



# Testing the Approaches of Regional Development in Small Municipalities

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## Abstract

Aims of regional development in terms of the new paradigm related to creativity and sustainability and possibilities of small municipalities (with decreasing population) to reach and to evaluate development accordingly to the new paradigm have stimulated authors' interest to test regional development in small municipalities. Additionally, *high* and *low* level of development in terms of small municipalities often finds roots in similar dominating stimuli. The paper focuses on the analysis that covers testing of two main approaches of regional development – *place*- and *people*-based – using the case study of 19 municipalities in the region with the continuously relatively low level of regional development (Latgale region at the Southeast of Latvia). Testing of a number of variables related to financial support and education (*people*-based approach) and to infrastructure and expenses linked with territory as well as natural resources (*place*-based approach) for municipalities divided accordingly to *process* (development rates) and *result* (development level) provides understanding of the contribution of each approach to the development of municipalities that are at different stages of regional development. Additionally, the paper offers variables that can be used for further monitoring of development in small municipalities in terms of the different development approaches. The results come from application of regression analysis and particularly from a number of log-log models. Authors have found dependence on the same short-term stimuli related to *place*-based approach in all municipalities' groups at all stages of development. Realization of development strategies can improve the situation, because municipalities' activities have provided effect accordingly to the data analysed, and this is a positive tendency.

**Keywords:** place-based development, people-based development, small municipalities, Latgale region (Southeast of Latvia).

## Introduction

Regional development in Europe meets with the new paradigm – creativity. Creativity contributes to uniqueness and helps to get more from the resources, particularly from

the knowledge that has been accumulated at certain territory. The new paradigm focuses on regional intelligence that is understood as a driving factor for stimulating required innovative activities in an effective way in regions. Mostly, the results depend on

regional inspiration that differentiates regions and requires availability of human capital and technological infrastructure (e.g., Sleuwaegen, Boiardi 2014). In general, the new paradigm for regional development contributes to sustainability, i.e., long-term development based on the potential of human capital and territory.

The implementation of the new paradigm, however, is hard to evaluate at the level of small municipalities, which have to be involved in the 'modern' pathway of regional development. Practically, regions find it necessary to implement one of the approaches – *place-* or *people-*based or combine both approaches for being able to save and even to create regional uniqueness in an economic context. The evaluation of the development, however, is limited in terms of small municipalities. Usually such variables as science, technologies, sectoral employment, and registered patents that are necessary for assessment (e.g. Huggins et al. 2014; Sleuwaegen, Boiardi 2014) are limited or absent at all for small municipalities. Moreover, small municipalities do not experience scientific activities and often have limited number of economically active sectors. Thus, the paper aims to – determine the contribution of *place-* and *people-*based approaches to regional development in small municipalities and to choose possible variables for assessment and available at the level of small municipalities. This would contribute to the further monitoring of development. The paper uses the case study of small municipalities in Latgale region (southeast of Latvia). The choice of the case study of Latgale region finds roots in:

- general regional tendencies in Latvia, i.e., worsening of the positions of many territories (particularly, of Latgale region) thus hindering the potential of balanced regional development –
  - mobility of resources towards higher developed regions (mostly capital-city and abroad territories have benefited, rather than small municipalities);
  - ageing;
  - low productivity (Saeima, Cross-Sectoral Coordination Centre 2012);

➤ peculiarities of Latgale region –

- persistently lagging positions in economic performance, what stimulates resources' outflows from Latgale to higher developed regions;
- high share (about 68%) of predominantly rural territories, whilst one can argue that non-agricultural activities become dominant during transition and especially after accession of the European Union (Karwat-Wozniak 2014);
- insufficiently developed and used high potential of Latgale region –
  - rich forest areas and mineral resources;
  - transport infrastructure;
  - wide educational possibilities;
  - high share of self-employed persons etc. (Latgale planning region 2014).

In general, scientific contributions rarely pay attention to the issues of small municipalities. Mostly, findings relate to local activities on effective service delivery (Arcelus et al. 2015) and to high dependency on financial support in a form of income transfers (Partridge et al. 2015). However, some authors indicate the effectiveness of policy-making for development in small municipalities as well (Olfert et al. 2011). Authors extend the existing findings by the experience of 'prosper' and 'lagging' small municipalities in region with high share of predominantly rural territories. Research findings could be of interest for scientists and policy-makers.

The main challenge of the research relates to mismatches between the socio-economical characteristics of small municipalities and the main aims set for regional development in terms of the new paradigm. On the one hand, regional development aims to be in a spatially balanced form, what mostly requires *place-*based approach for economically less attractive territories with decreasing population. On the other hand, one argues that creativity of people makes regions unique thus contributing to smart growth and sustainability in development (Sleuwaegen, Boiardi 2014). Therefore, *people-*based approach could be more

beneficial for improving economic and social conditions of lower developed territories.

Addressing the issue under research, authors have structured the paper as follows: the second chapter discovers the main scientifically proved benefits from *place*- and *people*-based approaches; the third chapter intensively debates and explains the logic of research, while the fourth chapter introduces the research results and the fifth chapter concludes the paper. The paper mostly draws on Šipilova, Aleksejeva and Ostrovska (2015) and contributes to the previous research findings by widening of tested variables.

