SOCIAL STRUCTURES AND THE RATE OF RUSSIAN AS A MOTHER TONGUE IN SLAVIC REGIONS OF THE USSR FROM 1959 TO 1989

Masayuki KUWATA, Makoto HAYASAKA, Masanori NAKAGAWA
(Tokyo Institute of Technology)

1. Introduction

The research presented in this paper uses multivariate analyses that incorporate Soviet statistical materials in order to inquire into the social meaning of Russian language selection as a mother tongue and explicate the relationship between social structures and the rate of Russian selection as a mother tongue in the Slavic regions of the USSR from 1959 to 1989.

Russians and minorities have held conflicting views of Soviet language policies. Minorities were dissatisfied with Soviet language policies because they felt that their languages were suppressed despite the officially proclaimed policies to preserve vernaculars. On the other hand, Russians were dissatisfied with their daily life in the USSR because they believed that they were less privileged due to the USSR's affirmative action policies for minorities (Shiokawa 1990).

In the academic field, Soviet language policies have been evaluated on the basis of the policies themselves under the Soviet regime, as well as on the basis of some statistical materials relevant to citizens' language selections. Referring to such policies and language selection data, one group of scholars found Soviet language policies to be consistent Russification, while another asserted that language policy for the preservation of vernaculars had succeeded to some extent, and indigenous languages were being sustained (Shiokawa 1997).

In other words, Soviet citizens and even scholars had diametrically opposed views of Soviet language and nationality policies. Our purpose is to verify the validity of these evaluations by Russians and minorities. An empirical evaluation
Masayuki Kuwata

of these opposing perspectives would also help to determine the validity of earlier scholars’ views of these language policies as Russification or vernacular preservation.

The choice of the statistical method that was used in this research is motivated by the following concerns. In the first place, although policies might affect language selection, they never determine the particular mother tongue rate. A comparison of language selection data alone is fruitless because a high estimate of the Russian mother tongue rate does not necessarily imply Russification, and a low estimate of this rate does not confirm the function of Soviet vernacular preservation policies. Ultimately, if you want to evaluate language policy, the mere analysis of policy or comparison of language selection data are quite insufficient.

Thus, we have chosen to investigate the relationship between social structures and the rate of Russian as a mother tongue. If the Soviet intended to promote only Russian, there should be some gains correlated to the selection of Russian as a mother tongue. At the same time, if Russian mother tongue selection is artificially correlated with some gains, then the minorities’ discontent would have a basis.

2. Previous research and the present study’s research focus

2.1. An attempt to deduce the meaning of Russian’s selection as a mother tongue in the relationship between the rate of Russian as a mother tongue and other social indices

A means of understanding language selection in relation to other social indices was pioneered by Brian D. Silver (Silver 1978). He developed a model that estimates the number of people who claim Russian as their mother tongue or so-called second language by using the Soviet census of 1970. This model is based on a multiple regression analysis in which the number of Russian speakers is the dependent variable and inter-ethnic contact (the number of ethnic Russians in each administrative unit), religious affiliation (the number of people who believe in Islam or Orthodox Christianity) and urbanization (urban population) are the independent variables. Considering the fact that these statistical materials were hard to obtain, his development was elaborate enough at that time. But this model has some problems. First, Silver did not refer to each independent
SOCIAL STRUCTURES AND THE RATE OF RUSSIAN

variable’s standardized regression coefficient. Therefore it is not clear from his model how much each independent variable explains the Russian mother tongue or Russian second language population. Second, Silver selected variables that are supposed to have considerable correlation as independent variables. This point implies his model’s invalidity. In fact, earlier research had already pointed out the fact that there is a strong correlation between Russian population and urbanization (Lewis et al. 1976). But the selection of independent variables as indicators of citizens’ language selection was sustained by subsequent research (Arel 1993).

