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From the 2008 to the 2014 Crisis: Response of the Labor Market of Russia's Largest Cities

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ABSTRACT

The model of shift share analysis was improved to show that the foundation of economy's transition to industrially innovational type of development is created at the local level in case of developing countries. Analysis of structural shifts in 28 large cities in 2008-2014 showed that the perspective of industrially innovational development is yet delusive – production sector and the sphere of human capital development are reduced. There's outflow of employees into the service sphere and financial activities. That is an alarming tendency. The 2014 crisis might become rather long for Russia's economy, and perspectives for transition to innovational type of development until 2020 remain delusive. In order to ensure transition to innovational type of development, it's necessary to build corresponding structure of economy – primarily, in large cities of the country. They are the first to react to policy changes. Local authorities perform the most important role in this process. Calculations showed that municipalities are most sensitive to influence of crisis and measures taken by the government.

KEYWORDS

Local territories, regions, labor markets, crisis, developing countries

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Introduction

As in the works by P. M. Romer (1990) and G. S. Becker (2007), human capital is considered to be the key factor of economic growth on the basis of industrial and innovational development, study of the issues of formation and adaptation of labor markets to the needs of knowledge economy draw large interest of scientists and politicians. In particular, the connection between self-

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employment and creation of business and innovations in urban and rural labor markets (Faggio & Silva, 2014), sustainability of the structure of employment in metropolis (Redfearn, 2009), and urban cycles of employment (Owyang, Piger & Wall, 2013; Wall, 2013) were studied. At that, local authorities are viewed as a key agent for support for renewed economic growth and strengthening of the country's economy (Travers, 2012) by means of the possibility of fuller realization of local potential. However, while in developed countries this role is obvious, in developing countries this issue is debatable and depends on the level of decentralization of the country (Oduro-Ofori, 2011).

The role of local authorities is studied by various means: with the help of the data on the budget (Travers, 2012), interview, survey, and documents analysis (Oduro-Ofori, 2011).

This research helps to prove the thesis that analysis of the statistical data on employment can help to evaluate the role of local authorities in development of the territory. Though statistics acquired the status of driving force of scientific knowledge (Freedman & Stark, 2003), it is impossible to determine all forms of the unknown. Such events are not planned beforehand and they are unpredictable (The Black Swan), and might change the course of economic and social activities (Taleb, 2007). While national, sectorial, and regional factors are more or less studied, the local factors influencing economic growth and changes of employment of territory are a problem. Understanding the differences in factors which influence economic growth and changes of employment in local territories will help the politicians to understand specific issues in each community.

Beginning from 2008, the state of Russian economy has been chronically recessionary. Vulnerability of Russian economy could be explained by dependence on the raw materials export. In particular, the share of energy resources in the export structure reaches 70%. In 2007, the Government of Russia established a range of state programs for reduction of this dependences and transition of Russian economy to the model of economic growth on the basis of innovations. In 2011, the Government of the Russian Federation established the "Strategy of innovational development of the Russian Federation until 2020". However, the results of these measures haven't yet reached the desired level. The Central Bank spent a third part of the gold and foreign currency reserves for supporting the economy and slowing down the ruble depreciation (total of $600 billion). In 2008, the Government of the RF spent around $200 billion for the realization of the "Plan of actions for recovery of situation in the financial sector and particular spheres of economy" – namely, to increase liquidity in banking sector and support national companies that couldn't pay back large external debts.

All this led to reduction of the programs of stimulation of small business and stimulated decrease of accessibility of credits for medium and large enterprises. The decrease of economic activity was overcome in the mid-2009, and Russia's economy started growing in the first quarter of 2010. High oil prices supported the growth of Russian economy in the 1st quarter of 2011 and helped Russia to reduce budget deficit which remained from the 2008-2009 crisis – but inflation and increased government spending limited positive influence of oil revenues.

In 2014, Russian economy wasn't ready to changes of raw materials prices. A short period of high oil prices was accompanied by manifestations of "the Dutch disease" ("The Dutch disease" is a negative effect caused by strengthening of national currency due to high prices for exported raw materials, which stimulates development of raw materials sectors of the country's economy. This effect has been observed in Russian economy from early 2000's), but it allowed replenishing the Reserve Fund and the National Welfare Fund, the volume of which constituted $91.72 billion and $85.31 billion, accordingly – as of 01.09.2014. Reduction of oil prices in the world markets and implementation of economic sanctions were caused for depreciation of Russian ruble and provoked growth of inflation and reduction of real income of the population. The assets of the Reserve Fund the National Welfare Fund are used for supporting the Russian economy.

Conclusions of this paper are aimed at understanding the role of local authorities in formation of the employment structure of local territories; also, the authors tried to estimate the consequences of the crisis for the labor market of 28 large cities of Russia. The main issues of the study: has a structural transformation of economies of these cities begun and is "the Dutch disease" expected with the growth of oil prices?

