A Convergence Approach to Transport Corridor Europe Caucasus Asia (TRACECA) Logistic Project Zone

Guner U*

Department of Research and Development, University of Dumlupınar, Ankara, Turkey*

Corresponding Author: Umit Guner, Ministry of Labor Family and Social Services, Department of Research and Development, University of Dumlupınar, Sogutozu Mahallesi 2177, Ankara, Turkey, E-mail: umit_gg@hotmail.com

1. Abstract

The purpose of this paper is to investigate phenomenon behind the relationship between growth and trade in the contex of Traceca Logistic Project for member countries. Weather this membership supports the poor member countries do catch up with the richer ones according to the convergence theory. The convergence and growth effects in the Transport Corridor Europe Caucasus Asia (TRACECA) countries is estimated by using the dynamic heterogenous panel approach Pooled Mean Group Estimator. The analysis includes a dummy as a proxy for TRACECA logistic project former countries, and dummies for new members after the enlargements as a proxy. It was found that The empirical evidence supports unconditional and conditional convergence hypotheses in the first countries for the years of 1993-2014. The TRACECA1 tends to converge to a steady state growth rate of per capita GDP with a speed of convergence of between 1.8% and 18.1%.

2. Keywords: TRACECA; Logistics; Growth; Foreign trade; Convergence; Transport ınfrastructure

3. Introduction

The concept of growth has been one of the subjects which have been heavily analyzed by the science of economics for a long time. Having been studied by many leading scholars in depth, there even sprung schools which explain the economic growth, take its basis from theoretical and empirical studies. Pioneered by Solow, the neo-classical growth model and convergence analysis has still maintained its popularity in the recent years. Moreover, the increasing momentum of the foreign trade activities resulted from the increasing rate of the logistics projects, thanks to the particular impact of globalization, has diverted the attentions to this direction. As in [17] both macroeconomic and international economic analyses have been developed, which study the impact of foreign trade on the economic growth. The international economic analyses frequently used convergence analyses and panel data analyses [6,31,38]. However, researches in this area on the TRACECA Countries remained extremely limited. As part of our study, empirical analysis on the increasing foreign trade and economic growth with reference to TRACECA logistics project will contribute significantly in bridging this gap. The basic reasons behind this limitation is the economic sizes of countries, the fact that most of them gained their independencies after 1990, the level of their economic integration, foreign trade volumes and problems related with their databases.

With the collapse of Soviet Union in 1990, nations in the former Soviet Union regained their independencies and the attention of the world attracted to these regions. The first target of all of the states which have just regained their independencies was to complete the transformation processes from planned economies dependent to Soviet Union. During the 1990s where globalization pace was at its peak, the process of transformation of economies and integration to the world economy is no more an issue of only these economies or regions but of an important problem of the whole world [32].

In the same period, European Union has made a significant progress in completing its economic and social union, and following the disintegration of Soviet Union, USA has strengthened its position as the leader of world. Naturally, this new emerging political structure in the Central Asia also attracted the interest of European Union. For these purposes, new quests have been emerged for easy access to the raw material and energy resources of the region. Then it became necessary to launch logistics projects in order to economize the raw material and energy resources. In addition, not only logistics projects devoted to the region accesses the raw

Table 1: GDP per capita (cons2010 US$)/Trade (% of GDP) of the first Traceca members (X Million Current Dollars)

	1993		1999		2005		2011		2017	
	GDP	Trade	GDP	Trade	GDP	Trade	GDP	Trade	GDP	Trade
Armenia	886,03	107,97	1317,74	70,56	2571,99	72,04	3371,67	71,11	4219,37	86,87
Georgia	1056,39	118,64	1396,24	57,15	2150,67	85,32	3220,39	91,02	4283,92	112,51
Kazakhstan	4512,62	84,63	4078,43	82,58	7227,57	97,76	9603,24	73,12	10867,82	60,62
Kyrgyz Republic	714,76	74,71	628,07	99,20	747,57	95,08	921,18	136,18	1070,32	102,21
Tajikistan	668,45	70,90	389,90	133,61	597,54	126,99	775,30	79,78	1020,14	56,73
Turkmenistan	2808,25	146,36	2282,98	90,48	2899,96	53,97	5006,30	111,06	7317,55	53,58
Uzbekistan	804,94	…	794,35	36,62	996,87	69,53	1451,88	63,49	2031,05	68,52
Azerbaijan	1760,55	133,49	1482,33	69,83	2949,44	115,84	5770,97	80,51	5805,13	90,66