### **Is there a need for a place- or people-based approach? Short literature overview**

Small municipalities have to follow the new paradigm of regional development, i.e., creative development, smart development, sustainable development. Modern growth and development at all levels – global, European and local – are unified under the term ‘smart’. Particularly, activities in terms of the definition ‘smart’ lead to sustainable regional development (European Commission 2010) and depend on creativity, i.e., human capital and technological infrastructure (e.g., Sleuwaegen, Boiardi 2014). Despite the widely spread understanding of regional development within the new paradigm, markets often react weakly to the elements of sustainability. Thus, the role of regional institutions and governance in regional development has increased (Krueger 2010). Recent scientific literature presents many attempts how to select better policy-making for regional development and one of the most valuable questions relates to the choice between two main policy types – *place*- and *people*-based (Crowley et al. 2012; Olfert et al. 2011). Mostly small municipalities can get the knowledge necessary for ‘modern’ pathway in development from the experience of ‘big’ regions.

For example, increasing regional inequality and modest results in spatial balancing across countries have stimulated emergency of the issue under research. One can find that the example that was intensely debated in the scientific literature relates to attempts towards overcoming high and persistent regional inequalities in the UK (Crowley et

al. 2012; Martin et al. 2015). Research findings indicate that the “old model did not work”, i.e. exclusive focusing on place (Crowley et al. 2012); therefore, the UK needs a new policy model (Martin et al. 2015).

Moreover, convergence, which occurred slower than expected (within EU), brightly demonstrates the necessity of improvements in policy-making not only within certain countries, and the EU as well (Sánchez-Domínguez, Ruiz-Martos 2014; Gonzalez et al. 2015).

What makes *place*- and *people*-based approaches different and beneficial? In general, *place*-based approach mostly relates to the high mobility of resources (for example, for directing resource allocation) for improving attractiveness of poor or declining territories. In turn, *people*-based approach relates to increasing resources’ mobility (Partridge et al. 2015).

*Place*-based approach offers possibilities to realize the growth potential of every territory (McCann, Rodriguez-Pose 2011). Although, as far as activities towards supporting decreasing territories meet a challenge of reaching disadvantaged people, also, one can argue that bright differences between territories mostly relate to people rather than to place (Crowley et al. 2012). On the other hand, it is not a rule that both, i.e., targeted people and place, can be found together. One can find that many poor people live in territories that are highly developed, and in case of *place*-based policy, they remain excluded from the programmes (Crowley et al. 2012).

However, realizing support of particular place often can meet challenge of duration of effect, i.e., short-term or long-term. For example, specifically local activities often take a form of simple income transfers, which what is the most efficient way to overcome lagging positions of regions (Partridge et al. 2015). One finds that this is usually the case of small municipalities. Although, such activities provide serious contribution in regional development, these are not enough and other stimuli are necessary for sustainable development.

Resources move to the regions that have higher productivity. Realization of *place*-based approach aims to retain resources

within certain, possibly decreasing, territory (Partridge et al. 2015). Since this takes place,

the topicality of *people*-based approach rose, because one finds that people are a driving force for regional prosperity. One argues that *people*-based approach is more effective than *place*-based approach (Martin et al. 2015). Moreover, scientific literature concerning regional inequality is often attributable to wage-inequality, which depends on skills and education (Pereira, Galego 2015). Regions benefit also from employment of creative people (Sleuwaegen, Boiardi 2014). Additionally, investments in skills and mobility of people can reach not only people who live in distressed territories, but also poor people who live in highly developed territories. On the other hand, returns from such investments are long-term process (Crowley et al. 2012).

Scientists during debates usually use case studies and mostly peculiarities of regional disparities and challenges for further regional development. Findings highlight benefits provided by each approach. Moreover, the choice of regions for realizing certain approach is the result of detailed analysis (Olfert et al. 2011). The most recent findings on policy-making for overcoming regional inequality and balancing regional development address the issue of the example of high and persistent regional inequalities in the UK (Crowley et al. 2012; Martin et al. 2015). The conclusion made after a wide evaluation of the benefits achieved during the implementation of regional development policies in the UK underlines the necessity of balance between *place*- and *people*-based approaches (Crowley et al. 2012). In any way, sustainability of economic performance cannot be reached without developing regional uniqueness (Gedminaitė-Raudonė 2014).

### Method

The paper aims to determine the contribution of *place*- and *people*-based approaches to regional development in small municipalities and to set the number of variables necessary for the assessment and available at the level of small municipalities for the future monitoring of development. Authors use the case study of 19 municipalities of Latgale region

(Southeast of Latvia) during the time from 2009 to 2014. Lagging economic positions at the country's level, economical intra-inequality and prevalence of predominantly rural territories characterise the region and stimulate scientific interest to detect reasons for the existing regional economic performance.