In order to solve these issues, the methodology of the shift share analysis was used, which included a local factor – which allowed bringing down the contour of factors into four components: three levels of territorial division of the country and determination of the influence of sectorial situation. The local factor allows studying the contribution of local economies and local authorities into formation of the labor market structure.

The conclusions on the role of local authorities in the formation of the structure of economy of territory and the consequences of crisis will be useful for state, regional, and local authorities and business for making managerial decisions and developing cooperation for attraction of highly qualified employees of enterprises and achievement of prosperity of their territories.

Our research, which is based on the statistical data, proves the fact that the current global recession is a decisive moment for local authorities. Local leaders become more responsible for creation of favorable conditions for future prosperity. Good knowledge of peculiarities of local territories allows local authorities adapting services according to local needs, integrating diverse government initiatives, and taking the role of unifying force. Economic crisis sets complex tasks before local authorities, which have to act in order to assuage the consequences of economic recession and prepare the cities for future growth under the conditions of intense competition.

Literature Review and Methodology

Studying the reactions of regions' economies and cities to the crisis phenomena always drew attention from scientists, especially regarding developing countries with unstable economy. It is offered to use various methods in order to solve this task. Navarro-Espigares (Navarro-Espigares, Martín-Segura & Hernández-Torres, 2012) studies the reaction of regional economy to influence the service sector in Spanish regional economic sustainability with the use of time rows of gross added value and employment for seventeen regions of Spain for 1986-2009.

Courvisanos, Jain and Mardaneh (2015) use cluster analysis for processing a wide range of data (data mining) of population census in Australia in 2001, 2006, and 20011 to evaluate the influence of two large commotions – 13-year drought and the global financial crisis. The authors offer the models of adaptive potential in four various functional groups regions of local authorities in Australia regarding their sustainability as in specific spheres. Chernik et al. (2015) estimate the consequences of financing of large cities after the 2008 crisis and "build the city government" on the basis of statistical data processing on tax revenues.

Study of the structure of economy and structural shifts give the researchers the possibility to determine sources of regional economic changes. A. V. Moshkov (2015) determines the state of economy's structure as the most important indicator of region's economy and uses average linear and quadratic mean characteristics as indicators of structural shifts. With their help, the author determines the average deviation of specific weights for the studied period. This approach is very simple and vivid during study of quantitative values of structural shifts, but indicators of average linear and quadratic means characteristics do not allow distinguishing in the indicators' values the influence of movement of labor resources at different levels of economy (in the country on the whole, at the level of regions and municipalities, and influence of changes of the situation in the sphere).

Some authors offer to use different variants of analysis of shifts for evaluation of policy, realized on the territory of municipal entities. Thus, L. G. Miljaeva and M. V. Prokolov (2014) view structural shifts of labor resources as the results of policy in the sphere of employment.

However, the most popular method of study of the reasons of economic growth and convergence is the method of shift share analysis. Over its long history, this method, while preserving the basic principle of calculation of structural shifts, was improved many times, this expanding the circle of solving the research tasks.

In its classic form, the method of structural shifts allows evaluating the influence of national and regional factors on change of regional indicators.

The traditional three-factor model Shift-share formalized by E. S. Dunn (1960); it is widely used for determination of the role of regional and national effects in formation of modern tendencies in economy.

In particular, the dynamic model of shift share analysis was used by T. R. Harris (Harris et al., 1994) during study of the character of dynamics of Nevada economy before recession of 1981-82 and 1990-1991.

The shift share analysis method is a method of accounting aimed at determination of total growth of region's efficiency as to the country's average efficiency and determination of result of its economic structure or / and growth rates of its sectors (Artige & Neuss, 2015). This method expands the specter of possibilities by means of increase of precision of evaluation of the competitiveness effect.

Dynamics and structural shifts of employment of labor resources may be the generalizing characteristics of the results of transformations in economy, caused by crisis phenomena of 2008.

The main advantage of Shift-share analysis consists in the fact that it allows solving the problem of determination of local effect in change of the general structure of taken jobs.

In classic understanding, the shift share analysis is totality of the following factors: national factor (NS_i), sectorial factor (IM_i), and regional factor (RS_i).

$$\Delta l_I = l_{i,t} - l_{i,t-1} = NS_i + IM_i + RS_i \quad (1)$$

where

Δl_I – absolute change of indicator at the local level;

$l_{i,t}$ - value of indicator at the level of local territory (e.g., city, village) in specific sphere for the last studied period;

$l_{i,t-1}$- value of indicator at the level of local territory in specific sphere for the first studied year;

NS_i – national factor (at the level of country);

IM_i – sectorial factor;

RS_i – regional factor (region).

However, for the countries, in which regions' population is rather large – as compared to the territory's population – such three-factor model has significant drawbacks. In particular, it doesn't allow evaluating the depth of structural shifts with sufficient level of detalization: determination of local effects in dynamics of jobs in cities and villages. That is important for such large countries as Russia, USA, and Canada. Thus, for example, in some regions of Russia the number of population is similar to small European countries (e.g., in the Republic of Bashkortostan and Croatia population constitutes appr. 4 million). The population of Texas – the second most populated US state – constitutes more that 25 million people. For less populated countries with vivid regionalization (Great Britain, Germany, Italy), it is important to determine connections between national, regional, and local effects. This effect could be applied to clusters, as the technology of calculation is not changed. Four-factor model could be applied during monitoring of development of territories within the European policy of "clever specialization", which allows determining tendencies in the labor market: determining the most perspective innovational types of activities and the dying spheres.

