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Economic Freedom and Growth

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Economic Freedom and Growth¹

Abstract

The neoclassical growth model stresses the importance of investments in physical and human capital, as well as technological advancement, in fostering economic growth. However, new institutional economists argue that it does not explain why investment rates or productivity levels are different across countries, whereas quality of a nation's institutions, and by implication, the degree of economic freedom, can influence both availability and productivity of human and capital resources and economic growth. On the other hand, it is argued that economic freedom can be viewed as a normal good. Economic growth leads to higher living standards in a nation and creates larger demand for a higher level of economic freedom. This study, therefore, attempts to employ panel cointegration and Granger causality tests to evaluate the dynamic relationship between economic freedom and real GDP per capita. The empirical findings show that the long-run causal link between real GDP per capita and economic freedom cannot be rejected and hence they can undergo the error-correcting process to maintain their long-run relations intact.

JEL classification codes: D78, E3

Key words: economic freedom, economic growth, Granger-causality

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I. Introduction:

Why income grows faster in some countries than in others is one of the major topics of research in developing economies. Neoclassical economists stress the importance of accumulation of capital and labour for fostering economic growth. However, diminishing returns of capital and labour are a major factor causing slower growth; eventually any region or economy will have to reach a "steady state" where new capital is unable to enhance economic growth. Inventing new technologies can increase productivity and help overcome the steady state problem, enabling an economy to maintain continuous growth.² In a nutshell, the neoclassical approach predicts that investments in physical and human capital, as well as technological advances, play a significant role in facilitating economic growth.

Although several studies support the neoclassical growth theory in that there is strong positive relationship between rate of investment in physical capital and long-term growth, new institutional economists argue that the neoclassical growth model cannot explain why investment rates and productivity levels vary across countries; it is the institutional and policy environment that can explain these differences.³ Sound institutions encourage productive activities and depress predatory behavior. Hence, quality of a nation's institutions and, by implication, the level of economic

² For details, see Swan (1956).

³ See Gwartney (2009).

freedom, can influence both availability and productivity of human and capital resources and might play an influential role in its economic performance. Economic freedom is a condition or state of being in which individuals can act with autonomy while in the pursuit of livelihood. It therefore implies that the right to produce, trade and consume any goods and services is almost a fundamental right for one and all. Furthermore, economic freedom is characterized by open markets, adequate protection of property rights, freedom of economic initiative and freedom from corruption.⁴ North (1990) pointed out that a society's institutional framework (economic freedom) can play an instrumental role in the long-term performance of its economy. Mauro (1995) observed that corruption hinders economic growth. Moreover, secure property rights can attract outside capital, make access to credit easier, lower interest rates, and encourage investment, innovation, exchange of assets, maintenance of property and economic growth.⁵ Furthermore, entrepreneurs and market systems also significantly contribute to technological advancement, capital accumulation and long-run economic growth. An innovative entrepreneur successfully introducing a new product and production method will gain more revenue and profits, whereas the market positions of entrepreneurs that are not able or willing to change will be weakened or even destroyed (this is called creative destruction). Competitors have to follow successful entrepreneurs in their business or suffer lower profits, losses or even bankruptcy. As all players in the market have to adopt new technologies quickly, new technologies

⁴ For details, see http://en.wikipedia.org/wiki/Economic_freedom.

⁵ For details, see Brunt (2007), Yoo and Steckel (2009).

spread throughout the industry. Alan Greenspan, the former Chairman of Board of Governors of the Federal Reserve (U.S.), has described the impact of creative destruction on economic growth as "capitalism expands wealth primarily through creative destruction—the process by which the cash flow from obsolete low-return capital is invested in high-return cutting-edge technologies."⁶

Besides, free trade is another essential component of the drive for stronger economic growth because, based on the principle of comparative advantage, it is a way for regions to specialize, increase the productivity of their resources, and realize a larger total output than they otherwise would. On the whole, according to the new institutional arguments, economic freedom consisting of business and trade freedom, protection of property rights and freedom from corruption, etc., plays a significant role in determining economic growth. Chong and Calderón (2000) empirically found that improvements in the institutional framework have a positive influence on economic growth, especially in poor countries. Dawson (1998), Ayal and Karras (1998), Gwartney et al. (1999), De Haan and Sturm (2003), and Carlsson and Lundström (2002) investigated the relations between various components of freedom and growth and observed that some of them were associated with growth while some of them were not. Moreover, Baumol (2002) stressed that the free market economic system is a powerful innovation machine to stimulate economic growth. Gwartney (2009) reveals that countries with more economic freedom have higher shares of private investment in

⁶ For details, see Greenspan (2002).