Assessment of regional development is restricted by data availability at the regional level (especially for small municipalities) and difference in data choice (e.g. Huggins et al. 2014; Sleuwaegen, Boiardi 2014). Authors partly use EDORA Cube principles according to Copus and Noguera (2010) for refreshing stereotypes of intermediate and predominantly rural regions. New typology bases on *process* and *result* of development. Authors divide municipalities into the groups using the data on economically active statistical units of the market sector and sole proprietorships (development rates) and index of territorial development level (ITDL) (development level). Calculations allow authors to focus attention on regional development *process* and *result*. Authors understand development *process*, as development rates, and development *result*, as development level. Such approach provides advantages for presenting the effect of selected factors on regional development at different stages of development. Moreover, it makes possible to conclude which of the tested factors contributes to regional development in a bigger extent.

Authors test regional development using regression model, based on equation (1):

$$y_{(\text{population in municipality})} = \beta_0 x_i^{\beta_1} \quad (1)$$

where  $y$  – dependent variable (population in municipality),  $x_i$  – independent (explanatory) variables (see Appendix A),  $\beta_0$  and  $\beta_1$  – equation's coefficients.

As far as *place*- and *people*-based regional development imply policy-making for reaching cohesion targets, authors pay attention to the number of services/activities provided by municipalities dividing them into factors, which contribute to *people* (financial support, education), and *place* (infrastructure, expenses related to the territory (see Appendix A). Additionally,

authors take into account natural resources available at the territory (see Appendix A). This helps to shed a light on relative priorities during the policy-making (*place*-based, *people*-based) and development at municipalities' level.

The combination of data on development *process* and *result* (detected by authors using the data on market activities and ITDL) with the data on municipalities' activities provides the basis for understanding the character of regional development, i.e., short-term or long-term. Authors expect that dependence of regions with high regional performance by *process* and *result* from municipalities' financial support should be low or decreasing in case of long-term regional development. In turn, dependence on education and partly natural resources (depending on the effectiveness of their usage) should be strong.

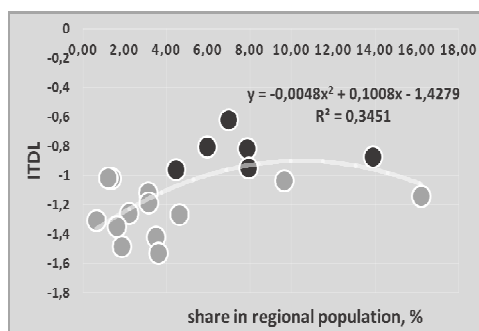
Correlation analysis provides a basis for the selection of key variables from the number of factors. Finally, the number of regression log-log models discovers relationship between regional population dynamic (dependent variable) and key variables for different combinations of municipalities depending on data on *process* and *result*.

Data for calculations were obtained from Regional development indicators module of Spatial Development Planning Information

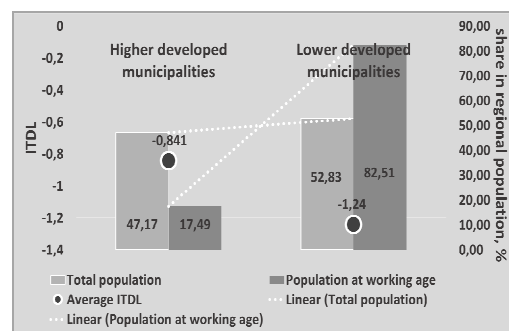
System in Latvia (RDIM) and reports of State Regional Development Agency (SRDA) "Development of Regions in Latvia", Ministry of Agriculture Industry portal and State Forest Services, Latvian Environment, Geology and Meteorology Centre. Authors meet limitations during the research, because of data-availability, composition and time series. These limitations are one of the widespread during spatial planning and territorial cohesion (Gonzalez et al. 2015).

### Research results

The existing peculiarities of the development level of Latgale region mostly found roots in persistently high unemployment rates, high share of workforce with low skills, insufficient capital inflows and low level of entrepreneurship (Latgale planning region 2014). However, the region provides wide educational possibilities, demonstrates high level of self-employment and has rich natural resources that form serious regional potential (Latgale planning region 2014). The chapter introduces possible logic for the evaluation of development in terms of *process* and *result* of development within the new paradigm at small municipalities' level.



(a) dispersion and relationship



(b) inequality

### Figure 1: ITDL, population and population at working age in municipalities

Notes: Thirteen municipalities are lower developed (mostly predominantly rural) and six municipalities are higher developed (mostly intermediate).

Dispersion of municipalities is based on values of ITDL, where higher developed municipalities have reached ITDL values that vary from -0.964 to -0.625. ITDL values for lower developed municipalities vary from -1.530 to -1.017.

Higher developed municipalities are coloured in dark at Fig 1a.

