018 | -3.312683 | 0.0597 | -3.279474 | Government expenditure rate |

**Table 2: Static variables with a difference**

|  | Without constant and trend | | With constant and trend | | |
|---|---|---|---|---|---|
| Prob | DF | DF | prob | DF | Variables |
| Stationary | 0.0406 | -3.324203 | 0.0001 | -6.534535 | VAT/NI |
| Stationary | 0.0514 | -2.656915 | 0.0235 | -3.290537 | GDPper |
| Stationary | 0.0122 | -4.248642 | 0.0001 | -7.734464 | Unemployment |
| Stationary | 0.0001 | -4.337223 | 0.0057 | -3.952312 | Gini |
| Stationary | 0.00001 | -6.966837 | 0.0001 | -7.097999 | City- urbanization |

**Table 3: Determine the optimum lag**

| HCI | SBI | ACI | Lag |
|---|---|---|---|
| 14.90891 | 14.23423 | 16.234230 | 0 |
| *5.023123 | *5.089784 | *4.980984 | 1 |

**Table 4: Estimation of the dynamic pattern**

| prob | t stat | coef | Variables |
|---|---|---|---|
| 0.0001 | 20.61 | 0.85 | Gini with lag |
| 0.00001 | -6.11 | -0.31 | VAT/NI |
| 0.00001 | -8.28 | -0.28 | VAT/NI with lag |
| 0.0001 | 4.12 | 0.16 | GDPper |
| 0.0001 | 4.18 | 0.21 | GDPper  with lag |
| 0.001 | -4.15 | -0.32 | Unemployment |

| 0.053 | -2.17 | -0.31 | Unemployment with lag |
|---|---|---|---|
| 0.0001 | 22.02 | 0.18 | City- urbanization |
| 0.0001 | 15.01 | 0.64 | City with lag |
| 0.001 | 4.12 | 0.65 | Inflation |
| 0.003 | 4.24 | 0.72 | Inflation with lag |
| 0.032 | -2.05 | -0.26 | Tax |
| 0.042 | -7.06 | -0.32 | Tax with lag |
| 0.004 | 9.01 | 0.32 | Exchange rate |
| 0.001 | 4.19 | 0.32 | Exchange ratewith lag |
| 0.0001 | -7.22 | -0.16 | Subside/NI |
| 0.001 | -4.21 | -0.33 | Subside/NI with lag |
| 0.001 | -4.22 | -0.36 | Government expenditure rate |
| 0.031 | -2.22 | -0.47 | Government expenditure rate with lag |
| $R^2$ :0.88 DW: 1.92     F = 145.9      prob F = 0.0001 | | | |

**Table 5: The long-term effects are model**

| prob | stat t | coef | Variables |
|---|---|---|---|
| .00001 | -5.27 | -0.21 | VAT/NI |
| .00001 | 3.12 | 0.34 | GDPper |
| .00001 | -2.01 | -0.16 | Unemployment |
| 0/04 | 4.12 | 0.27 | Gini |
| 0/001 | 2.08 | 0.19 | City |
| .00001 | -3.14 | -0.31 | Inflation |
| .0002 | 2.01 | 0.19 | Exchange rate |
| 0/004 | -4.02 | -0.13 | Subside/NI |
| 0/003 | -2.02 | -0.26 | Government expenditure rate |

**Table 6: The ECM model**

| prob | stat t | coef | Variables |
|---|---|---|---|
| .00001 | -14.354 | -.15 | VAT/NI difference |
| .00001 | 7.687 | .324 | GDPper difference |
| .00001 | - 6.023 | -.8543 | Unemployment difference |
| 0/024 | 2.3914 | .214 | Gini difference |
| .00001 | 8.245 | .2659 | City difference |
| .00001 | -7.063 | -.214 | Inflation difference |
| .00001 | 5.01 | .325 | Exchange rate difference |
| 0/002 | -2.021 | -.524 | Subside/NI difference |
| .00001 | -8.021 | -.325 | Government expenditure rate difference |
| .00001 | -9.053 | -.168 | ecm(-1) |
| $R^2$ :0/89 | | | |
| DW-statistic:      1.98 | | | |

**Table 7: Absence of autocorrelation test**

| prob | stat t | SE | Coef | Reg |
|---|---|---|---|---|
| 0/508 | 0.67104 | 0.21885 | 0.146850 | OLS RES(- 1) |
| 0.863 | 0.17385 | 0.22410 | 0.038959 | OLS RES(- 2) |
| 0.178 | -1.3823 | 0.22209 | -0.30701 | OLS RES(- 3) |
| 0.708 | 0.37896 | 0.22224 | 0.084218 | OLS RES(- 4) |
| 0.571 | 0.57423 | 0.22158 | 0.12724 | OLS RES(- 5) |

**Table 8: Duladow and Master test critical values**

| Prob | The critical ratio |
|---|---|
| %1 | 2.92 |
| %5 | 2.13 |
| %10 | 1.64 |

## CONCLUSIONS

In a summary of the overall results of the three-state model is estimated as follows: The results have shown the variable effects of VAT and other taxes on the Gini coefficient is negative and significant and show that the people who came up with the increase in VAT and higher consumption will be paid more taxes and results more equal income distribution. In other words, the tax income distribution will be more efficient. The results showed that GDP per capita increases the income inequality that this result is consistent with the Kuznets curve of income. The unemployment rate has negative and significant effect and increase the rate of urbanization is leading to a widening gap and increase in the Gini coefficient. In other words, the increasing rate of urbanization is associated with increased marginalization in large cities, income inequality has increased.

The results also show that the increase in inflation leads to a widening gap in the Gini coefficients. Variable of other taxes has positive and significant effect which suggests that other tax increases generally lead to a widening gap. Exchange rate appreciation in this study has led to the widening gap and increases the Gini and suggests that exchange rate appreciation could lead to imported inflation and rising inflation in the country as a result, causes

the Gini coefficient increases. Based on the research results increase in subsidies will lead to reduce the widening gap the Gini coefficient which shows that inequality decrease by reduction in state aid community. Lastly, the increase in the growth rate of government spending leads to a reduction in the Gini coefficient which indicates an increase in the size of government will lead to lower class interval, but this will be done at the cost of reduced productivity in the country. According to the results the following suggestions for reducing inequalities in the country are:

Regarding the effect of the independent variable on the dependent variable is the Gini coefficient of VAT which is negative and significant, suggesting an important policy tool instead of VAT and other taxes is to reduce income inequality. GDP per capita has increased the income inequality. The results are consistent with the Kuznets curve of income; it is suggested to keep pace with rising incomes policy, income distribution policies pursued. And lastly, the increase in the growth rate of government spending leads to a reduction in the Gini coefficient which indicates an increase in the size of government would be to reduce class conflict, but this will be done at the cost of reduced productivity in the country. It is recommended that the two policies with respect to the fairness and efficiency of

policies and economic conditions, the most appropriate way to be adopted.

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