GDP, higher productivity of private investment, grow more rapidly and achieve higher levels of per capita income than countries with lower levels of economic freedom.

While quite a few empirical studies have found that economic freedom causes economic growth, it is argued that growth can also cause more freedom because freedom is a normal good. Economic growth leads to higher living standards in a nation and creates larger demand for a higher level of economic freedom.⁷ Indeed, as economic freedom itself is decisive for economic growth, it is widely desirable and needed to stimulate higher growth. This phenomenon is more likely to occur in countries lacking natural resources or foreign aid because they cannot grow unless they undertake serious economic liberalization. Based on the above arguments, the freedom-growth relationship may not be solely dependent on whether “freedom causes growth” but also on whether “growth causes more freedom,” and the relationship may also include the mutual causation between them. However, not many researchers have quantitatively assessed their causal relationship. Heckelman (2000) observed that the average level of freedom precedes growth whereas growth may precede one of the components (government intervention); he did not find any relationship between growth and two of the indexes that are deemed to be components of economic freedom – trade policy and taxation. Vega-Gordillo and Alvarez-Arce (2003) found that economic freedom fosters economic

⁷ For example, Hanke and Walters (1997) and Prokopijevic (2002).

growth. Dawson (2003) found that the level of overall economic freedom, and most of its underlying components, are Granger-caused by the level of political and individual liberties. Justesen (2008) finds that some (but not all) aspects of economic freedom affect economic growth and investment. Thus, there is only weak evidence that growth affects economic freedom. These studies employ data up to the year 2000 only and the freedom index used in Vega-Gordillo and Alvarez-Arce (2003), Dawson (2003) and Justesen (2008), is the Fraser index, reported at 5-year intervals from 1975 to 2000. Therefore, the regression equations can be estimated only over 5 periods (observations). Economic growth is defined as the 5-year growth rate of real GDP per capita for comparison with the freedom index. This kind of observations in the time dimension poses a substantial problem. Technically, the above-mentioned studies use panel vector autoregressive regression (VAR) models for Granger causality tests and neglect the source of causation from the error-correction terms, once the cointegration relationship is established. If the variables are non-stationary but cointegrated, then a vector error correction model (VECM) can be employed to test for 'short-run' and 'long-run' forms of Granger causality, which are two sources of causation identified by Granger (1988) from the first-differenced terms of independent variables and the error-correction terms, respectively. Hence, this study attempts to employ panel cointegration and causality tests to update the causal relationship between growth and economic freedom by using the

Heritage index, an alternative index of economic freedom.⁸

The organization of the rest of the paper is as follows. Data is described in Section 2. Section 3 explains the econometric methodologies employed and reports the empirical results. Concluding remarks are made in the last section.

II. Data

The two key variables, income and economic freedom, are defined as follows:

(a) *Income, y*, is the natural logarithm of real GDP per capita from The World Bank's data set (data.worldbank.org/indicator) for the years 1995-2008, including data of real GDP per person employed, labor force and population; real GDP per capita is generated from these data.

(b) *f* denotes the index of economic freedom, obtained from The Heritage Foundation's data set (www.heritage.org/Index/Explore.asp) for the years 1995-2010.

