Iranian Economic Review, Vol.10, No.17, Fall 2006

Economic Freedom, Economic Growth & Governments Tax Revenue in (MENA)

Morteza Sameti*
Mahshid Shahchera**

Abstract

Economic freedom includes personal choice, voluntary exchange, freedom to compete, and protection of person and property. Institutions and policies are consistent with economic freedom when they provide infrastructures for voluntary exchange, and protect individuals and their property. Legal and monetary arrangements are particularly important: governments promote economic freedom when they provide a legal structure and law-enforcement system that protects the property rights of owners and en-forces contracts in an even-ended manner. They also enhance economic freedom when they facilitate access to sound money. On the other hand economic institutions that promote economic freedom are usually regarded as being fundamental for the process of economic growth.

However, economic freedom also requires governments to refrain from many activities. They must refrain from actions that interfere with personal choice, voluntary exchange, and the freedom to enter and compete in labor and product markets and specially reduce the taxe rates. Since economic freedom could generate economic growth, government tax income will be increased but it depends on the optimal degree of economic freedom. Because the relationship between economic freedom and government tax income is U shape and has optimal point.

In this paper, relationship among the economic freedom, economic growth and government tax revenue in MENA countries (During 1980 to 2002) have been measured and U shape hypothesis of relationship between economic freedom and the government tax income has been tested[1].

Keywords: Economic Freedom, Legal Structure, Property Rights, Economic Growth, Sound Money, Regulation, Tax Income, MENA countries.

---

*Associate Professor of Isfahan University – (Public Sector Economist and Econometrician, Maine Writer, sameti@ase.ui.ac.ir
** PhD Student of Isfahan University – (Public Sector Economist).

1. Adaptation From Laffer Curve.

1- Introduction

Recent economics researches show that policies characterized by economic freedom produce economic growth. “Economic freedom” means small government, protection of private property, a well-functioning legal system, free competition and few regulations.

Neoclassical economic theory explains economic growth as a function of four factors: capital, labour, human capital and technology (Romer 1990). But recently, new lines of research on economic freedom “as Adam Smith did long ago” pay attention to the relationship of economic freedom and growth. “Economic freedom” means the degree to which a market economy is in place, where the central components are voluntary exchange, free competition, and protection of persons and property (Gwartney and Lawson 2002, 5). And because there is positive relationship between economic growth and governments’ tax income, so it could be said that, there is relationship between economic freedom and governments’ tax income. However, the relationship is not linear and it has quadratic form. In addition, there are relationship between five area of economic freedom and governments’ tax income in quadratic form but different signs. So, in continue, economic freedom, its definition and its components are explained in part two. Relationship between economic freedom and economic growth has been reviewed in part three and OECD and MENA countries have been compared. In third part Economic freedom and governments’ tax income for MENA countries was reviewed by econometrics models and compared to OECD countries for testing U shape hypothesis of the relation.

2- Economic Freedom

Economic freedom is not government non-intervention. On the contrary, even in a libertarian society, there are some restrictions on individuals’ freedom. So, governments have important role to generate the economic freedom. There are different definitions for economic freedom in literature. However, in this paper the Gwartney definition (2000) was used for economic freedom index. Main components of this index are: personal choice, protection of property and freedom of exchange. The index emphasizes two fundamental goals for the government. The first is to provide infrastructure for the operation of a market economy, which includes secure property rights, enforcement of contracts and stable monetary regimes among other things. Second, the government should provide few selected goods, which have characteristics that make them difficult for private business to provide, i.e. public goods such as national defense, education, police and environmental protection (Fredrik Carlsson & Susanna Lundstrom, 2001).

Economic theory indicates that economic freedom also affects incentives, productive effort, and the effectiveness of resource use. Indeed, since the time of Adam Smith, if not before, economists and economic historians have argued that the freedom to choose and supply resources, competition in business, trade with others and secure property rights are central ingredients for economic progress (see e.g. North and Thomas, 1973). The new growth theory boosted interest in this issue. A number of recent empirical studies suggest that economic freedom may be important in explaining cross-country differences in economic performance (De Vanssay and Spindler, 1994; Alesina, 1998; De Haan and Siermann, 1998; Nelson and Singh, 1998).

In view of Gwartney et al. (1996), Individuals have economic freedom when (a) property they acquire without the use of force, fraud, or theft is protected from physical invasions by others, and (b) they are free to use, exchange, or give their property to another as long as their actions do not violate the identical rights of others. On the basis of this definition, an index of economic freedom should measure the extent to which one rightly acquired property is protected and individuals are free to engage in voluntary transactions. In society with economic freedom, the fundamental function of government is the protection of private property and the enforcement of contracts. When government deny to protect private property and establishes restrictions that limit voluntary exchange, it violates the economic freedom of its citizens. Institutional arrangements that restrain trade, increase transaction costs, weaken property rights, and create uncertainty will reduce the realization of gains from trade and also the incentive of individuals to engage in productive activities.