2.2. Extraction of social factors

It is imperative that we employ a method that distills social factors that never show a strong inter-correlation. We referred to earlier research that derives social factors from Soviet statistical materials for the purpose of confirming the relationship between ethnicity policies and ethnic dispersion (Lewis et al. 1976). This research compared the relationship between each ethnic group and a so-called modernization factor. Their method was as follows. First, 90 variables at the level of the 19 economic regions were picked out from the 1926 and 1959 censuses. Next, the data set was factor analyzed by varimax rotation and “the modernization factor” on which the urban population indicated the highest absolute value of factor loading was extracted. Then, they checked the factor loadings of each ethnic group’s population on the modernization factor. The ethnic group’s factor loadings are thought to be an indicator of the degree of modernization for each respective ethnic group. This research is suggested as a method for the extraction of social factors because distilled factors can avoid inter-correlation. But there are some contentious points. First, the number of samples (19 economic regions) is far fewer than the number of variables. This is statistically problematic. Second, this data set does not permit us to investigate regional diversity in a Soviet Union that embraced 15 republics.

The analysis of provincial-level data (so-called third-level data) in the former USSR enables us to break through the obstacles mentioned above because the number of provinces counted in the censuses is above 160 (because the demarcation of administrative units was revised, the number of provinces fluctuated between 161, 168, 174 and 169 in the censuses between 1959 and 1989). These numbers allow us to investigate not only the Soviet Union as a
whole but also some regional units on the basis of multivariate analysis.

2.3. Case studies on Ukraine
Our research on the case study of Ukraine began with the development of a model in which some particular observed variables were not presumed in advance. The Ukrainian SSR was selected because of the number of provinces as samples. It had 25 provinces (the second largest number in the USSR) and therefore it was convenient for conducting research in preparation for comparative research on the USSR. First, we picked out 17 variables that consisted of population, urbanization rate, ethnic composition (2 variables), educational level (7 variables), economic data (4 variables) and birth and death rate at Ukraine's provincial level from Soviet censuses of 1959, 1970, 1979, 1989 and nearly synchronized data from the national economy of Ukraine. Second, factor analyses of each census extracted two factors, namely the ethnicity and the wealth and social development. Third, we ran multiple regression analyses consisting of latent variables as independent variables and the Russian mother tongue rate as the dependent variable. This successive procedure (Figure 1) was developed through our previous research (Kuwata 2000; Kuwata, Hayasaka and Nakagawa 2003). Based on these two studies, we are forced to acknowledge that the ethnicity factor's explanation is not useful in the evaluation of Russian mother tongue selection's social profit. Both of the results concluded that the ethnicity factor explains most of the Russian mother tongue rate at any census time, and it is difficult to deduce the Russian mother tongue profitability from these results. First of all, the ethnicity factor consists of the ratio of ethnic Russians and ethnic Ukrainians that is supposed to have strong correlations with the Russian mother tongue rate. Thus we need to shed light on social factors other than the ethnicity factor even though the model's explanation rate dwindles for this purpose. In other words, the wealth and social development factor should be scrutinized.

2.4. Substitute for indicators of social benefits
The argument boils down to the selection of variables from which social factors are distilled. The selection of variables is a difficult task. In the first place, it has a limitation in materials themselves. Second, as Lewis' research indicated, variable selection requires statistical consideration. And finally, as our earlier research
showed, derived social factors do not necessarily conform to our purpose. Considering these difficulties, we chose the variables from the fields of educational attainment, occupational category and age distribution. Age distribution is also included in Bahry’s research in order to assess the influence of generational difference on educational attainment. The reasons for these choices are as follows:

1. Data for these categories are available through All-Union censuses. Censuses of 1959, 1970, 1979 and 1989 have data at a provincial level in the former USSR. These enable us to investigate regional differences in our subject, as indicated in the second section of this chapter. On the other hand, the national economy of the USSR and each of the former republics of the USSR also have a considerable array of data. Data that can be used at the provincial level and treated in the same categories for each respective republic are too limited.

2. These social indices are used in social research for soviet citizens’ regime evaluations (Bahry 1993). In particular, the variables for educational attainment and occupational category are dealt with as indicators of citizens’ level of emancipation and quality of life. Age distribution is also included in Bahry’s research because of the assessed influence of generational difference on educational attainment.

3. The income or wage structure of the Soviet Union was studied and showed
that while some differences definitely existed, the overall structure was not so dissimilar from western developed countries (Vinokur and Ofer 1987). Therefore, higher educational attainment and white collar-oriented jobs are thought to somehow correlate with a more affluent, higher quality life.

