SECTORAL STRUCTURE AND GDP: IS THERE A REMARKABLE RELATIONSHIP IN THE CASE OF THE ESTONIAN COUNTIES

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Abstract

The paper aims to offer some empirical insights into regional disparities in sectoral structure and GDP per capita in the case of the Estonian counties. In order to elaborate on the aggregated indicators of the Estonian counties' sectoral structure and to explore the relations between sectoral structure and GDP per capita as a proxy of economic wealth, the method of principal component in combination with regression analysis is applied. The results of empirical analysis confirm the validity of the hypothesis that regional disparities in GDP per capita are remarkably affected by the sectoral structure of the counties' economy. Additionally to sectoral structure, the location of a county, measured by the distance between the capital city and counties' centre, has a significant impact on GDP per capita. There is a core-periphery structure with high income levels in the capital region (Harjumaa) and low income levels in peripheral regions. The divergence in regional GDP levels may indicate the concentration of production inputs and development of sectoral structure in regions, where economies are functioning more efficiently.

Keywords: sectoral structure, economic wealth, regional disparities

1. Introduction

The issue of regional disparities and convergence has been the subject of a large body of empirical research since 1990s (e.g., Barro and Sala-i-Martin 1995; Armstrong 1995; Tondl 2001; Cuadrado Roura 2001; Baumont *et al.* 2003; Arbia and Piras 2005; Meliciani and Peracchi 2006; Anagnostou *et al.* 2008; Paas and Schlitte 2008). Despite the great interest in this matter, information on regional convergence in the enlarged EU is still relatively scarce and the role of sectoral structure in convergence processes has been largely ignored. However, considering the objective of enhancing economic and social cohesion, this constitutes a challenging task in the context of developing proper regional policy measures helping to alleviate poverty and to improve efficiency of an economy. Information on disparities and factors that may have impact on regional economic development is therefore of utmost importance for regional policy. Sectoral structure of an economy, which can be analysed on the basis of a wide range of indicators (employment, added value, GDP, etc.) and at different levels and structure of economic sectors, is playing a significant role in the economic performance and regional development of a country; its improvement is vital for enhancing both economic efficiency and wealth.

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The relationship between sectoral structure and economic development of a country has received considerable attention in recent decades (see Gemmell 1987). According to the three-sector hypothesis, which was first introduced by Fisher (1935) and Clark (1940), a gradual shift in employment and value added from the primary to the tertiary sector is inherent in the process of economic development. Hence, structural change could be characterized as a demand phenomenon: with increasing income levels, the demand for inferior goods will unavoidably decrease, while the demand for superior services will continue to grow (Breitenfellner & Hildebrandt 2006). Also regional aspects of structural change have gained remarkable attention in recent economic literature (e.g. Cunado, J., Sanches-Robles, B. 2000; Arcelus, F. J., Dovan, P. 2003; Marelli, E. 2004; Osterhaven, J., Broersma, C. 2007)

This paper aims to empirically investigate the relationship between sectoral structure and GDP per capita as a proxy of economic wealth in the Estonian counties focusing on the regional aspects and their peculiarities in the case of small economy with the post-socialist path-dependence. Estonia as the new member state belongs to the periphery of the EU having had one of the highest growth rates in the EU during the recent years till the year 2007. Examining GDP per capita in the counties of Estonia shows significant regional disparities (see also Lill and Paas 2008). Empirical analysis of our paper bases on the regional data of the Statistics Estonia which are examined using the combination of several statistical methods in order to elaborate on the aggregated indicators (latent variables) of the Estonian counties' sectoral structure and explore the relationship between the aggregated indicators of sectoral structure and GDP per capita. The data used for the analysis describe the sectoral structure of the 15 counties during the years 1996-2006. Three main economic sectors are taken into account for examining sectoral structure: primary, secondary and tertiary sectors.

The paper consists of five sections. In the next section, we introduce the framework for the analysis of sectoral structure including conceptualization and measurement of the observable phenomena and short data description. Section 3 introduces the procedure of finding aggregate indicators for analysis by means of the method of principal components, and presents the results of elaborating and analysing the aggregated indicators that describe sectoral structure of the Estonian counties. The results of examining the relationship between the aggregated indicators of sectoral structure and GDP per capita are presented in section 4. Section 5 concludes.

2. A framework for the analysis of sectoral structure: data and methodology

The general trends in sectoral evolution are summarized by the so-called "three-sector hypothesis" associated historically with Firsher (1935) and Clark (1940) works. "The three sector hypothesis" describes the long-run evolution of economies from agricultural to industrial and then to service-based economic structure defined as the process of tertiarization (see also Bachman and Burda 2008). These developments are associated with the changes in shares of sectors by creating value added as well as in movement of labour between sectors that induce new challenges

for development of human capital and educational system. Some of structural change has a short run nature reflecting temporary shifts of technological and innovative development, while others are more or less permanent having also different impact economic growth and GDP per capita across countries and their regions.

