SUSTAINABLE GROWTH: RECENT TRENDS ACROSS CENTRAL AND EASTERN EUROPEAN ECONOMIES

Mihuț Ioana Sorina [1], Luțaș Mihaela [2]
1Department of Economics, Faculty of Economics and Business Administration, "Babeş-Bolyai" University, Cluj-Napoca, Romania.
2Department of Economics, Faculty of Economics and Business Administration, "Babeş-Bolyai" University, Cluj-Napoca, Romania.
ioana.mihut@econ.ubbcluj.ro
mihaela.lutas@econ.ubbcluj.ro

Abstract: *What is economic growth? Although the answer to this question may seems of real simplicity, developing an accurate definition of this concept may constitute a real challenge both from a theoretical but also empirical point of view. This constant debate upon the concept of economic growth as well as indentifying the optimum set of instruments for quantifying it, constituted the starting point of the current article. The concept of economic growth is used nowadays complementary to terms like economic development, economic welfare or economic progress with reference to this complex process that implies macro-scale structures. Moreover indentifying the main factors that generate a significant impact upon the dynamics of the economic growth process, constitute a useful approach taking into consideration the high degree of heterogeneity that characterize the architecture of the economies around the world. If we develop this analysis across the European Union member states this debate became even more challenging due to the high degree of diversity that characterize these economies. Moreover, the Central and Eastern European countries and especially the ones that joined EU in 2004 and 2007 embody a set of particularities that make them extremely different from the rest of the European Union member states, features related to the historical background, economic policies and common efforts to intensify the convergence process with the more developed EU members. This paper studies the impact of two main factors upon the economic growth process namely an endogenous-exogenous factor like the degree of openness and an endogenous factor like the human capital using a complex dynamic panel method. The arguments that were in favour of choosing this two factors are on one hand the multitude of theoretical studies that argued the importance of them in modelling the economic growth process and on the other hand the small number of studies that use panel methods in assessing this impact. The obtained results point towards a positive correlation between degree of openness, human capital and economic growth across Central and Eastern European countries. These results may be used by the responsible authorities as a basis for the development of the future strategies concerning economic growth. The ability of the new member states to adapt to the macroeconomic changes will prove to be vital in the context of the global architecture and will constitute a vital indicator of the economic growth and performance level of these economies.*

Keywords: economic growth; human capital; degree of openness; panel analysis.

JEL Classification: F15; F43; O11; O15.

1. Introduction

The primary objective of each worldwide economy is assuring stability in what concerns the economic field that due to the multiple interconnections with the other components of the global system determines performance. The performance, whether we refer to the economic, financial or institutional one is an absolute indicator of the capacity to adapt to the frequent macroeconomic evolutions, and once this indicator is achieved the next step is economic growth and convergence between states.

The economic growth process is considered to be an extremely complex one, being influenced by a variety of financial, political, institutional, cultural and social factors. The literature in the field identifies a vast dichotomy in respect to these factors, the contribution of each one being supported by strong arguments. Highlighting the factors that have a significant impact upon the dynamics of the economic growth process constitute a real challenge due to the multitude of existing classifications and also due to the individual characteristics of each economy that determines a different componence from country to country. Furthermore, the recent economic crisis determined a reconfiguration of these factors that have nowadays to take into account the effects that were felt globally. Moreover developing such an analysis proves to be extremely difficult due to the multitude of factors this process embodies. In the studies that concentrated their research upon of the main aspects related to the economic growth process and its main triggering factors we identified two main approaches. The first one is the quantitative approach that takes into consideration quantitative variables such as natural resources, capital, foreign direct investments or degree of openness of the economy. The second one and namely the qualitative one embodies a series of variables more linked to the political and cultural framework. Taking into consideration the fact that a complex classification of the entire system of factors that determine the economic growth process requires a more vast work space, this article concentrates upon analyzing the impact of one endogenous factor namely the human capital and one endogenous-exogenous factor namely the degree of openness.