Bahry’s and Vinokur’s research used materials based on interview questionnaires from emigrants who came from the USSR, like the Harvard Project (HP), the Soviet Interview Project General Survey (SIP) and so on. Thus, we could not refer to their interview data concerning wealth indicators. This caused us some concern about our analysis of Soviet censuses. Therefore, we included datum of “retail turnover including the food service industry (rubles)” in order to confirm the relationship among social factors and wealth. The selection of this particular variable is based on the fact that this is the only wealth-attributed index that we could derive from the national economy of the RSFSR, the Ukrainian SSR and the Belorussian SSR at the provincial level.

3. Subjects, time scale, data and method

3.1. Subjects of analysis and data
The subjects of our research are the RSFSR, the Ukrainian SSR and the Belorussian SSR. The reason for regional limitation is that the wealth index used for the confirmation of the relationship among social factors and wealth could be obtained only within these regions. The subject censuses are those of 1959, 1970, 1979 and 1989. This choice also reflects the data availability. Analysis units are the following three regions: Slavic regions as a whole (RSFSR + Ukrainian SSR + Belorussian SSR), the RSFSR, and the Ukrainian SSR. The Belorussian SSR could not be analyzed because of a deficiency of provinces (6 administrative units). The samples were taken from each republic’s administrative units at the so-called third level. Hence, the RSFSR analysis has 71 samples, the Ukrainian SSR analysis has 25 samples, and the Slavic regions’ analysis has 102 samples.

Collected data are as follows (capitalized words in parentheses are variables taken from the censuses and national economy annual books, and some indices were compiled by the authors from those two resources):

1. Macro data (SIZE, URB)
SOCIAL STRUCTURES AND THE RATE OF RUSSIAN

2. Educational attainment (UNIV, SECOND, FIRST)
3. Worker’s educational attainment (W_UNIV)
4. Occupational categories (PHYS, MENT, KOL)
5. Age distribution (0_19, 20_39, 40_59, 60_)
6. Russian mother-tongue rate (RUS)
7. Retail turnover per capita in each province (RT)

SIZE refers to the respective provincial populations. URB stands for the rate of urban population in each province. UNIV is the ratio of people who graduated from university. SECOND represents the ratio of people who completed secondary education. FIRST means the ratio of people who finished elementary school. W_UNIV represents the ratio of workers who completed university. PHYS stands for the ratio of the population that engages in physical labor. MENT means the ratio of people who occupy themselves in so-called mental work in the census definition. The terms 0_19, 20_39, 40_59, and 60_ represent the population of each age group. RUS is the ratio of the population that claims Russian as their mother tongue. RT refers to the retail turnover per capita in each province. Actually, the maximum number of available variables for educational attainment is 6 and that of age distribution is 11. The reason for the slashed data is as follows. First, the number of variables makes the multivariate analysis impossible for republics like the Ukrainian SSR, which has a small number of administrative units (samples). Second, an analysis with all the available data brings about disproportionate numbers in the variables’ attributions. And third, this research is not to inquire into the exact cause of Russian’s selection as a mother tongue but to investigate the meaning of Russian mother tongue selection in connection with other social factors. As the earlier research demonstrated, the ethnicity factor or ethnic Russian presence explains most of the Russian mother tongue rate at any census time.

3.2. Validity and limitations of the data
We now turn to the data problem. The accuracy of the age data improved over time, particularly following 1970 when the inclusion of a questionnaire requesting the date of birth made it sufficiently reliable (Clem 1986). However, educational curriculum reform that might affect the educational attainment data from 1959 to 1989 was enacted in 1969, 1972, 1984 and 1987. The reform in
Masayuki Kuwata

1972 which obliged all pupils to attend school until 17 years of age was given particular significance because of its influential effect, which led to an increase in the rate of people who completed secondary education from 80% (1970) to 97.8% (1978) (Liebowitz 1986). This reform is not thought to significantly distort the results when using these indices’ relative values because the inclination of secondary education’s rate of increase from the period 1959 to 1970 and that of 1970 to 1979 are almost the same (Figure 2). The displayed graph represents all of the Slavic regions. If you draw graphs of the RSFSR, the Ukrainian SSR, and the entire USSR, they show the same tendency. Namely, a rapid increase in the rate of secondary education attainment, an accelerated decrease in primary education, and a moderate but consistent increase in higher education. These three relative relationships are commonly observed in each census, and are quite natural from the sociological point of view.

