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Analyzing the Relationship between Economic Freedom and Economic Growth: The Case Study of South-West Asian Countries

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Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aims: The main propose of this paper is analyzing the impact of economic freedom on growth in South West Asian countries using the panel data.

Place and Duration of Study: This study uses the panel data from 2000 to 2011 for 24 South West Asian countries economic freedom measurements are taken from The Heritage Foundation, reported in 2012. And all other statistics are taken from International Financial Statistics 2011 published by the International Monetary Fund and from world development indicators (WDI) 2012.

Methodology: The study employs econometric technique like Auto Regressive Distributive Lag (ARDL) Model to investigate the long run relationship between concerned variables.

Results: The analysis shows that the level of economic freedom robustly, positively and significantly affects the GDP per capita of the south west Asian countries; the impact of two control variables openness and foreign direct investment on growth of the south west Asian countries are also positive and statistically significant.

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1. INTRODUCTION

Economic freedom allows individuals and firms to voluntarily exchange and produces mutually beneficial outcomes. Sizeable theoretical and empirical evidences are available on growth. But there is not any remarkable study which pursued to investigate the nature of relationship between economic freedom–growth nexus issue in South West Asian Countries. Most studies show that those nations which have restriction on private agents and transactions have a lower level of economic growth [1]. In other words it is less clear whether economic freedom causes economic growth or not. This study investigates empirically nature of relationship between economic freedom and growth in twenty-four South west Asian countries. We used reliable economic freedom index measured by The Heritage Foundation (USA) in cooperation with the Wall Street Journal [2].

In Asia, where 70 percent of the developing world's people live, there is a distressing and lengthening agenda of economic development. More than 750 million people live in absolute poverty, more than 600 million people cannot read and write, two-third of them are women, about half the people have no access to safe drinking water and per capita income is also in lower levels. More disturbing are the wide disparities within Asia. In South West Asia, more than one billion people are facing economic instability, while East Asians are enjoying the economic prosperity. During third quarter of 20th century per capita incomes growth of East Asia was 5.2 percent per annum compared to 1.4 percent in South West Asia. During 1975 to 2005 average of GDP growth of East Asian countries was between 7 to 9 percent per annum while average GDP growth of South West Asian countries moved between 4.5 to 5.5 percent per annum. In spite of approximately similar social and economic condition of East and South regions, South west Asia is producing 8 percent of the world output while East Asia is contributing 18 percent at the spot in world output [3].

What are the reasons that East Asia's economic progress is too better than South West Asia? Consistent increase in income distribution disparities, poverty, unemployment and inflation rate, no doubt, are economic threats to South West Asian economic progress but an important reason is difference in level of economic freedom

in South West and in East Asia. Both regions have their own markets, but there is difference in market structure of East and South West Asia. In East Asian countries, people are enjoying free private markets where individuals making deals on their own behalf or as agents for identifiable individuals to pursue their own ends for their economic objectives rather than as agent of government [4]. On the other hand all these characteristics are deteriorated in South West Asian markets due to undue intervention in markets of goods and services by central and local governing authorities. It is true that there are so many other factors which could be responsible for such deteriorated economic progress in South West Asia but fact of worsen markets freedom has its unique importance [5].

A core purpose of this study is to investigate that if we have theoretical reasons to expect relationships between economic freedom and economic growth, then either growth economic freedom relationships exist empirically in South West Asian countries or not, and to inject few quantitative facts into the ongoing debate about the advantages of the free market economic system versus controlled and interventionist economic system [6]. We know that attainment of better level of economic freedom is a time consuming phenomenon, May it has little positive impact on economic prosperity in short run, but whether this growth will be sustained in long run or not in focused region, is other objective of this study.

This paper is organized as follow, section 1 based on review of literature, section 2 presents the data, model and methodology, section 3 based on empirical estimation of growth-economic freedom relationships, and section 4 provides conclusions.

2. REVIEW OF LITERATURE

Preliminary analysis by Gwartney, Lawson, and Block (1996) indicated that their economic freedom index was correlated with economic growth. This section explores the relationship between the two in more detail [7].

Economic theory provides several reasons why one would expect that incomes in a freer economy will grow more rapidly and eventually rise to higher levels than those in economies that are less free. Secure property rights and low

taxes will encourage individuals to engage more intensely in productive activity [8]. Greater freedom of exchange will expand the realization of gains derived from specialization and economies of scale. Freedom to enter and compete in markets will help to both promote efficiency in production and direct resources toward their most highly valued uses [9].

