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Beta-Convergence of Russian Regions: Sectoral and Spatial Aspects

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1. Introduction

Which regions grow faster: poor or rich? This issue is very relevant for such a large and heterogeneous country as Russia. If that's the case with the poor regions, then there is hope that they will be able to approach rich regions in the future. If the rich regions grow faster, then the gap between the regions may widen even more, which can lead to an undesirable increase in social tension. Therefore, it is not surprising that the question, raised for many decades, has attracted the attention of scientists from different countries. One of the most popular approaches is proposed by Barro and Sala-i-Martin (1992) of regional convergence / divergence. Gross regional income per capita or individual income (these indicators are usually quite strongly correlated) was frequently used as an indicator characterizing the wealth of a region. However, gross regional income consists of various spheres of economic activity, for which various dependencies can be observed. In this study, we examine the areas of economic activity that make up most of the gross regional product, namely, industry production, construction, agriculture, retail. Moreover, for each of these areas of activity, an analysis was carried out in the spirit Barro and Sala-i-Martin (1992). According to our information, such analysis has not been conducted before and we are grateful to Ilya Voskoboinikov, who presented us with the idea to conduct this study.

In the second section, a brief review of the works devoted to the analysis of convergence / divergence of the Russian regions is carried out. The third section describes the data, models, and variables used. The fourth section presents the results. The final section contains some concluding remarks and policy implications.

2. Literature review

Russian regions are very heterogeneous in terms of geography, climate, and endowment with natural resources. Many researchers (Solanko, 2008, Glushenko, 2012) note that there are huge differences between the Russian regions. This leads to a difference in their economic development; therefore, it is not surprising that the priorities of the state regional policy of the Russian Federation until 2020 will be (i) a reduction in interregional differences and (ii) a balanced socio-economic regional development. According to K. Glushenko (2012), "Russian regions are characterized with increased diversity and do not converge to the unique equilibrium path". Therefore, the absolute convergence models are not suitable for modeling the processes of convergence/divergence of Russian regions, and so it is necessary to use conditional convergence models.

Guriev and Vakulenko (2012), studying real income and wage found that there was no convergence in the 1990s, and the situation changed dramatically in the 2000s: poor Russian regions grew out of the poverty traps and mobility of labour and capital increased, which led to a convergence among Russian regions. Berkowitz and DeJong (2005), using data for 70 of Russia's regions for the period 1993-2000, also did not reveal convergence and found a positive relationship between entrepreneurial activity and growth. However, the same authors (Berkowitz and DeJong, 2011) concluded that since 2000 this factor has ceased to be the engine of economic growth and emergence of bank-issued credit became an important engine of growth since then. Solanko (2008), using data for 1992-2005, found the difference between poor and rich Russian regions, namely initially poor regions, had no clear trend of convergence or divergence, while initially rich regions demonstrated convergence. Leonard et al. (2016), Libman (2013), Alexeev and Chernyavskiy (2015) note that when modeling regional growth in Russia, it is necessary to take into account sub-national institutions. Leonard et al. (2016), as a measure of quality of such an institution, used the RA Expert index of investment risk. Libman (2013) stressed that sub-national democracy factors have different effects on growth in the regions, which are rich and poor in natural resources (oil and gas). Oil and gas have a positive effect on economic growth only in non-democratic regions. Alexeev and Chernyavskiy (2015) revealed that the hydrocarbon wealth of regions had a negative effect on their growth. At the same time non-hydrocarbon mineral wealth had a positive effect on regional economic growth.