Table 2: Unconditional convergence with the TRACECA dummy: 1993-2017

Dependent Variable: Log of GDP per capita					
	Coefficient	St.error	t-ratio	Hausman test	p-value
TRACECA	0.795	0.186	0.339	1.23	0.27
TRACECA1	0.03	0.130 Constant	0.308	1.24	0.25
0.113***	0.027		3.308		
Convergence coeff.	-0.041***	0.014	-3.089		
No of observations	200				
Log likelihood	509.323				

Notes: ***, **, * denote 1%, 5% and 10% level of significance respectively. The Hausman test accepted the null hypothesis that the homogeneity restriction imposed in the long run coefficient.

material and energy resources of Central Asia, but also it is aimed at creating an economic flow area which encompasses the Far East, Central Asia, Middle East, Caucasia and Balkans. This will not only be a unidirectional project meaning raw material and energy transfer only from region to Europa but also access of Europa to markets of the Far East, Central Asia, Middle East, Caucasia and Balkans [5].

European Union took its first steps in the region with the projects Technical Assistance to the Commonwealth of Independent States and Georgia (TACIS) in 1991 and Transport Corridor Europe Caucasus Asia (TRACECA) in 1993. Among these projects, TACIS is aimed at providing technical assistance to beneficiary countries, mostly comprised of Commonwealth of Independent States, financed by European Union, with an initial budget of approx. 1 billion Euro, focused mostly on economic transformation process in the first 2 years of implementation process [26]. TRACECA is perhaps the largest logistics project in the world and spans a vast area from the Far East to the Europe. Initially TRACECA institutional bodies and projects were financed by European Union. By 2004, member States gradually began to finance the program. In 2006, more than %75 of the budget of TRACECA were contributed by member States. In 2007, entire budget of the organization

was financed by its own members [26]. As a characteristic of the Logistics projects, TRACECA is first aimed at increasing the trade volume in the region. With the support of other internal and external parameters, such as transport infrastructure investments [27], significant improvements have been achieved in foreign trade and economic growth. Such improvements in the economic field have been achieved in whole member States of TRACECA even though it was recorded in different rates.

In this context, growth trends in foreign trade and economy triggered by TRACECA project, paved the way to the researches as to whether there has been convergence among the countries. Therefore, the question as to whether there has been any convergence among the TRACECA Countries. In this study, first present introductory information about the TRACECA logistics project. A literature review is carried out for the previous researches on the topic, which is followed by a description of the data and methodologies used in the model of this study and then the determination for the existence of the convergence.

The TRACECA Logistic Project: Initially a militaristic term, logistics has a parallel characteristic to the its definition in the economics. Due to the principle of ".... optimal distribution of scarce resources" in its definition in the economics, it covers the transfer process from raw material to end-product, from first manufacturer to the end-consumer, respectively. This also means transfer of a scarce resource from a place where it is less scarce place to where it is more scarce [37]. Following the definition of Council of Supply Chain Management Professionals (CSCMP), one of the largest logistical organizations in the world, logistics is "The process of planning, implementing, and controlling procedures for the efficient and effective transportation and storage of goods including services, and related information from the point of origin to the point of consumption for the purpose

Table 3: Conditional convergence with and without TRACECA dummy from 1993 to 2017

Dependent Variable: log of GDP per capita							
	(1)		(2)		(3)		(4)	
(n+g+d)	-0.054***	(0.018)	-0.159***	(0.033)	-0.283***	(0.081)	-0.498***	(0.195)
Sk	0.004***	(0.001)	0.012***	(0.003)	-0.009	(0.009)	-0.066	(0.041)
ASEAN					0.880**	(0.352)	1.198***	(0.599)
AFTA			0.012***	(0.023)	-0.04	(0.159)	-0.131	(0.801)
AFTA97/98							-1.417*	(0.79)
AFTA (2000-04)							-0.543	(0.499)
Convergence coefficient	-0.181***	(0.051)	-0.067	(0.061)	-0.022**	(0.01)	-0.018**	(0.007)
Trend	0.003***	(0.001)						
Constant	0.563***	(0.176)	0.251	(0.206)	0.089**	(0.032)	0.088**	(0.035)
No. Observation	186		192		200		200	