Furthermore, entrepreneurial discovery of new and improved technologies, better methods of production, and opportunities that were previously overlooked is an important source of economic growth (Kirzner 1973, 1997; Schumpeter 1912). Economic freedom facilitates this process and thereby promotes growth [10].

At any point in time, however, it would not be surprising to observe a loose relationship between the *level* of economic freedom and growth of income. A measure of economic freedom in 1995, for example, does not reveal how long that level has been present. Based on the level alone, it is not possible to determine whether economic freedom has been increasing or decreasing in recent years [11].

Neither is it possible to determine if there are good reasons to expect that there will be a change in the level of economic freedom in the near future. All of these factors will influence growth and therefore weaken the relationship between growth and level of economic freedom [12].

Gwartney, Lawson, and Holcombe [13] and de Haan and Strum [4,8] find that economic freedom has positive impact on economic growth in long run but in short period it does not contribute significantly toward economic growth because economic freedom is a time taking phenomenon. Carlsson and Lundstrom [14], Weede and Kampf [15], and Ali and Crain [2,16] found that economic freedoms at its initial stages did not have stronger and significant positive effect on economic prosperity, but in some cases during short run analysis economic freedom level affects economic growth significantly if difference in economic freedom is also included as an independent variable [17]. Berggren [18] summarized the existing studies about economic freedom –growth relationships and concludes the instead of lot of work that has been done but research on economic freedom is still at an early stage. He surveyed and concludes that mostly studies find the existence positive relationships between economic freedom and economic

growth, but some areas of freedom index also have inverse correlation between above said variables. Hanke and Walters [11] study relationship between economic freedom and GDP per capita and find the positive correlation [18]. De Haan and Siermann [9] conclude that the economic freedom index established by Scully and Slottje linked with growth but only in some out of the nine developed schemes. Wu and Davis (1999) probe the correlation between economic freedom, political freedom and growth and find that economic freedom has its unique importance especially for the purpose of economic growth [19].

There is more reason to expect a consistent relationship between *changes* in economic freedom and growth. Credibility, however, is vitally important here. Because credibility must be earned, there will often be a time lag between a change in economic freedom and when the change exerts an impact on economic activity [20]. For example, when a nation moves toward a more stable monetary policy or more liberal trade regime, it will take time to convince decision-makers that the change is permanent, rather than temporary [15]. This will be particularly true if opposition to the more liberal policy remains strong or if the nation has a history of policy shifts and instability. Both historical factors and current political conditions will influence the length of time required to earn credibility. Thus, the time period between when there is a change in policy that influences economic freedom and its impact on the growth of output is likely to vary, and in some cases it may be quite lengthy. This long and variable time lag will weaken the empirical relationship between changes in economic freedom and changes in the growth rate of output in the short run [13].

It is also important that whether all components or areas of economic freedom index are equally important for economic prosperity or not? Researchers find that some areas of index of economic freedom have better positive correlation with growth than others. Carlsson and Lundstrom [14] investigate those four out of seven areas of index of economic freedom (economic structure and use markets, freedom to use alternative currencies, legal structure and security of ownership, and freedom of exchange in capital markets) are positively and significantly associated with growth [21]. Two areas/components (size of government and international exchange, and freedom to trade

with foreigners) are negatively and statistically significantly related to economic growth. And remaining one component (monetary policy and price stability) of economic freedom has statistically insignificant relationship with economic growth [22].

3. MATERIALS AND METHODS

This study uses the panel data from 2000 to 2011 of 24 South West Asian countries (Kazakhstan, Kyrgyz Republic, Turkmenistan, Tajikistan, Uzbekistan, Azerbaijan, Georgia, Armenia, Turkey, Pakistan, Bahrain, Egypt, Iran, Iraq, Jordan, Lebanon, Israel, Kuwait, Oman, Qatar, Saudi Arabia, Syria, United Arab Emirates and Yemen). Member countries economic freedom measurements are taken from The Heritage Foundation USA economic freedom index report of 2012. And all other statistics are taken from International Financial Statistics 2011 published by the International Monetary Fund and from world development indicators (WDI) 2012. Exports (X), Imports (M), foreign direct investment (FDI) and Gross domestic product (GDP) measures in million of dollars. Per capita Gross domestic product is used as a proxy variable for economic growth. The ratio of Exports plus imports divided by GDP use for capture the impact of openness. All variables used in this study in logarithm transformation for econometrics estimation.