In these works, the distance from the capital region and Moscow is often used as a connecting factor between the regions, since, according to the Russian proverb, "All roads lead to Moscow" and this can be attributed to the «centralised nature of the Soviet economy» (Solanko, 2008). However, recently there has been a tendency to take into account the links between the regions in more detail. The main idea under such an approach is the following: it is necessary to consider not only the regions' own economic growth, but also the state of neighboring regions. Often this idea is realized with the help of models and methods of spatial econometrics (their description can be found, for example, in Elhorst, 2014). Buccellato (2007), using data for 1999-2004, noted that "the spatial component appears to be non-negligible and, consequently, conventional convergence estimates suffer a bias due to spatial dependence across observations". The bias in the estimates of the coefficients due to the ignoring of spatial effects is also discussed in papers (Vakulenko, 2015; Semerikova, 2015). Lugovoy et al, (2007) was one of the first who, using data for 1998-2004, showed that the growth of a particular Russian region depends on the growth of other Russian regions. Only if this factor is taken into account (in addition to the variables "financial assistance per capita population”, "share of the fuel industry in the output”, "dummies for depressed regions”), it was possible to establish that conditional convergence took place during the time period under consideration. Kolomak (2011) empirically demonstrated that spatial externalities are one of the factors of economic growth. Russian regions were found to be heterogeneous, and positive externalities were observed in the western regions, whereas negative externalities were observed in the eastern regions. Kholodilin et al, (2012) also confirmed the heterogeneity of Russian regions and revealed different dynamics for rich and poor regions. There was a strong regional convergence among high-income regions located near other high-income regions. The authors note that if we do not take into account spatial effects, then the estimate of the speed of regional convergence is overestimated. However, the authors did not take into account the influence of other explanatory variables.

In our study, we take into account the results of the aforemented authors in choosing control variables (this is discussed in more detail in the next chapter). In particular, like Lugovoy et al, (2007), Kolomak (2011), Kholodilin et al, (2012), etc., we account for the mutual influence of regions on each other by introducing spatial effects in the model. However, as noted above, we study the convergence / divergence processes not for the gross regional product as a whole, but for its constituent parts, such as industrial production, construction, agriculture, retail.

3. Data, Model and Variables

3.1 Basic beta convergence model

We build our research on conventional beta-converge model as outlined in Barro and Sala-i-Marin (1992).

$$\frac{1}{T} ln \frac{Y_{i(t_0+T)}}{Y_{it_0}^m} = \alpha + \beta Y_{it_0} + \sum_{j=1}^{K} \gamma_j X_{jit_0} + \varepsilon_i \qquad (1)$$

where $i = 1, \dots, n$ is a region number, t_0 is initial time point, $[t_0, t_0 + T]$ is a period of consideration, Y is the dependent variable, $X_j, j = 1, \dots, K$ are the explanatory variables, $\alpha, \beta, \gamma_j, j = 1, \dots, K$ are the estimated coefficients, $\varepsilon_i \sim iid(0, \sigma_\varepsilon^2), i = 1, \dots, n$ are the error terms.

If coefficient beta is negative (as in the case of convergence), this model predicts greater economic growth in regions with lower initial level of development. In unconditional convergence model, no additional variables are included. In conditional convergence model, equilibrium growth rate can vary among regions or countries because of their characteristics. We assume conditional convergence model.

3.2 Modified beta convergence model with spatial effects

To take into account the mutual influence of the regions, we add spatial lags in our model, like in the paper of Ivanova (2015). Namely, we estimated SAR and SEM models.

SAR model is

$$\frac{1}{T} ln \frac{Y^m_{i(t_0+T)}}{Y^m_{it_0}} = \alpha + \beta Y^m_{it_0} + \sum_{k=1}^{K} \gamma_j X_{kit_0} + \rho \sum_{j=1}^{n} w_{ij} \frac{Y^m_{j(t_0+T)}}{Y^m_{jt_0}} + \theta \sum_{j=1}^{n} w_{ij} ln Y^m_{jt_0} + \varepsilon_i \quad (2)$$

where $i = 1, \ldots, n$ is a region number, t_0 is initial time point, $[t_0, t_0 + T]$ is a period of consideration,

Y^m, m =1,…4 are variables, for which we studied the process of convergence/disvergence, namely, $Y^1_{it_0}, Y^2_{it_0}, Y^3_{it_0}, Y^4_{it_0}$ are the initial volumes of industry production, construction, agriculture, retail per capita (in logarithms) in the region i = 1, ..., 79;

$\frac{1}{T} ln \frac{Y^m_{i(t_0+T)}}{Y^m_{it_0}}$ is annual growth (in logarithms) in industry production, construction, agriculture, retail in the period $[t_0, t_0 + T]$,

$X_j, j = 1, \ldots, K$ are the explanatory variables,

$\alpha, \beta, \gamma_j, j = 1, \ldots, K; \theta$ are the estimated coefficients,

ρ is the spatial autoregressive coefficient,

$\varepsilon_i \sim iid(0, \sigma^2_\varepsilon), i = 1, \ldots, n$ are the error terms.