Source: authors' calculations based on data from RDIM 2015, SRDA 2010, 2011, 2012

Nineteen municipalities of Latgale region are brightly diversified by ITDL and population and the convergence is weak (see Fig 1a). Additionally, all municipalities have reached negative values of ITDL. Moreover, there is no univocal tendency for population increase in municipalities that have higher performance of regional development, i.e., higher level of ITDL (see Fig 1a). Weak correlative interconnection between ITDL

and share in regional population ( $r_{\text{all municipalities}} = .441$ ) holds this. In contradiction, municipalities that have relatively lower level of regional development concentrate more than half of the Latgale's population and the biggest share of population at working age (see Fig 1b). This, in turn, does not correspond with market tendencies, when better-developed territories absorb human capital (Partridge et al. 2015), and, additionally, do not correspond with the aims of spatially balanced regional

development (Saeima, Cross-Sectoral Coordination Centre 2012). One can argue that even higher developed municipalities in Latgale cannot be understood as "safe haven", mostly due to the negative values of ITDL and the low share of population at working age (in comparison with lower developed municipalities). However, difference in about -0.416 points between ITDL indicates relatively better regional performance in higher developed municipalities.

Authors' findings about weakly expressed linkage between regional development and population dynamic (see Fig 1) can be explained paying attention to – first, the peculiarities of *process* and *result* of regional development and second, stimuli providing regional development. Further analysis tests these suppositions in context of *place*- and *people*-based approaches.

**Table 1: Distribution of municipalities by development *result* and *process***

Development rates Development level	Development	
	High level of development <i>PROCESS</i> (n=4)	Low level of development <i>PROCESS</i> (n=15)
High level of development <i>RESULT</i> (n=9)	Municipalities of: Daugavpils, Varkava	Municipalities of: Balvi, Ilukste, Kraslava, Livani, Ludza, Preili, Rugaji
Low level of development <i>RESULT</i> (n=10)	Municipalities of: Cibla, Zilupe	Municipalities of: Aglona, Baltinava, Dagda, Karsava Rezekne, Riebini, Vilaka, Vilani

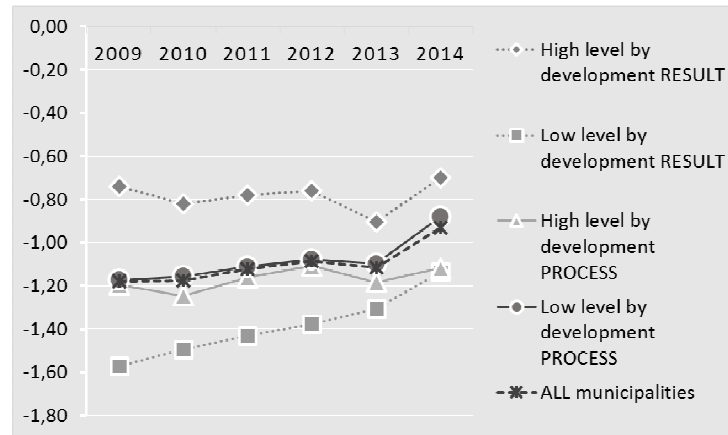
Source: authors' calculations based on data from RDIM 2015; SRDA 2010, 2011, 2012

The data on dynamic of ITDL and the entrepreneurial activities of the population indicate the homogeneity of municipalities in accordance with development *process* and *result* (see Table 1). Moreover, characteristics of regional development *process* and *result* in most municipalities are similar and attributable to the definition "low". Fifteen municipalities demonstrate *low rates* of development (*process*) what is about 79%, in turn, 52.6% of the municipalities demonstrate *low level* of development (*result*).

As far as the indicators of involvement of population in entrepreneurship are used for calculations, it is possible to conclude that market stimuli provide relatively weak and mostly seldom effect on improvements of regional development. One can find that municipalities with *low* level of development *process* demonstrate better performance of regional development (ITDL values and dynamic) than municipalities with *high* level of development *process*. This, in turn, indicates possibly higher significance of other stimuli as well. The difference brightly increased in 2014 (see Fig 2). In turn, only

municipalities with *low* level of development *result* demonstrate fast increase of ITDL values during the period analysed. This

group has reached max and similar with municipalities with *high* level of development *process* ITDL value in 2014 (see Fig 2).

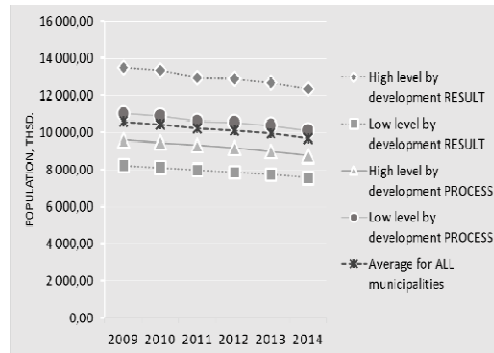


**Figure 2: Dynamic of ITDL in municipalities shared by level of development *process* and *result***

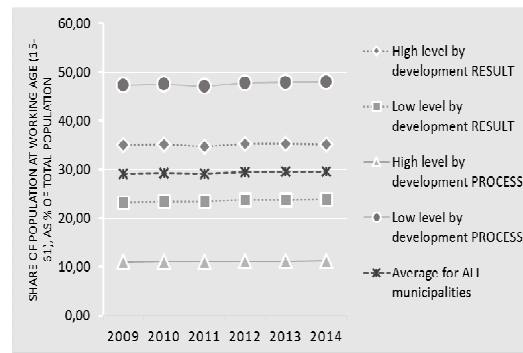
Source: authors' calculations based on data from RDIM 2015; SRDA 2010, 2011, 2012

Additionally, the data allow authors to emphasize that lower developed municipalities, in terms of development *process* and *result*, dominate over municipalities with *high* level of development *process* (see Fig 2). Moreover, average ITDL data for all municipalities is mostly similar with the data for municipalities' group with *low* level of development *process*. This, in turn,

underlines unfavourable tendencies for regional development in Latgale region. Taking into account the above mentioned, i.e., modest contribution of market stimuli and dominance of municipalities with *low* level of development *process* and *result* (see Table 1 and Fig 2), authors pay attention to stimuli, which provide regional development.



