Economic Freedom Verses Economic Growth: Cross Countries Analysis in the form of ARDL Approach

Abstract

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The generous theoretical and empirical debates are available on institutional freedom and economic growth, but unsuccessful to facilitate stationary conclusion regarding the nature of connection. It is still confusing that either economic freedom cause economic growth or economic growth widens the foundation for economic freedom. The finale will be more puzzled if the analysis based on different kinds of economies. The aim of this study is to probe the nature of relationships between economic freedom and economic growth in different kinds of economies. For statistical evidence autoregressive distributed lag (ARDL) approach is employed by using the data of 96 countries [High Income (29), Upper Middle Income (18), Lower Middle Income (26) and Lower Income (23)]. The empirical results indicate bilateral and robust relationships between economic freedom and economic growth in high income and lower middle income countries, while in upper middle income and low income countries, economic freedom causes economic growth in unilateral connection.

Introduction

The literature showed that economic freedom and economic growth nexus received gorgeous attention of economist. Various time series and cross sectional studies have shown the inconclusive conclusions regarding the nature of relationship between economic growth and economic freedom. Farr et al. (1998) found robust bilateral relationships between economic freedom and growth by employing the data of industrial (20 countries) and no industrial (78 countries). Nelson and Singh (1998) argued economic freedom aerobics a significant positive effect on growth. Heckleman (2000) used cross sectional data of 147 nations and found that the economic freedom index caused the economic growth across all three lag specifications but did not find the reverse causal relationship. Similarly this study also suggests that individual indicator of economic freedom index mostly precedes growth but not the other way around. De Haan and Sturm (2000) stated higher freedom conveys economies on the path of balanced growth. Erdal (2006) developed economic freedom index of Italian economy from 1970 to 2000 by adapting the methodology of The Fraser Institute and investigated the links between economic freedom and economic growth. He found unidirectional relationship from Economic Freedom to economic growth.

Few studies also showed inconclusive link between economic growth and economic freedom. Spindler and Miyake (1992) showed that strong connections stay alive between various measures of economic freedom, but relationships between economic freedom and economic growth across the nations are not matching. De Vanssay et.al (1994) and Dawson (1998) concluded that the detection of relationships between economic freedom and economic growth is not simple like common philosophy. Reasons are, i) actually economic freedom is highly subjective term and it require a uniform and widely accepted method and rating of index, but due to controversy in definition of economic freedom, its measurement is not similar and crystal clear . In other words, each researcher and analyst has its own interpretation of what is meant by economic freedom, and also treats economic freedom measurement according to his/ her convenience. ii) it is general perception that economic freedom enhances the economic growth, but if liberty is a normal good, then an increase in incomes may augment the demand for freedoms. Gwartney, Lawson, and Holcombe (1999) found that economic growth is not competent of predicting future boost in economic freedom in a significant manner. Wu and Davis (1999) also reached on identical causality fallout. (Cole (2003) appraised the effectiveness of economic freedom for growth under alternative theoretical frameworks and originate that economic freedom is a noteworthy factor for economic prosperity.

This study confronts the issue and extends the economic freedom-growth literature on following

grounds. First, study will probe that whether economic freedom provides origin for growth, economic growth develops the foundation for economic freedom or both remain unbiased in relation to one another. Second, article makes use of the more reliable and updated technique (ARDL Approach) of estimation for compact and sound conclusions. Third, this inspection of economic freedom –growth relationships of world economies separately investigates the targeted relationships in High Income Countries (HIC), Upper Middle Income Countries (UMC), Lower Middle Income Countries (LMC) and Low Income Countries (LIC). As a result the outcomes and policy recommendations will be more realistic and applicable. In this regard definitely this paper will improve the policy decision regarding economic freedom and growth issues, according to their political, social and economic environment for better economic performance. Keep it in mind that the categorizations of the world economies are according to WB classifications.