Spatial lags were created with the help of weighting matrix W:

$$W = \begin{pmatrix} 0 & w_{12} & \ldots & w_{1n} \\ w_{21} & 0 & \ldots & w_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ w_{n1} & w_{n2} & \ldots & 0 \end{pmatrix},$$

where w_{ij} initially is equal to 1 if regions i and j have common border. After that matrix was line-normalized, so w_{ij} accounts for the weights.

SEM model includes spatial lags only in error terms.

$$\frac{1}{T} ln \frac{Y_{i(t_0+T)}}{Y^m_{it_0}} = \alpha + \beta Y_{it_0} + \sum_{j=1}^{K} \gamma_j X_{jit_0} + u_i \quad (3)$$

$u_i = \lambda W u_i + \varepsilon_i$,

λ is the spatial autocorrelation coefficient; all other designations are the same.

3.3 Data

Our sample for estimation the parameters of this model, consisted of 79 regions during the period from 2000 to 2017. This data was available for public access via the website of the

Federal State Statistics Service (www.gks.ru) of the Russian Federation. Data on some regions is missing (the Republic of Chechnya, the Republic of Crimea and Sevastopol). In addition, the Kaliningrad region was not included in the study because it has no common borders with other regions of Russia. During the reporting period, some regions underwent changes of an administrative-territorial nature. This alteration of boundaries was taken into consideration, and mitigated by an aggregating procedure (see Appendix 1). We also did not include Moscow and St. Petersburg in the sample, since these regions differ significantly from other Russian regions.

Considering that before and after the crisis of 2008, various dependencies could take place, we also estimated our models at time intervals of 2000–2008 and 2009–2017.

3.4 Variables

Here we describe and motivate the choice of basic control variables included into regression as conditioning convergence path.

The link between urban population or urbanization level and economic growth was identified at the regional level for many countries (Spence et al., 2008; Turok & McGranahan, 2013; Chen et al., 2014; Castells-Quintana, 2017), so we included the share of the urban population as one of the explanatory variables ($X_1 = urbanshare$).

Investments are a key growth factor in the neoclassical growth theory (Solow, 1956). This variable is usually included in the model of economic growth that takes into account spatial effects (Nwaogu, 2012; Huang& Wei, 2016). We also included the ratio of investment in fixed assets to real GRP ($X_2 = inv\_gdp$) into the model.

Another important growth factor according to this theory is the quality of human capital. We used the proportion of the population with higher education in the labour force ($X_3 = highed$) as a characteristic of human capital.

The positive relationship between openness to foreign trade and economic growth was noted in a number of studies (Harrison, 1996; Sachs et al., 1995; Yanikkaya, 2003; Waiczarg & Welch, 2008; Huchet - Bourdon, et al., 2011). In this study, I used the ratio of exports and imports to the GRP of the region as an indicator of the openness of the region for trade ($X_4 = open$).

The infrastructure (especially the presence of highways) is very important for trade development, and for increase in mobility of the labour force. For example, EBRD noted Turkey's progress in the development of high-speed road construction, which led the country to economic growth by increasing the mobility of the workforce. Therefore, as one of the explanatory variables, we used the density of highways ($X_5 = road$).

The importance of accounting for sub-national institutions in the modeling of economic growth was noted by many researchers (Leonard et al. (2016), Libman (2013), Alexeev and Chernyavskiy (2015)). In studies on Russian data, the RA Expert index of investment risk (Leonard et al. (2016), Alexeev and Chernyavskiy (2015)) is often used as such factor, we also used this variable $(X_6 = risk)$. We also used another variable characterizing quality of sub-national institutions, namely, number of small enterprises per thousand of economically active population, like in the paper of $(X_7 = smallbus)$. This variable was proposed by S. Zemtsov (Zemtsov and Smelov, 2018) and obtained by dividing the number of small enterprises by the size of economically active population. It shows the extent of the working population involvement in entrepreneurial activity in the regions.

To characterize the degree of diversification of regional economies, the Herfindahl-Hirschman index was used, which shows the degree of differentiation of economic sectors $(X_8 = hh)$. Its value varies in the range [0; 1], and the closer it is to 1, the greater share of GRP is assumed by one specific industry in an arbitrary region, which indicates the underdevelopment or absence of other important industries.