Gwartney et al. (1996) argue that it is important to distinguish economic freedom from political and civil liberties. Political liberty is present when citizens are free to participate in the political process (vote, lobby, and choose among candidates), elections are fair and competitive, and alternative parties are allowed to participate freely. Civil liberty encompasses the freedom of the press and the rights of individuals to assemble, hold alternative religious views, receive a fair trial and express their views without fear of physical retaliation. He (1996) says also that a country may be liberal in a political sense - that is, be highly democratic while the major civil liberties are protected - and still adopt policies that conflict with economic freedom (Jakob de Haan and Jan-Egbert Sturm).

Economic freedom may constitute an explanatory factor for growth, the distribution of income equity and etc. In econometric analysis, economic freedom is thus an independent variable. However, some time it may be influenced by factors such as political freedom, wealth or democracy. It may also be the case that economic freedom has an intrinsic value, irrespective of whether economic growth or other economic variables benefit from it, and if this is the case, the second track, with economic freedom as a dependent variable, likewise becomes interesting.

The most ambitious attempt to quantify economic freedom is The Economic Freedom of the World Index (EFI) (Gwartney and Lawson 2002). Another economic freedom index is published by the Heritage Foundation in cooperation with the Wall Street Journal (O'Driscoll, Holmes and O'Grady 2002).

Given a general definition the next step is to decide on the elements that should be included in constructing a proper indicator. Table 1 compares two well known recent indicators in this respect. A detailed examination may be useful, as it is a way of gaining a more sophisticated understanding of what is meant by economic freedom The EFI and the just-mentioned index are relatively similar in the overall implications, but since the EFI has been used more extensively in academic contexts (partly because the other index only goes back to 1995 and because it uses more subjective variables), it is the focus of this paper (Jakob de Haan and Jan-Egbert Sturm, 1999).

Table1: A comparison of two indicators of economic freedom

Aspect:	Fraser Institute (Gwartney et al., 1996)	Heritage Foundation/Wall Street Journal (Holmes et al., 1998)
International trade	1. Taxes on international trade; 2. Size of a country's trade relative to potential	1. Level of tariff and ntb's and corruption in the customs service
International capital flows	3. Restrictions on capital flows	2. Restrictions on Capital flows and Foreign Inflows vestment
Black market	4. Differences between an official exchange rate and black-market rate	3. Presence of black market in general
Taxes	5. Top marginal tax rates (and income threshold at which it applies); 6. Is there conscription?	4. Taxation: Rates of Income Tax (top rate and rate that applies to average income) and Profit Taxes
Government intervention	7. Publicconsumption spending as a share of GDP 8. Subsidies and transfer payments as a share of GDP 9. The role and presence of state-operated enterprises	5. Government intervention in the economy measured by government consumption share, government ownership of business and output produced by government
Monetary policy and inflation	10. Volatility of inflation; 11. Monetary growthrate	6. Average Inflation
Banking	12. Citizens' rights to hold foreign-currency accounts domestically 13. Citizens' rights to bank account abroad	7. Freedom in banking, including restrictions on foreign banks and government regulation and ownership
Price controls and regulation and Market entry	14. Price controls; 15. Controls on borrowing and lending rates 16. Freedom to compete in markets (only in latest versions)	8. Wage and price controls (including minimum wage laws, price controls, government subsidies) 9. Government regulation concerning undertaking of certain activities (licensing requirements, corruption in the bureaucracy, labor regulations, environmental and safety regulations)
Property rights	17. Equality of citizens under law and access To judiciary (only in latest versions)	10. Property rights: including freedom from government influence over judicial system, expropriation, corruption within judiciary

The indicator of the Heritage Foundation/Wall Street Journal (Holmes et al., 1998) takes 10 elements into account: trade policy, taxation, government intervention in the economy, monetary policy, foreign investment, banking, wage and price controls, property rights and black market activity. Under every heading a number of questions (a total of 50) is asked on the basis of which the score - running from 1 (most free) to 5 (least free) - for the aspect concerned is given. The unweighted average of all 10 elements constitutes the economic freedom rating of that country.

The EFI is an attempt to measure the degree of economic freedom by weighing 37 components divided into 5 groups into an index for the years 1970 (54 countries), 1975 countries), 1980 (105 countries), 1985 (111 countries), 1990 (113 countries), 1995 (123 countries) and 2000 (123 countries). The five groups are: (the components of any group are in the footnote)

1- Size of government: expenditures, taxes and enterprises[1]

2- Legal structure and security of property rights[2]

3- Access to sound money[3]

1-A)General government consumption spending as a percentage of total consumption.
B)Transfers and subsidies as a percentage of GDP.
C)Government enterprises and investment as a percentage of total investment
D)Top marginal tax rate (and income threshold at which it applies).
i Top marginal income tax rate (and income threshold at which it applies).
ii Top marginal income and payroll tax rates (and income threshold at which they apply).