Thus, the original idea of the offered four-factor model of the shift share analysis consists in the fact that dynamics of indicators of the employment level allows determining:

- influence of general national tendencies (consequences of the 2008 crisis and government measures) in the total number of jobs in the studied cities;

- influence of general national tendencies on the number of jobs for specific types of activities (spheres);

- whether the number of jobs will reduce or increase under the influence of tendencies in the sphere;

- to which extent the local self-government copes with realization of the tasks of regional innovational economic policy: creation of jobs for innovational economy, favorable conditions for business, and provision of high living standards, etc.

- evaluating perspectives for further growth of jobs (in case if local factor grows quicker than national or regional factor) or local conditions hinder development of enterprises in the sphere (in case if local factor grows slower than national or regional factor);

- whether the local economy conforms to general tendencies in the sphere.

To get complex evaluation of effectiveness of realization of socio-economic policy, let us introduce another element – local factor (LS_i).

Then, the generalized four-factor model of the shift share analysis will have the following form:

$$\Delta l_I = l_{i,t} - l_{i,t-1} = NS_i + IM_i + RS_i + LS_i, \quad (2)$$

where

LS_i - local factor (local territory).

National factor (at the level of the country):

$$NS_i = l_{i,t-1} \times \frac{E_t - E_{t-1}}{E_{t-1}}, \quad (3)$$

where

$l_{i,t-1}$ – value of indicator at the level of municipal entity in specific sphere for the first studied year;

E_t - value of indicator for the country on the whole for the last studied year;

E_{t-1} – value of indicator for the country on the whole over the first studied year.

Sectorial factor:

$$IM_i = l_{i,t-1} \times \left(\frac{E_{i,t} - E_{i,t-1}}{E_{i,t-1}} - \frac{E_t - E_{t-1}}{E_{t-1}}\right), \quad (4)$$

where

$E_{i,t}$ – value of indicator at the level of the country in specific sphere for the last studied year;

$E_{i,t-1}$ - value of indicator at the level of the country in specific sphere for the first studied year.

Regional factor:

$$RS_i = l_{i,t-1} \times \left(\frac{e_{i,t} - e_{i,t-1}}{e_{i,t-1}} - \frac{E_{i,t} - E_{i,t-1}}{E_{i,t-1}}\right), \quad (5)$$

where

$e_{i,t}$- value of indicator at the regional level in specific sphere for the last studied year;

$e_{i,t-1}$- value of indicator at the regional level in specific sphere for the first studied year.

Local factor:

$$LS_i = l_{i,t-1} \times \left(\frac{l_{i,t} - l_{i,t-1}}{l_{i,t-1}} - \frac{e_{i,t} - e_{i,t-1}}{e_{i,t-1}}\right) \quad (6)$$

where $l_{i,t}$, $l_{i,t-1}$ – number of the employed on local territory in specific sphere for current and basic periods, accordingly.

Then, the total change of number of the employed in the city could be explained by influence of four factors:

$$\sum \Delta l = \sum NS + \sum IM + \sum RS + \sum LS \quad (7)$$

1st effect ($\sum NS$) – national effect, created under the influence of dynamics of total employment in the country for the studied period. Growth of total employment in the country stimulated the growth of employment in cities and provides positive effect ($\sum NS > 0$). On the contrary, reduction of national employment provides negative effect for the city ($\sum NS < 0$).

2nd effect ($\sum IM$) – effect of national sectorial situation; it is created as a result of changes of demand for labor for specific types of activities at the level of the country. Positive effect of sectorial situation ($\sum IM > 0$) is observed if the structure of city economy corresponds to national tendencies. On the contrary, the negative effect ($\sum IM < 0$) is observed of the city economy's structure contradicts national tendencies. The larger the non-correspondence of local and national employment structures, the larger the influence of this factor.

3rd effect ($\sum RS$) – effect of regional proportions; it is created under the influence of regional structure of economy and shows to which extent the regional labor market conforms to national proportions. If the vector of regional changes conforms to national tendencies in the labor market, then ($\sum RS > 0$).

4th effect ($\sum LS$) – the effect of territorial competitiveness; it shows how the city uses its competitive advantages. If ($\sum LS > 0$), the city has favorable conditions for population, and labor potential grows. Negative effect of territorial competitiveness ($\sum LS < 0$) shows that economy's structure is unfavorable for development of the city. Analyzing the value and direction of local factor in view of types of activities, it is possible to evaluate possibilities of development of city economy.

The offered model complements the existing variations of the shift share analysis: four-factor model of J.M. Esteban-Marquillas (1972), extended model (Arcelus, 1988), and dynamic model (Barff & Prentice, 1988).