Nowadays the service sector is the most important sector in industrialized economies. According to the ILO data, the service sector's share of total employment in the European Union and other developed economies has grown from 66.1% in 1995 to 71.4% in 2005; the industry sector shrunk from 28.7% to 24.9% at the same time (ILO 2006). The sectoral shifts in employment and also in GVA structure describe the widening process of tertiarization of national as well as international economies and this tendency is also valid in the EU countries and their regions. The industrialized countries of the EU have already entered the stage of post-industrialised service economies which also generates certain effects of sectoral structure on the aggregated productivity of an economy. The new member states of the EU mainly passed the process of industrialisation and also entering into the post-industrialization stage. The economies with different sectoral structures have essentially different opportunities of growth.

The sectoral structure of an economy can be analysed on the basis of a wide range of indicators (employment, added value, GDP, etc.) and at different levels and structure of economic sectors. Table 1 presents the 3-level classification system of economic sectors which is used in the Eurostat database of sectoral data.

Table 1. Classification of the main economic sectors

Economic sectors	Classification code in the Eurostat database
Agriculture, hunting, forestry, fishing	A, B
Manufacturing, construction,	C, D, E, F
Wholesale and retail trade; repair of motor vehicles and household appliances, hotels and restaurants, transport, warehousing, communication, financial mediation, real estate, renting and business activities, public administration and civil defence; compulsory social insurance, education, health care and social welfare, etc.	G, H, I, J, K, L, M, N, O

Source: Eurostat.

The empirical analysis of a sectoral structure of the counties of Estonia bases on the different indicators focusing on the role of three main economic sectors in employment and in creating GDP and value added (table 2). The data for the analysis are derived from the regional data base of the Statistics Estonia of the years 1997-2006, the period that describes the post-socialist transition and EU assessment processes. As we see from the table 2, according to the different indicators describing sectoral structure there are significant regional disparities between the 15 counties.

Tabel 2. The variability of the share of the main economic sectors in the counties of Estonia, 1997-2006 average (%)

		Minimum	Maximum	Average
Primary sector	The share in GDP	0.7	23.0	10.0
	The share in employment	1.1	32.0	13.1
	The share in added value	0.8	25.0	11.3
Secondary sector	The share in GDP	14.4	45.3	27.1
	The share in employment	19.1	53.9	33.2
	The share in added value	16.2	51.5	30.5
Tertiary sector	The share in GDP	40.5	68.3	51.3
	The share in employment	41.3	70.8	53.4
	The share in added value	46.4	76.0	57.9

Source: Authors' calculations based on the data of Statistics Estonia.

Sectoral structure of an economy is a complicated phenomenon, the different sides of which could be characterized by a number of different indicators. Use of several individual indicators would make the analysis complicated and incomprehensive, whereby in the present study we first attempt to generalize the initial indicators to some aggregated variables which will be applied in further analysis. For the generalization procedure there are several methods available; in our study the method of principal components (confirmative factor analysis) has been chosen. This method suits well for integrating correlating individual indicators as that is case in our data. Thus, by using method of principal components the aggregated indicators characterising the economic structures of the Estonian counties are elaborated and presented in the next part of the paper. In order to examine the relationship between the aggregated indicators of sectoral structure and GDP per capita as a proxy of a county's wealth several regression models are estimated. Additionally to the aggregated indicators of a sectoral structure also the distance between the capital city and counties' centre a proxy of the county's location is used as an independent variable of the regression model.

3. Aggregated indicators of the Estonian counties' sectoral structure

We estimate a factor model based on the cross-section data of the separate years of the period under observation, two sub-periods (1996-2000 and 2001-2006) and on the pooled data of the whole period 1996-2006. The results are robust. Statistical criteria (KMO – Kaiser-Meyer-Olkin criteria; MSA – measure of sampling adequacy) confirm that the extraction results are statistically correct.

Table 3 presents the main results of implementation of the method of principal components (confirmative factor analysis) for elaborating the aggregated indicators of sectoral structure of the Estonian counties during the whole period under observation. The results of KMO test imply the technical appropriateness of the initial indicators for aggregation of by the method of principal component in the

cases of all three sectors (primary, secondary and tertiary). Due to the fact that there is a high correlation between all three initial indicators of sectoral structure (the shares in employment, added value and GDP), there is no sense to use them separately. Therefore, aggregated indicator will be applied in the further analysis.

Tabel 3. Extraction of the aggregated indicators of three economic sectors based on the data of the Estonian counties, 1997-2006

	Primary sector		Secondary sector		Tertiary sector	
	Loads[2]	Extraction[3]	Loads	Extraction	Loads	Extraction
KMO[4]	0.7		0.7		0.7	
Share in GDP	0.981	0.963	0.980	0.960	0.975	0.951
Share in employment	0.916	0.839	0.905	0.818	0.870	0.756
Share in added value	0.983	0.965	0.981	0.962	0.974	0.949
% of Variance[5]	92.2		91.3		88.6	

Source: Authors' calculations based on the data of Statistics Estonia.

Component scores[6] and their changes during the period under observation have been brought out in table 5.

The share of primary sector has declined more rapidly in the counties with the comparatively low share of secondary sector. The beginning of the period under observation can be considered as the period of industrialisation: the share of primary sector declined and secondary sector increased. The increase of tertiary sector has mainly been instead of decline of both primary and secondary sector characterising the first steps of tertiarization.