Government expenditure to real GDP ratio can be used to measure the degree of government intervention and economic freedom. The smaller the ratio, the higher is the reliance on markets, or the larger is the degree of economic freedom. However, markets require an institutional framework

⁸ Basu, et. al. (2003) attempted the tests of short-run and long-run Granger causality between economic growth and FDI within the framework of panel VECM.

providing for protection of property rights and enforcement of contracts. Governments may use regulations and mandates to allocate resources rather than doing so through taxes and spending processes. Hence, government expenditure to real GDP ratio is not a good indicator. To measure the consistency of a nation's institutions and policies with economic freedom, an index of economic freedom is constructed to reflect an economy's degree of freedom for personal choice, voluntary exchange, internal and external openness of the market, and private property rights enforcement, etc. There are two indices for world economic freedom, compiled by the Heritage Foundation and The Fraser Institute. Fraser index started much earlier, in 1975, but is presented every five years until 2000; since then it has been published annually. The Heritage index has been presented annually since 1995. The Fraser index is based on 42 factors that are more difficult to control from a policy perspective. In contrast, factors employed in the Heritage index only represent trade policy, fiscal burden, and black markets, etc., which are more policy oriented, in the sense that governments can control them (Heckelman, 2000). Moreover, the Heritage index involves more observations and is more consistent,⁹ and hence, is employed in this study.

III. Methodology and empirical results:

Regressions with non-stationary variables produce spurious results. To avoid this problem, the first step for investigating causality between economic freedom and real GDP per capita is to test

⁹ For details, see Madan (2002).

for the null hypothesis of unit root against the alternative of stationarity for y_t and f_t using the panel unit root methods of Levin, Lin and Chu (LLC) (2002), and Im, Pesaran and Shin (IPS) (2003). LLC assumes that there is a common unit-root process across countries (cross-sections), whereas IPS allows for individual unit root processes. The results shown in Table 1 cannot reject the null hypothesis of non-stationarity for the series of income, y_t , and freedom index, f_t , and nor can it reject the null hypothesis for the series in first differences. Then, both series are I(1).

Table 1: Panel Unit Root Tests

| Variables | LLC | | IPS | |
|-----------|-------------------|---------------------|-------------------|---------------------|
| | Levels | First Differences | Levels | First Differences |
| y_t | 2.665 (0.996) | -22.083* (0.000) | 13.596 (1.000) | -13.394* (0.000) |
| f_t | -0.884 (0.188) | -28.129* (0.000) | -0.895 (0.185) | -20.181* (0.000) |

Notes: LLC and IPS test statistics are distributed as $N(0,1)$ under the null hypothesis of panel unit root. The sample periods run from 1995 to 2008 and the number of countries is 79. Figures in brackets are P-values. * denotes rejection at 1% significance level.

The concept of cointegration helps identify the long-run relationship between the I(1) variables, y_t and f_t , and avoid spurious regression results from the use of traditional statistical inferences.

We employ the panel cointegration method of Pedroni (1999 and 2004) using residual-based ADF tests over the period 1995-2008. This method allows for both heterogeneous cointegrating vectors and short-run dynamics across cross-sections. The specific cointegrating regression we estimate is:

$$y_{i,t} = \alpha_i + \theta_t + \beta_i f_{i,t} + e_{i,t} \quad (1)$$

We allow for the slope of cointegrating regression β_i to vary across countries. The common time dummies θ_t capture any common worldwide effects that would tend to cause individual country variables to move together. In case of cointegration, the regression residuals, $e_{i,t}$, will be stationary. The Pedroni panel statistics will be applied to $e_{i,t}$ for the null hypothesis of no cointegration. There are, however, two alternative hypotheses: one is the homogenous alternative for all countries known as the within-dimension ADF statistic test, and the other is the heterogenous alternative which is referred to as the between-dimension ADF statistic test. The results in Table 2 show the evidence of cointegration between y_t and f_t at 1% significance level.

Table 2: Pedroni Panel Cointegration Tests

| Variable | Within-dimension ADF | Between-dimension ADF |
|-----------------|----------------------|-----------------------|
| y_t and f_t | -3.669* (0.0001) | -2.665* (0.003) |

Notes: The test statistics are distributed as $N(0,1)$ under the null hypothesis of no cointegration. Figures in brackets are P-values. * denotes rejection at 1% significance level.