Probably the most debated aspect related to the economic growth process and its determinants is the one referring to its evolution across Central and Eastern European countries. A series of authors concluded the fact that the economic integration of Europe constitutes a continuous support in favour of achieving a sustainable economic growth. Sustainability seems to be the key concept that the supranational authorities refer to when developing the new growth strategies across European Union member states. What actually triggers the interest of econometricians and macroeconomist towards these economies may have multiple causes. The evaluation on both theoretical and empirical level of trade barriers and productivity factors, capital, services and individuals had a decisive role upon the development of the conceptual and methodological framework considering economic growth.

The accession waves from 2004 with 10 new member states and 2007 with two new ones represented just the first step in assuring a sustainable economic growth across these economies. On the path towards achieving this goal, the new member states have to face a series of challenges. On one hand these economies unlike their predecessors have to cope with the effects of the recent economic crisis that determined the reorganization of the economies across the world. On the other hand, in order to assure a sustainable economic growth it is necessary to orientate the economic growth strategies towards innovation and competiveness whose benefits will be better evaluate within the Economic and Monetary Union, the next step for the new member states. The remainder of the paper is organized as follows: section 2 presents a short review of the most relevant studies that assessed the impact of human capital and degree of openness upon

economic growth, section 3 presents the used data and the methodology for testing this interconnection, section 4 reveals the empirical results and at the end we presented some general conclusions and policy implications.

2. Literature review – State of the arte

The degree of openness is a debated factor in relation to the economic growth process. This indicator influence the economic growth process through a variety of channels such as: exploring competitive advantage, technological transfer, scale economies increase and also increased competitive exposure (Chang, R.,Kaltani, L., Loayza, N., 2009). The literature in the field suggest an extremely complex and ambiguous interconnection between economic growth and degree of openness. An important issue concerning economic growth-degree of openness links to the measurement instrument used. Most of the studies point in favour of using trade volume, namely the sum of import and export to GDP in quantifying the degree of openness of each economy.

A number of studies had as starting point the relation between economic growth and the degree of openness. On one hand there are studies that argue the fact that economies that have a high degree of openness have a high rate of GDP/capita and develop faster than other economies (Dollar 1992, Edwrads, 1992), Romer (1993), Grossman and Helpman (1991). Complementary to the analysis of these correlations at theoretical level, a series of empirical studies concentrate upon analyzing this interdependence using different econometric instruments. In testing the correlation between economic growth and the degree of openness the literature identified a variety of measuring instruments such as: the average rates of trade tariffs; quantitative restrictions, non-tariff barriers. If we take into consideration the empirical studies we may distinguish between the following categories:

- Studies that use simple and multiple regressions;
- Studies that use Granger causality tests (used in order to validate the hypothesis according to which a time series may be used to predict another one);
- Studies that used the panel methodology.

In what concerns the first category the studies developed by Dollar and Kraay (2002) or Tervio (2000) provide positive results concerning this correlation. Dollar and Kraay (2000) used a set of important data including a number of 953 observations from 137 countries for a time horizon between 1950 and 1999. The volume of trade is associated positively to the economic growth process; although the significance coefficient has not a high value.

The second category of studies, the one that use the Granger methodology, provide mixed results referring to the economic growth-degree of openness link. Singh (2011) obtain negative results concerning the effects of imports upon economic growth and Shahbaz (2012) argues in favour of a positive impact of trade upon economic growth. An increase of trade by 1% triggers an increase in economic growth by 0,0707%. Ahmad and Kwan (1991) using the same methodology upon a 47 African sample do not identify a causality results between trade and economic growth.

The third category that concentrates upon the use of panel methodology is an extremely vast one. Relevant are the articles developed by Islam (1998), Economidou and Murshid (2008), Redlin (2010), Das and Paul (2011).

Economidou and Murshid (2008) based on a sample of 12 OECD states and a time horizon between 1978 and 1997 identified a positive correlation between trade and productivity growth. Redlin (2010) using the panel GMM methodology upon 158 economies between 1970 and 2009 identifies a long term positive impact upon economic growth. Das and Paul (2011) using the same methodology upon 12 emerging countries

from Asia (Bangladesh, China, India, Indonesia, Korea, Malaysia, Nepal, Pakistan, Philippine, Singapore, Thailand and Sri Lanka) obtained results that confirm the positive interdependence between trade and economic growth.