Occupational category is inevitably ambiguous in its definition. In fact, barbers, manicurists, and photographers were classified as professionals or semi-professionals in 1959 but as occupations requiring physical exertion in 1970 (Sacks 1986). However, such definitional problems seems to have little influence on the results, because the graph of occupational categories does not describe any unnatural curves (Figure 3). As in the case of educational attainment, the RSFSR, the Ukrainian SSR and the USSR as a whole all show the same

![Figure 2. Educational attainment](image1.png)

![Figure 3. Occupational structures](image2.png)
SOCIAL STRUCTURES AND THE RATE OF RUSSIAN
tendency. The ratio of physical laborers peaked in 1979 and then decreased a little, while mental workers showed a moderate but consistent increase and kolkhoz workers rapidly decreased.

The bias towards under-estimation of the Russian mother tongue rate has been pointed out because of the questionnaire’s style of inquiry. Census questionnaires had used the term “mother tongue.” But this term might be misconstrued by most people as the language of their ethnic affiliation. Silver pointed out this problem earlier even in the absence of sufficient material evidence (Silver 1975). This under-estimation has subsequently been confirmed by recent research (Arel 1995; Hattori 2002). In particular, the considerable under-estimation of the Russian mother tongue rate is indicated in Ukraine and Belorussia where Russian language was widespread among a relative majority of indigenous ethnic groups and in urban areas of the USSR. But the validity of census results on mother tongue selection could not be insufficient even with the above-mentioned biases. First, the Russian mother tongue rate is much higher than the ethnic Russian rate. Second, even though the Russian mother tongue rate decreased a little from 1959 to 1989 in the RSFSR, the USSR as a whole and Central Asia, those decreasing rates are smaller than the decrease in ethnic Russian rates for each region. In addition, in the Ukraine and Slavic regions the Russian mother tongue rate increased and the difference between the Russian mother tongue rate and the ethnic Russian rate also increased as time went by. These points endorse the validity of the Russian mother tongue rate at least in relative comparison.

Of course, it is desirable to use revised data that has been estimated from the new data resources collected after the collapse of the USSR, but as yet such data for the entirety of the former USSR is unobtainable. Such estimations could also be done on the basis of old census results that include these data in a consistent format during the Soviet regime. Hence, we use census results as our basic sources and rely upon these indices’ relative values.

3.3. Method
This paper’s method basically follows the developed method of our previous research. Namely, social factors are derived from 12 variables (variables mentioned above other than SIZE, RUS and RT) for each census collection time as results of factor analyses by varimax rotation. Next, the Russian mother
Masayuki Kuwata

tongue rate is regressed to those aforementioned distilled factors (Figure 1). In addition, retail turnover per capita in each province (RT) is also regressed to derived social factors in order to confirm the meaning of social factors. The population of each administrative unit (SIZE) is used as the weight of both the factor analysis and the regression analysis because the result of the multivariate analyses could be distorted if one did not consider each administrative unit's population.

4. Results

This chapter addresses the results of our multivariate analyses of, respectively, the Ukrainian SSR, the RSFSR and the Slavic region as a whole.

4.1. Ukrainian SSR

The Ukrainian SSR had 25 administrative units. Hence, our factor analysis for each census dealt with 12 variables and 25 samples weighted by the population of each administrative unit. The results of factor analyses are presented below