Cointegration implies that causality must run in at least one direction (Granger, 1986) but does not make any assumption about the direction of causality between income (y) and the degree of freedom (f). To test for the direction of causality, we first estimate the individual disequilibrium error term from the cointegrating regression, (1), and then construct the panel VECM as follows:

$$\begin{aligned}
 \Delta y_{i,t} &= c_{2,i} + \lambda_{1,i} e_{i,t-1} + \sum_{j=1}^K \phi_{11,i,j} \Delta y_{i,t-j} + \sum_{j=1}^K \phi_{12,i,j} \Delta f_{i,t-j} + \varepsilon_{1i,t}, \\
 \Delta f_{i,t} &= c_{2,i} + \lambda_{2,i} e_{i,t-1} + \sum_{j=1}^K \phi_{21,i,j} \Delta y_{i,t-j} + \sum_{j=1}^K \phi_{22,i,j} \Delta f_{i,t-j} + \varepsilon_{2i,t}
 \end{aligned} \tag{2}$$

Under the Granger representation theorem, at least one of the adjustment coefficients $\lambda_{1,i}$, $\lambda_{2,i}$ of the VECM must be non-zero when a cointegration between two variables is established. Granger (1988) identified two sources of causality. The first is through the impact of the lagged first-differenced terms of each variable that are of only short-run nature, without reference to the long-run relationship. It can therefore be interpreted as short-run causality. The second is through the lagged error-correction terms, which provide additional channels of Granger causality in the cointegrated VAR model. When variables are cointegrated, deviations from the long-run equilibrium will feedback on the changes in dependent variables in order to restore equilibrium. If the dependent variables are driven directly by the equilibrium errors, then they are said to be responding to this feedback; otherwise, they are responding only to short-run stochastic shocks. Since the causal impact of lagged error-correction term is in relation to the long-run relationship of the cointegrated process, it is often interpreted as long-run causality. Toda and Phillips (1994) provided a theoretical overview of Granger causality tests in VECM, and referred to the two parts of the hypothesis as “short-run non-causality” and ‘long-run non-causality.’ The null hypothesis of short-run non-causality is indicated by setting the short-run coefficients of independent variables (i.e. $\phi_{12,ij}, \phi_{21,ij} \quad \forall i,k$) to be zero and then rejection of the null indicates evidence of short-run causal links. The long-run non-causality can be tested by calculating the F statistics under zero

restrictions on λ_{1i} and λ_{2i} . Significance of the coefficient adjustments indicates long-run causal effects.

The results presented in Table 3 suggest that the panel as a whole rejects the evidence of short-run causality between y_t and f_t . However, long-run causality exhibits bi-directional behavior with y_t causing f_t , and f_t causing y_t as the F statistics reject the null of zero adjustment coefficients at 1% significance level in equations of Δy_t and Δf_t . Both y_t and f_t adjust to disequilibrium induced by changes in f_t and y_t , respectively, between each year. The movements of real GDP per capita and the Economic Freedom Index have long lasting effects on each other, based on the panel VECM framework.

Table 3 Panel Short-run and Long-run Granger Causality Tests

| Ho: Short-run Non-causality | F-test | P-value | Ho: Long-run Noncausality | F-test | P-value |
|-----------------------------|--------|---------|---------------------------|--------|---------|
| From y_t to f_t | 1.174 | 0.143 | From y_t to f_t | 1.807* | 0.0001 |
| From f_t to y_t | 0.856 | 0.803 | From f_t to y_t | 1.996* | 0.000 |

Notes: Total pool observations = 790. Pooled LS method is adopted for estimation of (2).

IV. Conclusion:

In this paper, we employ panel cointegration method to find the evidence of long-run relationship between real GDP per capita and economic freedom. We further investigate the short-run and long-run forms of Granger causality in the whole panel. The long-run causal link between real GDP per capita and economic freedom cannot be rejected. Real GDP per capita and

economic freedom can undergo the error-correcting process to maintain their long-run relations intact. If, for example, real GDP per capita goes too fast or economic freedom goes too slow, deviations from the equilibrium will force them to adjust in each year to restore equilibrium.

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