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The Impact of Services Sub-Sectors on the Innovation Performance of Eastern European Countries

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Abstract

Many studies have shown that the services sector has grown rapidly recently and has contributed positively to the current productivity and growth rates in today's economies. However, these findings are insufficient to explain the contributions of services sector developments to the dynamics of the economy. Firstly, it would be more appropriate to associate developments in the services sector with the increase in innovation activities, which is an important feature of the economy, instead of associating them with current productivity and growth rates. Secondly, instead of considering the developments in the services sector as a whole, it would be a more accurate approach to divide them into subgroups and examine their effects on the economy. Accordingly, we aimed to examine the effects of services sub-sectors on the innovation performance of 13 Eastern European countries using panel data analysis for the period of 2000-2017. Our empirical findings revealed that the impact of services sub-sectors on the innovation performance of Eastern European countries varies. Only the knowledge-intensive business services (KIBS) sub-sector has contributed to the innovation performance of the Eastern European area. Thus, these empirical results indicated important implications for innovation-oriented economic growth policies based on the promotion of the KIBS sub-sector in Eastern European countries.

Keywords: services sectors, knowledge-intensive business services, innovation, Eastern European countries.

JEL Classification: L80, O30, O52

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1. Introduction

The ongoing economic development brings innovation-oriented growth processes that have led to an increase in long-term social welfare. Many studies have proved the innovation-growth nexus in today's economies and thus clearly showed that the innovation activities enhance economic growth nowadays (Fagerberg and Srholec [12]; Hasan and Tucci [16]; Pece et. al. [27]; Raghupathi and Raghupathi [30]; Broughel and Thierer [6]). Thus, today's developed countries provide economic prosperity coming from innovation-induced growth. Accordingly, the term "innovation-driven economy"

has been coined by economists to conceptualize the characteristics of this new development stage (OECD [26]; Yinxing [33]; Arkolakis et. al. [1]; Crowley and McCann [8]; Kozlova et. al. [22]).

The current economic system is also primarily characterized by the remarkable growth of the service industries. The contribution of the services sector to economies has increased over time and emerged as the largest segment in today's economy. The share of services in GDP increased from 61 to 76 percent in developed economies from 1980 to 2015. The importance of services has also appeared in the employment of developed economies where services jobs represent 75 percent of the total employment in 2016 (UNCTAD [31]: 3-4).

The expansion of service industries and the increasing innovation performance has gone hand in hand around the world over the past decades. Indeed, in the current development stage, the services sector has expanded its share in the economy while innovation activities have increased. Consequently, the relationship between the growth in the share of the services sector and the improvement of innovation performance has become an important research topic in the literature. Accordingly, some studies, albeit limited numbers have analysed the complementary role played by the services sector in the innovation process of the economy. The question of how the expansion of the services sector causes the new economy based on innovation is answered by its role in value chains. The services sector enhances the innovation capacity of the whole economy by providing crucial inputs to the innovation-creating process (Guerrieri and Meliciani [15], Jones [19], Hoekman and Shepherd [17], Di Berardino and Onesti [9]).

However, most of the studies in the related literature have analyzed the contributions of the services sector to actual productivity and economic growth, rather than their impact on innovation performance. Some economists have shown that particularly manufacturing sector productivity is affected by the availability of a number of services sector activities (van Ark et. al. [32]; Foster et. al. [14]; Duggan et. al. [10]; Arnold et. al. [2]; Beverelli et. al. [5]). In addition, some empirical studies have also indicated how the rising service sector activities contribute to economy-wide productivity and growth (Eschenbach and Hoekman [11]; Banga and Goldar, [4]; Jalil et. al. [18]; Yousuf et. al [34]; Hoekman and Shepherd [17]; Lee and McKibbin [23]; Kim and Wood [20]).

It is a known fact from today's literature that the service sector has grown rapidly in the recent period and constitutes an important dynamic in the development of actual productivity and economic growth. However, there are two important shortcomings in these studies investigating the role played by the services sector in today's economy. First, instead of associating expansion in the service sector with improvements in the level of innovation, almost all of the studies in the relevant literature have associated it with current levels of productivity and economic growth. Secondly, most of the studies lack a detailed explanation of the role of service sub-sectors in today's economy, as the effects of the service sector on the economy are investigated by considering the service sector as a whole without making any sub-sector classification.