On the other hand studies like the one developed by Levine and Renelt in 1992 confirm the fact that the policies related to growth (degree of openness, macroeconomic stability) are firstly inter-correlated. Within this study was aimed the analysis of the interconnection between economic growth and a series of import, total trade and trade policy indicators. Furthermore the endogenous growth literature provides a series of models that test the hypothesis according to which trade restrictions influence in a positive or negative manner economic growth. For example Riviera Batiz and Romer (1991) concentrate upon the way in which trade restrictions influence in a positive or negative manner the growth rates using the consumer behaviour analogy. The authors develop a classification of the changes within the worldwide growth rates taking into consideration two effects (integration and surplus) that ambiguous determine the decrease of the growth rate and a third effect (allocation) that may be influenced whether in the sense of growth or of decline of the rates. In order to explain this classification there are used two categories of restrictions. The first one relates to national restrictions regarding tradable goods and the second one refers to restrictions that aim to protect intellectual rights. In both cases the authors argue the fact that in the case of trade between similar regions like Europe or North America the first two effects dominate.

The second factor taken into consideration is the human capital. The concept concerning human capital is an extremely vast one that includes a series of variables that each influences the economic growth process. Human development is certainly connected to human capital development, as main determinant of it. The" *human capital*" concept was firstly introduced in the economy by the Nobel prize winner Theodore Schultz that argues in favour of the necessity of investing in education for increasing agricultural productivity in USA. Schultz, T.,(1963).

Human capital may be defined as:"*a real or non-real active, whose value is determined by the fact that it is a present or future source of goods and service, so of income*" (Jessua, C., Labrousse, C., Vitry, D., Gaumont, D., 2006).

Gary Becker (1964) considers human capital to be the sum of all monetary and non-monetary activities that influence the future monetary incomes of the individuals. Becker and Schultz argue that the improvement of the human capital component may be generated by superior investments in education.

The interconnection between human capital and economic growth is in our opinion one of the most important determinants of the level of progress and performance of each economy. The level of the education of the population constitutes a triggering factor in respect to the economic growth rate of each country. The interconnection between human development and economic growth is one that works both ways. Firstly, economic growth provides the necessary resources that allow visible developments of the human capital. On the other hand, the improvement of the quality of the working force constitutes a decisive indicator of economic growth. Economic growth may not be supported unless is preceded or accompanied by the improvement of human capital quality.

Human capital along with physical capital may generate a constant marginal physical capital due to the fact that human and physical capital becomes complementary. The economies with large stocks of human capital and physical capital register a more accelerate growth that the economies where these resources are limited. Despite all that we have to take into consideration the case of some particular economies, like the ones from Africa that benefit from a consistent stock of human capital and resources, but the lack of some efficient development strategies and a high degree of openness determine these economies to stagnate.

Evidence on the role of human capital upon economic growth may be found in the works of Adam Smith and Alfred Marshal that argued the fact that improving skills level is a triggering factor for progress, but the development of a solid theory concerning human capital was only at the mid of XX century with the work of Gary Becker. This theory according to which the level of education and experience of each individual determines is income level was initially tested at microeconomic level, but was immediately transferred to macroeconomic level also. Authors like Jorgenson/Griliches (1967) examined the manner in which changes in the level of working force quality explain total productivity factor.

Despite all that, the development of the new growth theory and the contribution of R. Lucas model raised the awareness upon the analysis of the connection between human capital and economic growth. The author highlights the positive effects that the capital accumulation has upon production.

Starting from the Solow model, the easier method to highlight the human capital role is the one developed by Mankiw/Romer/Weil (1992). These authors present a simple extension of the Solow model by introducing human capital as a different input within a standard Cobb-Douglas function:

$$Yt= Kt^{\alpha} Ht^{\beta} AtLt^{1-\alpha-\beta} \quad (2.1)$$

where *Y* is the output, *K* is the capital, *H* is the human capital stock, *A* is the technological level and *L* is the labour factor. α, β and 1-α-β exponents measures the output elasticity concerning the input.

This model highlights the direct impact of human capital upon the level of output as well as the persistence of it at macroeconomic level.