2-A) Judicial independence—the judiciary is independent and not subject to interference by the government or parties in disputes
B) Impartial courts—a trusted legal framework exists for private businesses to challenge the legality of government actions or regulation
C) Protection of intellectual property
D) Military interference in rule of law and the political process
E) Integrity of the legal system

3-A) Average annual growth of the money supply in the last five years minus average annual growth of real GDP in the last ten years
B) Standard inflation variability in the last five years
C) Recent inflation rate
D) Freedom to own foreign currency bank accounts domestically and abroad

4- Freedom to exchange with foreigners[1]

5) Regulation of credit, labor and business[2]

1- A) Taxes on international trade
i Revenue from taxes on international trade as a percentage of exports plus imports
ii Mean tariff rate
iii Standard deviation of tariff rates
B) Regulatory trade barriers
i Hidden import barriers—no barriers other than published tariffs and quotas
ii Costs of importing—the combined effect of import tariffs, license fees, bank fees, and the time required for administrative red-tape raises the costs of importing equipment (by 10% or less = score of 10; by more than 50% = score of 0)
C) Actual size of trade sector compared to expected size
D) Difference between official exchange rate and black-market rate
E) International capital market controls
i Access of citizens to foreign capital markets and foreign access to domestic capital markets
ii Restrictions on the freedom of citizens to engage in capital market exchange with foreigners
index of capital controls among 13 IMF categories

2- A) Credit market regulations
i Ownership of banks—percentage of deposits held in privately owned banks
ii Competition—domestic banks face competition from foreign banks
iii Extension of credit—percentage of credit extended to private sector
iv Avoidance of interest rate controls and regulations that lead to negative real interest rates
v Interest rate controls—interest rate controls on bank deposits and/or loans are freely determined by the market
B) Labor market regulations
i Impact of minimum wage—the minimum wage, set by law, has little impact on wages because it is too low or not obeyed
ii Hiring and firing practices—hiring and firing practices of companies are determined by private contract
iii Share of labor force whose wages are set by centralized collective bargaining
iv Unemployment benefits—the unemployment benefits system preserves the incentive to work
v Use of conscripts to obtain military personnel
C) Business regulations
i Price controls—extent to which businesses are free to set their own prices
ii Administrative conditions and new businesses—administrative procedures are an important obstacle to starting a new business
iii Time with government bureaucracy—senior management spends a substantial amount of time dealing with government bureaucracy
iv Starting a new business—starting a new business is generally easy
v Irregular payments—irregular, additional payments connected with import and export permits, business licenses, exchange controls, tax assessments, police protection, or loan applications are very rare

Each component is measured from 0 (“no economic freedom”) to 10 (“full economic freedom”). The index is calculated using arithmetic averages. It should be noted that the components of the EFI, as well as weighting schemes, have changed in the various editions that have been published. Hence, when comparing studies, one needs to be careful to clarify which editions are used.

In the table 2 and 3 ranking and rating of economic freedom and its component at 2002 in majority of MENA and OECD Countries was illustrated. Among the MENA countries, United Arab Emirates has the highest degree of economic freedom and it is 16th country among the 123 countries and Algeria has lowest rate and rank among MENA countries. Situation is different in the components of economic freedom. Highest (green) and lowest (red) rating and ranking could be seen in the table by different colors.

Table 2: Area Economic Freedom Ratings (and Rankings), 2002 At MENA Countries

	Economic Freedom		**Size of Government: Expenditures, Taxes and Enterprises**		**Legal Structure & Security of property Rights**		**Access to Sound Money**		**Freedom to Trade Internationally**		**Regulation of Credit, Labor, & Business**	
	Rat	Ran	Rat	Ran	Rat	Ran	Rat	Ran	Rat	Ran	Rat	Ran
Algeria	4.6	118	4.1	110	2.7	114	6.7	102	5.6	97	3.7	123
Bahrain	7.1	31	6.6	41	4.9	57	8.8	55	7.5	44	6.6	23
Egypt	6.2	74	6.9	33	4.9	71	9.6	16	4.9	112	4.6	115
Iran	6	78	6.5	44	5.9	54	8.2	66	5.3	105	3.9	121
Israel	6.6	51	2.6	123	7.6	19	9.2	44	8.2	20	5.5	85
Jordan	7	36	4.8	92	6.9	29	9.7	6	7.6	40	6.1	43
Kuwait	7.4	18	6.3	51	6.9	28	9.8	4	7.0	64	6.7	19
Malta	6.8	44	5.8	63	7.0	27	7.2	81	7.0	60	7.0	13
Morocco	5.9	83	5.5	77	5.9	53	7.0	89	5.6	98	5.6	83
Oman	7.4	18	5.8	64	6.9	30	9.9	2	7.8	32	6.8	18
Syria	5.4	103	5.1	84	5.1	68	8.3	63	4.5	116	3.9	122
Tunisia	6.3	68	5.3	80	6.9	33	7.2	80	6.2	85	6.0	47
United Arab.Em	7.5	16	7.6	13	6.6	38	9.1	47	8.2	21	6.2	39