Notes: ***, **, * denote 1%, 5% and 10% level of significance respectively. The numbers in parentheses are the Standard errors. All regressions include short-run dynamics terms. The Hausman test accepted the null hypothesis that the homogeneity restriction imposed in the long run coefficient.

of conforming to customer requirements. This definition includes inbound, outbound, internal, and external movement." [49]. Once completed, TRACECA will perhaps become one of the largest integrated-logistics projects in the history of the world. In terms of its range, it resembles transportation line "the silk road" emerged in 1 B.C. for the first time. The silk road extended from the Changan city, the Chinese trade center of the day, out into the West Roman Empire. Also called as Modern Silk Road, TRACECA likewise extends from Asia out to Europa. Its range reaches out from Moldova, Bulgaria, Romania and Ukraine in East Europe, along the regions of Black Sea and Middle East through the Georgia, region of Caucasia through Armenia, Azerbaijan and Iran, Central Asia through Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine, Uzbekistan to the Afghanistan and China. TRACECA is an integrated project boasting airways, seaways, railways and pipe lines on the basis of geographical locations, geographical features and unit transportations costs of countries covered under the project [25].

Before Republics in the Central Asia gained their independencies in 1990, their doors opening to the south and West through Caucasia had been kept shutdown under the hegemony of Soviet Union [43]. The potential underground and above ground resources and a vast number of customer bases and markets owned by States which gained their independencies after disintegration of Soviet Union, attracted the attention of the Western countries, particularly the EU. These years are also a period where political and economic integration process of European Union gained its momentum. In this respect, important steps were taken for the common

transportation policy of the EU. Although the legal foundation of transportation policy of EU is established with Founding Treaty of Rome in 1957, the process has been brought into life with Treaty of Maastricht in 1992 [42]. Among the most prominent programs of the common transportation policy are Trans European Transport Network (TEN-T), Technical Assistance to the Commonwealth of Independent States and Georgia (TACIS) and Marco Polo program as well as C-vitas II under the sixth framework program [46].

For the first time, TRACECA Programme was initiated at the Conference in Brussels, in May 1993, involving Ministries of Trade and Transport from 8 countries: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. In the period of 1996-1998 Ukraine, Mongolia and Moldova joined the Programme. In March, in Tbilisi, 2000, Bulgaria, Romania and Turkey officially applied to the European Commission with a request to join TRACECA and finally in July 2009, the Islamic Republic of Iran accessed to the TRACECA. The main aim of the TRACECA project is to strengthen economic relations, trade and transport links between the EU and the project's participating countries. Also according to the declaration of the project intent to increase and to create new transport demands and that will

generate new profit centers for all related countries. As a first step the project proposed creating an unbroken rail corridor from western Europe to China via the Black Sea, South Coucasus, Caspain Sea, and Cenatral Asia as a global strategy with social, economic, politic and financial goals [19];

- Strengthening the political and economic sovereignty of Commonwealth of Independent States countries in the TRACECA region to enable their political independence and effective participation in the world economy

- Supporting regional cooperation between TRACECA countries

- Promoting regional investment by international and private financial resources

- Linking the Euroasian transport corridor with European and world transport systems

- Supporting the construction and development of energy transportation projects of Interstate Oil and Gas Transport to Europe (INOGATE) programme which is a part of TACIS and to establish a link to the Trans-European Networks (TENs) and Pan European Transport Area (PETRA).

- Developing the full potential of the region's mineral and energy assets.

- Supporting the specific aimed road, maritime, aviation and multimodal projects

(Reports for the Implementation of the Multilateral Agreements, training courses, workshops and meetings etc.)

Under TRACECA, a wide range of technical assistance projects are developed in order to achieve such goals. While some of the projects are specific and nation-based, some are multi-functional and multinational-based. For instance, while road project called as "Rehabilitation of Hajigabul Highway - Contact Supervision" with a budget of 2 million Euro for the period of 2005 to 2007 covers 1 country, the project "Training of Operational Air Transport Staff of South Ring States" with a budget of 2.5 Million Euro for the period of 2007 to 2009 is a multi-national project which covers Armenia, Azerbaijan, Georgia, Kyrgyzstan, Kazakhstan, Moldova, Tajikistan, Turkmenistan and Uzbekistan. However, it should be noted that the direct and indirect outcomes achieved from each of said projects are not just for the countries under the project but also for countries member of TRACECA and also whole world economies. In addition, while each of technical support projects varies in aspects of financing method, conditions and financiers, some were completed, some are in progress and some are in the preparation stage [26].