Types and sources of data

In this work, the methodology of the shift share analysis is used for determination of structural shifts in economy of 28 Russian cities of the Volga, North-Western, and Ural Federal Districts, and Moscow over 2008-2014. Using the logic that post-crisis structural changes have already begun in the labor market during a year, the initial period is considered 2009. The calculations are performed for the whole period of 2009-2014. The sources of information are official data of the Federal State Statistics Service of the Russian Federation on the average annual number of employees of organizations for the types of activities (without subjects of small business), according to the Russian classifier of types of economic activities (OKVED 2) OK 029-2014.

Study of structural shifts by the example of large cities – administrative centers of regions – will provide the most vivid picture, as they have economic and labor potential necessary for development of innovational activities in regions. In the countries with highly centralized authority, governments cannot stimulate growth of effectiveness of local authorities, and tendencies of development are concentrated in metropolises (Beer & Clower, 2013). As a rule, the most active and professional part of the region's population lives in such cities. Residents of administrative centers are more flexible as to decision making regarding moving due to search for job, as compared to residents of rural

territories, as they have a possibility to receive high-quality education in their cities and receive income from professional activities, not from work in personal auxiliary plots. Large R&D centers, large share of innovational infrastructure, and enterprises in various spheres of activities are situated in large Russian administrative centers.

At the same time, the studied cities are different as to the population and the level of economic development. They include the leaders in population (Moscow and St. Petersburg) and wages (Tyumen) and small cities with low living standards and economic results (Kurgan, Veliky Novgorod, Pskov). Belonging to various types as to the level of development allowed conducting comparative analysis of structural shifts and making important conclusions for the policy.

The number of employees of organizations of Moscow and Leningrad Oblasts includes indicators of Moscow and St. Petersburg. These cities-regions are factual administrative centers for Moscow and Leningrad Oblasts.

Empirical results and analysis

Main results for 28 Russian cities are shown in Table 1.

Table 1. Structural shifts in cities, 2009-2014, thousand people

Cities	*2009*	*2014*	*NS*	*IS*	*RS*	*LS*	*ΔL*
Ufa	336,81	323,51	1,97	-1,85	-4,86	-8,56	- 13,30
Yoshkar-Ola	76,43	75,23	0,45	-1,27	-1,03	0,66	-1,20
Saransk	108,27	105,38	-2,49	1,16	-4,51	2,95	-2,90
Kazan	342,50	352,51	2,01	-2,95	1,01	9,94	10,01
Izhevsk	219,50	196,20	1,29	-3,42	-1,89	-19,27	-23,30
Cheboksary	150,49	138,07	0,88	-2,79	-3,72	-6,79	-12,42
Perm	311,04	298,65	1,82	-3,91	-12,50	2,19	-12,39
Kirov	157,04	143,29	0,92	-2,04	-6,16	-6,47	-13,75
Nizhny Novgorod	454,45	442,43	2,66	-0,53	-14,01	-0,14	-12,02
Orenburg	260,69	190,48	1,53	-2,90	-0,16	-68,67	-70,21
Penza	157,00	145,69	0,92	-2,38	-8,41	-1,45	-11,31
Samara	399,60	341,14	2,34	-0,26	-9,43	-51,11	-58,46
Saratov	260,05	247,26	1,52	-2,81	-3,78	-7,72	-12,79
Ulyanovsk	187,52	177,52	1,10	-4,28	0,26	-8,05	-9,99
Petrozavodsk	78,82	73,89	0,46	-0,77	-7,72	3,11	-4,93
Syktyvkar	89,06	84,90	0,52	-1,28	-5,75	2,35	-4,16
Archangelsk	123,00	97,76	0,72	-1,07	-3,36	-21,54	-25,25
Vologda	106,21	95,10	0,62	-1,38	-3,66	-6,70	-11,11
Kaliningrad	138,11	130,83	0,81	-0,25	-3,38	-4,44	-7,27
Murmansk	108,90	98,16	0,64	0,37	-9,92	-1,82	-10,73
Veliky Novgorod	79,68	74,12	0,47	-0,78	-1,59	-3,66	-5,56

Pskov	75,14	59,92	0,44	-0,69	-0,42	-14,56	-15,22
Saint Petersburg	2450,30	2589,80	14,36	47,10	61,17	16,88	139,50
Kurgan	115,28	95,56	0,68	-2,37	-7,05	-10,98	-19,72
Yekaterinburg	438,98	447,82	2,57	0,49	-3,68	9,47	8,85
Tyumen	183,90	201,24	1,08	1,01	3,56	11,69	17,34
Thelyabinsk	352,47	347,14	2,07	-6,49	1,69	-2,60	-5,34
Moscow	6368,10	6778,40	37,31	224,35	239,99	-91,35	410,30
Total	7761,19	7573,59	42,35	3,65	-49,28	-185,30	-187,61

Source: The authors calculated with official dates of the Federal State Statistics Service of Russian Federation.