(a) population



(b) share of population at working age (15-61)

**Figure 3: Dynamic of population and population at working age at municipalities' level**

Source: authors' calculations based on data from RDIM 2015

Dynamic of population at working age, comparing it with total population, partly

shed a light on the peculiarities of regional development in the context of *process* and

*result*. The tendencies observed emphasize that faster (in case of *low* development *result*) and higher (in case of *low* development *process*) improvements of ITDL occur in municipalities with bigger share of population at working age (see Fig 3 a, b). Additionally, fast and high improvements of ITDL have occurred in municipalities with *low* level of development *process* and *result*. Although, correlation discovers weak linkage

between ITDL and population ( $r_{\text{all municipalities}} = .137$ ) and population at working age ( $r_{\text{all municipalities}} = .140$ ), the data on Fig 3b demonstrate obvious dominance of municipalities characterised by *low* performance of regional development by share of population at working age. One can see that municipalities with *low* level of development *process* dominate over all municipalities regardless of the peculiarities of development *process* and *result*. In turn, municipalities with *low* level of development *result* have bigger share of population at working age than municipalities with *high* level of development *process* (see Fig 3b). Moreover, correlation coefficient for ITDL and population at working age is slightly higher ( $r_{\text{all municipalities}} = .140$ ).

One can find that relatively higher developed territories do not attract population,

especially population at working age. However, population at working age at this time is not able to contribute in the rise of regional development seriously (see data on Table 1). Therefore, the existing spread of regional development requires deeper understanding of the effect of *place-* or *people-*based approaches. This will provide additional knowledge for further choice making and further monitoring of regional development.

Presence of population at working age is a significant factor for regional development, especially during the *high* level of *process* of development. However, some contradictions are there for the case of Latgale region. For example, municipalities with *high* level of development *process* and municipalities with *low* level of development *result* demonstrate this. Correlation coefficients for linkage between ITDL and population at working age are as follow:  $r_{\text{"high process"}} = .918$ ,  $r_{\text{"low result"}} = .561$ ,  $r_{\text{"high result"}} = .406$  and  $r_{\text{"low process"}} = .397$ . Although, the contribution of population at working age only is not enough, it is important to test other stimuli for more effective involvement of policy-making (*place-*, *people-*based) in regional development.



**Table 2: Linkage between population and population at working age with number of selected variables, Pearson correlation**

Selected indicators related to <b>people-based</b> regional development						Selected indicators related to <b>place-based</b> regional development					
Financial support			Education			Revenues linked with territory		Infrastructure		Natural resources	
MIN_INCOME	SOCIAL_ASSIST	EU_FUNDS	EDUCATION_EXPENS	STUD_GEN_EDU	STUD_VOC_EDU	REVENUE_EQUALIZATION	REVENUE_REAL_EST_TAX	ROADS	BRIDGES	FORESTS	MINERAL_RESOURCES
TOTAL, N=19											
.813** (.813**)	-.194 (-.197)	-.487* (-.487*)	-.058 (-.054)	.969** (.969**)	-.198 (-.202)	.981** (.980**)	.974** (.974**)	-.133 (-.136)	.832** (.830**)	.877** (.877**)	.634** (.633**)
LOW RESULT, N=10											
.988** (.989**)	.031 (.029)	-.369 (-.366)	-.013 (-.006)	.998** (.998**)	-.135 (-.140)	.998** (.998**)	.992** (.992**)	-.468 (-.469)	.851** (.849**)	.940** (.940**)	.933** (.934**)
LOW PROCESS, N=15											
.842** (.843**)	-.142 (-.145)	-.489 (-.489)	-.054 (-.049)	.987** (.988**)	-.264 (-.268)	.972** (.970**)	.972** (.972**)	-.141 (-.144)	.728** (.724**)	.837** (.835**)	.695** (.695**)
HIGH RESULT, N=9											
.939** (.940**)	-.381 (-.383)	-.554 (-.557)	-.233 (-.233)	.925** (.925**)	-.982 (-.986)	.974** (.972**)	.945** (.946**)	.218 (.215)	.861** (.857**)	.823** (.821**)	.863** (.859**)
HIGH PROCESS, N=4											
.997** (.997**)	-.380 (-.381)	-.497 (-.500)	-.083 (-.081)	.998** (.998**)	-.534 (-.531)	1.000** (1.000**)	.999** (.998**)	-.164 (-.162)	.999** (.999**)	.976* (.977*)	.996** (.996**)

Note: Population (number of population at working age (15-61)), \*\*. Correlation is significant at 0.01 level, \*. Correlation is significant at 0.05 level.