The rest of the study is structured as follow; the next section describes the data, and methodological framework. Section 3 presents empirical findings. Section 4 based on conclusions of investigation.

Data and Methodological Framework

To asses the causality relationships between economic growth and economic freedom across the world study used the statistical information of 96 countries. It is very obvious that the world economies posses the differences on social, political and economic environment grounds. Due to such structural difference, a typical economic policy and its outcomes are not identical in unlike sort of economies. Due to differences in characteristics there should be dissimilarity regarding the relationships between economic freedom and economic growth in the world economies. For comprehensive conclusion on the topic of relationships between economic freedom and economic growth in world study used the World Bank's 2001 classification of the world economies by income. According to World Bank classification there are four types of economies. High Income Countries (HIC), Upper Middle Income Countries (UMC), Lower Middle Income Countries (LMC) and Low Income Countries (LIC). The study uses data for the period from 2000 to 2006. In this respect the data set of each group of countries based on limited number of time series observations. Study develops such pooled statistics to capture and exploit the time-series properties and all countries together in an effort to explore for causal relationships. Statistics of focused variables is required for causality investigation between Economic Freedom and

Economic Growth . World's economic growth statistics are taken from WDI, and study used Gross Domestic Product Growth as a proxy of economic growth. the compilation of economic freedom rating of the world economies is little bit care full job. At spot there are two major institutions in the world which measure the economic freedom index of the world nations. First is The Fraser Institute Vancouver Canada and second one is The Heritage Foundation Washington DC USA. As concerned the "The Fraser Institute" freedom index, it is available after every five year from 1970 to 2000, and then onward on annual basis. The Heritage Foundation" on the other hand has been publishing updated economic freedom rating of the world nations since 1994 on annual basis. Study used The Fraser Institute Economic Freedom rating for analysis.

The Fraser Institute's Layout of Economic Freedom of the World Index

The Fraser Institute's economic freedom index is one of the regularly published and updated set of measures. The Fraser Institute has been publishing the updated index of economic freedom of the world on annual basis since 2000. As concerned the brief structure of the economic freedom index of the world by above said institute, it based on 21 components of 5 major areas, but many of those components are themselves made up of several sub- components. The area wise feature of above said index is as follow:

Area 1: Size of Government: Expenditure, Taxes, and Enterprises

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 to which it applies)
i) Top marginal income tax rate (and income threshold to which it applies)
ii) Top marginal income and pay roll tax rate (and income threshold at which the top marginal rate applies)

Area 2: Legal Structure and security of property Rights

A) Judicial independence: The judiciary is independent and not subject to interference by the government or parties in

B) Impartial courts: A trusted legal framework exists for private businesses to challenge the

D) Military interference in rule of law and the political process

E) Integrity of the legal system

Area 3: Access to Sound Money

A) Average annual growth of the money supply in last 5 years minus average annual growth of real GDP in the last 10 years

B) Standard inflation variability during last 5 years

C) Recent inflation rate

D) Freedom to own foreign currency bank accounts domestically and abroad

Area 4: Freedom to Trade Internationally

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) Non tariff trade barriers

ii) Compliance cost of importing and exporting

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) Foreign ownership/ investment restrictions

ii) Restrictions on the freedom of citizens to engage in capital market exchange with foreigners

Area 5: Regulation of credit, Labor, and Business markets

legality of government

C) Protection of intellectual property

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 wages

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) Burden of regulation

iii) Time 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 licensees, exchange controls, tax assessments, police protection, or loan applications are very rar.

