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The Evolution of Peasant Economy in the Industrial Center of Russia at the End of the XIXth - Beginning of the XXth Century (According to the Zemstvo Statistical Data)

*H. Ossokina, G. Satarov**

Abstract: The dispute on Russian agrarian capitalism is a century old. The authors' aim is to reveal and to analyse the factors which determined the evolution of peasant economy in the Industrial Center on the turn of the century. The conditions for the development of the hiring of labourers, industrial activity and peasant land in use were also brought to light. The research was carried out on the uyezds results of Zemstvo statistics. The methods used are: principal components analysis, regression models on the principal components and one of the new methods - the method of additive fuzzy types.

Was there capitalism in the agrarian system of Russia? What was the nature of peasant economy in pre-revolutionary Russia? The dispute on this question began when capitalism in Russian industry distinctly revealed itself and was already a century old. On the turn of the century the Narodniks, Legal Marxists, Social Democrats discussed this problem with fervour. This dispute was continued in Soviet Russia in the 20s by the economists, historians and politicians. After the forced pause in the 30s - 40s the investigation of Russian agrarian capitalism was renewed and resulted in a series of discussions in the 60s and later years. The following problems were debated: small production in the agrarian system, the potential and actual character of the American way of agrarian capitalist development, the degree of capitalist development of the agrarian system of Russia on the turn of the century, etc. The discussions reflected two polar views on the problems of agrarian capitalism in Russia. The first was that the survivals of serfdom were prevalent. The second - that pure capitalism dominated. These two views are counterposed by the third, which is that capitalism was the dominating structure in Russian economy in the end of the XIXth beginning of the XXth century, and this determined the

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development of capitalist relations in all socio-economic spheres, including the agrarian. But the concrete forms of agrarian capitalism depended essentially on the level of conservation of the relics of serfdom in the Russian village, which hindered the development of capitalism in the agrarian system, distorted the agrarian capitalist relations. This point of view is stated in the works of Kovalchenko and his students.

Zemstvo statistics (1) are one of the main sources for the investigation of the structure of peasant economy in pre-revolutionary Russia. It carries information on peasant holdings and land in use, cattle provision, the use of hired labour, the development of peasant industries (promisly), etc. Zemstvo statistics have highly authentic and exact data. This is due to their main purpose (the determination of valuation standards for the taxation of real estate) and by the mode of collection of information (questioning of householders on the »skhod« and visiting all the households). Zemstvo investigations resulted in the publications of statistical data collections. The main part of the publications is presented by the average data on the village communities, volosts, uyezds, gubernias(2). The peasant household returns are insignificant. For a long time zemstvo statistics were used partially or illustratively due to the absence of average data processing methods. The last two decades are marked by a new approach to the employment of zemstvo statistics. This approach is characterized by complex employment of average data with the aim of investigation of peasant economy structure and determination of the level of its development and specific regional features. The main investigation method is modelling of socio-economic processes, including the stage of mathematical modelling. This research is carried out by the students and post-graduates of Moscow State University Chair of Sources.

The authors' aim is to analyse the peasant economy structure in the Industrial Center of Russia on the turn of the century and to determine the factors which influenced its nature.

The research was carried out with the use of uyezds results of investigations of peasant farms of Kostroma, Yaroslavl and Vladimir gubernias (27 uyezds, App. 3), which were held by Russian Zemstvos in the period of 1897-1906. The information contained in this source was the base for obtaining normalized variables which were then subjected to statistical processing and analysis (47 variables, App. 1). With the use of principal components analysis 5 factors which influenced the development of peasant economy socio-economic structure were revealed. They explained 74% of accounted variance (App. 2, 3).

The first factor (explains 29% of accounted variance) may be described as the factor of decline of crop cultivation, development and capitalization of livestock-farming. The first aspect is expressed by inverse interrelations of the factor and agricultural variables (App. 2, variables 26, 27, 35, 38, 44-46).