4. Literature Review

The concept of growth has been one of the most studied subjects in the economics for the last half century. In the area of the growth, very significant static and dynamic analyses were made, both long-term and short-term, at national and international levels. The economic growth theories originate from the period of classical economists. Adam Smith is the pioneer of this birth, which is further developed by David Ricardo and Robert Malthus (1789). According to A. Smith, it is defined as the source of the economic growth of nations as well as increasing GNP. In addition to Smith's output growth in the nation (GNP), the effect of population variable is also included. After Keynes, the growth models which reduce the unemployment thanks to demand-increasing investments are introduced into the literature. R. Harrod (1939) and E. Domar (1946), with their study, introduce the long term and stable growth model in the literature. Accordingly, in addition to the substitution relationship between labor and capital, the relationship between production and investment saving is also analyzed.

In his analysis, R. M. Solow (1956), while explaining the growth concept, takes into account the technology, factor price elasticity and productivity variables in addition to the labor and capital. So-called as Neoclassical growth model, Solow's model pioneered the long-term dynamic models. Intrinsic variables are included in the model for the long-term growth analysis, making it more explicative. Studies of Romer (1986), Lucas (1988) and Barro (1989) underpin the intrinsic growth models. Romer reaches the output growth on the basis of technological developments and marginal productivity while Barro tries to explain growth on the basis of public spending, research and development (R&D) activities and infrastructure spending. Lucas defends that human capital will become legitimate once it is combined with education and, conceived that, in this way, output per unit labor will increase. He defends that the production will increase by making foreign trade intrinsic, besides education and R&D. Since the age of classical economists, the idea of foreign trade as the engine of growth has been heavily debated. While the thesis of foreign trade as the engine of the growth is included in Adam Smith's specialization concept and Ricardo's comparative advantages theory, Lucas Romer pointed out the intrinsic dynamic of foreign trade. With the Heckscher-Ohlin-Samuelson models, the relationship between economy growth and foreign trade has become a very striking subject. General theory is founded upon the idea that foreign trade is the engine of the growth and export will boost up the growth. While many of the empirical studies verify said theory, many relate the growth to import. In a general literature review, there are differences between export and import, as foreign trade variables, and growth in terms of nation, period and method preferred in said studies.

The relationship between export growth and economic growth from the perspective of advanced countries is still a valid subject in both theoretical and empirical literature. Many empirical studies investigate the effect of export on the growth or export-based growth hypothesis through time series analysis or cross country analysis. In addition, co-integration, causality and convergence analyzes take up an important place in the growth methodologies literature. Some of these studies are cited below. On the other hand, although there is a vast literature which explains the relationship between growth and foreign trade on the basis of countries or world economy, the analyses which include logistics variable are very limited. Yet, logistics is one of the most important dynamics that affects the foreign trade. From this perspective, our study is the first and single study which analyzes the foreign trade volume, generated after a logistics project, through economic growth.

[16] analyze the relationship between foreign trade among countries and income by using ordinary least square method in their study which use data of 1960-1985 of selected 7 countries and demonstrate they have a significant relationship. [20], in his study, includes the innovation as an intrinsic variable in the foreign trade-growth relationship. In this long-term analysis, he analyzes innovation by using R&D spending, in addition to the foreign trade data and concluded that they have a positive relationship. [35], in his study, analyzes the macroeconomic parameters of post-war Japan and demonstrate that while foreign trade has a positive relationship with growth, it has a negative relationship with balance of payments. [40], in his study, analyzes the potential effects of European Union's transition in 1999 to monetary union. As of period, 5 EU countries with the least income were analyzed. They conclude that the countries included in the analysis (Greece, Ireland, Italy, Portugal, and Spain) will be able to maintain their current growth rates without facing balance of payments problems.