In order to close the above-mentioned gaps in the relevant literature, this paper aims to examine the impact of sub-sectors of services on the innovation performances of 13 Eastern European Countries for the term 2000-2017. Countries consist of Bulgaria,

Croatia, Czech Republic, Estonia, Greece, Hungary, Lithuania, Latvia, Poland, Romania, Slovakia, Slovenia, and Turkey. Accordingly, we investigate the impact of the subsectors of services - Other Business Services, Knowledge-Intensive Business Services, and Community, Social and Personal Services - on the number of patents of countries in Eastern Europe.

Thus, the contribution of this study to a better understanding of the impact of services in today's innovation-driven economy is twofold. First, contrary to many studies in the literature, we provided a more detailed explanation of the role that services play in today's economic development, by considering the services sector in terms of sub-sectors but not as a whole. Second, unlike most previous empirical studies that examined the impact of the service sector on productivity and economic growth, we directly addressed the impact of the services sector on innovation.

The rest of the paper is organized as follows: Section 2 reviews the studies examining the role of the services sector in today's productivity and economic growth. Section 3 explains the data, methodology, and empirical results. The final section comprises some concluding remarks and policy implications.

2. Brief Empirical Literature Review

It is clear that an important aspect of the current structural transformation of today's economies is the transition from industry to services. (UNCTAD [31]: 3-4). Most economists consider the rise of the services sector as an important dynamic of the economic transformation experienced today. Accordingly, in recent years, the increasing dominance of the services sector and its effects on today's economy has been shown in several ways. When the literature is examined, it seems that there are many studies showing the role played by the expansion in the service sector in current productivity and economic growth.

However, there are not enough studies examining the relationship between the rapidly developing services sector and the increase in innovation activities, which is an important feature of today's economies. This deficiency in the literature prevents the full emergence of the role played by the services sector in today's economies. Therefore, there is a great need for studies investigating the link between the expansion in the services sector and the increase in innovation activities. However, as can be seen from the studies in the literature below, economists mostly analyse the effects of developments in the service sector by associating them with productivity and growth rates in the manufacturing sector and the entire economy.

Some economists have specifically explored the effects of service sector growth on manufacturing sector productivity. van Ark et al. [32] examined the source of difference between productivity growth in the manufacturing sector Europe and the United States from 1973-2006. Empirical results indicated the key role of services in accounting for the productivity growth divergence between two regions. Accordingly, they argue that improved productivity growth in Europe's services sector will be needed to close the productivity gap with the United States. Foster et. al. [14] investigated the effects of the service sector on the manufacturing sector in the international framework.

The input/output linkages were taken from the newly constructed World Input-Output Database (WIOD) containing data on 18 countries between 1995 to 2005. They found that service industries not only account for a substantial part of manufacturing industries' inputs but are also the source of positive and substantial productivity effects in the manufacturing sector. Thus, the estimations confirm the necessity to take into account the service sector when estimating the productivity of the manufacturing sector. Duggan et. al. [10] analysed productivity developments in the manufacturing industry in Indonesia between 1997 and 2009. The results of the analysis showed that the increased foreign service provision due to the liberalization of the services sector increased productivity in the manufacturing industry. It finds that relaxation in service-sector foreign direct investment policies accounted for 8 percent of the observed increase in manufacturers' total factor productivity over the period. Arnold et. al. [2] investigated the basic dynamic of productivity of the Indian manufacturing sector for the period 1993–2005. Empirical results demonstrate the powerful contribution of the services sector in improving after India's policy reforms in services. The impact of services sector development on the productivity of manufacturing firms increases significantly after services reform. Services reforms benefited foreign-owned manufacturing firms are stronger compared to locally owned firms. Beverelli, et. al. [5] examined the effect of services reform on manufacturing productivity for a broad cross-section of 57 countries at all stages of economic development. Empirical analysis shows that decreasing services trade restrictiveness has a positive impact on manufacturing productivity. Thus, the results suggest services reform efforts aimed at enhancing the availability of services positively affect manufacturing sectors that use services as intermediate inputs in production.