The aspect of the development of livestock-farming manifests itself in strong direct interrelations of the factor with cattle provision (var.10-15), especially productive livestock, and with the provision of natural meadowlands (var. 28, 29, 39, 40). This is also indicated by the direct interrelations of the factor not with the provision of area under crops, but with the total land in use and purchased land (var. 25, 32,42,43), which mainly consisted of non-arable land. The interrelations of the factor with the variables of land purchasing (var. 25,28-30, 32) show its role in the development of the commercial livestock-farming.

The given factor is characterized by inverse interrelations with cowless, horseless, cultivating no land households (var.19 23): the development of commercial cattle-breeding was determined not by them, but by the households with production resources.

The interrelations of the factor with the variables which describe the long-term hiring of labourers demonstrate the capitalization of livestock farming (var.4, 3). These interrelations show that long-term hiring of labourers in stockbreeding was chiefly extensive. The interrelations of the factor with the intensification of hiring of workers variable (number of hired labourers per household, var.5) though exists, but is very weak.

The most positive factor weights (App. 3) were received by the north-west uyezds of Kostroma gubernia (Soligalich, Buy) with highly-developed men's outside employments. This was a so-called »women's land« (»babya storona«). Here livestock farming was relatively highly developed. This concerns one of the north-east forest uyezds (that of Kologriv) as well. Apart from them high factor weights were received by the Mologa and Rybinsk uyezds of Yaroslavl gubernia where meat and dairy stock-breeding was strongly developed. The most negative factor weights belong to Vladimir, Yuriev, Suzdal uyezds, fertile crop-growing oasis.

The second factor reflects the character of the socioeconomic differentiation of peasantry of the Industrial Center of Russia on the turn of the century - its primary proletarianization (it explains 21% of accounted variance). This factor is characterized by positive interrelations with badly-off households (var. 19, 20, 23) and by negative interrelations with well-to-do households (16, 18). Such interpretation of the factor is proved correct by its negative interrelations with the principal variables of the state of the household: cattle provision (var. 10, 11, 13, 14), family workers (var. 1), allotment (3) (36, 37), purchased and rented land (25, 26, 34, 35), total area of land in use (42, 43) and under crops (44, 45)(App. 2).

The direct interrelation of the proletarianization factor with the share of workers in the population (var.2) indicates the excess overpopulation of Russia's Industrial Center village. The surplus rural population was the source of formation of proletariat. This is shown by the interrelations of the factor with the variables of hiring of labourers (var. 3-5) and that of

peasant industries (7-8). The latter, moreover, indicates the main influence of peasant proletarianization on the development of peasant outside employments.

The most positive factor weights according to the given factor were received by the most proletarianized uyezds with developed industrial cities: Rybinsk, Yaroslavl, Uglich, Pokrov, Shouya, Yurievetz. The process of peasant proletarianization was most intensive here. The most negative factor weights belong to the well-to-do north-east uyezds of Kostroma gubernia (Vetluga, Kologriv, Makariev) and the least industrial uyezds of Vladimir gubernia (Yuriev, Soudogda, Pereslavl)(App. 3)

The third factor brings to light the processes which were in inverse correlation: the development of peasant outside employments and commercial agricultural production (crop-growing and livestock - breeding). It may be called the factor of development and intensification of the peasant economy's commercial specialization in the Central Industrial region. It explains 12% of accounted variance.

Two groups of variables in inverse correlation are distinguished. The first group describes the development of peasant industries and has direct interrelations with the factor. The analysis of this group's variables shows that the development of industries (App. 2, var. 6-8) was connected with the growth in share of proletarianized households (var. 22-23). The development of industries led to the easing of agricultural overpopulation: that is the reduction of the share of workers in the population (var.2). Thus, long-term seasonal occupation played an essential role in peasant industries.

The factor demonstrates the relative contrast between the commercial industrial and agricultural activities of the peasantry: the development of outside employments led to the curtailment of agricultural production. This is shown by the inverse interrelations of the factor with the variables, which belong to the second group and describe the development of flax growing and livestock-farming (App. 2, var.29,39,47). These interrelations show that the development of these spheres of commercial activities was determined by the households with production resources (var. 16, 18). It was accompanied by the development of land purchase, intensification of land renting and hiring of labourers (var. 24, 34, 5). Thus, this factor demonstrates the polarization of peasant commercial activities in this region.