According to correlation matrix in Table 1 our core explanatory variable (economic freedom) is strongly correlated with GDP per capita (proxy of growth). Statistics shows that growth of South West Asian countries is positively correlated with level of economic freedom. And the intensity of this correlation is eighty three percent.

Table 1. Descriptive statistics of data

	Ln(EF)	Ln(FDI)	Ln(OP)	Ln(Y)
Mean	3.9	-0.35	3.5	5.26
Median	3.8	-0.08	3.2	5.24
Maximum	4.2	0.95	4.29	5.84
Minimum	3.7	-5.21	2.96	4.47
Std. Dev.	0.11	0.9	0.23	0.29
Skewness	-0.17	-2.49	0.47	0.54
Kurtosis	3.5	11.72	1.74	2.36
Correlation matrix				
	Ln(EF)	Ln(FDI)	Ln(OP)	Ln(Y)
Ln(EF)	1.00			
Ln(FDI)	0.55	1.00		
Ln(OP)	0.68	0.18	1.00	
Ln(Y)	0.83	0.56	0.71	1.00

To examine the economic growth-economic freedom long run relationships for South west Asian Countries following model is applied,

$$Y_t = \beta_0 + \beta_1 EF_t + \beta_2 FDI_t + \beta_3 OP_t + \varepsilon_t \quad (1)$$

Here Y is per capita GDP; EF stands for level of economic freedom at certain period of time t; FDI is foreign direct investment and OP is representative of openness; β_0 is the constant; and ε_t is the disturbance term. The economic growth- economic freedom correlation is determined by the size of beta. FDI and OP are supporting variables. To examine relationships study employs the modified autoregressive distributed lag (MARDL) suggested by Pesaran et al. [3], for co-integration (panel data) analysis, and OLS econometric technique for estimation. We used above mentioned variables in natural logarithm form to assess the significance of economic freedom for growth purpose. So the log transformation of model is as follow;

$$\begin{aligned} Ln(Y)_t = & \beta_0 + \beta_1 Ln(EF)_t + \beta_2 Ln(FDI)_t \\ & + \beta_3 Ln(OP)_t + \varepsilon_t \end{aligned} \quad (2)$$

In case of more than unity value of concerned beta or slop coefficient (elasticity) growth will be more elastic with change in that explanatory variable.

To examine the long run relationships between economic growth and economic freedom, this study uses recent co-integration analysis approach, known as modified autoregressive-distributed lag (MARDL) model, Pesaran et al. [3]. Pesaran et al. co-integration approach, also known as Bounds testing approach. This approach is applicable only for more than 80 observation estimation, but lately Paresh Kumar Narayan in 2005 generate only the bounds values for an estimation which is based on less than 80 observations. So technique is MARDL and bounds values are taken from Paresh Kumar Narayan tables. To begins with; we test for the null hypothesis of no co-integration against the existence of a long run relationship. Unlike other co-integration techniques (e.g., Johansen's approach) which require certain pre-testing for unit roots and that the focused variables to be integrated are of order one, 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.

- i. The long and short-run parameters of the model in question are estimated simultaneously;
- ii. 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;
- iii. 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. [3] is employed to test the existence of a co-integration relationship among the variables.
- iv. Modified ARDL method is free from any problem faced by traditional techniques in the literature.

The Pesaran et al. procedure involves investigating the existence of a long-run relationship in the form of the unrestricted error correction model for each variable as follow-

$$\begin{aligned} \Delta \ln(Y)_t = & \lambda_0 + \sum_{i=1}^n \lambda_i \Delta \ln(Y)_{t-i} + \sum_{i=1}^n \lambda_i \Delta \ln(EF)_{t-i} + \sum_{i=1}^n \lambda_i \Delta \ln(OP)_{t-i} \\ & + \sum_{i=1}^n \lambda_i \Delta \ln(FDI)_{t-i} + \alpha_1 \ln(Y)_{t-1} + \alpha_2 \ln(EF)_{t-1} + \alpha_3 \ln(OP)_{t-1} \\ & + \alpha_4 \ln(FDI)_{t-1} + v_{1t} \end{aligned} \quad (3)$$

Where $\ln(Y)$ is the natural logarithms of per capita Gross domestic product, $\ln(EF)$ is the natural logarithms of economic freedom level, $\ln(OP)$ is the natural logarithms of trade openness, and $\ln(FDI)$ is the natural logarithms of foreign direct investment, Δ is the difference operator. The modified ARDL approach estimate '(n+1)' number of regression in order to obtain optimal lag length for each variable, where 'n' is the number of lags to be used in the equation 3.