Sours: Economic Freedom of the World: 2004 Annual Report

Table 3: Area Economic Freedom Ratings (and Rankings), 2002 At OECD

	Economic Freedom		Size of Government: Expenditure s,Taxes and Enterprises		Legal Structure & Security of property Rights		Access to Sound Money		Freedom to Trade Internationally		Regulation of Credit, Labor, & Business	
	Rate	Ran	Rate Ran		Rate	Ran	Rate Ran		Rate	Ran	Rate Ran	
Australia	7.9	7	6.2	56	9.1	3	9.4	32	7.6	37	7.4	5
Austria	7.5	16	4.8	91	8.4	12	9.7	11	8.4	13	6.2	37
Belgium	7.4	18	4.6	99	7.7	18	9.7	13	8.8	5	6.1	45
Canada	7.9	7	6.5	49	8.3	15	9.5	29	8	25	7.3	9
Denmark	7.6	14	3.9	112	9.3	2	9.7	9	8.1	22	6.8	17
Finland	7.7	11	4.6	98	9.3	1	9.6	19	8.1	23	6.8	16
France	6.8	44	2.8	122	7.4	23	9.6	17	8.1	24	6.2	38
Germany	7.3	22	4.2	107	8.7	9	9.6	20	8.6	8	5.6	84
Greece	6.9	41	6.1	57	6	52	9.6	24	7.4	48	5.4	92
Hungry	7.3	22	5.7	66	6.7	34	9.1	48	8.3	14	6.4	30
Iceland	7.6	14	5.6	72	9	7	9.3	41	6.6	77	7.8	2
Ireland	7.8	9	6.0	61	7.9	17	9.6	18	9	3	6.7	22
Italy	7	36	4.7	93	7.4	22	9.6	22	7.9	27	5.3	94
Japan	7	36	5.6	70	7.1	26	9.4	31	6.5	80	6.2	35
Luxembourg	7.8	9	4.7	96	8.4	13	9.8	5	8.9	4	7.4	6
Mexico	6.5	58	8.1	6	4.2	88	7.4	77	7.4	46	5.3	96
Netherlands	7.7	11	4.6	101	9.1	4	9.5	27	8.6	9	6.7	21
New zealand	8.2	3	6.7	39	9	6	9.4	35	8.4	12	7.6	4
Norway	7	36	4.6	97	8.3	14	9	51	7	63	6.3	32
Poland	6.4	61	5.6	71	5.9	55	7.9	69	7	59	5.5	86
Portugal	7.2	27	5.0	87	7.6	20	9.6	23	7.8	34	6	52
Spain	7.1	31	4.9	88	6.5	42	9.6	21	8	26	6.4	31
Sweden	7.3	22	3.1	118	8.9	8	9.6	15	8.2	18	6.5	26
Switzerland	8.2	3	6.9	32	8.6	11	9.7	7	8.3	16	7.3	8
Turkey	5.5	100	7.0	28	4.5	77	4	119	6.9	66	5	106
United King.	8.2	3	6.	36	9	5	9.5	28	8.3	17	7.4	7
United State	8.2	3	7.4	16	8.2	16	9.8	3	7.8	29	7.7	3

In OECD countries economic freedom and its components are different in comparison with MENA countries. Table 4 shows the comparison. It can be seen that economic freedom in rating and ranking in average in OECD is more than MENA countries. And except size of government expenditures, taxes and enterprises, in all of area in components of the economic freedom, OECD has better situation in rating and ranking in comparison with MENA.

Table 4: Comparison of Area Economic Freedom Ratings (and Rankings), 2002 between MENA & OECD

	Economic Freedom		Size of Government: Expenditures, Taxes and Enterprises		Legal Structure & Security of property Rights		Access to Sound Money		Freedom to Trade Internationally		Regulation of Credit, Labor, & Business	
	Rate	Ran	Rate	Ran	Rate	Ran	Rate	Ran	Rate	Ran	Rate	Ran
MENA	6.5	56.7	5.6	67.3	6.01	47.7	8.51	50.4	6.6	69.8	5.6	65.6
OECD	7.4	24.6	5.4	72.9	7.8	22.2	9.2	30	7.9	29.8	6.49	37.18

Sours: Economic Freedom of the World: 2004 Annual Report

In table 5 economic freedom rating data from 1970 to 2002 and its changes as mean of variation was illustrated. During this time Algeria has highest and Bahrain lowest mean of variation.