The most positive factor weights belong to the uyezds of developed peasant industries (Shouya, Pokrov, Kovrov). The Myshkin uyezd of Yaroslavl gubernia, where half of the territory consisted of arable lands, has the most negative factor weight.

The fourth factor causes certain difficulties in interpretation due to the weakness of interrelations and a small set of renting variables (explains 7% of variance). But it is thought to reflect different trends in peasant renting

of land in the Central Industrial region. The extensive trend is expressed in the growing number of renting land households. As was shown in a vaster investigation the extensive development was characterized by the increase of short-term renting of non-allotment land, mostly the meadowlands. It was used by badly-off households and was caused by the insufficiency of the allotment. This renting was followed by the decrease of long-term and money renting of land.

But there was still another trend, represented by long-term money renting within the community (mostly of arable land). This trend was connected with commercial crop-growing production which was led by prosperous households hiring labourers.

In this case we can ascribe to the first trend (the extensive development of the scale of renting) the interrelation of the factor with the share of households renting land and with the share of meadow land in the allotment and in the purchased land (App. 2, var. 29, 33, 39). The development of this trend was connected with the proletarianization of the peasantry. It is expressed in the direct interrelation of the factor with the share of the industrialists in the population and with the share of industrialists who did not give up crop-growing (var. 7, 9). Thus, this trend mostly represents petty food renting of the badly-off peasantry.

The other trend of renting is represented in this factor more clearly. It is connected not with the growing total number of renting households (App. 2, var. 33), but with the increase of the dimensions of rented crop area per household (var.34), that is it has an intensive business character. The interrelations show that this is the renting of peasant households well provided with cattle and employing wage-workers (var.3,4, 16). It was accompanied and supplemented by the growth of land purchase (var.25, 26, 28, 31, 32). The interrelations of the variables show that the extensive and intensive development of the renting were in inverse correlation, and the growth of one trend led to the reduction of the indicators of the other.

The most positive weights according to this factor belong to Buy, Galich, Soligalich uyezds of Kostroma gubernia, Melenky, Mourom of Vladimir gubernia. Pereslavl, Alexandrov, Pokrov, Myshkin and Mologa uyezds have the most negative weights (App. 3).

The fifth factor describes the development of the peasant purchase of land in the Central Industrial region (it explains 5% of accounted variance). To a greater degree it shows its extensive development. The interrelations show that the increase of the number of the households purchasing land (var.24) was connected with the growth of the share of purchased land in crop area (31), and in the end with the extension of the share of flax in the crops (47). But along with this there was no increase in the share of purchased land in total land in use (var.32) and in purchased land per household (var.25, 26)(App. 2).

The purchase of arable land was connected with the development of commercial activities of the prosperous households. The latter was demonstrated by the negative interrelations of the factor with the variables which describe the process of peasantry proletarianization, such as the share of households with industries and the share of workers in the population (App. 2, var. 6, 2). The interrelations show that the development of land purchase led to the growth of the general amount of the land in use and to the decrease of the significance of allotment land in the land in use (var. 43,41).

The strongly expressed commodity specialization of the uyezds, as well as the process of differentiation of peasantry which has gone very far, are confirmed by the results of the processing of this information by the classification method. We have employed one of the new methods - the method of additive fuzzy types. Unlike the other classification methods where the type is supposed to be a concentration of similar objects, this method is based on the notion that the type is an ideal object which can be only more or less approached by real objects.

The initial data for this method is provided by a data matrix. As a result the method has a number of tables. The first is the data matrix which describes ideal types (App. 4, table 1). The rows in this matrix correspond to the ideal types, and the columns to the ideal types coordinates in the variable space. In our case the initial variables are presented by the described above factors. The meanings in table 1 are the ideal types coordinates in the factor weights space. While interpreting the ideal types according to table 1, one must pay attention to the biggest or smallest coordinates meanings. They are determined by means of analysis of every column.