[2] Correlation coefficient between initial and aggregate indicator
[3] Information in the aggregate indicator reflected by the initial indicator
[4] Kaiser-Meyer-Olkin Measure of Sampling Adequacy (>0,7 middling, >0,8 meritorius)
[5] Total variance explained
[6] Mean equals zero. Component scores show the difference from mean in positive or negativev direction in standard deviation

Table 5. Aggregated indicators of the Estonian counties' secoral structure (factor scores), 1997-2006

	Average factor scores			Changes in factor scores, 1997-2006		
	Primary	Secondary	Tertiary	Primary	Secondary	Tertsiary
Harjumaa	-1.692	-0.743	2.388	-0.129	-0.402	0.535
Hiiumaa	1.245	-1.117	-0.055	-1.355	1.314	-0.041
Ida-Virumaa	-1.480	2.661	-1.194	-0.434	-0.433	0.802
Jõgevamaa	1.786	-1.472	-0.238	-1.009	1.199	-0.088
Järvamaa	1.092	0.181	-1.220	-1.151	1.282	-0.142
Läänemaa	-0.355	-0.083	0.445	-0.806	0.928	-0.098
Lääne-Virumaa	0.766	0.830	-0.951	-0.640	0.567	0.101
Põlvamaa	0.707	-0.526	-0.151	-0.064	0.467	-0.274
Pärnumaa	-0.230	0.435	-0.205	-1.096	0.195	0.961
Raplamaa	0.374	0.089	-0.463	-0.855	0.908	-0.068
Saaremaa	-0.241	-0.184	0.441	-0.632	0.569	0.104
Tartumaa	-1.156	-0.580	1.710	-0.330	0.601	-0.227
Valgamaa	-0.136	0.104	0.046	-0.656	1.124	-0.373
Viljandimaa	0.505	0.086	-0.630	-0.405	1.242	-0.791
Võrumaa	-0.235	0.186	0.069	-0.165	0.442	-0.199

Source: Authors' calculations based on the data of Statistics Estonia.

Figures 1-3 give an overview of how the comparative position of the counties in the sectoral structure has been changed during the years 1997-2006.

Analysing the aggregated indicators of the primary sector it is possible to divide counties into three groups: 1) counties with the high share of this sector; this share remained comparatively high also at the end of the period under observation (Jõgevamaa, Põlvamaa, Hiiumaa, Viljandimaa and Järvamaa); 2) counties with the comparatively low share of the primary sector and/or this share did not changed remarkably (Harjumaa, Ida-Virumaa, Tartumaa, Läänemaa, Saaremaa and Võrumaa); 3) the counties which had a high share of primary sector; this share has significantly declined during the period under observation (Pärnumaa, Valgamaa, Lääne-Virumaa and Raplamaa) (see figure 1).

The changes in the secondary sector have been the most rapid and also heterogenous (see figure 2 and table 5). Again, we can distinguish between the three groups of counties: 1) counties were the share of the secondary sector has been above average over the whole period under observation (Ida-Virumaa, Lääne-Virumaa, Võrumaa and Pärnumaa); 2) counties were the share of the secondary sector has been below average over the whole period (Jõgevamaa, Hiiumaa, Tartumaa, Põlvamaa and Harjumaa); 3) the share of the secondary sector has increased significantly (Valgamaa, Saaremaa, Viljandimaa, Raplamaa, Läänemaa and Järvamaa).