Innovative activities are seen as a way to encourage economic growth and overcome existing production frontier since Schumpeter (1934). Technical progress is a central piece of contemporary endogenous growth theories (Arrow, 1962; Romer, 1986; 1994). Various measures of patent activity were used in empirical conditional convergence models with spatial lags (Fingleton & Lopez-Bazo, 2006; Le Sage & Fischer, 2008). Therefore, we include patent applications per 10000 population in our models $(X_9 = patent)$.

Russia has extensive system of intergovernmental grants which are targeted to lagging regions. Although in Dall'Erba & Le Gallo (2008) it shown that similar EU programs have no impact on regional convergence, it may not be the case in Russia, where federal equalization grants play a crucial role in economies of some regions. We include control for share of intergovernmental grants in regional budget revenue $(X_{10} = dot)$.

4. Results of estimation

Spatial-econometric SAR and SEM models cannot be estimated using OLS. The right side of the SAR model contains a spatial lag, so OLS estimates will be inconsistent. Estimates of SEM models will be consistent, but not effective, since the covariance matrix of the regression errors is not proportional to an identity matrix.

To obtain consistent estimates of the parameters of both models, maximum likelihood is used, details can be found in (Elhorst, 2014; Arbia, 2014). Estimation was carried out using the statistical package STATA, package spatwmat.

The results of estimation are shown in tables 1-4.

Table 1. Results of estimation for industry production

Переменные	2000-2017		2000-2008		2009-2017	
	SAR	SEM	SAR	SEM	SAR	SEM
lnymanuf	0.0189**	0.0190**	0.0322**	0.0362***	-0.0110**	-0.0121***
wlnyman	-0.0038	-	0.006		-0.0058	-
urbansh	-0.0683*	-0.0731**	-0.1206**	-0.1218**	0.0644*	0.0637*
invgrp	-0.0435*	-0.0227	-0.0696*	-0.0531	0.0548**	0.0555**
highed	0.0895	0.1258*	-0.0166	0.013	0.0264	0.0316
impexp	-0.0019	-0.002	-0.0013	-0.0006	0.014	0.0177
road	0.0001*	0.0001**	0.0002**	0.0001**	0	0
risk	-0.0508**	-0.0823***	-0.0845**	-0.1164***	-0.0525**	-0.0556**
dot	0.0005**	0.0005***	0.0007*	0.0007**	0.0005	0.0006
hh	-0.0805	-0.1049	-0.142	-0.1814	-0.2786	-0.2335
patent	-0.0088	-0.0002	-0.0117	0.0021	0.0121	0.0084
smallbu	1.0647	0.7459	1.678	1.3882	0.2906	0.1559
cons	-0.0485	-0.0898*	-0.1794*	-0.1682*	0.1871**	0.1229*
rho	-0.2515	-	-0.3313*	-	-0.1766	-
sigma	0.0236***	0.0230***	0.0390***	0.0388***	0.0248***	0.0249***
lambda	-	-0.5069**	-	-0.4269*	-	-0.1855

Table . Results of estimation for construction

Variables	2000-2017		2000-2008		2009-2017	
	SAR	SEM	SAR	SEM	SAR	SEM
lnycons	0.0035	0.0055	0.0135	0.0257*	0.0086	0.0009
wlnycons	0.0088	-	0.0343**	-	-0.0245	-
urbansh	-0.1386***	- 0.1316***	-0.2227***	- 0.2182***	0.0459	0.0306
invgrp	-0.1384***	- 0.1296***	-0.1230*	-0.1474**	-0.0349	-0.0161
highed	0.0071	0.0025	-0.0732	-0.1324	-0.2657*	-0.2999**
impexp	0.0006	0.0005	0.0016	0.0003	0.0332	0.0444
road	0	0	0.0001	0.0001	0	0
risk	-0.0021	-0.0061	0.0228	0.0292	-0.0319	-0.0431
dot	0.0004*	0.0004*	0.0002	0.0005	0.0014**	0.0015**
hh	0.0389	0.0535	-0.0506	-0.0051	-0.3254	-0.0955
patent	-0.0047	-0.0186	-0.0112	0.0246	0.0656	0.053
smallbu	1.011	0.87	3.9639**	4.4161**	-1.034	-0.9607
cons	0.0516	0.0893*	-0.1205	0.0497	0.19	0.0138
rho	-0.233	-	0.0684	-	-0.1699	-
sigma	0.0277***	0.0282***	0.0458***	0.0468***	0.0473***	0.0471***
lambda	-	-0.2668	-	0.1647	-	-0.3071