| 1959 Factor1 | Factor2 | Factor3 | 1970 Factor1 | Factor2 | Factor3 |
|--------------|---------|---------|--------------|---------|---------|
| PHYS         | 0.917   | 0.313   | -0.057       | PHYS    | 0.975   | 0.071   | -0.127 |
| 20.39        | 0.872   | 0.302   | -0.256       | URB     | 0.939   | 0.266   | 0.093  |
| URB          | 0.862   | 0.489   | 0.017        | 20.39   | 0.745   | 0.507   | -0.379 |
| FIRST        | 0.832   | -0.113  | 0.116        | KOL     | -0.937  | -0.312  | 0.105  |
| 60           | -0.758  | -0.194  | 0.805        | UNIV    | 0.312   | 0.934   | 0.055  |
| KOL          | -0.865  | -0.466  | 0.031        | W. UNIV | 0.333   | 0.925   | 0.043  |
| UNIV         | 0.071   | 0.967   | 0.187        | MENT    | 0.524   | 0.833   | 0.001  |
| W. UNIV      | 0.182   | 0.953   | 0.187        | SECOND  | 0.554   | 0.800   | 0.141  |
| MENT         | 0.395   | 0.887   | 0.096        | FIRST   | 0.200   | -0.863  | -0.186 |
| SECOND       | 0.376   | 0.884   | 0.241        | 40.59   | -0.100  | -0.009  | 0.973  |
| 40.59        | -0.258  | 0.250   | 0.916        | 60      | -0.874  | -0.059  | 0.694  |
| 0.19         | -0.189  | -0.361  | -0.978       | 0.19    | -0.064  | -0.414  | -0.394 |

| 1979 Factor2 | Factor1 | Factor3 | 1989 Factor2 | Factor1 | Factor3 |
|--------------|---------|---------|--------------|---------|---------|
| PHYS         | 0.979   | 0.066   | -0.113       | PHYS    | 0.968   | 0.004   | 0.087  |
| URB          | 0.878   | 0.410   | 0.214        | URB     | 0.830   | 0.464   | -0.253 |
| KOL          | -0.893  | -0.421  | 0.100        | SECOND  | 0.718   | 0.578   | -0.102 |
| UNIV         | 0.209   | 0.969   | -0.018       | KOL     | -0.891  | -0.410  | -0.117 |
| W. UNIV      | 0.199   | 0.965   | -0.024       | UNIV    | 0.175   | 0.977   | 0.046  |
| MENT         | 0.313   | 0.935   | -0.013       | W. UNIV | 0.145   | 0.973   | 0.083  |
| SECOND       | 0.587   | 0.761   | 0.088        | MENT    | 0.175   | 0.969   | 0.022  |
| 20.39        | 0.564   | 0.716   | -0.359       | 20.39   | 0.521   | 0.621   | 0.580  |
| FIRST        | -0.240  | -0.924  | 0.033        | FIRST   | -0.341  | -0.829  | -0.336 |
| 60           | -0.503  | -0.178  | 0.814        | 0.19    | -0.107  | -0.134  | 0.976  |
| 40.59        | 0.163   | -0.634  | 0.715        | 40.59   | 0.523   | -0.244  | -0.728 |
| 0.19         | -0.117  | -0.236  | -0.951       | 0.19    | -0.443  | 0.305   | -0.817 |
SOCIAL STRUCTURES AND THE RATE OF RUSSIAN

(Table 1). Because of the social structures' transitions, factor loadings of social factors extracted from each census vary. However, it is possible to find nearly the same properties of factors throughout the censuses. Factor 1 of 1959 and 1970 and Factor 2 of 1979 and 1989 consist of PHYS, URB and KOL as high absolute values of factor loadings. PHYS and URB are positive but KOL is negative. We construed these factors as the urban physical labor (urb_phys). Factor 2 of 1959 and 1970 and Factor 1 of 1979 and 1989 are comprised of variables of UNIV, W_UNIV and MENT as high absolute values of factor loadings that have positive attribution. These factors are named as the higher educational attainment factor (higher_edu). Factor 3 of all censuses other than 1989 is composed of relatively older generations as high absolute values of factor loadings. Factor 3 of 1959 and 1970 are named as the over-middle-aged (ov_mid_ag) and that of 1979 is as the older aged (older_ag). Factor 3 of 1989 has the 0_19 age group variable as a positive high absolute value of factor loading. But the 60_age group also indicates a high absolute value even though it is negative. We call this factor “the minus older aged factor (-older_ag)” for easier comparison.