The second is the membership fuzzy classification matrix (t.2). Here rows correspond to real objects (uyezds), and columns to fuzzy types. The meanings of the table are the membership measures of real objects to ideal types which fluctuate in the interval from 0 to 1. Index 1 shows the full membership of the object to the type, and index 0 - absolutely no membership. The total of the indexes in a row equals 1. This method allows to appreciate the contribution of each type in the explanation of the accounted variance.

The method works so that the initial points cloud allocated in the variable space is encircled by a convex polyhedron the vertices of which represent the points describing the ideal types. Along with this the number of vertices must be minimum, and the polyhedron must adjoin the points cloud as close as possible. The membership measures of the real objects to the types are defined as the scalar multiplication function of two vectors. One of them links the center of the points cloud with the vertex of the polyhedron. The second one links the center with the point which corresponds to the objects.

With the use of the method of additive fuzzy types 5 ideal types of peasant economies were revealed (App. 4, t.1). The first type is characterized by highly-developed livestock-farming. This is demonstrated by the most positive value according to the first factor. It can be described by the tendency towards the transformation of peasantry into rural bourgeoisie and the decline of the significance of peasant industries (negative values according to factors 2 and 3), the highly intensive development of renting (the highest positive value according to factor 4) and the lowering of the extensive variables of the land purchase (the highest negative value according to factor 5). The Soligalich, Kologriv, Buy, Mologa, Rybinsk uyezds are involved in this type of development (App. 4, t.2). Its input in total accounted variance is the largest - 22%

The second ideal type (t.1) is characterized by the primary development of crop-growing (the highest negative value according to factor 1). Compared to the I type it is characterized by a stronger decline of proletarianization and industrial activities level (negative values according to factors 2 and 3), but the intensification of renting and land purchase is comparatively less (lower values according to factors 4 and 5). Thus, the first two types represent the two main trends in the commodity agricultural activities of the peasantry - stock-breeding (type I) and crop-growing (type II). In spite of different commodity specialization they have common features. These types explain 40% of accounted variance. The Souzdal, Yuriev, Vladimir uyezds (the crop-growing oasis of Vladimir gubernia) almost completely belong to the II ideal type. The Melenky, Mourom uyezds have high membership measures to this type (App. 4, t.2).

The third ideal type (t.1) is characterized by a high degree of proletarianization of peasantry (the highest value according to factor 2) which was accompanied by the increase of industrial activities (factor 3). The highest membership values to this type were received by uyezds with strongly expressed industrial specialization: those of Pokrov, Shouya, Uglich, Yaroslavl, Yurievetz (t.2). This type explains 12% of variance.

The fourth type is determined by the highest negative value according to the second factor (t.1). This is the type of the primary transformation of peasantry into rural bourgeoisie. In the proletarianized Industrial Center of Russia there are no uyezds which have high membership measures to this type. The Vetlouga, Alexandrov, Pereslavl uyezds are drawn to it (t.2). Input of this type in total accounted variance is 11%. Thus, the first two types reflect the main trends in the commodity agricultural activities of the peasantry, and the third and fourth types denote the two poles of differentiation of peasantry.

The fifth type is determined by the highest negative value according to the factor 3 (t.1). This is the type of nonindustrial farming with primary development of agricultural activities. It is characterized by extensive de-

velopment of renting and land purchase (the highest values according to factor 4 and 5). In the Industrial Center of Russia where the peasant industries were of exceptional importance only the Myshkin uyezd belongs to this type (t.2). It explains 10% of accounted variance.

And finally, the last type. It explains 1% of accounted variance. According to the method it unites the objects which are not obviously drawn to either of the ideal types. This group of objects form a certain center in the points cloud and have by all initial variables more or less average value characteristics. This type embodies Varnavin, Galich, Gorokhovetz, tyaz-niki uyezds (t.2) It is characterized by the decline of the importance of stock-breeding, the tendency towards the proletarianization of the peasantry, the development of industrial activities, the tendency towards the intensification of renting and extensive development of land purchase (t.1). The allocated types explain 74% of accounted variance of the data.