The F-tests are used for testing the existence of long-run relationships. Thus; the Pesaran et al. approach compute two sets of critical values for a given significance level. One set assumes that all variables are $I(0)$ and the other set assumes they are all $I(1)$. If the computed F-statistic exceeds the upper critical bounds value, then the H_0 (null hypothesis) is rejected. If the F-statistic falls into the bounds, then the test becomes inconclusive. Lastly, if the F-statistic is below the lower critical bounds value, it implies no co-integration. When long-run relationship exists, the F-test indicates which variable should be normalized. The null hypothesis of equation (1) is:

$$(H_0 = \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = 0).$$

Moreover, when the order of integration of the variables is known and if all the variables are $I(1)$, the decision is made based on the upper bound. Similarly, if all the variables are $I(0)$, then

the decision is made based on the lower bound. Then the long run relationship is estimated using the selected ARDL model.

4. RESULTS AND DISCUSSION

4.1 Unit Root Problem

Process of investigating the order of integration reveals that except openness our all variables are stationary at level. We relied on the Levin Lin & Chu t Common Unit Root Test Statistics and IPS (Im Pesran, Shin) Individual Unit Root Test Statistics for panel data stationary evidence. These considered power full and suggestive than any other test for panel data stationary detection. The statistics are given in Table 2 and 3 as under.

According to both unit root test process of investigating the order of integration reveals that only OP having a unit root problem at level while all other three variables are stationary at level but openness is stationary at 1st difference.

4.2 Co-integration Analysis

Turning to the results of ARDL co-integration test is shown in Table 4. The results of the bounds testing approach for co-integration show that there all four are co-integrated vector. It is found that our concerned variables are co-integrated for South West Asian countries and the long run

relationships exists between the variable because F-statistic exceed the Narayan Paresh Kumar [23] upper bound at the 5 and 10 percent level of significance. So we conclude that the null hypothesis of no co-integration cannot be accepted and that there is indeed an existence of Co-integration relationship among the variables in the model.

4.3 Long Run Elasticity

After detection of long run relationship between the variables, our goal in this section is to estimate the long run elasticity. We achieve this thorough using the ordinary least square procedure. Table 5 shows the results of long run coefficient. This table describes the long run

elasticities because all variables in logarithm form. Estimation shows that Economic Freedom (EF) has positive and significant affect on economic growth of South West Asian countries in long span of time. The other variables openness and foreign direct investment also positively and significantly effect in the South West Asian countries growth.

Economic freedom, openness and foreign direct investment have their unique importance for determining growth in the long run of the South West Asian countries. In which the elasticity of the economic freedom coefficient is greater than one, it means that change in level of economic freedom in focused region has more elastic impacts on growth in long span of time.

Table 2. Panel data “Levin Lin & Chu t” common unit root test

Variables	Statistics	Probability	Specification
EF*	-1.82	0.046	Level (individual trend and intercept)
FDI*	-5.22	0.000	Level (Intercept)
GDPPC*	-2.33	0.004	Level (individual trend and intercept)
OP*	-5.98	0.000	1 st difference (Intecept)

*Stands for natural log

Table 3. Panel data “IPS (Im Pesran Shin W statistics) individual unit root test

Variables	t-Statistics	Probability	Specification
EF	-1.90	0.043	Level (Intercept)
FDI*	-4.61	0.000	Level (Intercept)
GDPPC*	-1.78	0.045	Level (individual trend and intercept)
OP*	-3.89	0.000	1 st difference (Intecept)

*Stands for natural log

Table 4. ARDL Co-integration bound testing (restricted intercept and no trend)

Dependent variables	F statistics (lag order 3)	Paresh Kumar Narayan (2005) critical values		
		Level of significance	Lower bound value i.e. I(0)	Upper bound value i.e. I(1)
GDPPC	4.46			
OP	4.35	1%	3.96	5.26
EF	4.03	5%	2.84	3.97
FDI	4.86	10%	2.42	3.28

