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**COMPARATIVE ANALYSIS OF THE ECONOMIC DEVELOPMENT  
IN THE POST-SOCIALIST VISEGRAD AND SOUTH CAUCASIA**

Thesis Book of the PhD Dissertation

**UNIVERSITY OF SZEGED  
FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION  
DOCTORAL SCHOOL IN ECONOMICS**

**COMPARATIVE ANALYSIS OF THE ECONOMIC DEVELOPMENT  
IN THE POST-SOCIALIST VISEGRAD AND SOUTH CAUCASIA**

*PhD Dissertation*

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**Szeged 2022**

## Table of Contents

Background of the study.....	4
Statement of Research Problem .....	6
Research Aims and Objectives .....	8
Research Questions .....	8
Research Hypothesis .....	8
Novelty and Significance of dissertation .....	10
Structure of Study .....	11
Methodology of study .....	11
Summary of Study .....	14
Policy Recommendations .....	21
Limitations of the Study and Recommendation for future studies.....	24
Reference List.....	25

## Background of the study

Economic growth is the most powerful instruments of increasing the living standards of the people and reducing poverty. The lower level of the living standards, and higher poverty rate concentrated mainly in the countries which has a long history of low rate of economic growth (Rodrik 2008).

Economic growth captured political agenda of the poor countries since the beginning of the second half of the twentieth century. Overall, the developing countries experienced economic growth at 2 percent between 1960 and 2010 (World Bank 2013) and it enabled them to alleviate the social and poverty problems and improve the quality of life of their population. However, the rate of the development had been uneven among developing countries. Economic growth in the East and South-East Asia has been faster and continuous in the last six decades. It enabled to reduce the gap with rich countries and some of them such as South Korea, Taiwan, Singapore and Hong Kong joined the club of rich countries. Latin American and Sub-Saharan countries also enjoyed economic growth, but their growth came to halt in the late 70s and early 80s and they shifted to the lower growth rate which did not allow them to reduce the gap with advanced economies. The growth exhausted also in the socialist world in the same period.

The questions of the “why some countries are richer than others”, “how developing countries can achieve economic development” captured the science of the economy and requested a solution to overcome the economic backwardness of the developing countries. The neoclassic growth theories emphasized the differing level of factor accumulation as a cause for differences in income (Solow 1956; Cass 1965; Koopman 1965). The endogenous growth theories underlined that the physical and human capital accumulation creates externalities which sustain the steady-state growth (Romer 1986; Lucas 1988). Therefore, accumulation of the physical and human capital does not create diminishing rate of growth. The second wave of endogenous growth theories endogenized the technical progress as a positive effect of the accumulation of the physical and human capital. But none of these theories could answer that why the level of capital accumulation in the developing is not similar to developed countries rich countries. The *structural*

*change theory* and *institutional economics* try to suggest an answer to this question from their own approach.

The structural change theory claims that an economy consists of a modern and traditional sector (Lewis 1954). The modern sector has a higher capital intensity and capital accumulation capacity, higher productivity rate, higher R&D intensity, rapid technological development capacities (Szirmai and Verspagen 2015; Timmer et al 2015; Rodrik 2016). While the opposite is characteristic to traditional sector. The developing countries have a larger traditional and smaller modern sector. Therefore, they can't achieve a capital accumulation, innovation, and growth. The shift of labor from traditional to modern sector is the way of the sustaining growth and development in developing countries. The countries in the developing world which achieved a considerable convergence (China, Malaysia,) and catch-up (South Korea, Taiwan) with developed countries are those which experienced a deep structural change (Ajopa and Szirmai 2021).

Neoclassic growth theories propose that differences in the physical and human capital accumulation are behind the differing economic outcome across the nations. But why different nations have different preferences and propensity to invest in physical and human capital? This is the question which Institutional Economics try to answer. Differences in the institutional settings across nations produce different incentives to invest. The division of labor and specialization results in fall in the production cost. But it also necessitates alienated and over long-distance human interactions which creates room for opportunistic behavior and increases the transaction cost among economic subjects. It is necessary to have effective institutions to reduce transaction costs. If effective institutions do not exist, then transaction cost will be higher and discourage to invest in reducing the production cost which would result in lower growth (North 1992). Institutions which provide the protection of the property rights to broader part of society can induce economic growth (Acemoglu et al 2005). Protection of the property rights guarantees the reaping the benefits of the investment, therefore its provision to broader society encourages more investment which is essential for growth. If the protection of the property rights is provided to only a small fraction of the society in the developing countries, therefore, the whole potential of the society is not utilized which creates lower growth regime in these countries (Acemoglu et al 2005).

