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The Effect of Trade Openness and Economic Freedom on Economic Growth: the Case of Middle East and East Asian Countries

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ABSTRACT: One of the rudiment features of international trade theory is that open economies achieve high economic growth rates than closed economies. The current study aims to investigate how economic freedom impacts economic growth. Therefore, economic growth model is estimated by using 17(Middle East and East Asian) countries' data during 2000-2009.In order to testing the data, panel data analysis is employed. The results show that overall index of economic freedom is positively and robustly correlated with growth, further, the results demonstrate that trade openness is positively associated and statistically significant determinant of growth. We find that economic freedom has significant effect on economic growth. Furthermore, we decompose the economic freedom index into the five categories constructing the index and observed that just index of size of government and index of access to sound money is negatively correlated with growth.

Keywords: Economic Freedom; Openness; Economic Growth; Panel Data
JEL Classifications: C33; F43; O50

1. Introduction

Economic growth is the mainstay of any country's economic development; because of its overall benefits to different sectors of the economy. In addition, economic growth can increase the living standard if the nation's wealth is distributed fairly. By the way, because of positive influences on aggregate demand, growth augments employment rates. Further, growth provides fiscal dividend through extra tax revenue that can be used to finance public projects; it enhances the accelerator effect by encouraging investment in new technology that then helps in sustaining economic growth through increased aggregate supply. Finally, growth boosts business confidence through its positive impact on firm's profits, which in turn boosts their stock exchange values resulting in the growth of big companies.

International trades immensely benefit the citizens and firms of a country. Specializing in the production of goods and services where there is an absolute or comparative advantage results in an overall gain in welfare that in turn results in productive and allocation efficiency. Economists measure the benefits of free international trade by using the concepts of consumer and producer surplus. The difference between the price that consumers would be willing to pay for a goods or service rather than go without it and the price that they end up paying is called consumer surplus. It measures the welfare gain to the consumer. The difference between the price that producers will be willing to sell their produce at and the price they actually sell it at is called the producer surplus. These two concepts measure the total welfare gain from the product. International trade increases both consumer and producer surplus and thus total economic welfare. The notion of economic growth is vital to economists because of its central role in economic development. Therefore, the key factors that propel economic growth have been an area of interest for a very long time to economists because of their significant role in the improvement of the standard of living of the populace. International trade as one of the factors that has a positive effect on economic growth has also become very important as the expansion of world markets took root within the global economy. The purpose of this chapter is to outline briefly the main theories of growth and trade. This is done by analyzing the contribution of classical economists to the theory of trade and growth.

2. Literature Review

2.1. Theoretical Literature: Economic freedom and Growth

Economic freedom in its most compact definition refers to the protection of private property rights and the freedom of voluntary transactions (Gwartney et al., 1996). A government that does not enforce contracts usurps property from its citizens without due compensation, and puts limits on voluntary transactions, violates the tenets of economic freedom. In so doing, such a government provides a disincentive for entrepreneurship and productivity, given that individuals are skeptical about realizing the gains of their productive efforts. It is a lure of the individual's potential gain from productive activities and new ideas that makes entrepreneurship; thus, growth possible[1]. Within the growth literature, there have been many efforts to assess the impact of economic freedom on growth and development. Noting that protection of private property and freedom of choice and exchange are the key elements of economic freedom. DeHaan et al., (2006) examine the existing empirical research and conclude that a vast majority of studies support the positive link between economic freedom and growth[2]. For instance, Gwartney et al., (1996), the creators of the Fraser Institute's (1996), measure of economic freedom, note that the countries with the highest economic freedom scores have an average annual growth rate of per capita real GDP of 2.4%, while those with the lowest economic freedom scores have an average of negative 1.3% for 1980-94.The authors also iterate that countries significantly improving their economic freedom scores recorded positive rates of growth. Given the existing literature illustrating the importance of economic freedom, independently, on growth, the next logical question is how economic growth is impacted by both variables. When economic freedom is included in empirical estimates, the relative impact of each on growth can be deduced. In the next section, we begin this endeavor by describing the variables used in our analysis and the potential outcomes of our regressions.