The applied statistical methods made it possible to reveal the factors which determined the evolution of the peasant economy in the Central Industrial region on the turn of the century, to appreciate the significance and the nature of these factors and also to show the allocation of the uyezds in these factors space.

The next stage of the research was to bring to light the reasons which determined the development of the most important processes in the peasant economy of this region, that is the hiring of labourers, industrial activities and development of peasant land in use. With that end in view a series of regression models was constructed.

During the construction of regression models a number of problems arise. They are generated by the existence of a big number of highly correlated variables in the data. The multicollinearity phenomenon is a practically inevitable consequence of the reflection of complex interdependent socioeconomic processes in historical statistics. Moreover, these correlations can be generated by the peculiarities of the construction of variables (two variables may be the result of the division of two initial variables by one and the same third variable). The existence in the data of almost rigid structural correlations may generate artifacts in the interpretation of regression models. We can also add that the existence of correlation does not indicate a certain link, the logic of which is often employed in the process of interpretation.

The way out in this situation is in the construction of regression models not on the initial variables, but on their principal components. The methodological advantage of this approach is that integrative latent factors, which with good reason may claim the role of »causes«, are used as explanatory variables. Moreover, the interpretation of regression coefficients as indicators of the »importance« of independent variables in the constructed model becomes more valid.

The technical advantage is caused by the following considerations. First - the influence of the almost rigid structural correlations, which often do not have serious profound value, is eliminated. Second, one can work with the data where the number of observations is less than the number of variables (what, e.g., will not do when step-wise regression method is used). Third, when factors with small eigenvalues are cast away, multicollinearity is eradicated.

The five principal components described above were used to construct regression models, which are analyzed below.

The regression equations (1) and (2) allow to judge the factors which influenced the extensive (Y4 - portion of hired labourers in the working age population) and intensive (Y5 - number of hired labourers per household) development of long-term hiring of workers. XI, X2, X3 - numbering of factors which corresponds with the order of their singling out in the above made analysis.

$$Y4 = 0.002X1 + 0.001X2 - 0.001X3 + 0.0198 \quad (1)$$

$$Y5 = 0.021X1 + 0.024X2 - 0.056X3 + 0.995 \quad (2)$$

The equations show that the spreading of long-term hiring of workers in the Central Industrial region to a great measure was the result of the development of commercial stock-breeding and of the proletarianization of the peasantry. This is indicated by the positive relations of the dependent variable with factors 1 and 2 (XI, X2). Thus, the two necessary contractors of the hiring are available: the army of proletarianized peasantry and entrepreneur commodity activities of the households. The primary development of industries in this or that region led to the diminishing of the scale of hiring (negative relation of the dependent variable with X3). The development of industries reduced most of all the intensity of the use of long-term hiring of labourers: while in equation (1) X3 explains only 7% of variance of dependent variable, in equation (2) it explains 36%. This is the manifestation of one of the main features of the Industrial Center: the existence of a powerful drainage canal for the agrarian overpopulation - that is the possibility of finding work in the city, which was one of the reasons of the chiefly extensive development of hiring. The three factors (in both equations) explain about 60% of accounted variance of the dependent variable. The multiple correlation coefficient is 0.77.

The spreading of industrial activities (equation 3, Y7 portion of industrialists in the population) was determined to a great measure by the intensification of the commodity specialization of the peasant economy, namely, the decrease of the significance of agricultural production. This is demonstrated by the positive relation of the dependent variable with X3. Moreover, X3 explains 41% of the accounted variance. The proletarianization of peasantry also influenced the development of industries (positive

relation of the dependent variable with X2). The factors explain 56% of variance, the multiple correlation coefficient is 0.77.