Economic growth had also been the main target of the socialist world. In the initial decades of the communism, they achieved high rate of economic development via industrialization and

urbanization by administrative methods. However, those methods could not provide further growth due to inherited inefficiency of the socialist system and long-lasting low-growth regime persisted since 1970s until the collapse of the socialist world (Kornai 1992). As these countries refused the socialist system and decided to move to the market economy, the main question became how they can converge with rich countries. Early studies mentioned the market reforms as a main factor which could reduce the inefficiency in the existing production system and facilitate the rise of the new activities (Pelipas and Chubrik 2008). Other line of research considered the development of the institutions to protect property rights as a decisive factor for economic growth. Regard of the level of institutional development in the post-socialist countries, a dividing line emerged between CEE and CIS. The CEE countries could achieve a higher level of the institutional development which motivated both foreign and domestic investors. However, institutional trap would be an impeding factor on higher rate of the economic growth in CIS countries (Anders 2013). I compare the economic development in Visegrad and South Caucasia in the context of CEE-CIS duality. The effect of the transition shock on the South Caucasian economies has been devastating. They output loss due to transition shock was huge and they fell from the middle-income level to nearly to poverty level at 1000 USD per capita (2015 constant USD). Compared to South Caucasia, the output loss in the beginning of the transition can be called “mild” in Visegrad countries and transitional recession lasted shorter than South Caucasia. The main locomotive of the economic growth after transition shock has been development of the manufacturing sector and business services since mid-2000s in the Visegrad countries. However, South Caucasian countries lost their industrial production which have been built during socialist period and the export of the natural resources, worker remittances, ease of access to foreign capital drove their rapid economic growth after transition shock.

## Statement of Research Problem

After the transition shock was over in 1990s, higher rate of economic growth started both in the Visegrad and South Caucasia. However, the higher rate of economic growth come to halt in both regions since 2008/9 financial crisis. In regard of the lower rate of economic growth, the catch-up with rich countries does not seem on the horizon. Part of the slow rate of growth, especially in the Visegrad countries could be linked to slowdown of growth in EU but another part linked to inability of the current growth strategies to provide further growth in these regions.

Economic growth of Visegrad countries relied on attracting MNCs by cost competitiveness of the labor mainly in the low and middle-value added tasks in the manufacturing sector, but they exhausted potential of this type of growth strategy (Kolotay 2017). Favorable term of trade, ease of access to international finance, oil (Azerbaijan) and metal exports and worker remittances (Armenia and Georgia) fueled high-rate economic growth in South Caucasia. However, growth model based on export of raw materials and labor exhausted its growth potential. In these regards, it worth to investigate the potential direction of economic development in these regions to converge them to the developed countries.

In the background of the EU integration, Visegrad countries achieved a considerable level of development of property right institutions, and it enabled them to host a considerable amount of private foreign and domestic investment. However, there is a backlash on the institutional environment especially in Poland and Hungary which violates the investment climate. South Caucasian countries evolved from institutional chaos of the early transition and experienced a slight development in the property rights institutions. However, institutionalized protection of the property rights is still poor which can discourage the private investment. Addition to property right institutions, labor market, innovation, product market competition and education institutions are also important for economic growth. It is necessary to evaluate the effect of these institutions on the economic growth in Visegrad and South Caucasia.

The history of the catching-up of the laggard economies with rich countries shows that they did more than just improving the mastering of the existing the low value-added production. They changed the structure of their economies by creating and expansion of the high value-added production. It is also necessary for Visegrad and South Caucasian countries to upgrade the value structure of their economies for achieving convergence with developed countries.

The structural change focus on channeling the resource to the high value progressive sectors while institutional development would enable the development of capabilities across all sectors, and both are essential for economic growth. Rodrik, Macmillan and Sepulveda (2018) introduce a unifying framework which entails the *structural transformation* and *fundamentals* (institutions). I follow the same approach and conduct the comparative analysis of the economic growth in Visegrad and South Caucasia within the unifying framework of the structural change and institutions.

## Research Aims and Objectives

The main aim of this thesis is to investigate the effect of the institutional and structural factors on economic growth in the post-socialist Visegrad and South Caucasia. Specifically, this study addresses the following objectives:

1. To examine the structural change in the economies of these regions in the post-socialist period and evaluate its effect on economic growth
2. To analyze the development of the market system in these regions in the post-socialist period
3. To investigate the development of the property right institutions and evaluate its effect on the economic growth
4. To examine the institutions of the product market regulation, labor markets, innovation and education and measure their effect on economic growth
5. To analyze the relationship between the institutional change and structural change in the Visegrad and South Caucasia.
6. To suggest policy recommendations based on the findings of the study.

## Research Questions

This study addresses the following questions for achieving the aims and objectives of the thesis:

1. What is the effect of the sectoral reallocation of the labor on productivity in these regions? How does the expansion of the modern sectors contribute to the overall economic growth?
2. What is the impact of the property right institutions on the economic growth?
3. What is the role of the institutions of the product market regulation, labor markets, innovation, and education on economic growth.
4. How did the institutional development and structural change formulate each other in the Visegrad and South Caucasia.

## Research Hypothesis

According to the stated research questions, the following testable hypothesis are formulated.