Using international panel data, apart from productivity in the manufacturing industry, many empirical studies have also shown how the expansion of the service sector contributes to productivity and growth throughout the economy. Eschenbach and Hoekman [11] analyzed the impact of the services sector on the growth performance of 24 transition economies. Using annual data for the 1990 - 2004 period, the results of panel estimation show that services sector development affects growth and total efficiency in the economy. especially, the services sector was found to be an important determinant of the productivity of workers in all sectors of the economy. Thus, it seems that effective service sector policy is a key element of productivity growth. Hoekman and Shepherd [17] examined the linkage between services and productivity performance of the 100 developing countries. They find a strong relationship between services sector development and economic productivity. The average rate of services input intensity is found to be closely associated with an increase in productivity. Besides, they indicated that services trade restrictions negatively affect production and manufactured exports. This finding clearly shows that trade-in service is a key channel through which services technology and know-how are transferred across countries. Lee and McKibbin [23] explored the performance of the service sector in the overall economic growth with a focus on the experience of Asian countries. Data covers from 1990 to 2005 in 10 major Asian economies. The evidence shows that in Asian economies, the service sector has made a significantly positive contribution to productivity growth through increasing labor efficiency. The findings improve the understanding of the relationship between the growing services sector and overall productivity growth in the Asian economies.

Therefore, there is enormous potential for policies aiming to enhance the services sector in order to extend productivity growth. Finally, Kim and Wood [20] provided a comprehensive analysis of the relationship between the development of the service sector and economic growth in Asia. They showed that a rapid shift towards the services sector increases its importance in the total production of Asian economies. The services sector in Asia has the potential to become a new engine of economic growth as supplying greater productivity gains. Thus, the expanding role of the services sector in Asia's economic growth requires the creation of a set of policy provisions based on supporting the services sector.

Empirical studies using national time series have also determined how the rising service sector contributes to economy-wide productivity and growth. Banga and Goldar [4] examined the role of services as an input into the production process of India. Results of production function estimation show that the importance of services as an input to production increased considerably in the 1990s as compared to the 1980s. The contribution of services to the growth of manufacturing output went up considerably, from about 1 percent in the 1980s to about 25 percent in the 1990s. Thus, empirical results proved that the increasing use of services in manufacturing in the production process had a favorable effect on Indian industrial production. Jalil et. al. [18] empirically investigated the effect of services on economic growth in the case of Pakistan during the period 1960-2014. They used the Johansen-Juselius cointegration test and the autoregressive distributed lag bounds test to test the long-run relationship between the services sector and Pakistan's economic growth. The empirical results reveal that the service sector has a long-term relationship with Pakistan's economic growth. Moreover, the estimation of the cointegration vector shows that the services sector contributes positively to Pakistan's economic growth. Yousuf et al [34] attempted to examine the contribution of the service sector in the economic growth of Bangladesh during the period of 1973-2017. Estimation results of the ARDL bound approach indicate the service sector and gross domestic product growth are correlated both in the short-run and long run. An expansion of 1% in the service sector has resulted in an increase of 0.64% in economic growth in the short run and 0.75% in the long run.

Looking at the literature, it is seen that some studies, albeit in a limited number, analyse the effect of some subgroups of the services sector in new economies instead of the whole. In this limited number of studies, the effects of the Knowledge-Intensive Business Services (KIBS) sub-sector on the new economy are analysed, rather than the service sector as a whole. KIBS sub-sector covers a broad spectrum of services from software development to computer and data processing, from research and development to the management of complex engineering projects. Thus, firms in KIBS encompass a broad range of functions highly concentrated in science and technology (S&T) occupations and mostly help their clients to complete technologically intensive tasks. Services provided from KIBS are mainly used as primarily intermediate inputs to make innovation (OECD [25]: 12). Thus, since the production process entered a new phase based on creating innovation, it is required that more service-related input of the innovation process is being sourced from specialized providers in KIBS. The services provided by the KIBS

sector are sometimes the main source, sometimes the facilitator, and sometimes the carrier of the innovations (Muller and Doloreux [24]: 68).

Zhan [35] analysed the relationship between the KIBS and the value-creating capacity of the economy in China, the Czech Republic, France, Japan, South Korea, Norway, the United Kingdom, and the United States. Estimation results of panel data regression show that the KIBS sector promotes the upgrading of the productivity of the manufacturing sector, thereby creating greater value. It is shown that more KIBS is used as an input, a higher rate of benefit can a manufacturing industry gain from it. Thus, by realizing the upgrading of the manufacturing industry, the paper indicated that the KIBS sector made a significant contribution to the productivity of manufacturing sector-based innovation. Fischer [13] investigated the relationship between innovation performance and KIBS providing by Foreign Direct Investments in 38 developing countries. Thus, they analyse empirical aspects of the inherent interconnections between KIBS sourced from FDI and innovation systems in developing countries. The results of panel data analysis covering the term between 2001 and 2010 underscore the relevance of KIBS contribution provided by multinational companies to host innovation capacity in developing countries. In this regard, it is concluded that the services provided by foreign firms in KIBS as innovation carriers and knowledge facilitators can help to close the gap between developing and advanced economies. Corejova and Kassiri [7] illustrated the importance of KIBSs as a source of innovation and economic growth in Slovakia. Using the data between 2008 and 2013, they explain the importance of KIBSs on innovation performance by growing the labor force KIBS in Slovakia. Findings show that Slovakia is among the countries with the largest share of employees in KIBS and this leads to a significant increase in innovation performance and economic growth. The correlation between the number of scientists employed in KIBSs and the growth of innovation was found to be very high, especially.