The results of multiple regression analyses for each census collection time in which these distilled social factors are independent variables and the Russian mother tongue rate is the dependent variable are displayed below (Table 2). The urban physical labor factor explained most of the Russian mother tongue rate in

|          | 1959    | 1970    | 1979    | 1989    |
|----------|---------|---------|---------|---------|
| urb_phys | .74**   | .86**   | .83**   | .79**   |
| higher_edu | .48**   | .15     | .23*    | .24*    |
| ov_mid_ag | -.03    | .04     | .15     | -.18    |
| educ     | .72     | .77     | .73     | .68     |

†adj_r_sq, adjusted R square
*p<0.05, **p<0.01

|          | 1959    | 1970    | 1979    | 1989    |
|----------|---------|---------|---------|---------|
| urb_phys | .70**   | .78**   | .56**   | .55**   |
| higher_edu | .69**   | .38**   | .74**   | .71**   |
| ov_mid_ag | -.01    | .09     | -.10    | -.05    |
| educ     | .98     | .72     | .85     | .78     |

†adj_r_sq, adjusted R square
*p<0.05, **p<0.01

75
Masayuki Kuwata

every census. The higher educational attainment’s explanation rate in 1959 is highest among the censuses but less than the urban physical labor factor. If we assume that educational attainment is in proportion to wealth or quality of life, then Russian mother tongue selection would not bring about much profit. But the situation is not so simple. Let us examine the relationship between social factors and retail turnover per capita (Table 3). Retail turnover per capita is primarily explained by higher education in 1979 and 1989. But it is not so evident in 1959, and the urban physical labor factor’s standardized regression coefficient in 1970 is much higher than that of higher educational attainment, which does not show sufficient significance. These results can be interpreted to mean that the selection of Russian as a mother tongue in Ukraine is not very profitable at least after 1979. But it is uncertain whether people could perceive this fact, because those differences between higher education’s standardized regression coefficients and those of urban physical labor concerning retail turnover are not so prominent even after 1979. In addition, the urban physical labor factor seems to exceed the higher educational attainment in its effect on retail turnover before 1970.

4.2. RSFSR
The RSFSR has 71 administrative units. Thus, factor analysis for each census dealt with 12 variables and 71 samples weighted by the population of each administrative unit. The results of factor analyses of the RSFSR are shown below (Table 4). The properties of social factors vary to a greater extent than in the case of Ukraine, but it is possible to find almost the same properties of factors in 1959 and 1979. Factor 1 of 1959 and Factor 3 of 1979 incorporate PHYS, URB and KOL as high absolute values of factor loadings. PHYS and URB are positive and KOL is negative, as in the case of Ukraine. Thus, these factors are interpreted as the urban physical labor factors (urb_phys). As in the case of Ukraine, Factor 2 of 1959 and Factor 1 of 1979 are construed as the higher educational attainment factors (higher_edu) because of the presence of W_UNIV, UNTV and MENT. Factor 3 of 1959 and Factor 2 of 1979 are named as the over-middle-aged factor (ov_mid_ag) and the older aged factor (older_age) because the 40_59 and 60_age groups show positive higher absolute values on their respective factors.

Social factors of 1970 and 1989 vary from those mentioned above with the
SOCIAL STRUCTURES AND THE RATE OF RUSSIAN

Table 4. Social factors of RSFSR

|        | 1959 Factor1 | 1959 Factor2 | 1959 Factor3 | 1970 Factor1 | 1970 Factor2 | 1970 Factor3 |
|--------|--------------|--------------|--------------|--------------|--------------|--------------|
| PHYS   | 0.910        | 0.136        | -0.123       | 0.864        | -0.296       | 0.037        |
| 20.39  | 0.824        | 0.330        | -0.225       | 0.854        | 0.245        | -0.230       |
| URB    | 0.917        | 0.509        | 0.030        | 0.071        | 0.973        | 0.126        |
| FIRST  | 0.916        | -0.227       | 0.339        | -0.067       | 0.902        | 0.345        |
| KOL    | -0.850       | -0.456       | 0.054        | -0.254       | 0.891        | 0.345        |
| W_UNIV | 0.291        | 0.920        | 0.241        | -0.308       | 0.884        | 0.314        |
| UNIV   | 0.273        | 0.903        | 0.305        | 0.386        | 0.865        | 0.106        |
| MENT   | 0.482        | 0.853        | 0.077        | 0.042        | 0.783        | -0.293       |
| SECOND | 0.357        | 0.851        | 0.352        | -0.540       | -0.795       | 0.077        |