*On the structural change and economic growth:*

H1: The reallocation of the labor from the low value-added sectors to the higher value-added sectors play an important role in the productivity growth in Visegrad and South Caucasia

H2A: Expansion of the share of the manufacturing production have a positive effect on economic growth in these regions.

H2B: Expansion of the share of the business service production have a positive effect on economic growth in these regions.

*On the institutions and economic growth, property right institutions*

H3: Strengthening of the protection of the property rights stimulates the economic growth

*On the institutions and economic growth, product market regulation institutions*

H4A: Competitive product markets have a positive effect on economic growth

*On the institutions and economic growth, Labor Market Institutions*

H4B1: Stricter the regulation of employment relations impedes the economic growth

H4B2: Higher rate of informal employment contributes negatively to economic growth

*On the institutions and economic growth, institutions of innovation*

H4C1: innovation in the form of the improvement in the production capacity plays an important role in economic growth in these regions

H4C2: Innovation in the form of the enhancement of the technological capacity have a positive impact on economic growth

H4C3: Innovation in the form of development of the R&D capacity contributes positively to economic growth

*On the institutions and economic growth, institutions of the education*

H4D: Expansion of the tertiary education spurs economic growth

*On the relationship between institutions and structural change*

H5A: There is a bidirectional relation between institutional development and economic structure.

H5B: The competitive environment has a positive effect on the economic structure.

### Novelty and Significance of dissertation

There are studies which gives the comparative analysis of the institutions and growth in CEE and CIS duality (Brunetti, Kisunko and Weder 1997; Campos 2000; Mickiewicz 2005; Redek and Susjan 2005; Anders 2013). Significant changes happened in the last decade but there is not a comparative analysis of the effect of the institutions on economic growth in post-socialist geography entailing the last decade. Contribution of this study is to fill this gap by giving a comparative analysis of Visegrad and South Caucasia.

CEE and CIS countries have an institutional diversity and differing economic structure within themselves. Visegrad, Baltics, Western Balkans, Romania-Bulgaria in CEE, Eastern CIS (Russia, Belarus, Ukraine), South Caucasia, Central Asia in the CIS have their own distinctiveness. However, there is a limited number of comparative studies to touch such diversity (Farkas 2011; Bohle and Greskovitsz 2012; Farkas 2016; Farkas 2017). Nevertheless, these studies cover diversity only within the CEE and CIS is remained unlearned. This thesis attempts to fill gap by covering diversity within CIS (South Caucasia) and compares one region (Visegrad) from CEE with one region (South Caucasia) in the CIS.

The institutional analysis of economic development in transition economies mainly investigated the effect of the property right institutions on economic growth. However, except a few of the post-socialist Central Asian countries, all post-socialist countries are middle and high-income countries. Therefore, property right institutions cannot alone explain the economic growth (Lee 2010). At this income level, particular institutions become a factor to affect economic growth. Addition to property right institutions, this thesis also investigates the effect of institutions such as innovation, labor markets, product market competition, education on economic growth.

There are a few studies to evaluate the effect of the structural change on economic growth in transition economies (Havlik 2005; 2014; Alam 2008; Kuusk, Staehr and Verblane 2016). However, these studies focus mainly on CEE countries, and the CIS including South Caucasia is neglected. Additionally, despite, these studies can measure overall effect of the structural change on productivity growth, but their methodologies does not allow to give accurate evaluation of the contribution of each sector to productivity. I use more sophisticated method for overcoming that deficiency.

## Structure of Study

This thesis consists of five main chapters. The first chapter is an Introduction. It introduces the background of the study, states the research problem, objectives, questions, and hypothesis, and outlines the structure of the dissertation. Second chapter introduces the relevant theories of the growth and states the theoretical framework of the study. Third chapter analyzes the relationship between structural change and economic growth. It firstly gives a descriptive analysis of the structural change in these regions. Secondly, it measures the effect of structural change on productivity growth by employing the Shift Share Analysis. Lastly, it introduces the econometric evaluation of the effect of the high value-added sectors on economic growth. The fourth chapter evaluates the effect of the institutions on economic growth. It starts with a description of the market development in these regions. After that evaluates the development of the property right institutions and measure its effect on economic growth by employing an econometric evaluation. Following, it narrates the development of the product market regulation, labor markets, innovation and education institutions and gives an econometric measurement of these institutions on economic growth in these countries. The last chapter evaluates the interaction between institutions and structural change, presents the summary of findings, conclusion and policy recommendation, highlights the further areas of the research and limitations of this study.