As can be seen from the determinations made above in the literature, it is clear that the whole service sector has grown rapidly in the recent period and constitutes an important dynamic in the actual productivity and economic growth level. However, these studies mostly focused on the impact of services sector expansion on actual productivity and growth. There are not enough studies examining the relationship between the development of the service sector and the increasing innovation activities that are an important feature of today's economies. In addition, in most of the studies, the services sector is included in the analysis as a whole, without dividing it into sub-sectors. In only a limited number of studies, the impact of the Information Intensive Business Services (KIBS) sub-sector on the economy has been handled separately. That means most of these studies lack a detailed investigation of the role of all service sub-sectors in the new economy. Therefore, studies to determine the dynamics of today's economies in the context of developments in the services sector are insufficient. Thus, while determining the role of the services sector in today's economic developments, it would be more accurate to divide the services sector into subgroups instead of considering it as a whole and focus on the effects it creates on innovation rather than productivity and growth. There is an important need for studies aiming to determine the economic effects of all service sub-sectors separately on innovation.

3. Data Set, Methodology and Empirical Results

In this part of the study, we empirically examine the impact of different services sub-sectors on the innovation performance of 13 Eastern European Countries (EECs) including Bulgaria, Croatia, Czech Republic, Estonia, Greece, Hungary, Lithuania, Latvia, Poland, Romania, Slovakia, Slovenia, and Turkey. The analysis is carried out by using data between 2000-2017, that was retrieved from the OECD Structural Analysis Statistics (STAN) database and EPO. The data are included in the analysis at the annual frequency and logarithmic form. The country group and period determined in the sample are selected according to the availability of data.

Table 1 shows the explanations for the variables. The number of patents (lnpatent), which are dependent variables, indicates the number of patent applications to the European Patent Office (EPO). Although patent applications are not a sufficient criterion to show the innovation activity of countries due to some limitations, this variable is used by many studies in the literature. Because, apart from this indicator, no other variable showing the innovation performance of countries has yet been developed to be used in empirical studies. The independent variables in the econometric model indicate the million-dollar values of various services sub-sectors, which were created on the basis year of 2015. This specification is made taking into account ISIC rev. 4. Within the framework of the OECD database, the OECD Structural Analysis Statistics (STAN) method classifies the services sector as Other Business Services, Knowledge-Intensive Business Services, and Community, Social and Personal Services. Other Business Services (lnobs) cover the production items between 45th and 57th rank. Knowledge-Intensive Business Services (lnkibs) include production items between 58th and 82nd rank. Finally, Community, Social and Personal Services (lncsps) contain production items between 83rd and 99th rank.

Table 1: Definition of Variables

Variables	Definition	Source
lnpatent	The number of applications to the EPO	European Patent Office (EPO)
lnobs	Other Business Services: Production items between 45th and 57th rank according to ISIC rev. 4rd classification	OECD STAN database
lnkibs	Knowledge-Intensive Business Services: Production items between 58th and 82nd rank according to ISIC rev. 4rd classification	OECD STAN database
lncsps	Community, Social and Personal Services: Production items between 83rd and 99th rank according to ISIC rev. 4rd classification	OECD STAN database

Source: Authors' own work

Descriptive statistics of the variables are presented in Table-2. The econometric model was estimated with 234 observations. The mean values of the variables expressed with the symbols lnpatent, lndih, lnbyih and lntskh are 3.61, 9.66, 9.72 and 9.41, respectively.