$$Y7 = 0.005X2 + 0.011X3 + 0.29 \quad (3)$$

The extension of peasant land in use (equation 4, Y42 dessiatines (1 Dessiatine = 2.7 acres) per household) was connected to a considerable extent to the transformation of peasantry into rural bourgeoisie. The process of this transformation was accompanied by the redistribution of the reserve of land. This is indicated by the inverse relation of the dependent variable with the proletarianization factor (X2 explains 43% of its variance) The growth of peasant land in use in the Central Industrial region was determined to a great extent by the needs of commercial stock-breeding (X1 explains 33% of variance). This growth was also influenced by the intensive development of renting and the extensive development of land purchase. This is indicated by the positive relation of the dependent variable with X4, X5. The share of explained variance is 81%, the multiple correlation coefficient is 0.9.

$$Y42 = 0.318X1 + 0.433X2 + 0.184X4 + 0.214X5 + 10.993 \quad (4)$$

Thus, the analysis has demonstrated that the evolution of peasant economy in the Central Industrial region on the turn of the century was determined by factors of capitalist nature. They were: the intensification of commodity specialization of peasant economy (industrial, crop-growing, livestock-farming); the development and capitalization of commercial spheres of agricultural activities, stock-breeding in the first place; differentiation of peasantry, what chiefly meant proletarianization; the development of entrepreneur renting and purchase of land. These factors by more than two thirds explain the evolution of peasant economy in this region. But of course they do not express the total combination of reasons, which influenced the transformation of the peasant economy structure. The factors that hindered the development of capitalism also were present. They existed because of the survivals of serfdom in the socio-economic and political order of Russia. Their negative influence specifically manifested itself in that capitalism developed in the peasant economy mainly in its lowest petty bourgeois forms.

Notes

1. Zemstvos are institutions of local government which were created in a number of gubernias in Russia in 1864. In particular they carried out statistical investigation of agriculture.

It should be noted that to fill in the gaps in the zemstvo statistics

- which were used we employed the method of construction of local regression models on the separate data matrix fragments.
2. **Gubernia is the largest administrative territorial unit in pre-revolutionary Russia.** It consisted of uyezds. Volost is the lowest administrative territorial unit of the uyezd.
 3. **Allotment land - land left for the use of the peasants after the abolition of serfdom in Russia in 1861.** Held by the peasant community it was periodically redistributed among the peasants.

Literature

- H.A. Ossokina The socio-economic structure of peasant economy of the Central Industrial region at the end of the XIX - beginning of the XX century (The attempt of quantitative analysis of the territorial returns of Zemstvo statistics). Ph. D. thesis. Moscow, 1987.
- B.G.Mirkin, G.A.Satarov The method of additive fuzzy types for the analysis of multivariate data: the algorithm and its characteristics. In: Automatics and telemechanics. In print.

Appendix 1. Variables.

1. Population of both sexes per household
2. Portion of the working age population in total population
3. Portion of farms hiring labourers in total households
4. Portion of hired labourers in the working age population
5. No. of hired labourers per household
6. Portion of farms engaged in industries in total households
7. Portion of industrialists in the population
8. Portion of industrialists of working age in the adult population
9. Portion of industrialists not giving up crop-growing
10. Draught horses per household
11. Draught horses per capita
12. Draught horses per dessiatine
13. Productive stock per household
14. Productive stock per capita
15. Productive stock per dess.
16. Portion of multihorses households in total households
17. Portion of farms with 1 horse in total households
18. Portion of farms with 2 horse in total households
19. Portion of horseless in total households
20. Portion of cowless in total households
21. Portion of farms with 1 cow in total households
22. Portion of households with no land under crops
23. Portion of households with no animals
24. Portion of households with purchased land
25. Purchased land per purchasing household (dess.)
26. Purchased land under crops per purchasing household (dess.)
27. Portion of arable land in total purchased land
28. Portion of pasture in total purchased land
29. Portion of meadowland in total purchased land
30. Portion of forest in total purchased land
31. Portion of purchased land under crops in total area under crops
32. Portion of purchased land in total land in use
33. Portion of renting households in total households
34. Rented land under crops per renting household (dess.)
35. Portion of rented land under crops in total area under crops
36. Allotment per household (dess.)
37. Allotment per capita (dess.)
38. Portion of arable land in allotment
39. Portion of meadowland in allotment
40. Portion of pasture in allotment
41. Portion of allotment in total land in use

42. Total **land** in use per household (dessa.)
43. Total land in use per capita (dessa.)
44. Total area under crops per household (dessa.)
45. Total area under crops per capita (dessa.)
46. Portion of area under crops in total land in use
47. Portion of flax in total area under crops

Appendix 2. Factor Loadings.