2.2. Trade-Based Theories

Both the static and dynamic versions of the traditional trade theories suggest that openness to international trade leads higher national income. According to (static) traditional theories (i.e., the Ricardian and Hecksher-Ohlin theories), liberalization of trade in the form of lower barriers generate welfare improvements as the specialization gains and exchange gains manifest themselves into higher output than would have been possible under a restrictive trade regime[3].The dynamic versions of these traditional models, in fact, suggest that the overtime, the productivity gains are even higher due to acceleration in the accumulation of additional resources.

This may be because of the higher savings made possible by higher output levels, or because of enhanced technology, forward and backward linkages in the export sector as well as x-efficiencies. The implication of these traditional models is that since openness can raise the rate of accumulation of additional resources, countries that are more open should experience higher output growth. The new trade theories, which are attributable to the works of Krugman (1986), Brander and Spencer (1983), Dixit (1886; 1987), and Grossman (1992), however recognize that trade restrictions may be welfare enhancing under certain conditions.

The argument is that if domestic firms use such restrictions to acquire international market power, which is then used to prevent entry (e.g. especially through price wars) and increase their market shares, then lower prices and higher output may result due to economies of scale. Dynamic gains are therefore possible because there is high entry cost, high learning cost, and externalities in the

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1- In addition to the general definition offered above, recall that economic freedom can be thought of as a collection of various sub headings, including size of government, economic structure and use of markets, monetary policy and price stability, freedom to use alternative currencies, legal structure and security of private ownership, international exchange and freedom to trade with foreigners, and freedom of exchange in capital markets (Carlsson and Lundström 2002). Each of these categories represents a smaller facet ofthe overarching definition of economic freedom.

2- For example, De Vanssay and Spindler 1994; Gwartney et al., 1996; Islam, 1996; Hanke and Walters, 1997; De Haan and Siermann 1998; Johnson and Lenartowicz 1998; Nelson and Singh 1998; Gwartney et al. 1999; De Haan and Sturm, 2000; Carlsson and Lundström, 2002; Green et al., 2002; Knowles and Garces-Ozanne, 2003;Heckleman and Knack, 2004; Berggren and Jordahl, 2005; Weede, 2006.

3- Specialisation gains occur because all factors are allocated to their best uses. Exchange gains occur since production is done under least-cost conditions, free trade leads to consumption gains through both increased choice of goods and services and the lower prices for consumers than would have prevailed under autarky.

protected industries. These externalities refer to those linked to accumulation of physical and human capital (education, on the job training and learning-by doing), and in the production of new ideas (learn how to imitate as well as use blueprints to adapt technology, innovations, etc.). The new trade theories, therefore, justify government interventions (such as subsidies, for instance) that will enhance spillovers in the economy. It is the existence of spillovers in production lead to the increase in the long-run growth rate of the economy. This is so because positive spillovers make possible constant or even increasing returns of the accumulated physical and human capital. Based on Solow's model (1956) of endogenous growth, we adopt the following growth model for (Middle East and East Asian) countries with respect to inputs and outputs.

$$Y_t = F(K_t, A_t, L_t) \quad (1)$$

Where:

Y = output, K = capital, L= labour and A = efficiency of labour through the changes of technology. Subscript t denotes time which assumes that outputs change over time if the inputs change. A and L enter multiplicatively in this equation, so we can specify A as the function of openness where openness is defined as export plus import to GDP ratio.

$$A = F(\text{openness}) \quad (2)$$

$$\text{Where openness} = \frac{(\text{EXPORT}+\text{EMPORT})}{\text{GDP}} \quad (3)$$

2.3. The Economic Freedom

Economic freedom as defined by the Fraser Institute (1996), a think tank that publishes Economic Freedom of the world since 1996, is composed of personal choice, voluntary exchange, freedom to compete and protection of person and property. Individuals have economic freedom when: (a) their property acquired without the use of force, fraud, or threat 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. In an economically free society, the fundamental function of government is the protection of property and the enforcement of contracts (Gwartney and Lawson, 2004).