The empirical model estimated in the panel regression is as follows:

Table 2: Descriptive Statistics of the Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
lnpatent	234	3.614153	1.279524	.4700036	6.483871
lndih	234	9.660091	1.164993	7.144323	12.26582
lnbyih	234	9.729764	1.150466	7.168614	12.07114
lntskh	234	9.414905	1.150697	6.789861	11.72645

Source: Authors' own work

$$lnpatent_{it} = \beta_0 + \beta_1\ lnobs_{it} + \beta_2\ lnkibs_{it} + \beta_3\ lncsbs_{it} + u_{it} \quad (1)$$

In the model, the dependent variable is the number of patents (lnpatent). The independent variables are the other business services (lnobs), the knowledge-intensive business services (lnkibs), and community, social and personal services (lncsbs). The equation shows the unobservable individual effect and individual effects that do not change time-dependent and are not included in the regression.

In the framework of panel data analysis, firstly, we examine whether the series used are stationary or not by performing a panel unit root test. It is common for panel data to have a cross-sectional dependency and unit root tests are quite sensitive to this problem. Therefore, it should be investigated whether there is a cross-section dependency in the series, in order to decide on the unit root test to be used. If there is no cross-sectional dependency problem in series, first-generation unit root tests will be used. If there is a cross-section dependency problem, the second-generation unit root test, Pesaran CADF test, will be performed. Secondly, the effect of the knowledge-intensive business service on the number of patents is analyzed by the panel regression method. There are three approaches to run the panel regression estimation: pooled regression, fixed, or random-effects. Hausman, Breusch-Pagan LM test, determines the appropriate one and F test (Baltagi [3]: 11).

Before estimating the panel regression model, the stationarity of the series should be investigated. In the panel unit root test preference, it is very important whether the series has a cross-section dependency problem. In this framework, Pesaran [28] cross-sectional dependence (CD) test is performed. Table 3 shows the Pesaran CD test and unit root test results. According to the Pesaran CD test, there is cross-sectional dependency in all series. In this direction, the CADF unit root test suggested by Pesaran [29] is preferred. The CADF unit root test takes into account the cross-sectional dependency in the series. The variable of lnpatent and lnkibs are stationary in level when both constant and constant+trend models. The variable of lnobs and lncsbs are not stationary in level in both constant and constant+trend models. Both variables are stationary in the first difference. Considering the unit root test results, the series is stabilized by using the difference method.

While estimating the panel regression model, one of the fixed effects, random effects, or pooled regression approaches is used. Table 4 shows the results of the Hausman, Breusch, and Pagan LM Test and F Test. In the Hausman test, the Null hypothesis is "there is no correlation between explanatory variables and unit effect". According to the Hausman test result, the Null hypothesis is accepted and the random-effects model is

Table 3: Pesaran CD and Pesaran CADF Test Results

Pesaran CD Cross-Sectional Dependence Test								
	CD-test	p-value	corr	abs (corr)				
lnpatent	18.75194	0.0000	0.917	0.917				
lnobs	34.35236	0.0000	0.957	0.957				
lnkibs	35.84183	0.0000	0.930	0.930				
lncsbs	34.84429	0.0000	0.500	0.630				
Pesaran CADF Panel Unit Root Test								
	constant				constant+trend			
	t-bar	cv10	cv5	cv1	t-bar	cv10	cv5	cv1
lnpatent	-2.735	-2.140	-2.260	-2.260	-3.029	-2.670	-2.780	-3.010
lnobs	-2.133	-2.140	-2.260	-2.260	-2.335	-2.670	-2.780	-3.010
Δlnobs	-2.635	-2.140	-2.260	-2.260	-2.789	-2.670	-2.780	-3.010
lnkibs	-2.277	-2.140	-2.260	-2.260	-3.049	-2.670	-2.780	-3.010
lncsbs	-2.077	-2.140	-2.260	-2.260	-2.624	-2.670	-2.780	-3.010
Δlncsbs	-2.713	-2.140	-2.260	-2.260	-2.856	-2.670	-2.780	-3.010

Source: Authors' own work

preferred to the fixed-effects model. In the Breush-Pagan LM test, the Null hypothesis is "there are unit and time effects". The LM test shows that the alternative hypothesis is accepted. Thus, the random effect model is preferred to the pooled regression model.