Table 5. Long run OLS (ordinary least squares) results

Dependent variable: Ln(Y)				
Variables	Coefficient	Std. error	t-statistics	Probability
Constant	-1.41	1.15	-1.22	0.31
Ln(OP)	0.16	0.06	2.64	0.00
Ln(EF)	1.15	0.41	2.78	0.00
Ln(EF(-1))	0.37	0.34	1.07	0.38
Ln(FDI)	0.09	0.03	3.39	0.00
R-squared	0.84	Adjus. R-squared		0.82
F-statistic	56.1	D.w. Stat.		2.12

4.4 Short Run Dynamics Behavior

Finally we employed the ECM version of modified ARDL to investigate the short run dynamic relationships. After investigation the long run impacts of concerned variables in the basic model, we turned to short run dynamic model as following;

$$\Delta Ln(Y)_t = \lambda_0 + \sum_{i=1}^n \lambda_i \Delta Ln(Y)_{t-i} + \sum_{i=1}^n \lambda_i \Delta Ln(EF)_{i-t} + \sum_{i=1}^n \lambda_i \Delta Ln(OP)_{i-t} + \sum_{i=1}^n \lambda_i \Delta Ln(FDI)_{i-t} + (ECM)_{t-1} Y_{t-1} \tag{1}$$

Table 6. Short run OLS (Ordinary Least Squares) results

Dependent Variable: $\Delta Ln(Y)$				
Variables	Coefficient	Std. error	t-statistics	Probability
$\Delta Ln(OP)$	0.343	0.05	6.49	0.00
$\Delta Ln(EF)$	0.037	1.23	0.03	0.79
$\Delta Ln(EF(-1))$	0.062	0.09	0.72	0.46
$\Delta Ln(FDI)$	0.067	0.008	8.12	0.00
Constant	0.033	0.004	7.81	0.00
ECM(-1)	-0.134	0.024	-5.68	0.00
R-squared	0.64	Adjus. R-squared		0.62
F-statistic	3.74	Probability		0.09
D.w. Stat.	1.86			

Table 6 (above) reports the results of ECM formulation of above given equation. According to Engle Granger (1987), co-integrated must have in ECM representation. The ECM strategy provides an answer to problem off spurious correlation in the short run dynamic relationship between economic growth and economic freedom along with supporting variables, more technically, ECM measures the speed of adjustment back to co-integrated relationships. ECM posited to be a force affecting the integrated variables to return their long run relation when they deviate from it. The signs of the short run dynamic impacts are maintained to the long span of time. The equilibrium correction coefficients estimated value is -0.134, which is significant at 10 percent level of significance has the correct sign and imply a fairly 13.4 percent per annum speed of adjustment. In other words 13.4 percent disequilibrium from the previous year shock converges back to the long run equilibrium in the current year.

5. CONCLUSION

Research on economic freedom is still at its embryonic stages and a lot of remains to be done.

However we used the most applicable technique to judge the long run economic freedom-growth relationships in twenty-four South West Asian countries. The study shows that freedom to private sectors (financial freedom, investment freedom, fiscal freedom, monetary freedom, business freedom, trade freedom, freedom from corruption and property rights) leads toward economic prosperity. In our study, we observed that size of government has negative correlation with growth while financial freedom trade freedom, investment freedom, property rights, business freedom, and freedom from corruption are positively linked with economic growth.

Keeping in view the above discussion, we offer some policy recommendations to enhance the economic growth in under discussion South West Asian countries through increase in economic freedom.

- i. One indicator of the Heritage Foundation Economic Freedom index is government size. The study shows that government size is negatively correlated with growth. Because increase in government size negatively affects the better allocation of resources. South West Asian countries can enhance the growth process through

- reduction in government size. These countries should plan policies that influence the incentive to private individual, to work, to save and to invest.
- ii. Protection of property rights is another key ingredient of economic freedom index. But property rights are protected through strong and unbiased judicial system. Establishment of impartial and strong judicial system may increase the process of growth through sufficient provision of protection to property rights.
 - iii. Financial and monetary markets should be free, because freedom and development of financial sector enhance the pace of investment but keep in mind that in this respect central bank of economy will play central role to avoid the problem of inflation.
 - iv. There should be a freedom of business and investment through reduction in business starting complication of documentation, availability of infrastructure. Investor should be entertained through reduction in taxes, increase in financial assistance and through introduction of tax free zone.
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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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