The Heritage Foundation, with another publishes (Wall Street Journal) Index of Economic Freedom since 1995 defines economic freedom as "the absence of government coercion or constraint on the production, distribution or consumption of goods and services beyond the extent necessary for citizens to protect and maintain liberty itself". In other words, people are free to work, produce, consume and invest in the ways they feel are most productive (Beach and Miles, 2004).

In this definition, there is a substantial difference between the degrees to which people are free individually and collectively to undertake economic activities. Individual freedom means the right to do economic activities free from arbitrary control and interference by the state and other individuals. Collective freedom refers to the extent to which the economic system that controls choice reflects the expressed preferences of majority of the citizenry rather than those of a ruling few (De Haan and Sturm, 2000).

To measure economic freedom, we utilize the well cited and established Economic Freedom of the world Index compiled by the Fraser Institute (Gwartney et al., 2008).The index measures the level of economic freedom, utilizing 23 different components, on a scale from zero to ten, with ten representing a greater degree of freedom. These components can be grouped in seven broad categories namely: size of government, economic structure and use of markets, monetary policy and price stability, freedom to use alternative currencies, legal structure and security of private ownership, freedom to trade with foreigners, and freedom to exchange in capital markets. According to this index, economic freedom measures "the extent to which rightly acquired property is protected and individuals are free to engage in voluntary transactions" (De Haan and Sturm, 1999:3).

Thus, any government interference in transactions decreases the economic freedom score for that country[1].The factors and the components of the economic freedom index are listed in Table 1.

1-We recognize the availability of alternative institutional indices (such as Heritage Foundation's Index of Economic Freedom and ICRG's average protection against risk of expropriation); however, due to the long time period and sample size of countries covered by the Fraser index, we find it to be the most suitable for our analysis. For an in-depth explanation of and comparison between the Fraser freedom index and Heritage's freedom index, see De Haan and Sturm 1999.

Table 1. Economic freedom index for Middle East and East Asian countries

Factor	Index mean(2009)	variable
1. Size of Government: Expenditures, Taxes, and Enterprises	**5.61**	**1-1 general government consumption spending 1-2 transfers and subsidies as a percentage of GDP 1-3 government enterprises and investment 1-4 top marginal tax rate**
2. Legal Structure and Security of Property Rights	**6.20**	**2-1 judicial independence 2-2 impartial courts 2-3 protection of property rights 2-4 military interference in rule of low and the political process 2-5 integrity of the legal system 2-6 legal enforcement of contracts 2-7regulatory restrictions on the sale of real property**
3. Access to Sound Money	**8.31**	**3-1 money growth 3-2 standard deviation of inflation 3-3 inflation: most recent year 3-4 freedom to own foreign currency bank accounts**
4. Freedom to Trade Internationally	**6.54**	**4-1 taxes on international trade 4-2 regulatory trade barriers 4-3 size of the trade sector relative to expected 4-4 black – market exchange rate 4-5 international capital market controls**
5. Regulation of Credit, Labor, and Business	**6.65**	**5-1 credit market regulations 5-2 labor market regulations 5-3 business regulation**

3. Model Specification and Data Description

In the study we use of two model. First, we employ a variety of control variables that may affect a country's growth and we estimate the model with the overall index of economic freedom. In the next step we decompose the economic freedom index into the categories constructing the index. Summary statistics and 17 opponents **(**Middle East and East Asian) are illustrated in Table 2.