## Methodology of study

### *Methodology*

This section describes the used methodology for investigation of the research questions and hypothesis. In order to evaluate the effect of the sectoral reallocation of labor, I used the growth accounting method- Shift Share Analysis (SSA) method. The SSA is widely used and convenient

method to measure the effect of sectoral reallocation of labor on productivity (Timmer and Szirmai 2000; Peneder 2003; Rodrik and Macmillan 2011). Havlik (2005; 2014) and Kuusk et al (2016) used traditional SSA (static and dynamic) to assess the effect of structural change on productivity in Central Eastern Europe. Their methodological approach is successful to estimate total effect of structural change on productivity growth, but it can't give accurate estimation of the effect of each sector to structural change. For understanding the deficiency of the convenient SSAs, I introduce below the formulas they used and then explain it.

#### Static Shift Share Analysis

$$L_p = \sum S_{t-k,i} \Delta L_{p,i} + \sum L_{p,i} \Delta S_{i,t}$$

#### Dynamic Shift Share Analysis

$$L_p = \sum S_{t-k,i} \Delta L_{p,i} + \sum L_{p,i} \Delta S_{i,t} + \sum \Delta S_{i,t} \Delta L_{p,i}$$

$L_p$  and  $L_{p,i}$  are total productivity and sectoral productivity.  $S_i$  is the share of the employment of sector  $i$  in total employment and  $\Delta$  is the difference in employment share and labor productivity in sector  $i$  between  $t-k$  and  $t$ . The first term is *within sector* growth effect. The second term stands for *static shift effect*. The third term in Dynamic SSA is *dynamic shift effect* which represents the contribution of concurrent change in productivity and employment each sector on overall productivity. According to traditional SSA, any sector experiencing employment expansion with above zero productivity level, contributes positively to structural change effect and negatively in opposite case. For example, expansion of agricultural employment contributes to productivity growth which does not have any meaningful interpretation. According to dynamic SSA, a sector experiencing productivity growth have positive dynamic shift effect on productivity growth. Again, expansion of lowest productivity sector such as agriculture which experience productivity growth can't be accepted as positive effect of structural change on economic growth. The main deficiency of Static and Dynamic SSA is that reference of change in productivity level in a sector is itself, there is not estimation of the contribution of individual sector in reference to productivity in other sectors. Effect of the movement of the labor on aggregate productivity depends on whether labor is reemployed in a sector with higher productivity than sector which it left. Reinsdorf and Yuskavage (2010) suggest that economically meaningful interpretation of the labor reallocation

effect can be attained by measuring each industry's productivity deviation from average productivity. They introduce CSLS<sup>1</sup> method for this estimation.

$$L_p = \sum S_{t-k,i} \Delta L_{p,i} + \sum (L_{i,t} - L_{a,t}) \Delta S_{i,t} + \sum ((L_{i,t} - L_{i,t-k}) - (L_{a,t} - L_{a,t-k})) \Delta S_{i,t}$$

*Within sector* effect is the same as in traditional SSA, in *static reallocation effect* term, labor productivity in sector *i* is replaced with difference between labor productivity in sector *i* and average productivity. In dynamic *reallocation effect* term, change in labor productivity in sector *i* is replaced with difference between change in labor productivity in sector *i* and change in average productivity.

I conduct an econometric analysis for testing the Hypotheses H2-H4 and employ Panel FMOLS. This method is more suitable for small sample panel series especially when the number of cross-sections is smaller than number of time period ( $N < T$ ). In the panel dataset of this study, the number of cross-sections ( $N=7$ ) is smaller than the number of time period ( $T=20$ ). Contrast to OLS, FMOLS allows for a degree of cross-sectional heterogeneity, and this enables to have a less biasedness of estimators. As a static model, OLS cannot deal with endogeneity problem that can produce biased estimators. However, as a dynamic model, FMOLS can minimize the biased estimates caused by endogeneity problem (Pedroni 2001).

The following table gives detailed information about the data used in this study.

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<sup>1</sup> Authors named this method Center for Study of Living Standards (CSLS) at the conference hold by this organization in 2014

Table

Variables		Period	Source
<b>SSA</b>			
<b>Labor Productivity</b>	Output per worker	1995-2019	Eurostat, National Statistical Offices
<b>Sectoral Employment</b>	Sectoral employment (% of total employment)	1995-2019	Eurostat, National Statistical Offices
<b>Structural Change</b>			
<b>HTEX</b>	High-tech manufacturing export (% of total export)	2000-2019	World Trade Integrated Solutions, Word Bank
<b>BSO</b>	Business Service Output (% of total output)	2000-2020	Eurostat, National Statistical Offices
<b>Property Right Institutions</b>			
<b>ROL</b>	Rule of Law	1996-2019	World Bank, Governance Indicators
<b>HFPR</b>	Heritage Foundation, Index of Property Right	1995-2019	Heritage Foundation, Property Rights
<b>Institution of Product market Regulation</b>			
<b>Competition</b>	Competition Policy	1995-2014	EBRD Transition Indicators
<b>Labor Market Institutions</b>			
<b>EMPL</b>	Employment Protection Index	1995-2019	OECD, Lehman and Muravyev (2011)
<b>SELF-EMPL</b>	Self-Employment	1995-2019	World Bank
<b>Institution of Innovation</b>			
<b>ISO</b>	ISO-9000 Certificates	1995-2019	ISO Datasets
<b>PATENT</b>	Number of Patent Application	1995-2019	World Bank
<b>R&amp;D</b>	R&D Spending (% of GDP)	1995-2019	World Bank
<b>Institution of Education</b>			
<b>EDU</b>	Tertiary enrollment (% of total enrollment)	1995-2019	World Bank

## Summary of Study

This study undertook to evaluate the effect of the structural change and institutional development on the economic growth in the post-socialist Visegrad and South Caucasia. The effect

of the structural change and institutional development on economic growth were analyzed in the third and fourth chapters, respectively. I summarize the findings of the study along the stated hypothesis.