Methodological Framework

Empirical studies indicate that stationary analysis are necessary because during construction of time series models, the underlying stochastic process that generated the series must be invariant with respect to time. If the characteristics of the stochastic process change over time, i.e. if the process is non stationary, it will often be difficult to represent the time series over past and future intervals of time by a simple algebraic model and as results researchers are committing errors or facing misleading results. On the other side if the stochastic process is fixed in time i.e. if it stationary, then researcher can model or establish the process through an equation with fixed

coefficients that can be estimated from past data. In order to investigate the unit root problem this study is used IPS (Im Pesran, Shin, 2003) Individual Unit Root Test Statistics for panel data. This test is considered power full and suggestive than any other test for panel data in order to determine unit root. Im et.al (2003) suggest an average of the Augmented Dicky Fuller (ADF) test when u_{it} is serially correlated with different serial correlation properties across the cross sectional unit,

$$u_{it} = \sum_{j=1}^{p_i} \varphi_{ij} u_{i,t-j} + \varepsilon_{it}$$

and then we get

$$y_{it} = \varphi_{ij} \Delta y_{i,t-j} + z'_{it} \gamma + \varepsilon_{it}$$

The null hypothesis is that each series in the panel contains a unit root, and the alternative hypothesis is that at least one of the individual series in the panel is stationary. The IPS t-bar statistic is defined as the average of the individual ADF statistic as

Table #1 Group wise Detail of Countries Included in the Study

HIC	UMC	LMC	LIC
1. Austria	1. Argentina	1. Albania	1. Bangladesh
2. Australia	2. Botswana	2. Algeria	2. Burundi
3. Belgium	3. Brazil	3. Bolivia	3. Cameroon
4. Canada	4. Chile	4. Bulgaria	4. Chad
5. Cyprus	5. Costa Rica	5. China	5. Congo, Rep.
6. Denmark	6. Croatia	6. Colombia	6. Ghana
7. Finland	7. Czech Republic	7. Dominican Republic	7. Guinea-Bissau
8. France	8. Estonia	8. Ecuador	8. Haiti
9. Germany	9. Gabon	9. Egypt, Arab Rep.	9. India
10. Greece	10. Hungary	10. El Salvador	10. Indonesia
11. Hong Kong, China	11. Malaysia	11. Fiji	11. Kenya
12. Iceland	12. Mexico	12. Honduras	12. Madagascar
13. Ireland	13. Panama	13. Iran, Islamic Rep.	13. Malawi
14. Israel	14. Poland	14. Jamaica	14. Mali
15. Italy	15. South Africa	15. Jordan	15. Nepal
16. Japan	16. Turkey	16. Latvia	16. Niger
17. Luxembourg	17. Uruguay	17. Lithuania	17. Nigeria
18. Malta	18. Venezuela, RB	18. Morocco	18. Pakistan
19. Netherlands		19. Paraguay	19. Senegal
20. New Zealand		20. Peru	20. Tanzania
21. Norway		21. Philippines	21. Uganda
22. Portugal		22. Romania	22. Ukraine
23. Singapore		23. Russian Federation	23. Zambia
24. Slovenia		24. Sri Lanka	
25. Spain		25. Thailand	
26. Sweden		26. Tunisia	
27. Switzerland			
28. United Kingdom			
29. United States			

$$t = \frac{1}{N} \sum_{i=1}^{N} t_{\rho i}$$

Where $t_{\rho i}$ is the individual t-statistic for testing H_0: $p_i = 1$ for all i

$$t_{\rho i} \Rightarrow \frac{\int_0^1 W_{iz} dW_{iz}}{\left[\int_0^1 W_{iZ}^2\right]^{1/2}} = t_i T$$

As $T \to \infty$ where $\int W(r)dr$ denotes a Weiner integral. IPS assumes that $t_i T$ is IID having finite mean and variance. Then

$$W = \frac{\sqrt{N}\left(\frac{1}{N}\sum_{i=1}^{N} t_{iT} - \frac{1}{N}\sum_{i=1}^{N} E(t_{iT}|\rho i=1)\right)}{\sqrt{\frac{1}{N}\sum_{i=1}^{N} var(t_{iT}|\rho i=1)}} \Rightarrow N(0,1)$$