Total number of the employed in the studied cities constituted 7,573.59 thousand people in 2014. It is by 187.61 thousand people less than in 2009. Total influence of national factor was positive due to general growth of the number of the employed at enterprises and organizations of the country. Under the influence of the national factor, the number of the employed at enterprises of the studied cities increased by 42.35 thousand people. Changes of situation in the spheres influenced the labor market in the studied cities in different ways. At close study it is seen that this factor acquires negative value in the cities with the structure of economy that does not conform to modern tendencies in economy. As a consequence, economic results are rather low in the cities in which economy wasn't able to react timely to sectorial situation. The sectorial factor has positive influence in the cities with the most developed economy with high economic results (St. Petersburg, Ekaterinburg, Tyumen, Moscow).

The most influence is done by regional factor (Saransk, Perm, Nizhny Novgorod, Murmansk, St. Petersburg, Moscow) and local factor (Ufa, Kazan, Izhevsk, Cheboksary, Orenburg, Samara, Arkhangelsk, Pskov, Tyumen, etc.).

Table 2 shows total results of structural shifts in 28 studied cities. At that, the local factor influences a lot the total dynamics of the number of enterprises' employees in processing production, production and distribution of electric energy, gas, and water, services of hotels and restaurants, transport and communications sector, and medical services.

Table 2. Structural shifts for the types of activities (2008-2009), thousand people

Economic activity	*NS*	*IS*	*RS*	*LS*	*ΔL*
Agriculture, hunting and forestry	0,29	-4,33	-7,45	-2,69	-14,17
Mining and quarrying	0,30	-1,80	-1,91	-0,03	-3,44
Processing production	11,42	-118,59	-24,22	-103,02	-234,42
Electricity, gas and water supply	1,91	-4,29	2,77	-10,61	-10,22
Construction	6,90	63,76	42,99	-35,32	78,33
Retail and wholesale trade; repair of transport vehicles, motorcycles, household goods, and	18,91	138,44	96,75	90,92	345,02

personal items					
Hotels and restaurants	1,70	28,97	1,02	-34,60	-2,90
Transport and communications	7,30	19,73	22,87	-111,39	-61,48
Financial activities	3,06	108,07	23,07	28,34	162,53
Real estate, renting and business activities	10,74	186,88	10,23	-24,34	183,51
Public administration and defence, compulsory social security	5,01	-37,99	14,53	-3,01	-21,46
Education	7,44	-108,75	10,23	10,99	-80,09
Health and social work	5,99	-37,72	-2,56	-53,85	-88,15

Source: The authors calculated with official dates of the Federal State Statistics Service of Russian Federation.

Table 2 shows that structural transformation of economy takes place: outflow from the production sector, development of human capital into financial, trade, and service sector. At that, the largest outflow of the employed is observed in processing production – the largest influence was made by unfavorable sectorial situation (-118.59 thousand people) and local conditions (-103.02 thousand people). Educational, healthcare, and social services sectors are reduced.

Let us view structural shifts for key types of activities in the cities.

Table 3 presents structural shifts for the type of activities "Processing production".

Table 3. Structural shifts for the activities type "Processing production" for 2009-2014, thousand people

Cities	*NS*	*IS*	*RS*	*LS*	*ΔL*
Ufa	0,4166	-4,0326	0,4866	-5,8865	-9,0160
Yoshkar-Ola	0,1006	-0,9741	0,8450	0,0825	0,0540
Saransk	-0,7334	-0,8874	-1,1210	0,8247	-1,9170
Kazan	0,4525	-4,3802	2,2562	-6,0004	-7,6720
Izhevsk	0,3531	-3,4185	1,8645	-6,7371	-7,9380
Cheboksary	0,2629	-2,5447	0,7173	-5,0934	-6,6580
Perm	0,5196	-5,0299	-0,8988	2,6101	-2,7990
Kirov	0,2012	-1,9477	-0,6340	-1,7895	-4,1700
Nizhny Novgorod	0,5464	-5,2892	-6,8429	-0,9942	-12,5800
Orenburg	0,1107	-1,0716	1,2047	2,4532	2,6970
Penza	0,2086	-2,0190	-3,0797	1,2132	-3,6770
Samara	0,4853	-4,6977	-4,7942	6,6627	-2,3440
Saratov	0,3221	-3,1183	-0,8247	-1,9271	-5,5480
Ulyanovsk	0,3379	-3,2712	-0,5473	-3,0404	-6,5210

Petrozavodsk	0,0353	-0,3417	-1,6689	0,5493	-1,4260
Syktyvkar	0,0073	-0,0886	-0,1567	0,0090	-0,2290
Archangelsk	0,0743	-0,7193	0,4698	-6,0188	-6,1940
Vologda	0,1092	-1,0576	-1,2219	-1,6478	-3,8180
Kaliningrad	0,1071	-1,0365	-1,3207	2,5941	0,3440
Murmansk	0,0337	-0,3259	-0,3972	0,5404	-0,1490
Veliky Novgorod	0,1069	-1,0344	0,0950	-0,7875	-1,6200
Pskov	0,0735	-0,7114	-0,2447	-1,2294	-2,1120
Saint Petersburg	2,0583	-19,9255	19,5754	0,1919	1,9000
Kurgan	0,1712	-1,6571	-2,4784	-0,9137	-4,8780
Yekaterinburg	0,4574	-4,4284	-0,2714	-4,9377	-9,1800
Tyumen	0,1430	-1,3848	2,0967	-1,7779	-0,9230
Thelyabinsk	0,5979	-5,7884	4,4128	-0,8654	-1,6430
Moscow	3,8646	-37,4122	-31,7439	-71,1085	-136,4000
Total	11,4235	-118,5938	-24,2224	-103,0243	-234,4170

Source: The authors calculated with official dates of the Federal State Statistics Service of Russian Federation.