Table 3. Results of estimation for agriculture

Variables	2000-2017		2000-2008		2009-2017	
	SAR	SEM	SAR	SEM	SAR	SEM
lnagric	0.0049	0.0047	-0.0026	-0.0039	0.0016	0.0027
wlnagric	0.008	-	0.0084	-	0.0230**	-
urbansh	-0.0151	-0.0113	-0.0461	-0.0428	-0.0347	-0.0585
invgrp	0.0363*	0.0234	0.0338	0.0308	0.0284	0.0158
highed	-0.0214	-0.0801	-0.0416	-0.1382	-0.2233**	-0.1954**
impexp	0.0009	0.0011	0.0008	0.0004	-0.0179	-0.0123
road	0.0001*	0.0002***	0.0001	0.0002***	0.0001**	0.0001**
risk	0.0571***	0.0660***	0.0327	0.0347	0.0789***	0.0572**
dot	0.0001	0	0	-0.0001	-0.0007*	-0.0005
hh	0.0502	0.036	0.0369	0.0526	-0.0735	0.1325
patent	-0.0266	-0.0523	-0.0184	-0.0339	-0.0102	-0.0025
smallbu	1.3631*	1.7827***	1.3204	1.5228*	0.5579	0.356
cons	-0.1213	-0.0417	-0.0292	0.0644	-0.1474	0.0548
rho	0.4705***	-	0.5420***	-	0.3058**	-

Table 4. Results of estimation for retail

Variables	2000-2017		2000-2008		2009-2017	
	SAR	SEM	SAR	SEM	SAR	SEM
lnretail	-0.0237***	-0.0224***	-0.0255*	-0.0287*	-0.0419***	-0.0368***
wlnyretail	0.0105	-	0.0355	-	-0.0296**	-
urbansh	-0.0326**	-0.0363**	-0.0058	-0.0009	-0.0273	-0.0132
invgrp	-0.0006	0.009	-0.0071	-0.021	0.0146	0.0193
highed	-0.0093	-0.0127	-0.0942	-0.1184	0.0459	0.0539
impexp	0.0004	0.0006	0.0019	0.0012	0.0108	0.0153
road	0.0001***	0.0001***	0	0.0001	0	0
risk	-0.0379***	-0.0354***	-0.0567*	-0.0486	-0.0437***	-0.0393**
dot	0	0	0.0002	0.0001	-0.0001	0.0001
hh	0.0049	0.02	-0.0083	-0.0087	0.4116**	0.4163**
patent	0.0437	0.0615*	0.1456*	0.1297	0.0058	-0.0006
smallbu	0.2429	0.2956	0.1544	0.3339	0.1782	0.1293
cons	0.2318*	0.2893***	0.0385	0.4121***	0.7889***	0.3762***
rho	-0.4325**	-	0.0728	-	0.0847	-
sigma	0.0120***	0.0121***	0.0266***	0.0268***	0.0156***	0.0163***
lambda	-	-0.4869**	-	0.2168	-	0.1361

According to the results, beta coefficients are significant only in models for industry and retail. While for retail the estimates of beta coefficients are negative in all time periods, for industry estimates of beta coefficients are positive in the interval 2000-2017 and 2000-2008 and negative in the interval 2009-2017. Thus, beta convergence processes take place only for retail in the entire 2000-2017 interval and for industry in the 2009-2017 interval.

The interpretation of the absolute values of estimates of beta coefficients, if convergence takes place, is usually given in terms of the so-called "half-life to convergence", namely, by calculating the time required to reach half the distance separating the regional economies from their steady-states,

$$HL = \tau T = - \frac{\ln 2}{\ln\frac{1+\beta-\rho}{1-\rho}} T \quad (4)$$

For retail, the estimated τ for the entire interval in the SAR model indicates a very long half-life: 28.899 rounds of 17 years (HL = 491.3 years). In other words, the convergence process will take too long.

For industrial production in the SAR model in the period 2009-2017, the estimated τ was 62.66 rounds of 8 years each (HL = 501.28 years).

We give an interpretation of the other results, based on the significance and signs of the coefficients of the explanatory factors.