As $N \to \infty$ by the Lindeberg-Levy central limit theorem. So,

$$t_{IPS} = \frac{\sqrt{N}\left(t - \frac{1}{N}\sum_{i=1}^{N} E(t_{iT}|p_i = 1)\right)}{\sqrt{\frac{1}{N}\sum_{i=1}^{N} var(t_{iT}|p_i = 1)}} \Rightarrow N(0,1)$$

ARDL approach to Co-integration

To examine the long run relationships between economic growth and economic freedom across the nations, this study uses recent co-integration analysis approach, known as autoregressive-distributed lag (ARDL) model {Pesaran *et al.* (2001)}. Pesaran *et al.* co-integration approach is also known as Bounds testing technique. To begins with; study test the null hypothesis of no cointegration against the existence of a long run relationship. Unlike other cointegration techniques (e.g., Johansen's approach) which require certain pre testing for unit roots and that whether the focused variables are integrated at same order or not, the ARDL model provides an substitute test for

examining a long run relationship regardless of whether the underlying variables are I(0),I(1), or fractionally integrated. This approach has the following econometric advantages in comparison to other Co-integration procedures.

1) The long and short-run parameters of the model in question are estimated simultaneously;

2) The ARDL approach to testing for the existence of a long-run relationship between the variables in levels is applicable irrespective of whether the underlying regressors are purely I(0), purely I(1), or fractionally integrated;

3) The small sample properties of the bounds testing approach are far superior to that of multivariate co-integration. The bounds testing approach of Pesaran et al. (2001) is employed to test the existence of a co-integration relationship among the variables.

4) Modified ARDL method is free from any problem faced by traditional techniques in the literature.

The core focus of this study is inspection of existence of causality between our focused variables (Economic Growth and Economic Freedom) that either EG and EF has unidirectional or multidirectional (Economic Freedom Index) relationships. In other words study want to examine that either economic freedom cause the economic growth or economic growth cause the economic freedom i.e. EG (EF→EG), or EG cause EF i.e. EF (EG→EF).

For this rationale we develop the following pair of regressions:

$$\Delta (EG)_{(t)} = \alpha + \sum_{i=1}^{n} \beta_i \Delta (EG)_{t-1} + \sum_{i=0}^{n} \lambda_i \Delta (EF)_{t-1} + \delta_1 (EF)_{t-1} + \delta_2 (EG)_{t-1} + u_{1t} - - - -(1)$$

$$\Delta (EG)_{(t)} = \alpha + \sum_{i=1}^{n} \beta_i \Delta (EG)_{t-1} + \sum_{i=0}^{n} \lambda_i \Delta (EF)_{t-1} + u_{2t} - - - - - - - - - - - - - (2)$$

Here study assumed that the disturbances "u_{1t}" and "u_{2t}" are uncorrelated. In regression notation t represents the particular year. Now question is how one can scrutinize the casual relationships between targeted variables. For this purpose study used "F test" (Wald Statistics), and its steps study state as under;

- Firstly regress (equation #1) the Δ (EG) on all its and Δ (EF) lagged plus EF and EG at first lag with out difference and find unrestricted residuals sum of square RSS_{UR}.

- Then regress (equation #2) the Δ (EG) on all its and Δ (EF) lagged term and don't include the without difference (EF) t-1 and (EG) t-1 variables and find the restricted residuals sum of square RSS_R.

- To test that "Economic Freedom does not cause Economic Growth" we develop null hypotheses H_0: Economic Freedom does not cause Economic Growth and apply the following F test.

$$F = \frac{(RSS_R - RSS_{UR})/m}{RSS_{UR}/(n-k)}$$

Which follow the F distribution with "m" and "(n-k)" df. In the present case "m" is equal to the number of excluded variables which we omit in restricted regression, and k stands for number of estimators in the unrestricted regression.

- If the computed F value exceeds the critical F value at the chosen level of significance, we reject our null hypothesis that "Economic Freedom does not cause Economic Growth" and will accept the alternative hypothesis which is indicating that economic freedom cause the economic growth.