[45] analyze the economic growth and foreign trade openness in their study which takes a critical stance to the literature. In their study, they demonstrate a positive correlation between foreign trade openness and growth. [36] analyze, in their study, the relationship between export and economic growth of countries. In their analysis which uses trade partner diversification measurements, they conclude that it positively and significantly correlates with growth in countries that have low financial depth, high inflation, low levels of human capital, or high trade openness. [22]. concentrate in their study more on the foreign trade openness and volatility of the growth. In the study which covers 78 countries and many variables and is carried out by using Generalized Method of Moments (GMM) method, they concluded that trade openness affects growth volatility. [7] analyses the relationship between trade openness and output volatility and finds that higher trade openness is associated with higher output volatility. [44] demonstrate that there is a two-way causality between foreign trade openness and growth for the countries in their study on 126 selected countries of which they used their data of 1950-1990. [15] demonstrate that there is a two-way causality between export and growth as a result of co-integration analysis they made on the 1960-1997 data of 8 developing Asian countries. [14] demonstrate the existence of causality between financial openness and growth as a result of analysis they made with data of 1960-2000 for Greece.

[53] demonstrate a significant and positive relationship between export and growth as a result of causality co-integration analysis they made by using data of 1973-1993 of Gulf Arab countries. Jayme

(2001) analyses the theoretical and empirical studies on foreign trade-growth relationship by using comparative analyses according to the underlying economics schools. He demonstrates presence of the causality between foreign trade and growth by taking into account the microeconomic variables besides macroeconomic variables. [1] demonstrates the positive impact of export on the growth in the study they make by using data of 1973-2002 of South Asian countries. [50] likewise demonstrate the positive impact of the growth in the study they make by using the data of 1973-1985 of 19 South Asian countries.

In addition, many studies have been made, which analyse the foreign trade-growth relationship where foreign logistics, transportation and infrastructure investments are used as variables. Some of them are: [3,13,24,28,33]. studied on the impact of logistics on economic growth for European zone. Lim et al anaysed the factors of the transit trade corridors. In the case of northern Asia. Gubta et. al. While there have been a lot of papers on the importance of logistics in a country or a region specificly [10,13,21,29,47,51] these are not supported by quantitative assessment in the case of TRACECA.

5. Methodology and Data

After the foundation of TRACECA in 1993 with eight countries which are Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan. In September 1998 at the historic Summit in Baku 12 TRACECA countries signed the "Basic Multilateral Agreement on International Transport for Development of the Europe-the Caucasus-Asia Corridor" (MLA) with the aim of implementing in full of their geopolitical and economic potentials. In 2009, the Islamic Republic of Iran joined to TRACECA. A dynamic growth model has applied to first eight member countries as proposed by [4] presented in the following equation:

$$\Delta \ln y_{i,t} = a_{0,i} - \phi \ln y_{i,t-1} + a_{1,i} \ln str_{i,t} - a_{2,i} \ln n_{i,t} + a_{m=t,it} + b_{1,i} \Delta \ln str_{i,t} + b_{2,i} \Delta \ln n_{i,t} + \varepsilon_{i,t} \quad (1)$$

where $Yt-1$ is the lagged dependent variable which measures the convergence effect which ϕ is a covergence parameters, str is the share of trade in GDP (instead of investment in GDP), n is population growth, and t is time trend. The coefficient b captures short term dynamics and ε is a country-specific error term.

Pool mean group estimation (PMGE) has used which based on a panel data set for eight TRACECA countries, mainly from World Bank and IMF World database over the period of 1993 to 2017. The analysis includes a dummy for TRACECA as a proxy for TRACECA logistic project formed in 1993, and a dummy for TRACECA1 as

a proxy for the TRACECA countries including new countries after Baku Summit in 1998.

In PMGE, the long run coefficient (a's) will be identical for all countries, however, the intercept, the speed of convergence and the short run coefficient (b's) will differ. The Hausman Test [23] is used to test the null hypothesis of homogeneity in the long run parameters. However, the hypothesis of homogeneity in the long run parameters cannot be assumed priori and should be tested empirically in all specifications. Therefore, after imposing the long run homogeneity restrictions, the estimated growth equation is as follows:

$$\Delta \ln y_{i,t} = -\phi_i \left[\Delta \ln y_{i,t-1} - \delta_1 \ln str_{i,t} + \delta_2 n_{i,t} \sum_{j=3}^{m} \delta_j \ln V_{i,j,t} - \alpha_{m+1} t_i - \delta_{0,i} \right] + b_{1,i} \Delta \ln str_{i,t} + b_{2,i} \Delta \ln n_{i,t} +$$

$$\sum_{j=3}^{m} b_{j,i,t} \Delta V_{i,j,t} + \varepsilon_{i,t} \qquad \ggggggg \qquad \theta_s = \alpha_s r_{/\phi_i} \qquad (2)$$