Enterprises of the processing sector are peculiar for significant reduction of the number of employees in almost all cities by 234.42 thousand people, of which more than 50% account for employees in Moscow. A slight increase of the number of employees in the processing sector is observed in the following cities: Yoshkar-Ola, Orenburg, Kaliningrad, and St. Petersburg. Reducing dynamics of the indicators is determined by sectorial and local factors.

Table 4 shows structural shifts for the activities type "Construction".

Table 4. Structural shifts for the activities type "Construction" for 2009-2014, thousand people

Cities	*NS*	*IS*	*RS*	*LS*	*ΔL*
Ufa	0,1015	0,9157	- 0,2289	-5,6653	-4,8770
Yoshkar-Ola	0,0168	0,1517	0,3573	- 1,8119	-1,2860
Saransk	-0,1191	0,4229	-0,2660	0,1162	0,1540
Kazan	0,0773	0,6968	-0,8619	-0,2692	-0,3570
Izhevsk	0,0617	0,5566	-0,3049	-1,2904	-0,9770
Cheboksary	0,0478	0,4306	-0,9173	-1,5621	-2,0010
Perm	0,0751	0,6771	-0,4951	-0,9321	-0,6750
Kirov	0,0255	0,2299	-0,1270	-1,2194	-1,0910
Nizhny Novgorod	0,0792	0,7142	-0,9621	-1,9923	-2,1610
Orenburg	0,0391	0,3529	-0,5111	-1,0929	-1,2120
Penza	0,0321	0,2894	1,1137	-2,6282	-1,1930
Samara	0,0632	0,5702	0,4257	-1,2941	-0,2350
Saratov	0,0450	0,4061	0,3894	-2,0225	-1,1820
Ulyanovsk	0,0301	0,2716	0,9237	-1,0735	0,1520
Petrozavodsk	0,0118	0,1066	-0,0728	0,2923	0,3380

Syktyvkar	0,0117	0,1053	0,0040	0,0780	0,1990
Archangelsk	0,0270	0,2436	-0,3575	-1,6230	-1,7100
Vologda	0,0221	0,1992	0,0546	-1,0399	-0,7640
Kaliningrad	0,0228	0,2056	0,3797	0,2179	0,8260
Murmansk	0,0067	0,0607	-0,0431	0,3347	0,3590
Veliky Novgorod	0,0302	0,2726	-0,6781	-1,9977	-2,3730
Pskov	0,0109	0,0984	0,3057	-0,6161	-0,2010
Saint Petersburg	1,4132	12,7432	10,1072	0,3364	24,6000
Kurgan	0,0172	0,1555	0,0646	-1,8764	-1,6390
Yekaterinburg	0,1335	1,2040	-2,7784	-3,9421	-5,3830
Tyumen	0,0793	0,7148	-0,8535	4,1704	4,1110
Thelyabinsk	0,0647	0,5832	-0,3479	-3,3900	-3,0900
Moscow	4,4780	40,3800	38,6681	-3,5261	80,0000
Total	6,9046	63,7585	42,9882	-35,3193	78,3320

Source: The authors calculated with official dates of the Federal State Statistics Service of Russian Federation.

Construction sector is peculiar for an ambiguous situation: in most cities, there are insignificant shifts to positive or negative side. Large growth of activity in the construction sector is observed only in large Russian centers – Moscow and St. Petersburg. Certain revival is observed in a large Siberian city Tyumen, where the number of employee of construction enterprises grew by 4.11 thousand people.

Table 5 showed structural shifts for the activities type "Retail and wholesale trade; repair of transport vehicles, motorcycles, household goods, and personal items".