- Then repeat this procedure to test that whether Economic Growth cause economic freedom or not by taking EF as dependent variable and Economic Growth as independent contributor.

Schwartz's lag length selection criterion is used for the selection of lag length of the focused variables.

Empirical Results

Process of investigating the order of integration reveals that all seven variables (EG, EF and area wise freedoms GS, LSSPR, ASM, FTI and REGU) are stationary at level and at 1st difference.

Table # 2 Panel Data "IPS (Im Pesran Shin W statistics) Individual Unit Root Test

Im Pesran Shin W statistics Unit Root Test Statistics

Variables	HIC			UMC		
	Statistics	Prob.	Specification	Statistics	Prob.	Specification
EG	-5.65	0.00	1st difference (Intercept)	-1.92	0.02	Level (trend and Intercept
FE	-7.00	0.00	1st difference (Intercept)	-2.57	0.00	1st difference (Intercept)
GS	-1.18	0.10	1st difference (Intercept)	-3.02	0.00	Level (trend and Intercept)
LSSPR	-46.74	0.00	Level (trend and Intercept)	-1.25	0.10	Level (Intercept)
ASM	-1.28	0.10	Level (Intercept)	-5.55	0.00	Level (trend and Intercept)
FTI	-5.54	0.00	Level (trend and Intercept)	-1.63	0.05	Level (trend and Intercept)
REGU	-3.31	0.00	1st difference (Intercept)	-1.95	0.02	1st difference (Intercept)

Variables	LMC			LIC		
	Statistics	Prob.	Specification	Statistics	Prob.	Specification
EG	-1.92	0.02	Level (Intercept)	-1.99	0.02	Level (Intercept)
FE	-1.35	0.08	Level (trend and Intercept)	-11.00	0.00	Level (trend and Intercept)
GS	-1.73	0.04	Level (Intercept)	-14.57	0.00	Level (trend and Intercept)
LSSPR	-4.06	0.00	1st difference (Intercept)	-1.75	0.04	Level (Intercept)
ASM	-4.83	0.00	1st difference (Intercept)	-1.45	0.09	Level (Intercept)
FTI	1.19	0.00	Level ((trend and Intercept)	-1.41	0.07	Level (Intercept)
REGU	-2.08	0.01	1st difference (Intercept)	-2.55	0.00	1st difference (Intercept)

Except REGU all variables are stationary at level and at 1st difference but REGU in all four group of world economies are stationary at 1st difference only. Because such Stationarity variable's stochastic process is fixed in time, so study can model or establish the process through an equation with fixed coefficients that can be estimated from past data. Consequently, due to Stationarity of all above mentioned variables at level and at 1st difference we choose the ARDL econometrics technique of estimation for empirical analysis. We relied on the IPS (Im Pesran, Shin) Individual Unit Root Test Statistics for panel data stationary evidence Statistics of tests are given in the table # 2. In this study to analyze the connection between economic freedom and economic growth that either economic freedom cause economic growth or economic growth precede economic freedom in nations of world we employ the ARDL approach examination. The ARDL causality test results are displayed in below tables. Tests are based on single and double lag model specifications. Upshots of empirical study reflect that economic freedom develops grounds for economic growth robustly and directly. Except LMC few freedom measure which   are significant (enhance the economic growth) at 5 % level of significance, our all four categories HIC (High Income Countries), UMC (Upper Middle Income Countries), LMC (Lower Middle Income Countries),and in LIC(Low Income Countries)   results reveal that economic freedom augment the economic growth of the world economies even at 1% level of significance. Therefore we reject our hypothesis that economic freedom does not cause economic growth. Reason of this robust significant positive connection between above said variables is that in area wise investigation we found that all five areas index of economic freedom, i) SG (Size of government), ii) LSSPR (Legal Structure and Security of Property Rights), iii) ASM (Access to Sound Money), iv) FTI (Freedom to Trade Internationally) and REGU (Regulations to Labor and Credit markets) have noteworthy positive association toward economic   growth. Area wise freedoms also have positive and consistent contribution toward economic growth. That's why economic freedom cause economic growth.