Dummies for the TRACECA are included which represent into three types of dummies: the TRACECA1 dummy is for the eleven years (1999 to 2009) after the Baku Summit; a TRACECA2 dummy for the period of 2008-2009 for the financial crisis; and an TRACECA3 dummy is for the period of 2010-2017, which was a recovery period in most of countries after 2008-2009 financial crisis and also after Iran enlargement in 2009. The TRACECA dummy represents the period when all eight countries formed the TRACECA in 1993. Finally, the time trend and country specific terms as presented in the equation will also be included. [4] replace the time trend with 5-year time dummy and tested with the null of homogeneity of time dummies across country. In addition, the long run homogeneity restrictions (θ s = as,i /Φi) are checked by the Hausman Test as proposed by [41] applied in the model selection of specification.

6. Results

(Table 2) presents the results for unconditional convergence in the TRACECA Countries by employing the Pooled Mean Group Estimation. In this estimation, a simple AR (1) model which includes the lagged dependent variable and dummies for TRACECA and TRACECA1 is estimated. Both coefficients on the dummy variables are positive but insignificant. However, the convergence effect is negative and significant at about 4.1% which suggests evidence of unconditional effects in the TRACECA dummy for about 25 years starting in 1993. The Hausman test of the homogeneity assumption for the long run coefficient (in this model, only dummies for TRACECA and TRACECA1) is accepted.

(Table 3) presents the conditional convergence analysis which includes not only convergence variable (the lagged dependent variable) but also the additional variables as in the Solow model, which is the sum of population growth, exogenous growth and depreciation $(n + g + d)$, as well as the log share of trade which is the sum of export and import. In column (1) both coefficients have the expected sign and are highly significant, with the coefficient for population growth being negative and the share of trade positive. This confirms the results of earlier findings such as [2,4,9] albeit from a different sample of countries and methods. The convergence coefficient, which represents the speed of adjustment, is negative and highly significant, suggesting that the GDP per capita in the TRACECA countries will converge to the common steady-state path at 18% per annum. The Hausman test also fails to reject that the homogeneity restriction has been imposed in the long run coefficient. However, the individual speed of convergence for TRACECA member's ranges from the highest about Armenia 42%, Uzbekistan 34%, Azerbaijan 30%, Kazakhstan 25%, Tajikistan 25%, Turkmenistan 15%, Kyrgyzstan 10% and Georgia 9%.

All specifications present the estimation of conditional convergence but with the inclusion of dummies such as TRACECA, TRACECA1, TRACECA2 and TRACECA3. In column (2), the dummy for TRACECA1 is positive and significant and the convergence coefficient, negative and significant. However, with the inclusion of the TRACECA and TRACECA1 dummies in column (3) results the coefficient of the TRACECA dummy being positive and significant. This estimation implies that the positive growth after the eight TRACECA countries formed the regional corporation in 1993 until 2017 led to a positive growth in per capita GDP. The convergence coefficient is also significant at about 2.2%. Finally, in the last specification, all TRACECA / TRACECA1 dummies are included, however the coefficients for TRACECA and TRACECA2 are significant. The TRACECA1 dummy shows no effect on growth. The coefficient for the TRACECA dummy is positive and higher than in the specification (3) showing a positive growth in income per capita with TRACECA membership. Conversely, the dummy for TRACECA2 is negative which reflects that for eleven years, during the financial crisis, income per capita in the TRACECA countries was decreasing.

7. Discussion

It is obvious that world is in the age of mobility. The facilities that collectively make this unprecedented mobility possible are called logistics. It is impossible to deny logistic project does

enhance economic development and growth, hence supports the low income countries more than high income countries. As an economic intuition applied pool mean group estimation due to observe the convergence and growth effects in TRACECA region. As a dynamic, heterogeneous panel approach estimation, the analyze covers two stages using the years of 1993 - 2017 for eight original members in TRACECA. The first stage tests for unconditional convergence hypothesis, meanwhile, the second stage includes population growth and the share of trade to test for conditional hypothesis.

Consequently, results of our econometrics analyses provides the conditional and unconditional converge hypotheses. Therefore, it means the TRACECA logistic project splay to converge to steady member country growth rate of per capita GDP with a speed of convergence of between 1.8% and 18.1%. Moreover, the formation of TRACECA was positively associated with growth member countries for the period of 1993 to 2017. Furthermore, the enlargement in TRACECA have a significant impact on growth.

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