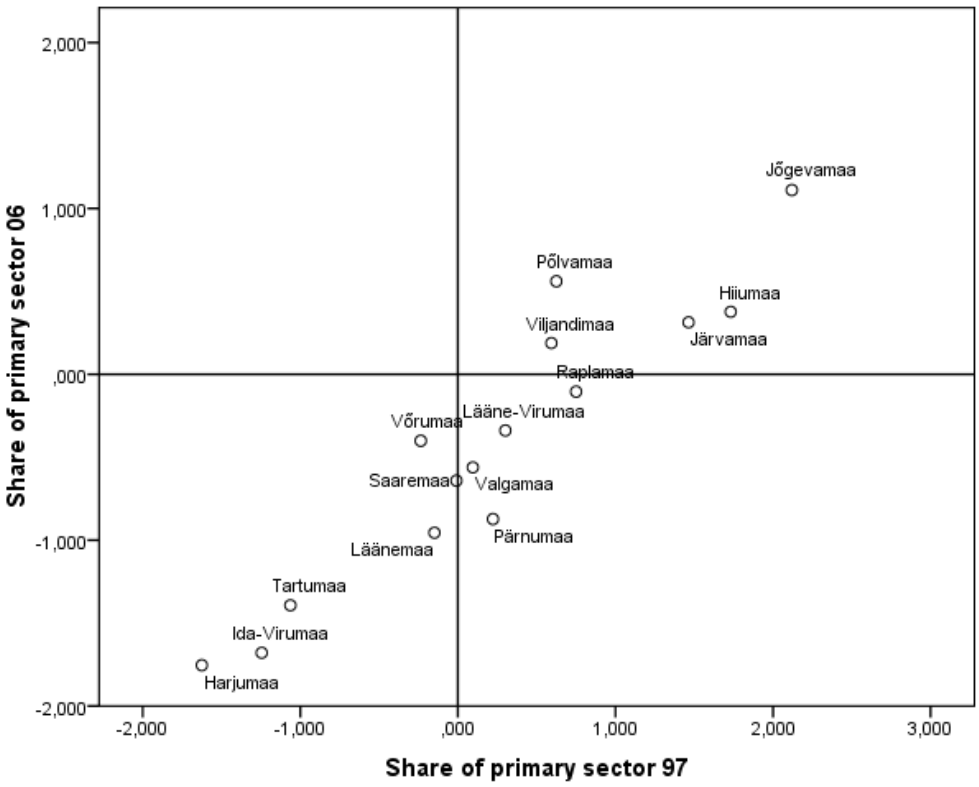

Figure 1. Aggregated indicators of primary sector. (Authors' calculations based on the data of Statistics Estonia)

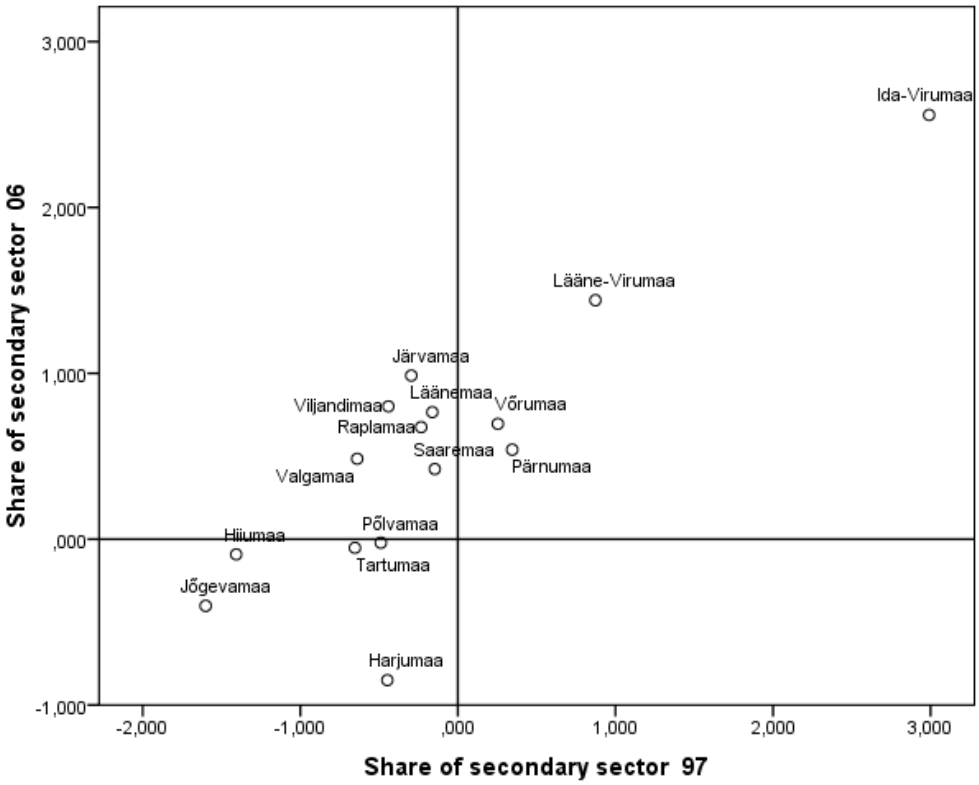

Figure 2. Aggregated indicators of secondary sector. (Authors' calculations based on the data of Statistics Estonia)

According to the aggregated indicators of the tertiary sector (see figure 3) it is possible to divide counties into two groups: the counties where the share of this sector is above (e.g. Harjumaa, Tartumaa, Pärnumaa) and below the average (e.g. Järvamaa, Lääne-Virumaa).