Source: authors' calculations based on data from RDIM 2015, Ministry of Agriculture Industry portal and State Forest Services 2015, Latvian Environment, Geology and Meteorology Centre 2015

Despite the limitations of composition of available statistical data, authors are able to select a number of variables, which characterise municipalities' activities and priorities during regional development in the context of *place*- and *people*-based approaches (see Appendix 1). Authors check these data on linkage with population and population at working age in the context of development *process* and *result*. Results of the analysis provide a number of key variables for regression log-log models.

Data on Table 2 offer several important observations (see Table 2). First, authors excluded a number of variables from further analysis, because of lack of close and statistically significant correlation with population and population at working age. These are EDUCATION\_EXPENS, SOCIAL\_ASSIST, EU\_FUNDS, STUD\_VOC\_EDU and ROADS (see Appendix A for explanation of variables), where correlation coefficients vary for population and population at working age from  $r = -.469$  to  $r = .031$  and they are not statistically significant for variable STUD\_VOC\_EDU despite the mostly close linkage with the dependent variables. As a result, variables attributable to *place*-based approach dominate over variables attributable to *people*-based approach during the analysis. The remaining variables for *place*-based approach consist from five units and for *people*-based approach from two units. Correlation coefficients for variables selected for further analysis vary from  $r = .633^{**}$  to  $r = 1.000^{**}$ . Second, significance of variables is similar for all groups of municipalities regardless of the stages of development *process* and *result*. Third, significance of variables is similar within each group of municipalities.

Characteristics of variables with close and statistically significant correlation with population and population at working age (except variables BRIDGES and STUD\_GEN\_EDU) indicate mostly short-term regional development – MIN\_INCOME, REVENUE\_EQUALIZATION, REVENUE\_REAL\_EST\_TAX, i.e. financing of current needs and disproportions during the development process. Close linkage with natural resources cannot be evaluated univocally. The character of contribution of natural resources to regional development mostly depends on the kind of usage and

demand level. Strategies aim to stimulate the involvement of natural resources to in the production of higher value added or energy that could seriously contribute to regional development. Additionally, more than 45% of entrepreneurs in Latgale region consider presence of natural resources as significant factor for decision-making and choice of place for business. However, local demand for natural resources is at low level now (Latgale planning region 2014). In turn, such variables as EDUCATION\_EXPENS, STUD\_VOC\_EDU, EU\_FUNDS and ROADS, which would be necessary for long-term regional development, demonstrate weak correlation coefficients. Further analysis is necessary for detecting those variables, which provide greater impact on regional development.

As far as targets of regional development include all population (not only those at working age), correlation coefficients for both variables are similar and dynamic of population is one of the most valuable indicators of regional development, authors use population as a dependent variable in regression analysis (see Table 3).

The data on Table 3 present results of regression analysis. Number of log-log models for five municipalities' groups provides the possibility for detailed comparison of development stimuli across municipalities' groups. Such analysis highlights the quality of regional development as well.

Correlation analysis indicates the similarity between all groups of municipalities by selected variables. Data on regression analysis one more time underlines that regardless of stage of *process* and *result* of regional development, the significance of tested variables is similar. Moreover, overall tendencies across municipalities' groups indicate that population number is dependent on short-term stimuli, which are related to certain territory, i.e. financing from equalization fund, real estate tax revenues. Close linkage with natural resources seems to provide positive contribution.

Calculations indicate that a 1-percentage point rise in the "Municipality revenue from the equalization fund" and "Municipality real estate tax revenues" implies a significant

growth of population; respectively more than 1-percentage point (see Table 3). Population growth rates in this case vary from 0.967 and 1.289 across municipalities' groups. It would be difficult to imagine that such indicators can stimulate population growth because of rising birth rate or positive migration. Therefore, authors explain these findings, i.e., population growth, as households' decision does not move to other municipalities or abroad, but stays at the territory, which is able to provide certain level (hypothetically higher than in other municipalities) of well-being by equalization's donations and real estates' tax revenues. Population demonstrates the tendency to grow mostly because of population decrease in other poorer municipalities.

Variables, related to infrastructure, as "Total number of municipal bridges" and "Density of the road network in Latvia", are mostly attributable to long-term regional development. These variables demonstrate weaker impact on population number. For example, the variable "Density of the road network in Latvia" does not participate in the regression analysis (see Table 2). In turn, the variable "Total number of municipal bridges" demonstrates significant impact on population number and 1-percentage point rise implies growth of population by about 0.706-0.796 percentage points. This indicates that infrastructure significantly contributes to population concentration.

Calculations made by the authors have underlined the high significance of natural resources also – the significance of forests for municipalities with low performance and the significance of mineral resources for municipalities with high performance in terms of *result* and *process* of development. For example, 1-percentage point rise of forestry area implies growth of population by about 0.934 percentage points in Latgale region. Mostly, municipalities with *low* level of development *result* have contributed there. In turn, 1-percentage point rise of mineral resources mostly contributes to population growth ( $\beta_1=1.51$ ) in municipalities with *high* level of development *result*. In general, the development of all municipalities mostly has gained from FORESTS ( $\beta_1=0.934$ ) rather

than from MINERAL\_RESOURCES ( $\beta_1=0.298$ ). This partly can be explained by the leading positions of the sector "Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials" (C16 in accordance with NACE 2. Rev.) in Latvia.