Table 2. Summary index and countries rank

Variable	Obs	Mean	Std.Dev.	Min	Max
$LRGDP_{it}$	**142**	**9.45**	**0.97**	**7.91**	**11.09**
$LECFR_{it}$	**142**	**1.92**	**0.11**	**1.58**	**2.19**
$LOPEN_{it}$	**142**	**4.47**	**0.63**	**3.01**	**6.02**
$LINV_{it}$	**142**	**3.27**	**0.30**	**2.43**	**3.88**
$LEMP_{it}$	**142**	**3.56**	**0.24**	**2.92**	**4.13**
$LHCAP_{it}$	**142**	**4.38**	**0.17**	**3.71**	**4.62**
$LPOP_{it}$	**142**	**9.97**	**1.87**	**6.48**	**14.09**

3.1. Methodology

The Economic Growth Model:

We follow the existing literature on economic freedom and growth in selecting our variables (for example, Levine and Renelt1992; Dawson 1998; Gwartney et al., 2004) and with Following Frankel and Romer (1999), Dollar and Kraay (2002) Romalis (2006), we use trade GDP ratio as indicator of **(**Middle East and East Asian) openness.

We estimated the following model:

$$\mathbf{Y_{it}=\beta_0+\beta_1 EF_{it}+\beta_2 OP_{it}+\beta_3 K_{it}+\beta_4 EM_{it}+\beta_5 H_{it}+\beta_6 POP_{it}+\varepsilon_{it}}$$

Where:

Y is growth of output for country i in t year, **EF** is economic freedom for country i in t year, **OP** is representative of openness.

The control variables used in the models above include:

K is physical capital, **EM** is Employment, **H** is human capital, **POP** is population,

β_0 is the constant; and ε_t is the disturbance term.

Economic theory predicts positive signs for all coefficients as they all contribute to growth. real Gross Domestic Product is used as dependent variable. The ratio of Exports plus imports divided by GDP use for capture the impact of openness. K is represented by investment share in GDP.EM is represented by Employment to population ratio, ages 15-24, total (%), Human capital is approximated by high school registered students in the population of 15-19ages.Finally, we use the index where the weights are determined by aprincipal-component analysis. The index of economic freedom is divided into the seven categories that in this study we use of five indexes. Each category index is measured on a scale between 0 and 10, where 10 is the highest level of freedom.

Re-writing the equation with the proxies as follows may be more explanatory:

$$\mathbf{LRGDP_{it}=\beta_0+\beta_1 LEF_{it}+\beta_2 LOPENC_{it}+\beta_3 LINV_{it}+\beta_4 LEMP_{it}+\beta_5 LHCAP_{it}+\beta_6 LPOP_{it}+\varepsilon_{it}} \quad (3)$$

We first estimated model without control variables for show the basic relationship between economic growth, openness and our main variables for 17**(**Middle East and East Asian) opponents in years 2000-2009.Data Source and Data Description explained in Appendix 1.

The data on economic freedom is reported in Economic Freedom of the World: 2010Annual Report (Gwartney et al., 2000). The data have been reported every fifth year since 1970. There are three main indices with different weightings of the 23 components of the index. Summary statistics for these unbalanced panel data are provided in Table 3.

Table 3. Summary statistics

For 2009 year		Country (East Asian)	For 2009 year		Country (Middle East)
Summary index	Rank		Summary index	Rank	
6.43	92	China	4.91	116	Syria
9.01	1	Hong Kong	7.28	28	Bahrain
6.50	84	Indonesia	6.60	53	Egypt
7.44	22	Japan	7.02	40	Emirate
7.32	30	Korea south	5.76	95	Iran
6.68	78	Malaysia	7.03	39	Oman
8.68	2	Singapore	6.55	56	Israel
6.87	65	Thailand	7.24	30	Jordan
			6.72	44	Kuwait

Source: Author's calculations

Thereafter, we take the panel characteristics of the dataset into account and estimate random and fixed effects models. The baseline models contain as control variables and we include the investment share as one of our standard control variables because of the well-documented positive relationship between investment in physical capital and growth (Levine and Renelt, 1992). All variables used in this study in logarithm transformation for econometrics estimation. However, we acknowledge a potential endogeneity problem, as highlighted by De Haan et al., (2006), of including both economic freedom and the investment rate in the same regression. Several studies show that economic freedom influences growth directly through a productivity-enhancing channel and indirectly

through an investment effect (Dawson 1998; Bengoa and Sanches- Robles 2003; Gwartney et al., 2004). In order to selecting the best methods, Pooled Least Squares(PLS),fixed effects(FE) and random effects (RE)),we used testes of Chao (f. Limer), and Hausman. First, in order to choose the type of model estimates, it is necessary to test the F Limer and Hausman. In second step, we estimated both random effect model and fixed effect model.