Table 5. Structural shifts for the activities type "Retail and wholesale trade; repair of transport vehicles, motorcycles, household goods, and personal items" for 2009-2014, thousand people

Cities	*NS*	*IS*	*RS*	*LS*	*ΔL*
Ufa	0,1225	1,1770	0,2204	6,6111	8,1310
Yoshkar-Ola	0,0263	0,2525	-0,4215	2,0577	1,9150
Saransk	-0,0916	0,3392	-0,2087	0,8981	0,9370
Kazan	0,1543	1,4831	-0,3093	8,4549	9,7830
Izhevsk	0,0841	0,8086	-0,5056	1,2909	1,6780
Cheboksary	0,0524	0,5038	-0,3290	2,5897	2,8170
Perm	0,1083	1,0409	0,3154	2,6215	4,0860
Kirov	0,0553	0,5313	-0,4483	1,9197	2,0580
Nizhny Novgorod	0,2288	2,1992	0,8022	7,3657	10,5960
Orenburg	0,0495	0,4757	-0,3178	2,1527	2,3600
Penza	0,0358	0,3436	0,1273	3,3744	3,8810
Samara	4,6490	0,1489	1,4310	-0,2685	3,3376
Saratov	0,1046	1,0051	-1,1542	1,7425	1,6980
Ulyanovsk	0,0501	0,4818	-0,4894	4,1105	4,1530

Petrozavodsk	0,0272	0,2609	-0,2365	2,0924	2,1440
Syktyvkar	0,0274	0,2633	-0,3397	1,5149	1,4660
Archangelsk	0,0301	0,2896	-0,3899	1,0401	0,9700
Vologda	0,0321	0,3082	-0,2984	1,2461	1,2880
Kaliningrad	0,0689	0,6621	0,3719	-1,8919	-0,7890
Murmansk	0,0498	0,4787	-0,7694	1,5179	1,2770
Veliky Novgorod	0,0352	0,3384	-0,4826	0,4090	0,3000
Pskov	0,0394	0,3791	0,0435	-1,2150	-0,7530
Saint Petersburg	3,1129	29,9156	-9,5992	12,0707	35,5000
Kurgan	0,0294	0,2828	0,0380	1,5518	1,9020
Yekaterinburg	0,2003	1,9249	-0,3145	15,3922	17,2030
Tyumen	0,0930	0,8936	0,4126	5,4768	6,8760
Thelyabinsk	0,1465	1,4081	0,2498	7,7806	9,5850
Moscow	9,3908	90,2478	109,3505	-0,9891	208,0000
Total	18,9124	138,4438	96,7486	90,9176	342,3996

Source: The authors calculated with official dates of the Federal State Statistics Service of Russian Federation.

Under the conditions of reduction of population's income and, therefore, total demand in the market, competition between trade enterprises grew, and the demand for repair services increased. As a result, the trade and service sphere has favorable sectorial situation, which stimulated inflow of 342.39 thousand people into this sector. Regional policy and activities of municipalities led to different things in the cities. Activities of municipalities influenced positively the development of trade and services in Ufa, Yoshkar-Ola, Perm, Nizhny Novgorod, Ulyanovsk, St. Petersburg, Ekaterinburg, Tyumen, and Chelyabinsk.

Table 6 shows structural shifts for the activities type "Financial activities".

Table 6. Structural shifts for the activities type "Financial activities" for 2009-2014, thousand people

Cities	*NS*	*IS*	*RS*	*LS*	*ΔL*
Ufa	0,0627	2,1166	0,1173	0,3034	2,6000
Yoshkar-Ola	0,0124	0,4200	- 0,1202	0,1718	0,4840
Saransk	- 0,1057	1,0409	- 0,8533	- 0,2800	- 0,1980
Kazan	0,0859	2,9013	-0,3798	3,7425	6,3500
Izhevsk	0,0311	1,0494	-1,1369	0,5874	0,5310
Cheboksary	0,0203	0,6864	-0,0561	0,8294	1,4800
Perm	0,0603	2,0375	-1,8133	1,3835	1,6680
Kirov	0,0306	1,0336	-0,6673	-0,2738	0,1230
Nizhny Novgorod	0,1094	3,6931	0,2321	2,6454	6,6800
Orenburg	0,0548	1,8505	-1,3904	-0,5040	0,0110
Penza	0,0269	0,9080	-1,1898	0,9060	0,6510
Samara	0,0990	3,3430	-1,6117	2,9797	4,8100

Saratov	0,0472	1,5946	-0,7799	2,6791	3,5410
Ulyanovsk	0,0258	0,8716	1,0684	1,1982	3,1640
Petrozavodsk	0,0167	0,5640	-0,2956	0,0949	0,3800
Syktyvkar	0,0188	0,6346	-0,9001	0,5258	0,2790
Archangelsk	0,0272	0,9194	-0,7385	-0,7451	-0,5370
Vologda	0,0213	0,7183	-0,4802	0,6426	0,9020
Kaliningrad	0,0397	1,3412	-2,1977	0,2999	-0,5170
Murmansk	0,0236	0,7968	-0,8204	0,2250	0,2250
Veliky Novgorod	0,0168	0,5659	-0,5827	0,2490	0,2490
Pskov	0,0188	0,6342	-0,7420	-0,1139	-0,2030
Saint Petersburg	0,2994	10,1081	0,1398	0,6527	11,2000
Kurgan	0,0166	0,5588	-0,7927	0,5813	0,3640
Yekaterinburg	0,1318	4,4484	0,9258	4,6701	10,1760
Tyumen	0,0516	1,7415	-0,7086	1,4674	2,5520
Thelyabinsk	0,0612	2,0661	-0,1107	0,9524	2,9690
Moscow	1,7600	59,4224	38,9509	2,4667	102,6000
Total	3,0643	108,0659	23,0665	28,3374	162,5340

Source: The authors calculated with official dates of the Federal State Statistics Service of Russian Federation.