Within the Lucas model the human capital is incorporated in the production function as well as the technological factor is incorporated in the Solow model. The following function is elaborated:

$$Yt=AKt^{\beta}(uthtLt)^{1-\beta}h_{a,t}^{\gamma} \quad (2.2)$$

where *Y, A, K , L* represents the level of output, technology, capital or labour, and *u* is the time fraction that an individual allocates to work, *h* is the level of training of the human capital and h_a is the average level of human capital that exists within an economy.

In this model the human capital accumulation is perceived as an endogenous source of the economic system that allows supporting a growth mechanism without resorting to external sources.

In the model developed by Romer, the economy is structured into three main sectors: final consumption sector, intermediate sector and research sector. The research sector use human capital in obtaining new intermediate goods that are incorporated into final goods along with human capital and labour to obtain the final output.

The production function according to Romer model is the following:

$$Y=H_y^{\alpha} L^{\beta} \sum_{i=1}^{A} x_i^{1-\alpha-\beta} \quad (2.3)$$

where *Y* and *L* are the level of output and labour, H_y is the level of capital incorporated into production, *A* is the stock of knowledge and x_u represents the quantity of intermediate goods incorporated in the production of final goods.

According to Romer, human capital is considered a primary source in the research process. The author makes a clear distinction between the stock of human capital that is

incorporated and the stock of knowledge that exists within every economy and is considered a public good.

A number of studies focused their research upon establishing the interdependence between human capital variable and economic growth. Barro (1991) within a study considering 98 economies during 1960-1985 highlights the positive correlation between the growth rate of GDP/capita and the initial level of human capital. The results are similar to the ones obtained by Sach and Warner (1997) or Gallup et al (1998) that argue the fact that an intense development of human capital leads to a rapid transnational growth. Xavier (1997), Levin and Renalt (1992) are also in favour of the fact that investments in human capital through investments in education constitute one of the main sources of economic growth. De la Fuente and Donenech (2000,2001) use a sample of 21 OECD countries during a time period between 1960 and 1990 and provide a series of strong arguments in favour of a positive correlation between human capital, quantified by the level of education and economic growth suggesting the fact that the previous studies that failed to highlight this correlation had major errors in what concerns the methods used to quantify human capital.

Middendorf (2005) investigated using panel methodology the contribution of human capital to economic growth based upon a sample of 29 OECD countries during a time horizon between 1965 and 2000. The model delivered positive results upon this correlation. Also Qadri (2013) that tested this correlation on a sample of 106 worldwide economies between 2002 and 2008 provided results that confirm the existence of this interdependence.

Table 1 present the evolution of the education expenditure across the states that joined EU in 2004 and 2007, revealing the fact that across all countries the expenditures from the education sector registered an increase from 1999 to 2010. The countries with the highest value associated to this indicator are Cyprus with an increase of 2,62% but also Romania (2,40), Malta (2,40) and Bulgaria (2,25). On the opposite pole are situated Lithuania (1,65) and Latvia (1,61). This general increase in the expenditures of the education sector are a strong argument in favour of the interest that the national authorities have in obtaining skilled labour force that would assure in the medium and long time horizon high growth rates.

Table 1: Evolutions of the education expenditures in 1999 and 2010 across member states that joined EU in 2004 and 2007

Total expenditures in the education sector (mill. Euro)

Country	**1999**	**2010**	**2010/1999 (%)**
Bulgaria	1472	3309	2,25
Czech Republic	5066	8709,3	1,72
Estonia	644	:	-
Cyprus	590	1547,5	2,62
Latvia	876	1409,8	1,61
Lithuania	1511	2486,5	1,65
Hungary	4648	7751,9	1,67
Malta	246	590,7	2,40
Poland	15963	30471,8	1,91
Romania	3600	8622,5	2,40
Slovenia	:	2381,7	-
Slovakia	2077	4096,1	1,97

Source: Eurostat.

Despite all that the correlation between human capital and economic growth may be analyzed complementary by taking into consideration also the life expectancy of the individuals. Although there are less studies that use this indicator to quantify the interdependence between human capital and economic growth, most of the studies identify a positive correlation between these two variables (See table no.2).