Data on *place*-based approach demonstrate a significant effect on the population number, but the characteristics of variables that are dominating indicate mostly the short-term character of regional development. It is possible to conclude, because, first, variables attributable to infrastructure provide lesser impact (see Tables 2, 3); second, revenues linked with territory are attributable to the financing of current needs and donating. Moreover, these revenues have stronger impact on the group of higher developed municipalities. Additionally, municipalities demonstrate close linkage and high dependence on natural resources. On the one hand, this raises the potential of further development. On the other hand, high transportation costs and low local demand provide insufficient short-term development (Latgale planning region 2014).

*People*-based approach practically does not find evidence in the analysis carried out by the authors, because of several reasons. First, there is a limited number of available variables attributable to *people*-based approach. Second, four of six of the selected variables did not show close linkage with population number, what is especially unfavourable in the case of the variables EDUCATION\_EXPENS, STUD\_VOC\_EDU and EU\_FUNDS. Additionally, "Amount of benefits to ensure the level of guaranteed minimum income" provides lesser impact on population than variables of *place*-based approach. Authors' calculations indicate that 1-percentage point increase of "Amount of benefits to ensure the level of guaranteed minimum income" stimulates growth of population by about 0.596-0.984 percentage points. In turn, the effect of the variable "Number of students at the general educational establishments" is significant, but similar for all municipalities' groups despite the stage of *process* and *result*.

Comparison of case studies provides additional knowledge. Authors found out that those municipalities that have *low* level of development *process* “compete” with municipalities’ group with *high* level of development *result*. Data on dynamic of ITDL and share of population and especially population at working age hold this. In conformity with Fig 2 and 3, municipalities with *low* level of development *process* come closer to the level of ITDL and population of municipalities with *high* level of development *result* and surpass of share of population at working age. Comparison of

these case studies equalizes both groups by values of  $\beta_1$ . Municipalities with *high* level of development *result* demonstrate higher values of  $\beta_1$  than municipalities with *low* level of development *process* by all tested variables (except variable BRIDGES and STUD\_GEN\_EDU) (see Table 3). One can find that this is logical, but first, population number in municipalities’ group with *high* level of development *result* decreases (see Fig 3a); second, characteristics of tested variables emphasize that regional development in municipalities’ group that is relatively higher developed depends on short-term stimuli (see Table 3)

**Table 3: Regression for population and selected variables at municipalities' level**  
 (Log-log model for average values of the period 2009-2014, dependent variable ln (POPULATION))

Independent variables	TOTAL			LOW RESULT			LOW PROCESS			HIGH RESULT			HIGH PROCESS		
	Coefficient	p-value (Sig.)	R <sup>2</sup>	Coefficient	p-value (Sig.)	R <sup>2</sup>	Coefficient	p-value (Sig.)	R <sup>2</sup>	Coefficient	p-value (Sig.)	R <sup>2</sup>	Coefficient	p-value (Sig.)	R <sup>2</sup>
Selected variables (after correlation analysis) related to <i>people-based</i> regional development															
ln(MIN_INCOME)	.901	.000	.811	.926	.000	.799	.887	.000	.787	.968	.000	.938	.953	.047	.907
$\beta_1$	0.730			0.596			0.931			0.984			0.808		
ln(STUD_GEN_EDU)	.986	.000	.972	.987	.000	.974	.989	.000	.978	.981	.000	.963	.990	.010	.979
$\beta_1$	1.04			1.07			1.04			1.01			1.12		
Selected variables (after correlation analysis) related to <i>place-based</i> regional development															
ln(REVENUE_EQUALIZATION)	.979	.000	.958	.994	.000	.987	.972	.000	.945	.971	.000	.942	.995	.000	.989
$\beta_1$	1.042			0.967			1.027			1.077			1.060		
ln(REAL_EST_TAX_REV)	.962	.000	.925	.964	.000	.928	.958	.000	.918	.962	.000	.925	.981	.019	.962
$\beta_1$	1.129			1.068			1.182			1.289			1.070		
ln(BRIDGES)	.853	.000	.727	.768	.009	.590	.784	.001	.615	.892	.001	.795	.974	.026	.949
$\beta_1$	0.725			0.706			0.796			0.725			0.732		
ln(FORESTS)	.744	.000	.554	.815	.004	.665	.675	.006	.455	.649	.059	.421	.927	.073	.859
$\beta_1$	0.934			0.737			0.562			.490			0.707		
ln(MINERAL_RESOURCES)	.494	.044	.244	.640	.046	.409	.395	.153	.156	.805	.029	.648	.949	.205	.900
$\beta_1$	0.298			1.12			0.693			1.51			1.137		
Number of Observations	19			10			15			9			4		
Average ITDL	-1.101			-1.386			-1.083			-0.784			-1.169		

Note: years from 2009 to 2013 were used in calculations for forests and mineral resources; number of observations for variable MINERAL\_RESOURCES excludes two municipalities.