Table 5: Changes of Economic Freedom Ratings, From 1970 to 2002 In MENA Countries

	1970	1975	1980	1985	1990	1995	2000	2001	2002	Mean of Variation
Algeria					3.3	4.1	5.7	5.8	5.8	13.004
Bahrain			7	6.5	6.8	6.9	7.2	7.1	7.2	0.473
Egypt		3.9	4.6	5.0	4.8	5.9	6.7	6.5	6.2	6.44
Iran	5.8	5.7	3.5	3.7	4.1	4.0	5.6	6.2	6.1	2.54
Israel	4.9	4.2	3.7	4.3	4.4	6.0	6.5	6.5	6.6	4.287
Jordan		5.2	5.0	5.5	5.6	6.2	7.0	6.7	7.0	3.972
Kuwait			5.8	7.9	5.1	6.6	6.7	7.3	7.4	6.002
Malta			5.0	4.8	5.2	6.4	6.5	6.5	6.6	4.358
Morocco	5.5	4.9	4.3	4.9	4.8	5.8	6.0	6.0	5.9	1.263
Oman				6.2	6.1	6.8	7.4	7.4	7.4	3.114
Syria	4.7	4.9	4.0	3.6	3.5	4.3	4.9	5.7	5.2	1.941
Tunisia	4.5	4.6	4.9	4.7	5.3	6.0	6.1	6.2	6.2	3.771
United Arab.Em			5.8	6.6	7.3	7.3	7.6	7.5	7.5	3.885

Sours: Economic Freedom of the World: 2004 Annual Report

3- Economic Freedom and Growth

Many empirical studies have found a positive relation between economic freedom and growth (Barro, 1991; Barro, 1994; Scully and Slottje, 1991; De Vanssay and Spindler, 1994; Torstensson, 1994). However, some others have taken negative or insignificant relationship between economic freedom and economic growth. So, in Table 6 there are Brief description of the economic freedom categories (not according to Fraser institute or Heritage foundation economic freedom definition) and summary of empirical studies.

Table 6: Brief description of the economic freedom categories and summary of empirical studies

Category	Description	Positive effect of freedom	Negative effect of freedom	Non-robust/insignificant effect of freedom
Size of Government	i. Gov. consumption share of total consumption ii. Transfer and subsidies as a percent of GDP	Barro 1991, Knack and Keefer 1995, Gwartney et al. 1998, Barro 1999, Kneller et al. 1999		Ayal and Karras 1998, Nelson and Singh 1998, Levine and Renelt 1992, Sala-i-Martin 1997a, Kneller et al. 1999
Economic Structure and Use of Markets	i. Share of gov. enterprises and investments ii. Price controls iii. Top marginal tax rate iv. Use of conscripts	Ayal and Karras 1998, Kneller et al. 1999		Sala-i-Martin 1997a, Barro 1991, Torstensson 1994, Ayal and Karras 1998.
Monetary Policy and Price Stability	i. Growth rate money supply ii. Standard deviation inflation iii. Annual inflation rate	Ayal and Karras 1998	Gwartney et al. 1998	Levine and Renelt 1992, Sala-i-Martin 1997a
Freedom to Use Alternative Currencies	i. Freedom to own foreign currency bank accounts ii. Difference between official exchange rate and black market rate	Ayal and Karras 1998, Barro 1994		Ayal and Karras 1998, Levine and Renelt 1992, Sala-i-Martin 1997a
Legal Structure and Security of Private Ownership	i. Legal security of private ownership ii. Viability of contracts iii. Rule of law	Barro 1994, Torstensson 1994, Knack and Keefer 1995, Levine and Renelt 1992, Sala-i-Martin 1997a		
International Exchange - Freedom to Trade with Foreigners	i. Taxes on international trade ii. Non-tariff regulatory trade barriers	Sala-i-Martin 1997a, Torstensson 1994	Ayal and Karras 1998	Sala-i-Martin 1997a
Freedom of Exchange in Capital Markets	i. Ownership of banks ii. Extension of Credit iii. Interest rate controls iv. Restrictions on capital transactions	Ayal and Karras 1998		

Sours: Fredrik Carlsson & Susanna Lundstrom

As it can be seen in the table 5, there are not unique solution for the relationship between economic freedom and economic growth. This is for that definition of economic freedom in last decade was not complete in comparison to recent year's definition. Studies by using the Fraser Institute definition of economic freedom show that there are bilateral relationship between economic freedom and growth.