### *Structural change and economic growth*

*H1: The reallocation of the labor from the low value-added sectors to the higher value-added sectors play an important role in the productivity growth in Visegrad and South Caucasia*

After giving the description of the change in the structure of the Visegrad and South Caucasian economies, I evaluated the effect of the structural change on the productivity growth by CCLS method of the SSA. The within sector productivity growth is the main driver of the productivity growth in both regions. Poland and Georgia are distinguished for experiencing the biggest reallocation effect.

The contribution of the manufacturing sector to the reallocation effect is not significant in both regions. Employment in the manufacturing sector already matured in the socialist period in Visegrad economies. Therefore, further expansion was not possible which has been cause of the small reallocation effect of this sector. However, the weakness of the reallocation effect of manufacturing sector in the South Caucasian countries is their inability to expand employment in this sector even from the lower level. Despite the reallocation effect of the manufacturing sector is negligible, it has been the driver of the within sector productivity growth in Visegrad countries. The FDI-led restructuring played an important role in the rise of the productivity in this sector and upgrading its value structure in these countries. However, the unimpressive productivity growth in the small manufacturing sector in South Caucasian countries did not enable this sector to be the locomotive of the within sector productivity growth.

Expansion of the business services with dynamic productivity growth in Poland played an important role in the productivity growth. However, the lack of the productivity dynamism in the expanding business services sector reduced its positive effect on productivity growth in Hungary and Slovakia. Armenia is distinguished for an impressive role of the expansion of the business services on productivity growth in South Caucasia.

Contraction of the agricultural sector played an important role in the positive reallocation effect in Poland among Visegrad countries. A slight contraction of the low value agricultural employment in Azerbaijan and Georgia also produced a large positive reallocation effect.

*H2A: Expansion of the share of the manufacturing production have a positive effect on economic growth in these regions.*

*H2B: Expansion of the share of the business service production have a positive effect on economic growth in these regions.*

The result of the econometric test shows that the high-tech manufacturing exports have a positive effect on overall economic growth in both regions between 2000 and 2019. However, the effect of business services sector is positive in Visegrad but it is negative in South Caucasian case. The locomotive of the economic growth in South Caucasia has been mainly revenue from the sale of the resource and inflows of the remittances. They contributed to expansion of the demand in the non-tradable sectors and business services did not benefit from that growth. Therefore, there is not a positive statistical association between business service and economic growth in South Caucasia.

*On the institutions and economic growth, property right institutions*

*H3: Strengthening of the protection of the property rights stimulates the economic growth*

Governments in the Visegrad countries have seen the deficiency of the socialist system to provide economic growth and inevitability of the adding the market elements. They had a contact with IMF and World bank and were aware of the necessary reforms. Contrastingly, South Caucasian countries never had thought on the deficiency of the socialist system and necessity of adding market mechanism. In short, the Visegrad countries were more prepared to tackle the transition shock than South Caucasian countries. Additionally, South Caucasian countries were caught in the massive military conflicts in the beginning of the transition, therefore, they did not have resources and will to devote to establish the better economic system in the new era. As a result, the Visegrad countries could handle the transition shock, achieve macroeconomic stability and conduct the necessary market reforms. However, the war, institutional void and hyperinflation created a chaos in South Caucasia which enabled the ex-communist to regain the political power. The political development since early transition had a significant effect on the property right



institutions. The societies in the Visegrad countries had a vision of the becoming European society in economic, social and political aspect. At the beginning of the transition, all political powers shared the similar vision, and they did not experience a political polarization. At the same time, stick and carrot policy of the EU played an important role in the development of the inclusive political system in Visegrad countries. As a result, they achieved a considerable development in the protection of the property rights. Political polarization and monopolization of the political power and using it for economic favor of the political ruler has been the main characteristics of the South Caucasia. Despite the Georgia achieved an electoral democracy but the marginalization of the opposition, leveraging the economic resources in favor of the political circle, instrumentalization of the court, rule of law remained the indispensable features of the electoral democracy of Georgia. Authoritarian regime for a long time in Armenia and still in Azerbaijan did not give up favoritism. In these regards, it cannot be said that South Caucasian countries have a considerable achievement in the protection of the property rights. Econometric evaluation shows that the property right institutions have a positive effect on economic growth in both regions. Therefore, the H3 is accepted.