Source: authors' calculations in SPSS environment based on data from RDIM 2015; SRDA 2010, 2011, 2012; Ministry of Agriculture Industry portal and State Forest Services 2015, Latvian Environment, Geology and Meteorology Centre 2015

The tendencies discovered during the analysis can be improved during the implementation of the aims set in the development strategies. For example, the development strategies of Latgale region make focus on 'smart' regional development that requires correspondence with the new paradigm of creativity and sustainability for all areas – education, entrepreneurship, infrastructure, and governance (Latgale planning region 2014). Particularly, Latgale region set the following aims for further development:

- to increase the involvement of the population in getting vocational education using wide possibilities offered in the region;
- to improve skills of workforce;
- to attract local workforce for regional vacancies;
- to coordinate the usage of attracted investments;
- to develop regional brand for activating entrepreneurship activities;
- to increase the usage of natural resources for the production of higher value added and energy (Latgale planning region 2014).

The research findings could be of help to make a better choice for targeted municipalities and to focus attention on certain approach (approaches) of regional development. For example, authors found out that development in municipalities has gained from the *place*-based approach mostly. However, the research findings have discovered the domination of short-term stimuli as financing of current needs and necessity to improve and diversify the usage of natural resources that provide sufficient contribution to regional development. On the other hand, the potential of *people* is not used effectively. Weak linkage between regional development and expenses on education and the number of students at vocational educational establishments evidences about this. Moreover, the effect from EU structural funds, where human capacity is very important, should be higher at municipalities' level.

## Conclusion

The paper has aimed to determine the contribution of *place*- and *people*-based approaches to regional development in small municipalities and to set variables available at the level of small municipalities for the future monitoring of development. Authors have focused attention on the case study of nineteen municipalities of Latgale region (Southeast of Latvia) using data on financial support and education for testing *people*-based approach and data on infrastructure, revenues linked with territory and natural resources for testing *place*-based approach in small municipalities. Small municipalities were divided into the groups accordingly to *process* (development rates) and *result* (development level).

Authors have concluded that differentiation was expressed weakly between municipalities' groups in terms of stimuli of regional development. Development in all municipalities has gained from activities and resources related to *place*-based approach in bigger extent. Additionally, regional development in all municipalities' groups has demonstrated dependence on the same stimuli, which can mostly be unified under definition short-term. Moreover, relatively *higher* developed municipalities have brighter expressed dependency on short-term stimuli than *lower* developed municipalities, what indicates an unfavourable tendency. For example, authors have discovered the dominance of short-term stimuli in municipalities with *low* level of development *process* and *high* level of development *result*. Authors indicate that wider list of tested variables would be necessary in further research aiming to detect key reasons for vulnerability of regional development at small municipalities' level. However, authors underline positive tendency as well – the contribution of municipalities' activities provides effect on regional development in small municipalities in Latgale.

Taking into account the existing peculiarities of regional development of small municipalities, the realization of aims set in the strategies for Latgale region can seriously contribute to balanced regional development. Scientific contributions

indicate that the combination of both approaches, i.e. *place-* and *people-*based, better address recent challenges in regional development. The case study, presented in this paper, corresponds with this statement. The research results indicate that further activities could pay attention to the combining of both approaches, i.e. *place-* and *people-*based, for stimulating regional development.

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**Appendix 1: List of tested variables**

<b>Authors' abbreviation</b>	<b>Explanation</b>
<b>MIN_INCOME</b>	Amount of benefits to ensure the level of guaranteed minimum income (EUR, MW)
<b>SOCIAL_ASSIST</b>	Municipality budget expenses for social assistance measures per one inhabitant (EUR, RDIM calculation)
<b>STUD_GEN_EDU</b>	Number of students at the general educational establishments (inhab., MES)
<b>STUD_VOC_EDU</b>	Number of students at the educational establishments providing vocational education programmes (inhab., MES)
<b>EU_FUNDS</b>	Sum of the EU fund (ERDF, ESF, CF) project public financing per 1000 residents (EUR, RDIM calc.)
<b>EDUCATION_EXPENS</b>	Municipality budget expenses on education per one person (EUR, RDIM calculation)
<b>REAL_EST_TAX_REV</b>	Municipality real estate tax revenues (EUR, ST)
<b>BRIDGES</b>	Total number of municipal bridges (number, LSR)
<b>ROADS</b>	Density of the road network in Latvia (km/sq. km, RDIM calculation)
<b>POPULATION</b>	Number of population (inhab., OCMA)
<b>REVENUE_EQUALIZATION</b>	Municipality revenue from the equalization fund (EUR, ST)
<b>FORESTS</b>	Forests, swamps, glades, infrastructure (Ministry of Agriculture Industry portal and State Forest Services)
<b>MINERAL_RESOURCES</b>	Building materials and row materials – gypsum, limestone, dolomite, clay, sand, quartz sand etc. (Latvian Environment, Geology and Meteorology Centre)

Source: RDIM 2015, Ministry of Agriculture Industry portal and State Forest Services 2015; Latvian Environment, Geology and Meteorology Centre 2015