To determine what causal relationships exist between economic freedom, and economic growth, dynamic model was used and define causality along the lines established by Granger (Granger 1969). We say that the variable *x* is causing *y* if we are better able to predict *y* using all available information than if the information apart from *x* had been used. That is, if we control for the information contained in past values of *y*, and past values of *x* add significantly to the explanation of current *y*, then we may say that *x* Granger-causes *y*. Because we are interested in the causal links between economic freedom, political freedom, and economic growth, we use the following dynamic specifications:

• Economic freedom as a cause of economic growth ($f\ ef \rightarrow g$) and economic growth as a cause of economic freedom ($g \rightarrow f\ ef$)[1]:

$$g_{i,t} = \sum_{j=1}^{m} \gamma_j^{g,ef} g_{i,t-j} + \sum_{j=1}^{n} \delta_j^{g,ef} f_{i,t-g}^{ef} + \alpha_i^{g,ef} + \varepsilon_{i,t}^{g,ef}$$

$$f_{i,t}^{ef} = \sum_{j=1}^{m'} \gamma_j^{ef,g} f_{i,t-j}^{ef} + \sum_{j=1}^{n'} \delta_j^{ef,g} g_{i,t-g} + \alpha_i^{ef,g} + \varepsilon_{i,t}^{ef,g}$$

Where $i = 1,.......N, t = 1,.........T$ and $g_{i,t}$ is the growth rate of real per capita GDP in country in period t and $f_{i.t}^{ef}$ is the index of economic freedom , and α_i represents unobserved individual effects that vary across i but are constant over time and $\varepsilon_{i,t}$ is an independent and identically distributed random error $N(0, \delta_{\varepsilon}^2)$.

The models were estimated for MENA and OECD countries by panel data methodology and the result shows in following tables

1. Engel Granger Test

Table 7: Dependent Variable: EF in OECD Countries

Variable	Coefficient	t- statistic
EF(-1)	0.986	24.7
G(-1)	-0.018	-1.03
C	-0.23	-0.867

Adjusted R-Squared: 0.87

Table 8: Dependent Variable: G in OECD Countries

Variable	Coefficient	t- statistic
EF(-1)	-0.215	-1.36
G(-1)	0.88	7.18
C	0.93	0.86

Adjusted R-Squared: 0.65

Table 9: Dependent Variable: G in MENA Countries

Variable	Coefficient	t- statistic
EF(-1)	2.23-	-1.79
G(-1)	-0.076	-0.36

Adjusted R-Squared: 0.23

Table 10: Dependent Variable: EF in MENA Countries

Variable	Coefficient	t- statistic
EF(-1)	0.713	9.34
G(-1)	-0.011	-0.51
C	1.29	2.76

Adjusted R-Squared: 0.60

Result of Engel Granger casualty test about the relationship between economic freedom and growth in OECD and MENA countries; show that there are not significant relationships. However, it seems that relationship among growth and component (5 areas) of economic freedom have different situations so that, in aggregate effects of economic freedom, partial affects is omitted by each other. Finally part Engel Grange casualty test have done only for industrial countries[1] . Results illustrated in table 11 and 12. We can see that in the industrial countries because the degrees of economic freedom are more than the others, economic freedom has could improve economic growth.

Table 11: Dependent Variable: EF in Industrial Countries

Variable	Coefficient	t- statistic
EF(-1)	0.89	24.31
G(-1)	-0.026	0.62

Adjusted R-Squared: 0.87

Table 12 .Dependent Variable: G in Industrial Countries

Variable	Coefficient	t- statistic
EF(-1)	1.036	3.036
G(-1)	-0.24	-2.65

Adjusted R-Squared: 0.11

4- Economic Freedom and Governments Tax Income

The U shape relationship between economic freedom and government tax income is the main idea of paper. Following econometrics quadratic form models were used for showing the U shape relationship.

$$\begin{aligned} T_{i,t} &= C + \alpha_1 SIZ_{i.t} + \alpha_2 SIZ_{i,t}^2 + \beta_1 LEGAL_{i.t} + \beta_2 LEGAL_{i,t}^2 + \delta_1 FTRADE_{i.t} + \\ \text{A)}\quad & \delta_2 FTRADE_{i,t}^2 + \eta_1 SMONEY_{i.t} + \eta_2 SMONEY_{i,t}^2 + \mu_1 REGULATION_{i,t} + \\ & \mu_2 REGULATIOMN_{i.t}^2 + \varepsilon_{1,i,t} \end{aligned}$$

1- Australia Austria Belgium Canada Denmark Finland France Germany Greece Italy Japan Netherlands Zealand Norway Poland Portugal Spain Sweden Kingdom United States

B) $T_{i,t} = C + \sigma_1 EF_{i,t} + \sigma_2 EF_{i,t}^2 + \varepsilon_{2,i,t}$

Where $i = 1.....N$ are observations and $t = 1........m$ are countries, T is governments tax income, SIZ is size of government: expenditures, taxes and enterprises, LEGAL is legal structure and security of property rights, FTRADE is Freedom to exchange with foreigners , SMONEY is access to sound money, REGULATION is regulation of credit, labor and business and EF is economic freedom. Panel data methodology was used for estimation of the models. In model (A) there are component of economic freedom as quadratic form and in model (B) there is economic freedom in aggregate. The models estimated for OECS and MENA countries and results were illustrated in following tables. In all of the tables variables that has sign (*2), are square and there signs are important.