*H4A: Competitive product markets have a positive effect on economic growth*

Visegrad countries initiated to build the legislative basis of the competitive environment from the beginning of the transition. Their achievement has been remarkable, and the EU integration also played an important role in this achievement. The South Caucasian countries initiated the establishment of the competition policy later at the end of the first decade of the transition and their reforms in this area is incomplete. Econometric evaluation shows that the competitive environment has a positive effect on economic growth in Visegrad countries while it is negative in South Caucasia. Competitive environment enforced the business entities to reduce the inefficiencies to remain in the business which had been conducive for growth in Visegrad. However, the reforms in the competition policy are incomplete in this South Caucasia. They did not stay the same as in the socialist period, but they haven't achieved a threshold level of competitive environment. Therefore, it can't contribute to the economic growth in this region. The H4A is partially accepted.

*H4B1: Stricter the regulation of employment relations impedes the economic growth*

The result of the FMOLS shows that the strictness of the labor regulation spurs the economic growth in both regions. It seems that employment protection supports the accumulation of the firm-specific knowledge and it result in an increase in the productivity of the firms. The H4B1 is rejected.

*H4B2: Higher rate of informal employment contributes negatively to economic growth*

The informal employment is considerably higher in the South Caucasia. An econometric test of the effect of the informal employment on growth shows that it is negative in Visegrad while it is positive in South Caucasia. The large share of the informal employment gives additional flexibility for firms to adjust to external environment in South Caucasia, therefore, it is effect is positive. The H4B2 is partially accepted.

*H4C1: innovation in the form of the improvement in the production capacity plays an important role in economic growth in these regions.*

I investigated the effect of innovation institutions on economic growth in three categories of innovation: production capacity, technological capacity and R&D and knowledge creation capacity. Increase in the number of the ISO certificates shows that there is a positive trend in the development of the production capacity in these regions. However, its level in Visegrad is incomparably higher than South Caucasia. The FDI-led modernization, higher requirement for production standard and lastly producing more sophisticated products can explain this gap between Visegrad and South Caucasia. The result of the FMOLS regression shows that an increase in the number of the ISO certificates has a positive effect on economic growth in both regions. Therefore, the H4C1 is accepted.

*H4C2: Innovation in the form of the enhancement of the technological capacity have a positive impact on economic growth*

The decline in the number of the patents could seem the degradation in the technological capacity of these regions. But couple of factors weakens this statement. The industries in which these regions are specialized have a slow technological dynamism. At the same time, incremental innovation in these industries is hard to patent in these industries. The result of the econometric

test shows that increase in the number of patent applications has a positive effect on economic growth in both regions. The H4C2 is accepted.

*H4C3: Innovation in the form of development of the R&D capacity contributes positively to economic growth*

Excepting Slovakia, Visegrad countries doubled the share of R&D spending in GDP and the funding from EU played an important role. The R&D spending stagnated at an extremely lower in South Caucasia. R&D occurred mainly in the scientific institutions to preserve the scientific capacity and financed mainly by government in South Caucasia. The FMOLS regression shows that the R&D spending has a positive and significant effect on economic growth in these regions. The positive effect of the R&D on economic growth occurs mainly through the development of the capacity of the companies to absorb foreign technologies. The H4C3 is accepted.

*H4D: Expansion of the tertiary education spurs economic growth*

Tertiary education expanded rapidly in these regions in the post-socialist period and the marketization of the higher education also contributed to the expansion of it. Lack of the increase in the educational staff in the higher education, their low salaries and inadequate level of the development of the educational infrastructure poses a threat on the quality of the higher education. Econometric evaluation of the effect of the tertiary education on economic growth by employing the FMOLS model indicates that the rise in the coverage of the tertiary education have a positive contribution on economic growth in Visegrad and, but its effect is negative in South Caucasia. There is a demand for skilled labor from progressive sectors and the skills of the university graduates are utilized in productive activities in Visegrad. However, there is an acute underutilization of the skills of the educated workforce, therefore, tertiary education does not have a positive effect on economic growth in South Caucasia.

*H5A: There is a bidirectional relation between institutional development and economic structure.*

I conducted a deductive analysis of the relationship between institutional development and structural change in these regions. I firstly introduced such a relationship between institution of property rights and structural change. At the beginning of the transition, Visegrad countries had

an inefficient but a complex industrial system. So, the stake was big which necessitated the institutional development for attracting capable investors to restructure and save their industrial base from the collapse. At the same time, institutional development attracted greenfield investment in manufacturing industry and business services sector beside privatization of the existing manufacturing firms. It resulted in the expansion of the progressive sectors. In South Caucasia, the manufacturing industry was smaller and less sophisticated and was heavily reliant collapsed trade, financial and production linkages in the USSR. The decline of underdeveloped manufacturing sector did not become a critical issue because the sales of their natural resources at world price in the new era would provide them with income. Therefore, the development of the property right institutions and business environment was not a priority in the South Caucasia. It discouraged a long-term investment in progressive sectors. The investment was granted to mainly to political power holders and their close circles and it had a short-termist feature and concentrated mainly in non-tradable sectors. The H5A is accepted.