- The spatial autocorrelation coefficient is significant and positive in all models for agriculture; as well as significant and negative in the model for retail in the time interval 2000-2017. Thus, if in one of the regions agricultural growth is observed, then it will take place in neighboring regions. In retail, the opposite trend is observed: if in one of the regions retail is growing, then in neighboring regions it is falling, that is, a competition mechanism exists in this area of economic activity.
- According to the results obtained, in 2000-2008, in regions with a higher share of the urban population, the rates of economic growth in industry, construction and retail were lower. In 2009-2017, this dependence was found only for retail, for construction it became insignificant, and for the industry production it changed to the opposite dependence.
- Reducing the level of investment risk stimulates industrial production growth at all intervals considered, and for retail in 2009-2017. For agriculture, the dependence is the opposite, which is apparently due to the fact that the main agricultural areas are located in the south of Russia, and these regions also have an increased level of investment risk.
- The development of small enterprises stimulated growth in construction in 2000-2008, and in agriculture throughout the entire time period 2000-2017.
- An increase in the density of roads stimulated the development of agriculture, since the export of finished goods was facilitated.

5. Conclusions

Thus, in the present study, it was shown that

• In the four examined areas of economic activity (industrial production, construction, agriculture, retail), beta convergence was observed only in retail in 2000-2017 and in industrial production in 2009-2017.
• Industrial growth can be achieved through urbanization processes and reduction of investment risk.
• Growth in agriculture can be achieved through the development of small enterprises, as well as an increase in the density of roads. At the same time, there are positive spatial spillovers for agriculture. Agricultural growth in one of the regions stimulates growth in neighboring regions.
• Retail growth can be achieved by reducing the investment risk.

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Appendix 1. List of Russian regions (Moscow and St. Petersburg were excluded)

Number	Region	Number	Region
1	Belgorod region	41	Republic of Mordovia
2	Bryansk region	42	Republic of Tatarstan
3	Vladimir region	43	Republic of Udmurtia
4	Voronezh region	44	Republic of Chuvashia
5	Ivanovo region	45	Perm territory
6	Kaluga region	46	Kirov region
7	Kostroma region	47	Nizhny Novgorod region

8	Kursk region	48	Orenburg region
9	Lipetsk region	49	Penza region
10	Orel region	50	Samara region
11	Ryazan region	51	Saratov region
12	Smolensk region	52	Ulyanovsk region
13	Tambov region	53	Kurgan region
14	Tver region	54	Sverdlovsk region
15	Tula region	55	Tumen region
16	Yaroslavl region	56	Khanty-Mansi Autonomous Area - Yugra
17	Republic of Karelia	57	Yamal-Nenets autonomous region
18	Republic of Komi	58	Chelyabinsk region
19	Arkhangelsk region	59	Republic of Altay
20	Nenets Autonomous Okrug	60	Republic of Buryatia
21	Vologda region	61	Republic of Tyva
22	Leningrad region	62	Republic of Khakassia
23	Murmansk region	63	Altay Territory
24	Novgorod region	64	Zabaykalsky Territory
25	Pskov region	65	Krasnoyarsk Territory
26	Republic of Adygea	66	Irkutsk region
28	Republic of Kalmykia	67	Kemerovo region
29	Krasnodar Territory	68	Novosibirsk region
30	Astrakhan region	69	Omsk region
31	Volgograd region	70	Tomsk region
32	Rostov region	71	Republic of Sakha (Yakutia)
33	Republic of Dagestan	72	Kamchatka territory
34	Republic of Ingushetia	73	Primorsky Territory
35	Republic of Kabardino-Balkaria	74	Khabarovsk Territory
36	Republic of Karachaevo-Cherkessia	75	Amur region
37	Republic of Northen Osetia – Alania	76	Magadan region
38	Stavropol Territory	77	Sakhalin region
39	Republic of Bashkortostan	78	Jewish autonomous area
40	Republic of Marii El	79	Chukotka Autonomous Okrug

Appendix 2. United subjects of the Russian Federation

Data	Merging regions	Incorporated as
01.01.2007	Taymyr Autonomous Okrug	Krasnoyarsk Territory
	Evenk Autonomous Okrug	
	Krasnoyarsk territory	
01.07.2007	Kamchatka oblast	Kamchatka territory
	Koryak Autonomous Okrug	

01.01.2008	Ust-Orda Buryat Autonomous Okrug	Irkutsk region
	Irkutsk region	
01.03.2008	Chita region	Zabaykalsky Territory
	Aginsky Buryatsky Autonomous Okrug	