|        | 1979 Factor1 | 1979 Factor2 | 1979 Factor3 | 1989 Factor1 | 1989 Factor2 | 1989 Factor3 |
|--------|--------------|--------------|--------------|--------------|--------------|--------------|
| PHYS   | 0.846        | -0.443       | -0.176       | 0.910        | 0.221        | 0.204        |
| URB    | 0.654        | 0.632        | 0.258        | 0.658        | 0.377        | -0.177       |
| 20.39  | 0.648        | 0.439        | -0.473       | -0.908       | -0.087       | 0.190        |
| KOL    | -0.824       | -0.498       | 0.039        | 0.464        | 0.838        | 0.173        |
| W_UNIV | 0.019        | 0.964        | 0.178        | 0.502        | 0.819        | 0.214        |
| UNIV   | 0.053        | 0.959        | 0.221        | 0.622        | 0.734        | 0.091        |
| MENT   | 0.217        | 0.947        | 0.098        | -0.386       | -0.678       | 0.561        |
| SECOND | 0.303        | 0.871        | 0.130        | 0.240        | -0.870       | -0.365       |
| FIRST  | 0.006        | -0.957       | 0.070        | 0.019        | 0.082        | 0.958        |
| 40.59  | -0.003       | 0.103        | 0.870        | 0.262        | 0.202        | 0.898        |
| 60     | -0.422       | -0.018       | 0.878        | 0.419        | 0.013        | -0.829       |
| 0.19   | -0.118       | -0.402       | -0.868       | 0.19         | -0.237       | -0.282       |

The exception of the factor comprised of age group. Factor 2 of 1970 is construed as the over-middle-aged factor (ov_mid_ag) and Factor 1 of 1989 is called the older aged factor (older_age) because of the variables that indicate the highest positive absolute value of factor loadings. Factor 3 of 1970 is called the low educational attainment and physical labor factor (lw_ed_phys) because of the existence of FIRST and PHYS. Factor 1 of 1970 is composed of the mental worker rate, with higher education as a higher positive absolute value of factor loadings and the kolkhoz worker as a relatively high negative absolute value. The urbanization rate variable also indicates a relatively high positive absolute value. Thus, we called this factor the mental worker and higher education factor (ment_h_e). URB, SECOND and KOL indicate relatively high absolute values on Factor 2 in 1989 but PHYS does not. Therefore Factor 2 of 1989 is construed as the urbanization and middle educational level factor (urb_mid_ed). Factor 3 of 1989 is called the higher educational attainment factor (higher_ed) because W_UNIV, UNIV and MENT indicate higher absolute values for Factor 3.

Owing to the difference in factor properties in 1970 and 1989, it is difficult to compare these factors in regression analysis results. We attempted to array
Masayuki Kuwata

Table 5. Regression of Russian mother tongue rate in RSFSR

|          | 1959   | 1970    | 1979    | 1989    |
|----------|--------|---------|---------|---------|
| urb.phys | .36**  | .49**   | .42**   | .46**   |
| higher.edu| .03    | .23**   | .17*    | -.03    |
| ov.mid.ag| .56**  | .59**   | .62**   | .52**   |
| adj.r sq | .41    | .64     | .57     | .46     |

†adj_r_sq, adjusted R square
*p<0.05, **p<0.01

Table 6. Regression of retail turnover per capita in RSFSR

|          | 1959   | 1970    | 1979    | 1989    |
|----------|--------|---------|---------|---------|
| urb.phys | .59**  | .08     | .32**   | .64**   |
| higher.edu| .75**  | .92**   | .88**   | .67**   |
| ov.mid.ag| .09**  | .15**   | .06     | .93     |
| adj.r sq | .92    | .87     | .83     | .85     |

†adj_r_sq, adjusted R square
*p<0.05, **p<0.01

the factors in accordance with the results of the Ukrainian SSR. Namely, the
factor of the first line in the matrix is close to the urban physical labor factor in
its attribution. For convenience of comparison, the second line is close to the
higher educational attainment factor and the last one is the age distribution
factor (Tables 5 and 6).