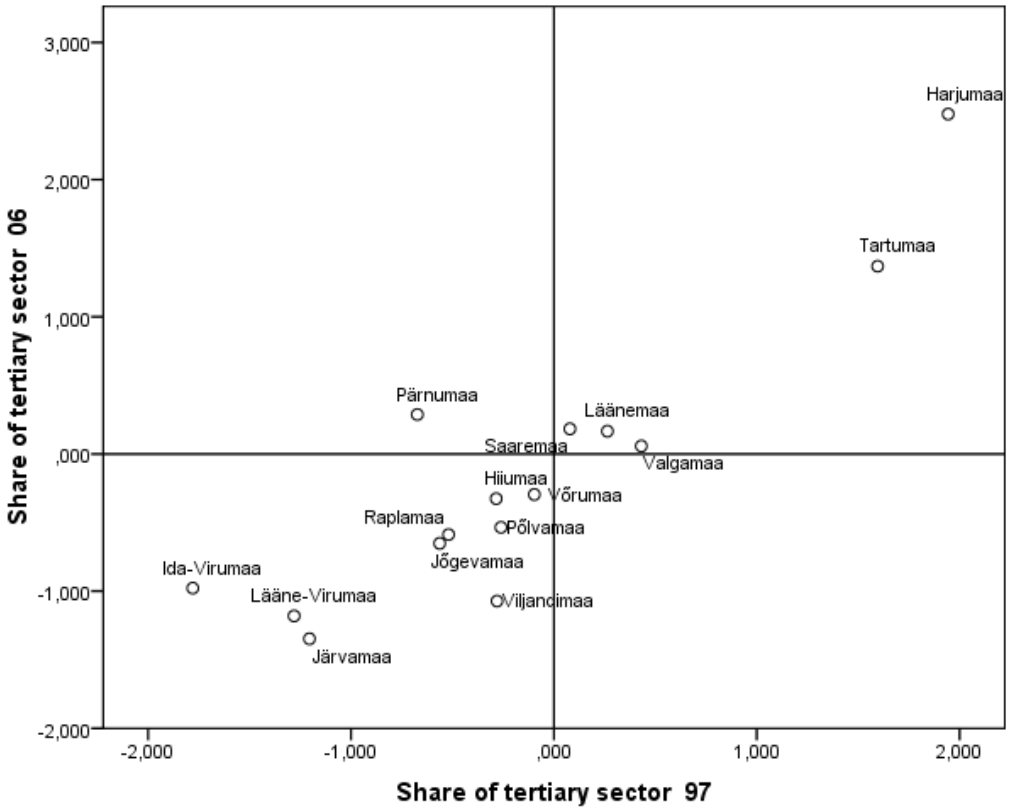

Figure 3. Aggregated indicators of tertiary sector. (Authors' calculations based on the data of Statistics Estonia)

In table 6 we present correlation coefficients between the aggregated indicators of sectoral structure and GDP per capita as the proxy of regional economic wealth in the counties of Estonia during the different time periods. As expected, there is a negative correlation between GDP per capita and the aggregated indicators of primary sector and positive correlation between GDP per capita and the aggregated indicators of tertiary sector. The correlation between GDP per capita and the aggregated indicators of secondary sector is not statistically significant. The dynamics of this relationship seems to be more stable during the recent period, the years 2001-2006. Therefore in the next part of our paper we estimate the regression models based on the pooled data of this period.

Table 7 presents the main results of extraction procedure for getting aggregated indicators of sectoral structure of the Estonian counties based on the data of years 2001-2006. The results are similar with the those presented in the table 4 indicating their robustness.

Tabel 6. Correlation coefficients between the aggregated indicators of sectoral structure and GDP per capita in the counties of Estonia, 1997-2006

Period	Primary sector	Secondary sector	Tertiary sector
1996-2006	-0.445**	0.025	0.455**
1996-2000	-0.327**	-0.058	0.522**
2001-2006	-0.570**	0.102	0.588**
1996	-0.668*	0.133	0.502
1997	-0.484	0.007	0.505
1998	-0.264	0.076	0.585*
1999	-0.438	-0.132	0.590*
2000	-0.532*	0.081	0.620*
2001	-0.567*	-0.089	0.625*
2002	-0.534*	0.242	0.722**
2003	-0.579*	0.239	0.681**
2004	-0.587*	0.176	0.667**
2005	-0.635*	0.189	0.767**
2006	-0.617*	-0.430	0.824**

* significance level 0.05; ** significance level 0.01
Source: Authors' calculations based on the data of Statistics Estonia.

Tabel 7. Extraction of the aggregated indicators of three economic sectors based on the data of the Estonian counties, 2001-2006

	Primary sector		Secondary sector		Tertiary sector	
Extraction	Loads	Extraction	Loads	Extraction	Loads	Extraction
KMO	0.707		0.658		0.674	
Share in GDP	0.983	0.966	0.976	0.952	0.974	0.949
Share in employment	0.925	0.855	0.878	0.772	0.863	0.744
Share in value added	0.984	0.968	0.977	0.955	0.974	0.949
% of Variance	93.0		89.3		88.1	

Source: Authors' calculations based on the data of Statistics Estonia.

Taking into account that aggregated indicators of sectoral structure are robust and statistically correct we implement these indicators for testing the hypothesis that regional variability of economic wealth (GDP per capita) is explained by the sectoral structure of the Estonian counties' economies.

4. The relationship between sectoral structure and GDP per capita

In order to examine the relationship between the sectoral structure and GDP per capita of the Estonian counties we estimate regression models based on the Estonian Statistics regional GDP data and the aggregated indicators (factor scores) of factors

of sectoral structure. The basic regression equation for exploring the relationship between the indicators of GDP per capita and sectoral structure is as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4i} + \beta_5 D_{1it} + ...\beta_9 D_{5it} + u_{it} \quad (1),$$

Where

Y_{it} – GDP per capita in the county *i* at time *t*;

X_{1it} – explanatory variable, aggregated indicator of primary sector of the county *i* at time *t* (factor scores);

X_{2it} – explanatory variable, aggregated indicator of secondary sector of the county *i* at time *t* (factor scores);

X_{3it} – explanatory variable, aggregated indicator of tertiary sector of the county *i* at time *t* (factor scores);

X_{4i} – explanatory variable, distance between capital city Tallinn and the counties centres (km; time invariant variable)

D_{jit} – dummy variables of years (reference year is 2006);

β_0 – intercept;

β_j – parameters of the explanatory variables;

i = 1,2, … 15; t =1, 2,…6

Taking into account that aggregated indicators of the secondary sector do not have significant correlation with dependent variable GDP per capita and in order to avoid possible problems of multicollinarity explanatory variable X_{2it} is not included into final regression models (see also see table 8).