Table 2: Evolution of life expectancy across states that joined EU in 2004 and 2007

Life expectancy	2004	2011
Bulgaria	:	65,9
Czech Republic	:	63,6
Estonia	53,8	57,9
Cyprus	:	61,4
Latvia	:	56,7
Lithuania	:	62,1
Hungary	:	59,1
Malta	:	70,7
Poland	:	59
Romania	:	57,1
Slovenia	:	53,8
Slovakia	:	52,3

Source: Eurostat

3. Used data and methodology

3.1 Used data

In order to assess the impact of human capital and degree of openness upon economic growth we used a data sample that comprises 12 Central and Eastern European countries namely: Czech Republic, Poland, Hungary, Slovenia, Slovakia, Malta, Cyprus, Estonia, Lithuania, Latvia, Romania and Bulgaria. The data sample covers the time horizon between 1992 and 2011. The definitions of the included variable are listed in the table below.

Table 3: Definition of the variables included in the model and their sources

Variable	Definition	Source
$y_{i,t}$ **–GDP/capita**	We used this indicator due to the fact that is more relevant in modelling the data in what concerns economic performance of different economies than the use of the absolute value or the growth rate.	Eurostat.
HC – human capital	The indicator used for human capital is the level of education. When is tested the conexion between the level of education and economic growth, most of the research are in favour of the use of the gross enrolment in the secondary	WorldBank

TO – degree of openess of the economy	education (See Barro 1991, Levine Ross & David Renelt 1992, Lucian Albu 2005). This variable is considered by many authors to be a necessary criterion to fulfil in order to assure real convergence between economies. The measure used to quantify the degree of openness was the volume of trade, namely the ratio of imports and exports to GDP. $$\boldsymbol{TO = \frac{I_{it} + E_{it}}{GDP_{IT}}}$$	WordBank

Source: Authors interpretation.

3.2 Methodology

In order to establish a correlation between economic growth, as the dependent variable and degree of openness and human capital as explanatory variables we used a dynamic panel methodology that allows a better evaluation of the dynamics of the variables included in the model. The dynamic panel methodology is not a completely new one and has been widely applied in different domains to obtain more accurate results and in order to provide solid arguments to sustain the economic theories.

The equation used to estimate the main parameters of the model has the following formula:
$\Delta(lny_{i,t}) = a_0 + \beta \ln y_{i,t-1} + a_1 HC_{i,t} + a_2 TO_{i,t} + a3u_i + \varepsilon_{it}$.

where *i* represents country index, iar *t* is the time index. The variables included in the model are the following ones:

- $(lny_{i,t})$ - natural logarithm of GDP/capita
- HC – human capital
- *TO* - degree of openess
- u_i – the fixed effect of the time variable
- ε_{it} – random distribution

A widely used technique regarding the GMM methodology is the one proposed by Arrelano and Bond (1992) that suggest the use of all valid lags of all regressors as instruments. The central point of this approach consists in the fact that the use of first differences allows the removal of the individual effects and also to include all previous information regarding $y_{i,t}$ as valid instruments. The advantages of this methodology may be summarized as:

- The systemic GMM is situated between the lower and upper limit represented by OLS and LSDV;
- The used instruments are valid;
- There are clear advantages in terms of overall efficiency.

4. Empirical results

Prior to the panel GMM tests we will investigate the main characteristics of the variables included in the model. Table no.4 presents some information regarding the minimum and maximum value of the variables, the standard deviation and the mean. We may notice the fact that there are significant differences between the variables. In what

concerns the GDP/capita variable the maximum value is of 27225,48 euro/capita for the case of Slovenia in 2008, on the opposite pole being situated Estonia with a value of 2739 in 1993. Also in what concerns the degree of openness the value fluctuate between 41, value registered by Poland in 1993 and 191 value registered by Malta in 2011.

Table 4: Descriptive statistics of the variables included in the model

Variable	Obs.	Mean	Std.Dev	Min.	Max.
PIBC_LOG	240	9.500363	.4429663	7.915348	10.21191
GDE	235	115.4383	35.05989	41	191
EDU	213	92.85446	6.220966	76	108

Source: Authors calculation based on Eurostat and Worldbank data.

The central element of the current research was the motivation to highlight the influence of the degree of openness and human capital upon economic growth process across the member states that joined EU in 2004 and 2007. That are at least two arguments in favour of the validity of this model both from a theoretical perspective but also considering the policies this countries adopted in order to improve their performance namely: the first one relates to highlighting different aspects related to the integration of the new member states into the European Union and the second one reflects the main channels through which technology is assimilated within an economy.