Table # 3	High Income Countries (HIC)		
Area #	Nature of relationship	Calculated F-statistics	
Complete index	**EF → EG**	**11.52***[1]**	**11.38***[2]**
	EG → EF	**6.43**[1]**	**4.71*[2]**
1	SG → EG	11.30*** [1]	10.94***[2]
	EG → SG	4.90* [1]	4.80*[2]
2	LSSPR → EG	9.73*** [1]	10.51***[2]
	EG → LSSPR	2.94[1]	1.84[2]
3	A SM → EG	9.10***[1]	11.85***[2]
	E G → A SM	28.98***[1]	21.13***[2]
4	F T I → E G	10.26***[1]	15.04***[2]
	E G → FTI	4.42[1]	1.72[2]
5	REGU → E G	11.88***[1]	9.53***[2]
	E G → REGU	3.49[1]	3.46[2]

Level of significance	Critical Values	
	Lower Bound I(0)	Upper Bound I(1)
***1%	6.84	7.84
**5%	4.94	5.73
*10%	4.04	4.78

[ ]: represent the numbers of lags

Here **EF** (Economic Freedom), **EG** (Economic Growth), **SG** (Size of Government), **ASM** (Access to Sound Money), **LSSPR** (Legal Structure and Security of Property Rights), **FTI** (Freedom to Trade Internationally) and **REGU** (Regulation to Credit, Labor, and Business).

Table # 4 Upper Middle Income Countries (UMC)

Area #	Nature of relationship	Calculated F-statistics	
Complete index	**EF → EG**	**15.48***[1]**	**15.42***[2]**
	EG → EF	**1.63[1]**	**1.98[2]**
1	SG → EG	19.03***[1]	27.44***[2]
	EG → SG	1.08[1]	0.63[2]
2	LSSPR → EG	25.45***[1]	30.76***[2]
	EG → LSSPR	3.95[1]	2.39[2]
3	A SM → EG	16.89***[1]	20.92***[2]
	E G → A SM	10.04***[1]	5.74**[2]
4	F T I → E G	18.24***[1]	35.78***[2]
	E G → FTI	2.14[1]	5.33*[2]
5	REGU → E G	16.40***[1]	20.80***[2]
	E G → REGU	0.25[1]	0.13[2]

Level of significance	Critical Values	
	Lower Bound I(0)	Upper Bound I(1)
***1%	6.84	7.84
**5%	4.94	5.73
*10%	4.04	4.78

[ ]: represent the numbers of lags

Table # 5 Lower Middle Income Countries (LMC)

Area #	Nature of relationship	Calculated F-statistics	
Complete index	**EF → EG**	**7.49**[1]**	**3.34[2]**
	EG → EF	**7.10**[1]**	**3.26[2]**
1	SG → EG	8.61***[1]	4.95*[2]
	EG → SG	2.63[1]	1.33[2]
2	LSSPR → EG	7.74**[1]	3.53[2]
	EG → LSSPR	10.64***[1]	9.15***[2]
3	A SM → EG	7.72**[1]	3.80[2]
	E G → A SM	10.04***[1]	5.39*[2]
4	F T I → E G	10.34***[1]	4.57[2]
	E G → FTI	1.68[1]	0.81[2]
5	REGU → E G	6.02**[1]	3.44[2]
	E G → REGU	1.20[1]	0.45[2]

Level of significance	Critical Values	
	Lower Bound I(0)	Upper Bound I(1)
***1%	6.84	7.84
**5%	4.94	5.73
*10%	4.04	4.78

[ ]: represent the numbers of lags

Table # 6 Low Income Countries (LIC)