3.2. Results and Discussion

Static Panel Regression Results:

We have also applied fixed effect and random effect models to test the robustness of estimated results. To compare the fixed effect model (FE) with random effect model (RE), Hausman test is applied. The value of Hausman test is significant which indicates that fixed effect model (FE) is a better choice for the analysis as compared to random effect model (RE). The results of fixed effect and random effect models are consistent with pooled OLS results, which corroborate the existence of relationship between openness, economic freedom and growth. Furthermore, positive we first estimate the model with the overall index of economic freedom and the results are presented in Table 4. Table 4 presents the static panel regression results.

Table 4. Fixed effects model and random effects model

Variables	Model1		Model 2		Model3		Model4		Model5	
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE
$LECFR_{it}$	1.61*** (6.99)	1.70*** (7.42)	1.56*** (6.49)	1.65*** (6.87)	1.25*** (5.08)	1.36*** (5.59)	1.51*** (3.64)	1.39*** (4.50)	1.07*** (3.39)	1.48*** (4.84)
$LOPEN_{it}$	0.22*** (3.80)	0.21*** (3.79)	0.22*** (3.71)	0.21*** (3.71)	0.18*** (3.13)	0.18*** (3.25)	0.24*** (3.80)	0.23*** (3.81)	0.22*** (3.61)	0.22*** (3.66)
$LINV_{it}$			0.03 (0.68)	0.03 (0.65)	0.05 (1.12)	0.04 (1.05)	0.04 (0.82)	0.03 (0.70)	0.11** (2.01)	0.10* (1.93)
$LEMP_{it}$					-0.56*** (-3.81)	-0.50*** (-3.47)	-0.43** (-2.34)	-0.28** (-1.68)	-0.36* (-1.93)	-0.24 (-1.47)
$LHCAP_{it}$							0.17 (2.11)	0.11 (1.78)	0.14 (2.01)	0.21 (2.32)
$LPOP_{it}$									0.23* (1.76)	-0.10 (-2.05)
Constant	5.33*** (12.59)	5.19*** (11.53)	5.33*** (12.57)	5.19*** (11.46)	8.08*** (9.77)	7.64*** (9.26)	6.76*** (7.03)	5.81*** (6.37)	4.75*** (3.20)	6.48*** (6.61)
Wald Chi-sq		9.47 0.0088		8.84 0.0314		12.09 0.0167		37.92 0.0000		49.71 0.0000
F Statistic	551.93 0.0000		549.96 0.0000		564.92 0.0000		389.16 0.0000		217.26 0.0000	
Adjusted R-squared	0.99	0.62	0.99	0.68	0.99	0.75	0.99	0.77	0.99	0.78

Notes:

1. ***,**,* indicates coefficient is significant at 1%, 5% and 10% level of significance respectively
2. Wald Chi-Square is used to assess the overall model fit for Random Effects (RE) Model and F-statistic is used to test the overall model fit for Fixed Effects (FE).
3. Numbers in parentheses are t statistic.

Both the versions Random Effect and Fixed Effect--show a very good overall model fit as indicated by the Wald Chi-Square and F-statistic respectively. In model 1, (RE) model is better than (FE) model and the equations, in the model 2 and model 3, (FE) model is better than (RE) model at level 5%. It is clear that the economic freedom is highly positively correlated with economic growth; coefficient is1.61 and t statistic is 6.99, meaning that the coefficient is statistically significant at all conventional levels. This is expected positive sign from the theory. One unit increase in the economic

freedom index leads to a 1.61% increases in growth; coefficients openness is positive and specification at 1% level and a unit increase in the openness leads to a 0.22% increases in growth .In order to provide a more complete model specification. We re-estimate regressions (1) by including our additional control variables. In the model 2 we include investment share of GDP. Coefficient economic freedom is positive and significant at the 1% level however, investment has no significant effect on growth. In the model 3 we added employment. Results present, coefficient EMP is negative and significant, where 1% increases in EMP leads to a 0.56% decrease in economic growth. In the model 4 we include Logarithm human capital; changes HCAP a country positively and significantly influence the growth with a coefficient of 0.17, this variable in RE model has not significant coefficient. In the finally model, we include population variable. Coefficient is positive but not significant, additional coefficients economic freedom and openness is positive and significant at the 1% level. The value of R is 0.99 and F-statistic measures statistically significant.