Table 8. Correlation coefficients between the aggregated indicators of sectoral structure and GDP per capita in the counties of Estonia, 2001-2006

	GDP *per capita*	Primary sector	Secondary sector	Tertiary sector
GDP *per capita*		-0.570**	-0.102	0.588**
Primary sector	-0.570**		-0.416**	-0.495**
Secondary sector	-0.102	-0.416**		-0.583**
Tertiary sector	0.588**	-0.495**	-0.583**	

** significance level 0.01

Source: Authors' calculations based on the data of Statistics Estonia.

The estimated regression models are presented in the tables 9 (model 1) and 10 (model 2). Table 10 presents estimators of the regression model that describe the relationship between GDP per capita and sectoral structure taking into account also the location of the counties (distance between the capital city and counties' centre). The estimated regression models describe approximately 64% (model 1) and 80% (model 2) of regional variability of GDP per capita.

The estimators show that the aggregated indicators both of primary and tertiary sectors are related to the GDP per capita as a proxy of economic wealth. The signs of the parameters are as expected: in the case of primary sector negative and tertiary sector positive. The estimation results also confirmed the validity of the hypothesis that location of the counties has a statistically significant impact on the regional variability of GDP per capita. The sign of the respective parameter is as expected negative indicating that there is a core-periphery structure with high income levels in the capital region, Harju county, and low income levels in peripheral regions. Divergence in regional GDP levels may indicate to the concentration of production inputs and development of sectoral structure in regions, where economies are functioning more efficiently.

Table 9. Empirical results: estimators of the model 1

Variables	Estimators		t	Significance
	Coefficients	Standard error		
Intercept	100825.861	5284.054	19.081	.000
Primary sector	-7866.794	2528.880	-3.111	.003
Tertiary sector	15892.736	2496.843	6.365	.000
2001	-42313.331	7542.407	-5.610	.000
2002	-36318.361	7478.053	-4.857	.000
2003	-31145.851	7425.534	-4.194	.000
2004	-24932.554	7403.919	-3.367	.001
2005	-14211.067	7376.164	-1.927	.057

$R^2=0.635$; $R^{2adj}=0.604$; $p=0.000$

Source: Authors' calculations based on the data of Statistics Estonia.

Table 10. Empirical results: estimators of the model 2

Variables	Estimators		t	Significance
	Coefficients	Standard error		
Intercept	128532.524	5266.042	24.408	.000
Primary sector	-7343.265	1901.680	-3.861	.000
Tertiary sector	13886.043	1893.123	7.335	.000
Distance	-189.021	23.594	-8.011	.000
2001	-42117.078	5668.479	-7.430	.000
2002	-36108.631	5620.123	-6.425	.000
2003	-30888.159	5580.684	-5.535	.000
2004	-24659.847	5564.451	-4.432	.000
2005	-13892.224	5543.630	-2.506	.014

$R^2=0.797$; $R^{2adj}=0.777$; $p=0.000$

Source: Authors' calculations based on the data of Statistics Estonia.

The predicted values of GDP per capita which are calculated on the basis of the regression models 1 and 2 could be considered as the so-called potential economic

wealth or "potential" – GDP per capita of a county. This is GDP per capita could have been in the given county if it had been influenced only
by sectoral structure characterized by aggregated indicators of economic sectors (model 1)
or
by sectoral structure characterized by aggregated indicators of economic sectors and the distance between the counties' centres and capital city (model 2).

In order to compare the so-called "potential" GDP per capita (or predicted GDP) with its real value the standardized residuals are calculated. Standardized residuals allow us to compare the differences in the actual and so-called potential economic wealth taking into account different size of the counties' economies. Table 11 presents data of actual and estimated (potential) GDP per capita, the differences between them (residuals) as well as standardized residuals for the year 2006.

Table 11. Actual and predicted GDP per capita (potential GDP) in Estonian counties in 2006

County	GDP *per capita*	Estimated GDP *per capita* (potential)	Residuals	Standardised residuals
Harjumaa	239987	174919	65067	4.307
Hiiumaa	91533	90214	1318	0.087
Ida-Virumaa	86085	95310	-9225	-0.611
Jõgevamaa	66918	82281	-15363	-1.017
Järvamaa	94112	88220	5891	0.390
Läänemaa	92997	118135	-25138	-1.664
Lääne-Virumaa	98499	94770	3728	0.247
Põlvamaa	72284	71547	736	0.049
Pärnumaa	111515	113612	-2097	-0.139
Raplamaa	82229	109952	-27723	-1.835
Saaremaa	97469	93178	4290	0.284
Tartumaa	134745	121602	13142	0.870
Valgamaa	74511	88994	-14483	-0.959
Viljandimaa	83717	81859	1857	0.123
Võrumaa	76131	78131	-2000	-0.132

Source: Authors' calculations based on the data of Statistics Estonia.