Table 4: Hausman Test and Breusch-Pagan LM Test Results

	Stat.	Prob.
Hausman Test	0.17	0.9825
Breusch-Pagan LM Test	720.90	0.0000
F Test	33.54	0.0000

Source: Authors' own work

Table 5 shows the results of panel regression estimations. The first column of Table 5 presents the results of the Random-Effect model and shows that only lnobs and lncsbs have a statistically significant impact on the innovation performance of firm EECs. However, the results of the diagnostic test below Table 5 indicate that there are autocorrelation, heteroscedasticity, and cross-sectional dependence problem in random-effect estimates. According to Bhargava et. al. Durbin-Watson and Baltagi-Wu LBI autocorrelation test, statistical values are less than 2, which indicates that there is autocorrelation in the estimates. Levene, Brown, and Forsythe tests are used as the heteroscedasticity test. Compared the statistical values (W0, W50, and W10) with the F table, the null hypothesis that "the variances of the units are equal" is rejected and it is decided that there is a heteroscedasticity problem. Lastly, it is performed that Pesaran's test of cross-sectional independence and concluded that there is cross-sectional dependence in the estimations.

Therefore, the empirical model has been re-estimated by using methods that generate robust predictors to these problems. The number (2) results are the estimates

performed by the method of Feasible Generalized Least Squares (FGLS) developed by Kmenta [21]. Estimation results show that lnobs and lncsbs have no statistically significant effect on the innovation performance of Eastern European countries. On the contrary, lnkibs have statistically significant positive effects on the number of patents. Thus, it is seen that only Knowledge-Intensive Business Services among service sub-sectors have an impact on the innovation performance of Eastern European countries.

Table 5: Results of Panel Regression Analysis

	(1) Random-Effects GLS Regression	(2) FGLS Regression
lnobs	0.12 (0.350)	-0.05 (0.241)
lnkibs	0.80*** (0.067)	0.80*** (0.066)
lncsbs	-0.68* (0.393)	-0.29 (0.281)
constant	-4.20*** (0.694)	-4.08*** (0.684)
Wald chi2	176.56***	147.08***
Autocorrelation Test	Bhargava et al. Durbin-Watson = 1.0098 Baltagi-Wu LBI = 1.1757	
Levene-Brown and Forsthe Heteroscedasticity Tests	W_0 = 2.8524340 df (12, 208) Pr >F = 0.00118 W_{50} = 1.9801869 df (12, 208) Pr >F = 0.00077 W_{10} = 2.4682316 df (12, 208) Pr >F = 0.00492	
Pesaran's test of cross-sectional independence	Stat: 24.271, Pr = 0.0187	

Source: Authors' own work
Note: The values in parentheses show standard errors. ***, **, * indicate statistical significance at the level of 1%, 5% and 10%, respectively.

4. Conclusions

Many economists have empirically shown that the expansion of the service sector as a whole is the fundamental dynamic of actual productivity and economic growth today. However, it is an inadequate approach to determine the role played by the services sector as a whole in today's productivity and economic growth process. Firstly, it would be more accurate to associate the developments in the services sector with the increase in innovation activities, which is an important feature of today's economies, rather than the current productivity and growth rates. A limited number of studies in the literature analyse the link between developments in the services sector and innovation performance. Second, the services sector consists of several sub-sectors, and therefore the role of each service sub-sector in the development of today's economies may be different. For this reason, it is necessary to examine the effects of service sub-sectors on innovation performance to comprehensively determine the role played by the services sector in the development of the economy. Accordingly, we examined the role of service sub-sectors on the innovation performance of 13 Eastern European Countries using panel regression analysis for the period 2000-2017. The service sector is divided into three sub-sectors: Other Business Services, Information Intensive Business Services, and Community, Social and Personal Services. The number of patents measures the innovation performance of countries.

The econometric results showed that the impact of service sub-sectors on the innovation performance of Eastern European Countries is different. Rather than other service sub-sectors, only Knowledge-Intensive Business Services contribute to the innovation performance of Eastern European Countries. Therefore, contrary to many studies in the literature, it is a more correct approach to examine the role of service sub-sectors in the development of the new economic system separately. Therefore, the results of the study contributed to a better understanding of the role of service sectors in innovation-driven new economies. It would not be correct to say that the services sector will gain weight in new economies where innovation is the main dynamic. Instead, it would be more accurate to say that the KIBS sector will gain importance rather than the entire service sector in today's innovation-based economies.

The empirical findings also provided important implications for policymakers in Eastern European Countries in designing the policies of innovation-led economic growth. The starting point in designing the economic policies aiming to enhance innovation-led economic growth should begin with the recognition of the strong link between innovation performance and the development of the KIBS sub-sector. Therefore, special attention should be paid to policies aimed at enhancing the KIBS sub-sector in order to develop innovation-oriented economic systems in the Eastern European region. In other words, policies towards improvements of the KIBS sector should be the basic component of an innovation-driven growth strategy.

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