Table 13: Dependent Variable: T in OECD Countries

Variable	Coefficient	t- statistic
EF	-5.44	-2.87
EF*2	0.52	3.42
C	40.79	6.69

Adjusted R-Squared: 0.86

In table 13, governments' tax income and economic freedom in OECD countries has significantly quadratic form. And because the sign of EF*2 is positive, it could be said that U shape hypothesis of above relationship is proved. This clime could become more powerful, if we see the results about MENA countries in table 14.

Table 14: Dependent Variable: T in MENA Countries

Variable	Coefficient	t- statistic
EF	-2.19	-0.68
EF*2	0.165	0.57
C	23.66	2.56

Adjusted R-Squared: 0.92

It could be seen that in the MENA countries, there is not significant relationship between governments' tax income and economic freedom. The reason is that economic freedom ranking in these countries is low. In continue relationship between governments' tax income and components of economic freedom were reviewed. Table 15 shows the relations for OECD countries.

Table15: Dependent Variable: T in OECD Countries

Variable	Coefficient	t- statistic
SIZ	-2.26	-1.59
SIZ*2	0.175	1.24
Legal	2.7	2.83
Legal*2	-0.128	-1.73
Ftrade	-4.91	-2.65
Ftrade*2	0.404	2.98
Smoney	1.49	2.1
Smoney*2	-0.062	-1.12
Regulation	-7.002	-2.88
Regulation*2	0.475	2.59

Adjusted R-Squared: 0.94

Square of size of government and sound money are not significant. So, there is not any declaration about the shape of there relations. However, because the sign of square of freedom to exchange with foreigners is positive and significant, it could be said that relationship between governments' tax income and the freedom to exchange with foreigners in OECD countries has U shape and convex. There is similar situation about the relation of governments' tax income and regulation of credit, labor and business but there is different situation about legal structure and security of property rights. The square of legal structure and security of property rights variable is significant but it has negative sign. So, the relation between governments' tax income and legal structure and security of property rights is U shape but it is concave. It means that, by increasing of rating of legal structure and security of property rights governments' tax income will be increased till optimize rate and after that it will be decreased.

In MENA countries there are not any significant relation between governments' tax income and economic freedom. The results were illustrated in table 16.

Table 16: Dependent Variable: T in MENA Countries

Variable	*Coefficient*	*t- statistic*
SIZ	0.69	0.54
SIZ*2	-0.151	-1.031
Legal	-0.49	-0.39
Legal*2	0.167	1.198
Ftrade	1.06	0.53
Ftrade*2	-0.12	-0.64
Smoney	-1.21	-1.03
Smoney*2	0.021	0.232
Regulation	-3.1	-0.68
Regulation*2	0.179	0.39
C	31.54	2.61

Adjusted R-Squared

Conclusion

In this paper we show that economic freedom can improve the economic growth rate and it has U shape and convex relation with governments' tax income. However, among the components of economic freedom, size of government (expenditures, taxes and business enterprises) and regulation in credit, labor and business market have significant convex U shape and legal structure and security of property rights have significant concave U shape relationships with governments' tax income.

References:

1- Alesina, A. (1998). *The political economy of high and low growth. Annual World* Bank Conference on Development Economics 1997. Washington DC: World Bank.

2- Beach, W.W. and G. Davis (1998). *The Index of Economic Freedom and Economic Growth*, in: Holmes et al. (1998).

3- Chong A., and Calderón C. (2000) "Causality *and Feedback between Institutional Measures and Economic Growth.*" Economics and Politics 12 (1): 69–81.

4- Dutz, M. A., and Hayri, A. (2000) "*Does More Intense Competition Lead to Higher Growth?"* World Bank Policy Research Working Paper no: 2320

5- Del Monte, A., and Papagni, E. (2001) *"Public Expenditure, Corruption, and Economic Growth: The Case of Italy."* European Journal of Political Economy 17: 1–16.

6- Fredric Carlsson & Suanna Lundstrom **"***Economic freedom and growth: Decomposing the effects***",** Department of Economics, Gutenberg University, SE-40530 Gutenberg, Sweden; e-mail: Susanna.Lundstrom@economics.gu.se

7- Feder, G. (1982) "*On Exports and Economic Growth*." Journal of Development Economics 12: 59–73.

8- Freedom. In: W. Block (ed.), *Economic Freedom: Toward a Theory of Measurement. Vancouver:* The Fraser Institute.