Figures 4 and 5 illustrate the differences between real and the so-called potential GDP per capita in the counties of Estonia. Figure 4 reflects the estimators in the case if only aggregated indicators of sectoral structure are taken into account (model 1). The estimators presented in the figure 5 take into account the role of location in forming counties' regional wealth.

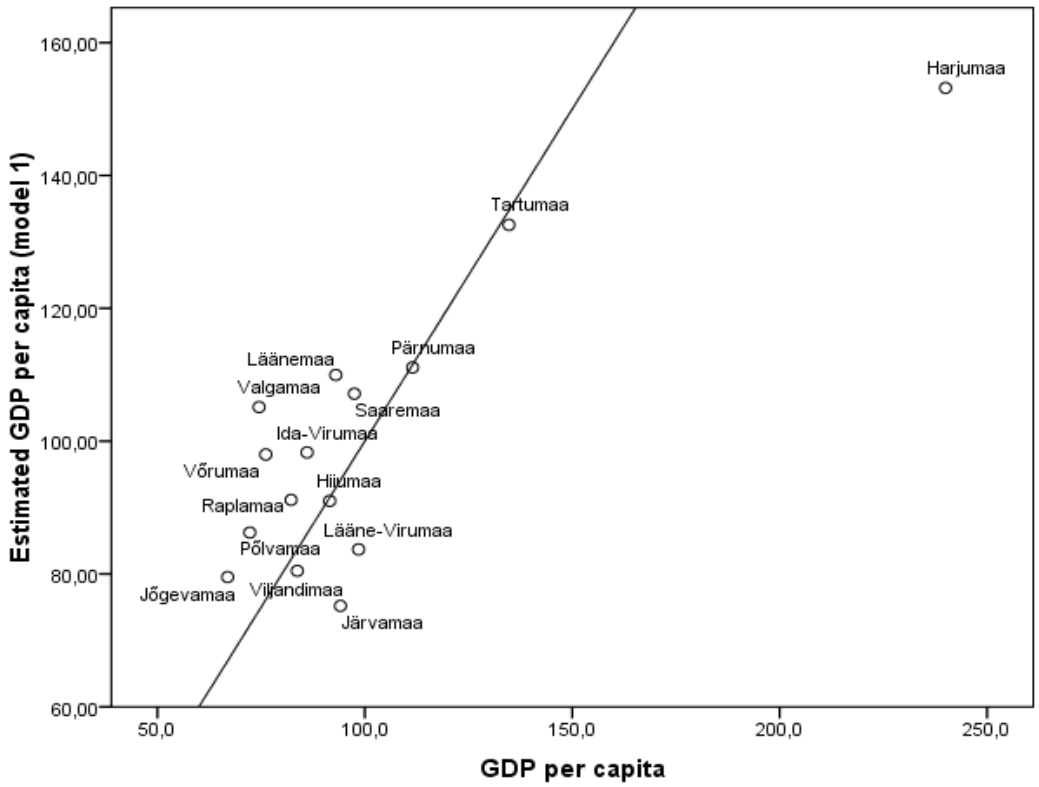

Figure 4. Real (horizontal axis) and estimated (vertical axis) GDP per capita (estimations base on model 1. 2006).