*H5B: The competitive environment has a positive effect on the structural change.*

Economies of both regions were heavily monopolized during the socialist period, and it had created a considerable level of inefficiencies. Reduction of the inefficiencies was important to preserve their industrial bases in these countries and the competitive environment was crucial for provision of it. Visegrad countries improved the legislation of the competition policy, and it attracted significant amount of FDIs which modernized their inefficient manufacturing sector. Otherwise, they would also experience a deindustrialization as CIS and Latin American countries. Competitive environment has also supported the development of the business services activities. The competitive environment had played an important role in the preservation and expansion of the modern sectors in Visegrad countries. South Caucasian countries lost significant part of their industrial bases in the first decade of transition. However, they had a pool of educated workforce and experience of the industrial production. By providing competitive environment in tandem with development of the property right institutions, they could utilize their latent capacity in the labor-intensive manufacturing. However, absence of the competitive environment had been one of the factors for non-realization of this opportunity. So, lack of the competitive environment became a hindering factor on the expansion of progressive sectors in South Caucasia. The H5B is accepted.

*H5C: Flexible labor markets have a positive effect on structural change*

Flexibility of the labor market regulation attracted huge amount of the foreign capital in the modern sectors in Visegrad countries. Despite of the fact that South Caucasian countries also liberalized the labor market regulations since 2000s, but it did not contribute to the expansion of the modern sectors. The H5C is partially accepted.

*H5D: Expansion of the tertiary education has a positive effect on structural change*

The modernized manufacturing and developing business services sectors increased their demand for educated workforce and the premium for education increased in Visegrad countries. As a result, it contributed to expansion of the tertiary education. The tertiary education also expanded in South Caucasia. But there was not expanding progressive sectors to motivate the expansion of the tertiary education. At the same time, the increased pool of the graduates did not attract the enterprises to utilize their skills in the modern sectors. The H5D is rejected.

*H5E: Innovation drives the structural change*

The progressive sectors expanded in the Visegrad economies, but it was not driven by the development of their innovation capacity. FDI-led development has been the main driver of the structural change by the preservation of the industrial base and development of the producer services activities. Visegrad economies specialized in the lower knowledge intensive task of modern sectors. Therefore, these sectors did not contribute to the development of their technological capacity. There was neither a development of the innovation capacity to specialize in the knowledge intensive higher value-added activities nor an upgrading of the structure of economy to increase the demand for innovation in South Caucasia. Therefore, South Caucasian economies are stuck in the vicious circle. The H5E is rejected.

## Policy Recommendations

Current specialization of the manufacturing sectors of the Visegrad countries in the European production system makes it harder Visegrad countries to upgrade the value structure of their existing manufacturing production. If Visegrad countries target to upgrade the existing manufacturing production, it means that they have to compete with the core European countries. Additionally, the main firms in the manufacturing sector are subsidiaries of the MNC whose headquarters are in the developed European countries. The headquarter companies are decisive in the decision of the subsidiaries in the Visegrad. Therefore, it would not be expected that the

headquarters allow and assist the subsidiaries to gain specialization in the core activities. Therefore, the new higher value-added activities should not aim to substitute the core activities in the developed Europe. Rather, the higher value-added activities which is complementary core activities should be targeted.

Visegrad countries escaped the deindustrialization while the South Caucasian countries could not. They have decades-long experience of industrial production and pool of labor. In this regard, they could at least target the labor-intensive manufacturing sectors which is within their current capacities. Governments can incentivize both domestic and foreign investor with various stimulus packages.

The South Caucasian countries have a considerable high rate of low productivity employment in the agriculture. Shifting the excess labor in this sector to the relatively higher value-added sectors in tandem with increasing the productivity in the agriculture by increasing its capital and technology intensity could contribute to the boost of productivity of the agricultural sector and overall economy. But it should be kept in mind that relatively higher value-added sectors should emerge and expand to absorb excess labor from agriculture.

The share of the employment in the business services in the total employment expanded in Visegrad. The expansion of the business service employment in the Czech Republic and Poland has been accompanied a dynamic productivity growth. However, Hungary and Slovakia lacked the productivity dynamism in the expanding business services sector. Decline and stagnation of the productivity in the producer services activities does not allow these countries fully benefit the positive effect of the expanding business services. Expansion of the lower value-added segments of the producer services and productivity stagnation in the higher value-added producer services can explain the productivity stagnation in the business services in Hungary and Slovakia. Therefore, the expansion of the higher value-added segments of this sector such should be targeted. At the same time, the barriers on the business activity of the higher value-added firms should be identified and removed.