Sectorial situation performed the decisive role in structural shifts of the financial sector and influenced the job choice for 162.53 thousand people.

Table 7 shows structural shifts for the activities type "Education".

Table 7. Structural shifts for the activities type "Education" for 2009-2014, thousand people

Cities	*NS*	*IS*	*RS*	*LS*	*ΔL*
Ufa	0,2616	- 3,6475	- 2,5057	1,4146	- 4,4770
Yoshkar-Ola	0,0582	- 0,8120	0,0140	1,5358	0,7960
Saransk	- 0,3091	- 0,7095	- 0,2850	1,3046	0,0010
Kazan	0,3196	-4,4567	-1,7053	4,7005	-1,1420
Izhevsk	0,1812	-2,5268	-1,3689	-0,0935	-3,8080
Cheboksary	0,1266	-1,7658	-1,5517	0,4519	-2,7390
Perm	0,2298	-3,2043	-4,4578	-0,8567	-8,2890
Kirov	0,1203	-1,6771	-1,9045	2,4353	-1,0260
Nizhny Novgorod	0,2977	-4,1507	-0,7967	2,0227	-2,6270
Orenburg	0,1707	-2,3807	-1,3140	-2,3790	-5,9030
Penza	0,1310	-1,8262	-2,6115	2,1897	-2,1170
Samara	0,2648	-3,6928	2,5559	-3,8660	-4,7380
Saratov	0,2227	-3,1053	2,6838	-1,6182	-1,8170
Ulyanovsk	0,1392	-1,9409	-0,4479	0,7866	-1,4630
Petrozavodsk	0,0813	-1,1332	-1,3911	1,1340	-1,3090
Syktyvkar	0,0824	-1,1496	-0,5457	0,3179	-1,2950

Archangelsk	0,1043	-1,4539	0,6479	-1,4503	-2,1520
Vologda	0,0874	-1,2182	-0,0101	-1,3751	-2,5160
Kaliningrad	0,1006	-1,4026	-0,0833	0,3973	-0,9880
Murmansk	0,0798	-1,1132	-0,5844	-0,3753	-1,9930
Veliky Novgorod	0,0580	-0,8089	0,0465	-1,0596	-1,7640
Pskov	0,0497	-0,6931	-0,4051	0,4836	-0,5650
Saint Petersburg	1,3815	-19,2649	5,3162	4,2672	-8,3000
Kurgan	0,0788	-1,0985	-1,6384	0,4761	-2,1820
Yekaterinburg	0,3369	-4,6986	0,7369	-2,1283	-5,7530
Tyumen	0,1266	-1,7649	0,8500	0,6833	-0,1050
Thelyabinsk	0,2846	-3,9691	0,2308	0,0386	-3,4150
Moscow	2,3723	-33,0804	20,7548	1,5533	-8,4000
Total	7,4385	-108,7453	10,2297	10,9911	-80,0860

Source: The authors calculated with official dates of the Federal State Statistics Service of Russian Federation.

Optimization of the network of schools and universities caused reduction of the number of employees in the sphere of education in all studied cities. Negative influence of situation factor was partly compensated by activities of municipalities of some cities (e.g., Yoshkar-Ola, Saransk, Kazan, St. Petersburg, etc.).

Conclusions and Consequences for policy

To provide transition to innovational type of development, it is necessary to build corresponding structure of economy – primarily, in large cities. Local markets are the most flexible ones (Détang-Dessendre, Partridge & Piguet, 2016), they react to policy changes very quickly. A very important role in this belongs to local authorities. Calculations showed that municipalities are most sensitive to influence of crisis and measures taken by the government. Able-bodied population prefers to leave for Moscow and St. Petersburg, where the living standards are high and the infrastructure is developed. While these cities have been traditional gravity centers for the most perspective personnel, the increase of the number of the employed at the city enterprises of Kazan and Tyumen is a new tendency. The results of this article correlate with the results of the governors' successfulness rankings. This, in 2015, the 13th ranking, held by the Russian Fund of development of civil society, named the governor of Tyumen Oblast, Vladimir Yakushev, the winner. The top places were occupied by the governor of Yamalo-Nenets Autonomous District, Dmitry Kobylkin and the head of Tatarstan, Rustam Minnikhanov.

The character of structural shifts in 28 large cities of Russia showed that as long as there's no foundation for future innovational development, the production sector and the sphere of development of human capital are reduced. There's outflow of employees into the service sphere and financial activity. This is an alarming tendency. The 2014 crisis might be lingering for the Russian economy, and perspectives of transition to innovational type of development until 2020 are alarming.

Understanding the difference in factors which influence the economic growth of cities may benefit the politicians, providing deeper understanding of specific issues on each territory and saving the time required for studying other sources.

Disclosure statement

No potential conflict of interest was reported by the authors.

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