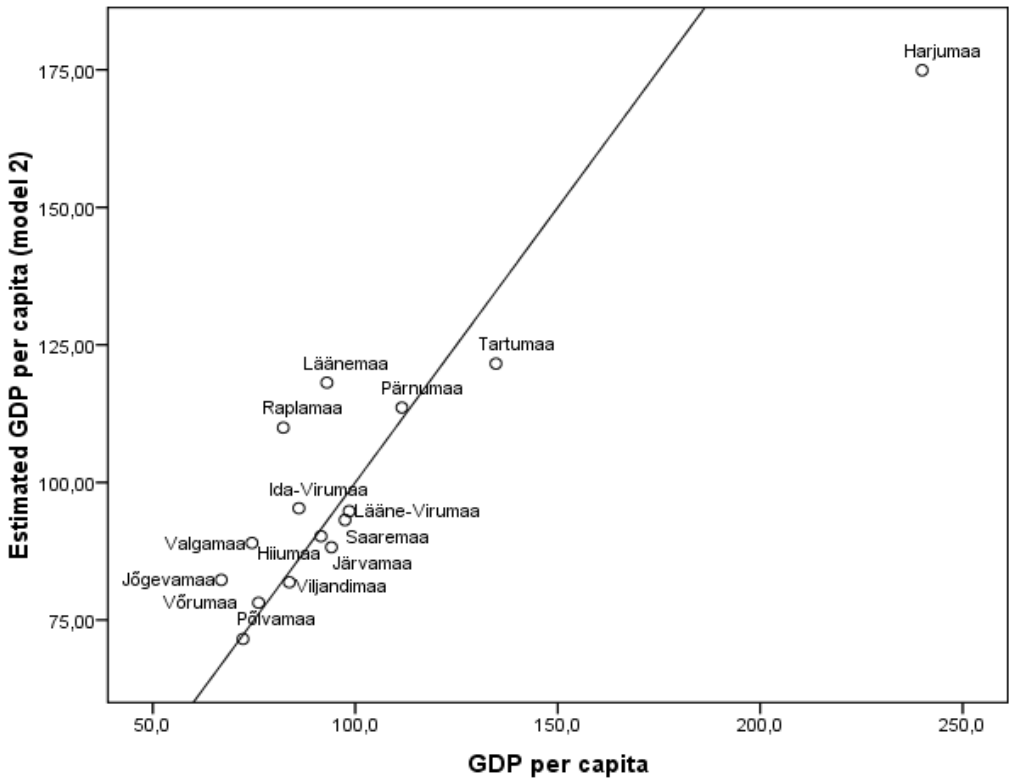

Figure 5. Real (horizontal axis) and estimated (vertical axis) GDP per capita (estimations base on model 2. 2006).

The counties which are below the line are performing better than heir so-called potential is: the predicted GDP per capita is lower that actual. The counties which are above the line have higher potential GDP per capita than actual is; thus, the predicted GDP per capita is higher that actual. The position of the countries below or above the line is different depending on the estimated models or those the location of the counties is taken into account (model 2) or not (model 1).

Performance of the counties Harjumaa and Tartumaa is somewhat different from the other counties (model 2, Figure 5). Real GDP per capita of Harjumaa county is higher that potential indicating that there are some additional factors that support economic development of this county, whish is located around the capital city. Economic wealth of county Tartumaa is approximately closed to its potential level (in the case of model 1) or remarkably better (model 2). Below potential are performing Läänemaa, Raplamaa and Jõgevamaa and above potential Järvamaa, Hiiumaa and Viljandimaa.

5. Conclusion

The most important common trend in recent economic development has been a shift of sectoral structure towards service activities, the process of tertiarization. Sectoral change is a natural process that occurs in all countries and is related to global and national business cycles. The EU enlargement and globalization processes posed new challenges for sectoral change, particularly for the EU new member states like Estonia. Our paper explores regional disparities in sectoral structure and GDP per capita in the case of the Estonian counties taking into account the small size of a country. In order to elaborate on the aggregated indicators of the Estonian counties' sectoral structure and to examine the relations between sectoral structure and GDP per capita as a proxy of economic wealth, the method of principal component in combination with regression analysis was applied.

The analysis of regional sectoral structure and elaboration of aggregated indicators of sectors allow us to divide counties according their respective sectoral performance into three groups within each of the three sectors. Firstly, based on the aggregated indicators of primary sector, it is possible to divide counties into the following groups: 1) counties with a high share of primary sector where this share has remained comparatively high also at the end of the period under observation (Jõgevamaa, Põlvamaa, Hiiumaa, Viljandimaa and Järvamaa); 2) counties with a comparatively low share of the primary sector and/or where this share did not change remarkably (Harjumaa, Ida-Virumaa, Tartumaa, Läänemaa, Saaremaa and Võrumaa); 3) the counties which has a high share of primary sector, but where this share has significantly declined during the period under observation (Pärnumaa, Valgamaa, Lääne-Virumaa and Raplamaa). Secondly, the changes in the secondary sector have been most rapid and heterogenous. Again, we can distinguish between three groups of counties: 1) counties where the share of secondary sector is above average in comparison with other counties and it increased during the period under observation; (Lääne-Virumaa, Võrumaa,Pärnumaa, Järvamaa) 2) counties where the share of secondary sector has been below average and it increased over the whole

period (Jõgevamaa, Hiiumaa, Tartumaa, Põlvamaa, Valgamaa); 3) counties where in comparison with other counties the share of the secondary sector decreased significantly (Ida-Virumma, where the share is above average; Harjumaa, whrerw the share is below average) Thirdly, according to the aggregated indicators of the tertiary sector, it is possible to divide counties into the following types 1) counties where the share of tertiary sector is above average and it increased (Harjumaa, Saaremaa) or decreased during the investigated period (Tartumaa, Valgamaa, Läänemaa, Võrumaa); 2) counties where the share of tertiary sector is below the average and has increased (Ida-Virumaa, Lääne-Virumaa, Pärnumaa) and 3) counties where the share of the sector was below the average and has declined (Jõgevamaa, Järvamaa, Põlvamaa, Viljandimaa). Thus, regional pattern of the Estonian counties sectoral structure is heterogenous and dynamic indicating that these small economies are able to adjust with the challenges posed by the rapidly changing socio-economic environment.

The results of empirical analysis that base on regression models confirm the validity of the hypothesis that regional disparities in GDP per capita are remarkably affected by the sectoral structure of the counties' economy. Additionally to sectoral structure, the location of a county has a significant impact on regional disparities in economic wealth measured by the GDP per capita. There is a core-periphery structure with high income levels in the capital region (Harjumaa) and low income levels in peripheral regions. Divergence in regional GDP levels may indicate the concentration of production inputs and development of sectoral structure in regions, where economies are functioning more efficiently.

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