Table 5: Panel GMM results

pibc_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pibc_log						
L1.	.7789498	.0168325	46.28	0.000	.7459587	.8119408
gde	.0028211	.0002546	11.08	0.000	.002322	.0033202
edu	.0052613	.0009185	5.73	0.000	.003461	.0070616
_cons	1.319194	.1434986	9.19	0.000	1.037942	1.600446

Source: Authors calculation based on Eurostat and Worldbank data.

If we consider the influence of the education upon economic growth, within recent studies that included this variable in the set of determinant factors of this process are the studies develop by Fukase in 2010 and Ibqal and Daly in 2013. In both cases the level of education has a positive influence upon economic growth, but the significance coefficient is different due to the analyzed time period, the set of complementary variables and the set of the countries analyzed. In our modelling the influence of this indicator upon economic growth is a positive one with a strong significance coefficient. Therefore the influence of human capital through the level of education constitute a remarkable endogenous resource that must be taken in consideration by the long term economic strategies and that may influence different domains like: productivity area, innovation area, the development and the implementation of strategies area and also the competiveness area.

The degree of openness of the economy has also a positive influence upon the economic growth especially for small countries that concentrate their economic activity on trade. Gries and Redlin (2012) starting from a sample of 158 countries and a time horizon

between 1970 and 2009 identified a significant correlation between the mentioned variables. The value of the coefficient obtained in our study is similar to the ones obtained by the previous ones. The degree of openness especially for the emerging markets like the ones from Central and Eastern Europe constitute a resource with multiple implications considering the fact that for these economies the intensification of the trade activities with the rest of the member states of the European Union allows the flows of information, products and capital that stimulate the trade interconnections between the participant states leading to the stimulation of the commercial transactions between states and in the long term perspective to economic growth.

The validity of the model is tested through a robustness test namely the Sargan test. The value of the coefficient confirms the validity of the results.

Sargan test of overidentifying restrictions
H0: overidentifying restrictions are valid

chi2(147) = 263.6037
Prob > chi2 = 0.0000

Concluding remarks

The harmonization of the interests of the new members states in the context of fulfilling the general standards imposed by the European Union constitute one important aspect taken into consideration by the national authorities in cooperation to the supra-national ones. The frequent changes within the global economic structures constitute a strong indicator in favour of the dynamics of the economies. Furthermore, the recession periods may be perceived as progress generators. This fact may be argued by the need to adapt that embodies the development of new policies and strategies in order to overcome the negative effects and to evolve.

The purpose of this article was to assess the impact of human capital through the level of education and degree of openness upon economic growth. This model may prove useful in what concerns the development of the future policies both at theoretical and empirical level. The infusion of technological progress whether by the degree of openness or by the investments in human capital constitutes one of the main sources in triggering economic growth, results that are confirmed by using the dynamic panel methodology. Concentrating on these sectors should be a prior objective of the national authorities. Long term sustainability is also important due to the fact that developing some compromise solutions that would generate short time results does not constitute a successful strategy and may trigger negative effects that could be felt by the states after a certain time period and that may produce massive economic imbalances.

Bibliography

1. Ahmad, J., Kwan, A.C.C., (1991), ”*Causality between exports and economic growth: Empirical evidence from Africa*”, Economics Letters, Vol. 37, No. 3.
2. Barro, R. J. (1991), *”Economic Growth in a Cross-Section of Countries*”, Quarterly Journal of Economics, 106(2).
3. Batiz, R., Romer (1991)- "*International trade with endogenous technological change*"-National Bereau of Economic Research, Working paper no.3594.