3.3. Different Measures of Economic Freedom

We now turn to the case with the five categories of the economic freedom index using analysis of (Carlsson and Lundstrom, 2000), the estimated model is now:

$$LRGDP_{it}=\alpha_0 +\alpha_1 LINV_{it} +\beta_1 LSIZ_{it} +\beta_2 LPRO_{it} +\beta_3 LSM_{it} +\beta_4 LFTR_{it} +\beta_5 LLOW_{it}+\beta_6 LOPEN_{it}+\varepsilon_{it} \quad (4)$$

Which:

INV_{it}: Investment for country i in t year, SIZ_{it}: index of size of government for country i in t year, PRO_{it}: index of Legal Structure and Security of Property Rights, SM_{it}: index of Access to Sound Money, FTR_{it}: index of Freedom to Trade Internationally, LOW_{it}: index of Regulation of Credit, Labor, and Business and OPEN is trade openness.

In order to choose the type of model estimates, it is necessary to test the F Limer and Hausman. Our results suggest that fixed effects model is better than the random effects. The Hausman test statistics is equaled to 15.6766 and significant. Results are presented in Table 5.

Table 5. Results estimations

Dependent variable: real GDP			
Independent Variable	**Cross-section Fixed effects test equation**		
	Coefficient	**Std. Error**	**t-Statistic**
$LINV_{it}$	**0. 2401**	**0.0389**	**3.1324**
$LSIZ_{it}$	**-0.0956**	**0.0872**	**-1.0966**
$LPRO_{it}$	**0.2932**	**0.0870**	**3.3692**
LSM_{it}	**-0.1116**	**0.1252**	**-0.8915**
$LFTR_{it}$	**0.1086**	**0.0128**	**2.6676**
$LLOW_{it}$	**0.7683**	**0.0750**	**10.2316**
$LOPEN_{it}$	**0.2066**	**0.0500**	**4.1323**
c	**6.9841**	**0.4160**	**16.7850**
The Chaw test (F-limer)	**701.8395 (0.0000)**		
The Hausman test	**15.6766 (0.0002)**		
R^2	**0.99**		
DW	**1.32**		

Coefficient investment is positive and significant. The size of government (EF1) is significant and the coefficient is negative, implying that a larger government size decreases growth. The estimated size suggests that one unit increase of the index decreases the average growth by approximately 0.09%. Most previous studies have found a positive relation between this variable and growth.

Legal structure and security of property rights (EF2) is significant and positive, and the estimated size suggests that one unit increase of the index increases growth by 0.29%. This result is somewhat surprising since most previous studies have found a negative or not significant relation. Property rights are protected through strong and unbiased judicial system, establishment of impartial and strong judicial system may decrease the process of growth through sufficient provision of protection to property rights; index of access to sound money (EF3) is negative and not significant. Freedom to trade with foreigners (EF4) is significant and interestingly there is a positive relation;

freedom to trade increases growth. The result suggests that one unit increase of the index increases growth by 0.10%. Regulation of Credit, Labor, and business (EF5) is positive and significant, and one unit increase of the index increases growth by 0.76%. Coefficients openness is positive and significant at 1% level and one unit increase in the openness leads to a 0.20% increase in growth. Consequently, three of the significant economic freedom variables are positively related to growth but two are negatively related. Table 6 illustrates the results of this section.