Variables	Factors				
	1	2	3	4	5
1.	-.214	-.711	-.187	-.120	-.422
2.	-.224	.427	-.464	-.101	-.315
3.	.528	.289	-.060	.366	-.067
4.	.614	.387	-.261	.306	-.033
5.	.345	.332	-.604	-.188	-.142
6.	-.075	.017	.694	.028	-.336
7.	-.057	.387	.642	-.405	-.198
8.	-.087	.343	.617	-.017	.026
9.	.264	-.515	.288	-.309	.036
10.	.420	-.815	-.114	-.203	.013
11.	.569	-.666	-.057	-.173	.200
12.	.876	.248	-.116	-.119	-.146
13.	.684	-.603	-.203	-.150	-.106
14.	.811	-.396	-.165	-.106	.040
15.	.849	.314	-.165	-.080	-.222
16.	-.194	-.693	-.315	-.303	-.091
17.	.666	-.266	-.018	.081	.008
18.	.122	-.826	-.319	-.174	-.025
19.	-.594	.700	-.078	.162	-.047
20.	-.657	.516	.226	-.101	-.070
21.	-.698	.057	.002	.140	-.074
22.	-.418	-.020	.551	-.165	.298
23.	-.619	.470	.399	-.080	.092
24.	.201	.111	-.556	-.247	.547
25.	.631	-.314	-.361	.310	-.252
26.	-.581	-.457	-.046	.416	-.039
27.	-.771	-.271	-.135	.285	.004
28.	.520	-.021	-.031	.354	-.098
29.	.401	.318	-.482	-.491	-.058
30.	.510	.127	.677	-.176	.028
31.	.353	-.018	-.221	.544	.567

32.	.751	.117	-.119	.421	.281
33.	-.422	.061	-.071	-.733	.154
34.	-.283	-.386	-.350	.556	-.052
35.	-.707	-.403	-.158	-.098	.272
36.	.188	-.791	.417	-.227	-.019
37.	.286	-.606	.555	-.201	.155
38.	-.823	-.275	-.166	.100	.052
39.	.636	.237	-.495	-.387	-.100
40.	.559	-.080	-.017	.480	-.205
41.	.758	.326	.285	-.132	-.232
42.	.578	-.655	.289	.165	.163
43.	.655	-.465	.354	.218	.302
44.	-.541	-.780	.007	-.026	.125
45.	-.560	-.710	.075	.000	.265
46.	-.911	-.283	-.194	-.038	-.039
47.	.211	.191	-.703	-.222	.368

Appendix 3. Factor weights.

Uyezds	Factors				
	1	2	3	4	5
1. Galich	2.860	-.338	.414	3.488	-.089
2. Vetluga	2.550	-6.947	-.851	-.668	-2.368
3. Kologriv	6.819	-3.404	2.159	.927	-1.060
4. Soligalich	7.470	-.464	1.360	2.600	.140
5. Buy	4.968	-.114	-1.471	3.673	1.425
6. Yurievetz	-2.261	2.794	1.328	-.536	.324
7. Varnavin	-.092	-1.937	.144	-.640	.477
8. Makariev	2.905	-2.625	2.787	.013	.590
9. Kostroma	.994	1.518	-2.570	2.046	.650
10. Mologa	5.061	2.026	-1.720	-1.792	-1.594
11. Rybinsk	5.126	5.575	.301	.374	-1.771
12. Myshkin	2.569	1.579	-7.151	-3.161	4.170
13. Uglich	2.547	4.830	-1.284	-1.372	-.138
14. Yaroslavl	-1.935	4.717	-1.160	-.084	.041
15. Sudogda	-2.996	-3.483	.749	.167	1.679
16. Kovrov	-3.227	-.251	4.335	-.083	1.376
17. Suzdal	-5.909	-.543	-.268	.163	-.927
18. Yuriev	-5.774	-4.919	-2.492	.108	-.423
19. Shuya	-2.727	2.991	5.353	-.286	2.480
20. Melenky	^ .664	-3.190	-1.636	2.574	.650
21. Mourom	-4.818	2.587	-3.207	2.221	-1.756