4. Becker, G., (1964), "*Human Capital*. *A Theoretical and Empirical Analysis, with Special Reference to Education*,*",* The Journal of Political Economy, Volume 70.
5. Bloom, D., Canning, D., (2004), "*The effect of health on Economic Growth*" World Development Vol. 32, No. 1.
6. Chang, R.,Kaltani, L., Loayza, N., (2009), "*Openness is Good for Growth: The Role of Policy Complementarities*", Journal of Development Economics, Vol. 90.
7. Das, A., Paul, B., P., (2011), "*Openness and growth in emerging Asian economies: evidence from GMM estimation of a dynamic panel*" Economics Bulletin, 31 (2011).
8. De la Fuente, A., Doménech, R., (D&D, 2000), *"Human capital in growth regressions: how much difference does data quality make?*" OECD Economics Department Working Paper no. 262, Paris.
9. Dewan, E., Hussein S., (2001), " *Determinants of Economic Growth – Panel data approach*", Working Paper, Reserve Bank of Fiji.
10. Dollar, D., Kraay, A. (2002), "*Growth is good for the poor*", Journal of Economic Growth, Vol. 7, No. 3.
11. Economidou, M., Murshid, A.P., (2008), "*Testing the linkages between trade and productivity growth*" Review of Development Economics, 12 (2008).
12. Edwards, S., (1992), "*Trade orientation, Distortions and Growth in developng countries*" Institute for Policy Reform.
13. Engelbrecht, H.J. (2003), "*Human Capital and Economic Growth: Cross-Section Evidence for OECD Countries*, " Economic Record, 79.
14. Fukase, E., (2010), "*Revisiting Linkages between Openness, Educationand Economic Growth: System GMM Approach*", Journal of Economic Integration No. 25.
15. Gallup, J. L, Sachs, J., Mellinger, D., (1998), "*Geography and Economic Growth*", Paper prepared for the Annual Bank Conference on Development Economics, Washington, D. C., April 20-21.
16. Gries, T., Redlin, M., (2012), "*Trade Openness and Economic Growth: A Panel Causality Analysis*" Center for International Economics, Working Paper Series, No: 2011-06.
17. Grossman, G., Helpman , E., (1991), "*Innovation and Growth in the Global Economy"*, Cambridge: MIT Press.
18. Islam, M.N., (1998), "*Export expansion and economic growth: testing for cointegration and Causality*", Applied Economics, Vol. 30, No. 3.
19. Jessua, C., Labrousse, C., Vitry, D., Gaumont, D., (2006), "*Dicționar de Stiințe Economice"*, Arc Publishing,.
20. Jorgenson, D., Griliches, Z., (1967), "*The Explanation of Productivity Change"* The Review of Economic Studies.
21. Levine, Ross, Renelt, David, (1992*) "A Sensitivity Analysis of Cross-Country Growth Regressions",* The American Economic Review, Vol. 82, No. 4.
22. Lucas R., Jr.(1988), "*On the mechanism of economic development"*, Journal of Monetary Economics.
23. Marshal, A., (1890), "*Principles of economics*", diponibil: http://snap3.uas.mx/RECURSO1/pensamiento%20economico/LECTURAS%20HISTORIA%20DEL%20PENSAMIENTO%20ECON%E0MICO.%20INGL%90S/Marshall.%20The%20Principles%20of%20Economics.pdf
24. Matsuyama, K. (1992), "*Agricultural Productivity, Comparative Advantage, and Economic Growth*" Journal of Economic Theory.
25. Middendorf, T., (2005), " *Human capital and economic growth in OECD countries*", Rheinisch-Westfälisches Institut für Wirtschaftsforschung, Discussion Paper No 30.

26. Quadri, F., Waheed, A., (2013), ” *Human capital and economic growth: cross-country evidence from low, middle and high-income countries*”, Progress in Development Studies 13.
27. Romer, P., (1990), "*The Origins of Endogenous Growth"*, The Journal of Economic Perspectives, Vol. 8, No.1.
28. Sach, J. D., Warner, A., (1997), ”*Sources of Slow Growth in African Economies*”, Journal of African Economies, Vol. 6.
29. Sala-i-Martin, X., (1997),” *Regional Cohesion: Evidence and Theories of Regional Growth and convergence*”, European Economic review, Vol. 40.
30. Schultz, T.,(1963), "*Human Capital: Policy Issues and Research Opportunities"* American Economic Review.
31. Singh, T., (2011), ”*International trade and economic growth nexus in Australia: a robust evidence from time-series estimato*r”, The World Economy (2011).
32. Shahbaz, M., (2012), ” *Does trade openness affect long run growth? Cointegration, causality and forecast error variance decomposition tests for Pakistan*”, Economic Modelling, Volume 29, Issue 6.