The share of the employment in the producer services in total employment is still smaller in the South Casasia and the absence of the production sector to have demand for such services can be considered a main factor behind the underdevelopment of this sector. There emerged an

increasing demand for the exports of producer services from Eastern Europe as well as from Armenia and Georgia. South Caucasian countries should target benefitting from the increased demand for exports of business services. Trade of services should be eased, and the education system should provide the skilled labor force with necessary qualification for this fields.

Political development and EU integration resulted in a considerable improvement of the protection of the property rights in Visegrad countries and it enabled these countries to attract huge amount of investment in progressive sectors. Recent attempts by Polish and Hungarian governments to violate the rule of law would be a discouraging factor on the investment environment. Compliance with the protection of the property rights should be kept in order to preserve the achieved economic development and add more to it in this region. The political environment in the South Caucasia did not support the well protection of the property rights. The rule of ruler is still more powerful than the rule of law in this region. The political elite can easily leverage their political power to channel economic opportunities and public resources in favor of their own circle. The rent-seeking is the dominant behavior among economic elite. Reducing the incentives for rent-seeking behavior and improvement in the rule of law and protection of the property rights are necessary for the economic development of this region. Otherwise, the ruling elite and their clients would block economic reforms or make reforms meaningless if they are still favored at the cost of the other economic actors.

One of the barriers on the innovation system in the Visegrad countries is its demand-driven characteristics. They mainly sophisticated already existing knowledge and technology rather than creating the new knowledge and technology. So, the change of the innovation system from demand-driven to supply-driven system is necessary for their further economic growth and to join the club of developed countries. Transformation to the supply-driven innovation system requires the development of the firm-level innovation capacity and the national innovation system. In order to develop the firm-level innovation capacity, various stimulus should be given to firms in the progressive sectors. At the national level, the resources to the R&D should be increased, the connection between industry, university and government be strengthened. Another threat on the innovation system in the Visegrad countries is its external dependency. For a long time, the FDIs played an important role in the R&D activities. In the last decade, the EU funds replaced that

dependence. In order to reduce the dependence on external funds, the domestic public spending on R&D should be increased and private R&D be promoted.

The share of the knowledge intensive production has been crucially low in the South Caucasia. Therefore, there has not been demand for innovation in these economies and their innovation system is rudimentary. At this level of the innovation system, they should focus on mastering the existing knowledge and technology and their sophistication. Attempting to introduce the new knowledge and technology does not seem an attainable goal for South Caucasian countries. Development of the innovation system would go hand in hand with the upgrading of the production. In the background of the promotion of the higher value-added activities, the innovation in such activities should also be stimulated. At the same time, national innovation system should be upgraded to meet the demand of the potential higher value-added sectors for innovation. The helix of the university, government and industry should be developed.

Further economic development requires the Visegrad economies to move to the more knowledge intensive production and the expansion of the higher education as well as development in its quality are necessary for knowledge economy. Therefore, education policy should target both expansion of the higher education and improvement of its quality. The South Caucasian countries should target the development of the higher value-added activities which would increase the demand for skilled labor. Therefore, both coverage and quality of the higher education in the fields which prepare skilled workforce for progressive sectors should be increased.

## Limitations of the Study and Recommendation for future studies

This study contributes to the literature by presenting the new findings. However, it has some limitations which should be mentioned. Firstly, the beginning of the data for the analysis of the effect of the sectoral reallocation on economic growth is 1995 for Visegrad and 1998 for South Caucasia. This limits the study because a significant change happened in the sectoral distribution of the output and employment in the first half of the 1990s, but this study cannot analyze their effect due to absence of the data for that period. Secondly, there is a considerable level of the informal economy in the South Caucasia. Therefore, the data of the sectoral distribution of the



output and employment would not fully describe the real situation in these countries. Lastly, the small sample size is the main limitation of the econometric analysis.

One of the directions of the future research should be evaluation of the activities in the manufacturing and business services sector in Visegrad countries which have a potential to introduce new technology, product and knowledge at the global level and upgrade their economies. These economies are at the level of the development which requires the introduction of the new knowledge, product or technology to the global economy for joining the rank of the developed economies. Now, Visegrad countries are specialized in activities in which there are a lot of competitor countries. If they can introduce and master new technology and knowledge, they would face less competition and have a technology rent in these new activities.

Analysis of the rent-seeking behavior and its effect on economic growth in the South Caucasian countries could be another interesting area of the future research. Access to political power can allow powerholder to use the public resources for their own economic interest. Therefore, it creates the rent-seeking in the economic activity. Economic actors do earn money by getting subsidies or monopolies rather than adding value to the society in the form of the increased efficiency of the existing economic activities or introducing the new activities. Rent-seeking behavior produces distorted incentives which can create undesired economic outcome.

Future study should also consider the investigation of the potential high value-added activities through which South Caucasian countries could integrate the GVC. As small economies, they cannot establish a whole industry from the scratch, now, it would be better them to start from tasks within sectors.

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