22. Vladimir	-6.380	3.193	-1.269	1.671	-2.968
23. Gorokhovetz	-.938	1.247	1.406	-.907	1.621
24. Vyazniky	-1.933	-.962	1.802	-.701	2.131
25. Alexandrov	-.753	-3.451	.517	-3.019	-.745
26. Pokrov	-.667	3.948	3.531	-2.641	-2.364
27. Pereslavl	1.206	-4.376	-1.103	-3.135	-1.550

Appendix 4.

Table 1.

Ideal types	Ideal Types' Characteristics (Ideal Types' Coordinates in the Factor Space)				
	Factors				
	1	2	3	4	5
I	10.958	-0.328	-0.066	1.853	-0.665
II	-5.544	-0.648	-1.024	1.189	-0.555
III	-0.617	5.434	1.798	-1.636	-0.250
IV	-0.021	-8.608	2.679	-2.953	-0.259
V	1.467	2.306	-9.695	-3.944	3.723
VI	-0.266	0.398	1.182	1.341	1.495

- 1: livestock-farming - crop-growing
- 2: proletarianization - transformation into rural bourgeoisie
- 3: peasant industries - agricultural production
- 4: intensive renting - extensive renting of land
- 5: extensive purchase - intensive purchase of land

Notes. In oppositions for each factor positive alternative comes first.

Table 2

Membership Measures of Objects to Ideal Types

Uyezds	Types					
	I	II	III	IV	V	VI
1. Galich	0.306	0.172	0.000	0.000	0.000	0.522
2. Vetluga	0.247	0.178	0.000	0.575	0.000	0.000
3. Kologriv	0.630	0.010	0.000	0.360	0.000	0.000
4. Soligalich	0.698	0.028	0.000	0.020	0.000	0.254
5. Buy	0.487	0.171	0.000	0.001	0.078	0.263
6. Yurievetz	0.000	0.252	0.577	0.028	0.000	0.143
7. Varna vin	0.000	0.017	0.001	0.209	0.044	0.729
8. Makariev	0.259	0.000	0.000	0.339	0.000	0.402
9. Kostroma	0.111	0.139	0.037	0.000	0.187	0.526
10. Mologa	0.409	0.000	0.404	0.029	0.158	0.000
11. Rybinsk	0.453	0.000	0.547	0.000	0.000	0.000
12. Myshkin	0.157	0.000	0.002	0.000	0.793	0.048
13. Uglich	0.193	0.000	0.749	0.000	0.058	0.000
14. Yaroslavl	0.000	0.257	0.720	0.000	0.023	0.000
15. Sudogda	0.000	0.512	0.000	0.348	0.011	0.129
16. Kovrov	0.001	0.376	0.268	0.264	0.000	0.091
n. Suzdal	0.000	1.000	0.000	0.000	0.000	0.000
18. Yuriev	0.000	1.000	0.000	0.000	0.000	0.000
19. Shuya	0.000	0.176	0.782	0.041	0.000	0.001
20. Melenky	0.000	0.952	0.000	0.048	0.000	0.000
21. Mourom	0.000	0.941	0.059	0.000	0.000	0.000
22. Vladimir	0.000	1.000	0.000	0.000	0.000	0.000
23. Gorokhovetz	0.000	0.029	0.308	0.075	0.003	0.585
24. Vyazniky	0.001	0.220	0.018	0.171	0.000	0.590
25. Alexandrov	0.000	0.080	0.000	0.447	0.086	0.387
26. Pokrov	0.000	0.000	0.923	0.077	0.000	0.000
27. Pereslavl	0.080	0.000	0.000	0.495	0.198	0.227