Area #	Nature of relationship	Calculated F-statistics	
Complete index	**EF → EG**	**20.46***[1]**	**8.60***[2]**
	EG → EF	**0.91[1]**	**0.02[2]**
1	SG → EG	19.91***[1]	9.93***[2]
	EG → SG	3.00[1]	2.02[2]
2	LSSPR → EG	19.85***[1]	10.13***[2]
	EG → LSSPR	2.56[1]	0.45[2]
3	A SM → EG	19.34***[1]	9.30***[2]
	E G → A SM	8.82***[1]	5.90**[2]
4	F T I → E G	19.07***[1]	10.11***[2]
	E G → FTI	5.47*[1]	1.44[2]
5	REGU → E G	18.53***[1]	19.90***[2]
	E G → REGU	1.59[1]	0.33[2]

	Critical Values	
Level of significance	Lower Bound I(0)	Upper Bound I(1)
***1%	6.84	7.84
**5%	4.94	5.73
*10%	4.04	4.78

[ ]: represent the numbers of lags

As concerned our second concentration that either economic growth in return enhance the economic freedom in above said four different sort of economies or not? Results (displayed in tables' # 3 to 6) disclose that economic growth cause economic freedom only in HIC at 5% with 1st lag specification and at 10% level of significance with 2nd lag model specification. Likewise in the LMC economic growth cause economic freedom at 5 % level of significance only at 1st lag model specification. Encouraging movement of economic growth on the road to economic freedom is not incredulous especially in HIC, because in developed and high income countries liberal economic, political, social and financial policies enhance the pace of economic freedom. In contrast due to restricted social, political and economic policies in LIC, negligible and un-sustained economic growth can not engender liberal business and economic environment. So here insignificant connection of economic growth in the direction of economic freedom is not astonished. But it is surprising that economic growth does not cause economic freedom in UMC while causing in LMC. Actually here we are expecting that in UMC economic growth should have some sort of affiliation toward economic freedom because of the factual

position which we state above. But the results are little bit different; in LMC economic growth has positive contributions toward economic freedom rather than UMC. In this regard we believe that the area 2nd freedom (Legal Structure and Security of Property Rights) may the vital player, because in empirical analysis where we investigate that either economic growth cause area's freedoms or not, the sole difference between UMC (table #4) and LMC (table #5) results is, in lower middle income countries (LMC) economic growth cause Legal Structure and Security of Property Rights but not in UMC (table #4). It means if economic growth enhance the judicial system and social security plus property rights then we may expect economic growth will improve the economic freedom.

Remaining result is approximately identical. Outline remarks of study are that economic freedom and all area wise freedoms precede economic growth in all four type world economies. And on the other side, economic growth cause economic freedom only in high income countries (HIC) and in lower middle income countries (LMC) but it does not cause the economic freedom in upper middle income (UMC) and low income countries (LIC).

Conclusion

ARDL causality test which study used to investigate that whether ther there exist unidirectional causality (economic freedom proceeds economic growth / may be a possibility of converse one-sided relationships), or bidirectional causality in our targeted variables, suggest that there is bidirectional causal connection between economic freedom and economic growth in HIC and UMC. Across all the two lag specifications, the average score of economic freedom and area's freedoms, i) SG (Size of government), ii) LSSPR (Legal Structure and Security of Property Rights), iii) ASM (Access to Sound Money), iv) FTI (Freedom to Trade Internationally) and REGU (Regulations to Labor and Credit markets) cause the economic growth. In return economic growth enhances the pace of economic freedom, but strength of causation of economic growth toward economic freedom is not robust and stronger as economic freedoms enhance economic growth. As the matter of remaining two categories of world economies LMC and LIC there we found robust and strong unidirectional relationships that economic freedoms enlarge the economic growth. While economic growth does not cause the economic freedom conversely. It means we accept our hypothesis that economic freedom causes the economic growth in the world economies.

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