9- Freedom House (2001) *Freedom in the World*: Annual Survey of Political Rights and Civil Liberties. Boston: Freedom House.

10- Freeman, R. (2002) *"Institutional Differences and Economic Performance among OECD Countries.*" CEP Discussion Papers.

11- Gwartney and R. Lawson, *Economic Freedom of the World*: 2002 Annual Report, xvii–xxi. Vancouver, B. C.: Fraser Institut.

12- Gwartney, J., R. Lawson and W. Block (1996). *Economic Freedom in the World*, 1975-1995. Vancouver: Fraser Institute

13- Gwartney, James G., Robert A. Lawson, and Randall G. Holcombe. 1998. *The Size and Functions of Government and Economic Growth*. Report to the Joint Economic Committee of the U.S. Congress, Washington, D.C.

14- _______. 1999. *Economic Freedom and the Environment for Economic Growth*. Journal of Institutional and Theoretical Economics 155 (4): 1-21.

15- _______. 1998. *Further Evidence on the Relationship between Economic Freedom and Economic Growth*. Public Choice 95 (3-4): 363-80.

16- Haan, J. de and C.L.J. Siermann (1998). *Further evidence on the relationship between economic freedom and economic growth*, Public Choice 95: 363-380.

17- Holmes, K.R., B.T. Johnson and M. Kirkpatrick (1998). 1998 *Index of Economic Freedom,* Washington DC/New York: Heritage Foundation/Wall Street Journal. -Rabushka (1991a). Philosophical Aspects of Economic

18- Haan, Jakob de, and Jan-Egbert Sturm. 2000. *On the Relationship between Economic Freedom and Economic Growth*. European Journal of Political Economy 16 (2): 215-41.

19- _______. 2001. *How Robust Is the Relationship between Economic Freedom and Economic Growth?* Applied Economics 33 (7): 839-44.

20- _______. 2003. *Does More Democracy Lead to Greater Economic Freedom? New Evidence for Developing Countries*, European Journal of Political Economy forthcoming

21- Hanke, Steve H., and Stephen J. K. Walters. 1997. *Economic Freedom, Prosperity, and Equality*: A Survey. Cato Journal 17 (2): 117-46.

22- Hanson, John R. II. 2000. *Prosperity and Economic Freedom*. The Independent Review 4 (4): 525-31.

23- Heckelman, Jac C. 2000. *Economic Freedom and Economic Growth*: A Short-Run Causal Investigation. Journal of Applied Economics 3 (1): 71-91.

24- Heckelman, Jac C., and Michael D. Stroup. 2000. *Which Economic Freedoms Contribute to Growth?* Kyklos 53 (4): 527-44.

25-Jakob de Haan and Jan-Egbert Sturm "*On the relationship between economic freedom and economic growth*" Department of Economics, University of Groningen, PO Box 800, 9700 AV Groningen, Revised version, March 1999

26- Niclas Berggren "*The Benefits of Economic Freedom: A Survey*" The Ratio Institute P.O. Box 5095 SE-102 42 Stockholm Sweden.

27- Rabushka (1991b). *Preliminary Definition of Economic Freedom*, In: W. Block (ed.), Economic Freedom: Toward a Theory of Measurement. Vancouver: The Fraser Institute.

28- Rabushka (1991c). *Freedom House Survey of Economic Freedoms*, In: W. Block (ed.), Economic Freedom: Toward a Theory of Measurement. Vancouver: The Fraser Institute.

29- Scully, G.W. and D.J. Slottje (1991). *Ranking economic liberty across countries*, Public Choice 69: 121-152.

30- Spindler, Z. and L. Still (1991), *Economic Freedom Ratings*, In: W. Block (ed.), Economic Freedom: Toward a Theory of Measurement. Vancouver: The Fraser Institute.

31- Torstensson, Johan. 1994. *Property Rights and Economic Growth: An Empirical Study*. Kyklos 47 (2): 231-47.

32- _______. 1996. *Constitutions, Institutions and Economic Convergence*: An International Comparison. Journal for Studies in Economics and Econometrics 20 (3): 1-19.

33- Vanssay, X. de and Z.A. Spindler (1994). *Freedom and growth: Do constitutions matter*? Public Choice 78: 359- 372

34- Vanssay, Xavier De, and Zane A. Spindler. 1994. *Freedom and Growth: Do Constitutions Matter?* Public Choice 78 (3-4): 359-72.

35- Wright, L.M. (1982). *A Comparative Survey of Economic Freedoms*, In: R.D. Gastil (ed.), Freedom in the World: Political Rights and Civil Liberties 1982. London: Greenwood Press.

36- Wu, Wenbo, and Otto A. Davis. 1999. *The Two Freedoms, Economic Growth and Development:* An Empirical Study. Public Choice 100 (1-2): 39-64.