Table 6. Result effect of Economic Freedom Variables on economic growth

Economic Freedom Variable	Sign of the effect
Size of Government	**Negative**
Legal Structure and Security of Property Rights	**Positive**
Access to Sound Money	**Negative**
Freedom to Trade Internationally	**Positive**
Regulation of Credit, Labor, and Business	**Positive**

4. Conclusion

Economic freedom has been recognized as potentially important for economic growth. We estimated both random effect (RE) model and fixed effect (FE) model. The results of the study will strengthened the view that openness and economic freedom to trade will continue to be viewed as two keys determinant of economic growth. The study found that the economic freedom is have positive and significant effect on economic growth .we decompose the economic freedom index into the five categories constructing the index and we observed that just size of government and Access to Sound Money are another key ingredient of economic freedom index that is negatively correlated with growth. Government size is negatively correlated with growth. Because increase in government size positively affects the better allocation of resources. Another index of economic freedom is positively correlated to growth. This index may be developed, extended with new and better proxies and used in investigating the impact of economic freedom on other macroeconomic magnitudes including investment, trade, even technology. This is important for further research.

Besides the literature survey highlights several dominant issues in empirical research on the impact of openness on growth, the results of the current study confirmed the pervious results. First, although the theoretical effect of openness on growth is positive in both traditional growth models, some versions of the new growth theory, such as that of Grossman and Helpman (1991), suggest that this needs not be. Such positive effect is conditional upon the presence of international knowledge spillover, without which openness could have a negative effect on growth. In such models as Parent and Prescott's (1994) models of technology adoption, countries that do not possess the requisite infrastructure for the imitation and adoption of new technology (including the requisite human capital stock) may not experience higher growth following trade liberalization. At empirical level, the literature seems to generally support the idea that trade openness has a positive effect on economic growth. However, the general problem lies in the definitional and methodological difficulties in capturing the concept of openness.

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	APPENDIX 1	
Variable	**Data Description**	**Data Source**
GDP Growth	Growth of GDP per capita, PPP basis, constant 2000international dollars.	World Development Indicators 2010
Economic Freedom	Economic freedom of the World is compiled by the Fraser Institute and measures the level of economic freedom on a scale from zero to ten, with ten representing a greater degree of freedom	Fraser Institute, Economic Freedom on the World
Human capital	It is approximated by high school registered students in the population of 15-19ages	World Development Indicators 2010
Investment share of GDP	Ratio of total investment to GDP in 2000 constant dollars	Penn World Tables version 7
Employment	is represented by Employment to population ratio, ages 15-24, total (%)	World Development Indicators 2010
openness	The ratio of Exports plus imports divided by GDP use for capture the impact of openness	Penn World Tables version 7 and World Development Indicators 2010
RGDP (log)	Real GDP in 2000 constant dollars, log form.	Penn World Tables version 7
Size of government	-General government consumption spending -Transfers and subsidies as a percentage of GDP -Government enterprises and investment , -Top marginal tax rate	Economic Freedom Dataset, published in Economic Freedom of the World: 2010 Annual Report
Legal Structure and Security of Property Rights	-Judicial independence (GCR), -Impartial courts (GCR) -Protection of property rights (GCR) -Military interference in rule of law and the political process (CRG) -Integrity of the legal system (CRG) -Legal enforcement of contracts (DB) -Regulatory restrictions on the sale of real property (DB)	Economic Freedom Dataset, published in Economic Freedom of the World: 2010 Annual Report
Access to Sound Money	-Money Growth -Standard deviation of inflation -Inflation: Most recent year -Freedom to own foreign currency bank accounts	Economic Freedom Dataset, published in Economic Freedom of the World: 2010 Annual Report
Population	population	Penn World Tables version 7
Freedom to Trade Internationally	-Taxes on international trade -Regulatory Trade Barriers -Size of the trade sector relative to expected -Black-market exchange rates -International capital market controls	Economic Freedom Dataset, published in Economic Freedom of the World: 2010 Annual Report
Regulation of Credit, Labor, and Business	-Credit market regulations -Labor market regulations -Business Regulations	Economic Freedom Dataset, published in Economic Freedom of the World: 2010 Annual Report