Without exception, the age distribution factors that have over-middle-aged
or older aged groups’ attribution explained most of the Russian mother tongue
rate. If you compare the standardized regression coefficients of the relatively
higher educational attainment attribution or white collar-oriented factor (the
second line of the matrix) and the relatively lower educational attainment or
blue collar-oriented factor (first line of matrix), you will find that, without
exception, the first line’s scores exceed the second line’s from 1959 to 1989
(Table 5). To the contrary, most of the retail turnover per capita is without
exception explained by the factor of the second line (Table 6). The standardized
regression coefficients of the first line factor and the second line factor in 1989
are closer than in any other census, but this is easily understood because the
urban and middle educational attainment factor has higher educational attribution
than other factors in the first line.

Hence, Russian language selection in the RSFSR is thought to be unprofitable.
This tendency is more evident than in Ukraine because the Russian mother
tongue rate is mainly explained by older age distributions, but social profit is

78
SOCIAL STRUCTURES AND THE RATE OF RUSSIAN

without exception oriented to higher educational status.

4.3. Slavic region (RSFSR+Ukrainian SSR+Belorussian SSR)
The Slavic regions have 102 administrative units. Thus, factor analyses for each census dealt with 12 variables and 102 samples weighted by the population of each administrative unit. The results of the factor analyses for the Slavic regions are presented in Table 7. As with the RSFSR, the properties of social factors are inconsistent, but we can find almost the same factors in 1979 and 1989. Factor 2 of 1979 and Factor 3 of 1989 are constituted by PHYS, URB and KOL as high absolute values of factor loadings. As with the Ukrainian SSR and the RSFSR in 1959 and 1979, PHYS and URB are positive and KOL is negative. Thus these factors are interpreted as the urban physical labor factors (urb_phys). Factor 1 of 1979 and 1989 could be interpreted as the higher educational attainment factor (higher_edu) because these factors have W_UNIV, UNIV and MENT as relatively higher absolute values of factor loadings, as in the case of the Ukrainian SSR and the RSFSR in 1959 and 1979. Factor 3 of 1979 and Factor 2 of 1989 are called the over-middle-aged (ov_mid_ag) and the older

Table 7. Social factors of Slavic regions

|        | 1959 Factor2 | Factor1 | Factor3 | 1970 Factor2 | Factor1 | Factor3 | 1989 Factor2 | Factor1 | Factor3 |
|--------|--------------|---------|---------|--------------|---------|---------|--------------|---------|---------|
| 60     | 0.916        | 0.204   | -0.045  | FIRST        | 0.932   | -0.110  | -0.070       |         |         |
| KOL    | 0.888        | -0.386  | -0.110  | PHYS         | 0.694   | 0.392   | -0.314       |         |         |
| URB    | -0.786       | 0.500   | 0.255   | URB          | 0.219   | 0.888   | 0.083        |         |         |
| PHYS   | -0.839       | 0.157   | 0.347   | 20.39        | 0.072   | 0.841   | -0.242       |         |         |
| UNIV   | -0.208       | 0.094   | 0.247   | UNIV         | -0.334  | 0.833   | 0.345        |         |         |
| W_UNIV | -0.306       | 0.898   | 0.171   | W_UNIV      | -0.386  | 0.824   | 0.308        |         |         |
| SECOND | -0.214       | 0.868   | 0.391   | MENT         | 0.192   | 0.822   | -0.022       |         |         |
| PHYS   | 0.496        | 0.755   | 0.257   | SECOND      | -0.365  | 0.794   | 0.392        |         |         |
| MENT   | -0.497       | 0.705   | 0.381   | KOL          | -0.134  | -0.006  | -0.049       |         |         |
| 0.19   | -0.059       | -0.787  | 0.398   | 40.59        | -0.037  | 0.173   | 0.967        |         |         |
| FIRST  | -0.051       | 0.237   | 0.911   | 60           | -0.277  | -0.356  | 0.857        |         |         |
| 20.39  | -0.418       | 0.113   | 0.854   | 0.19         | 0.140   | -0.043  | -0.868       |         |         |

|        | 1979 Factor2 | Factor1 | Factor3 | 1989 Factor2 | Factor1 | Factor3 |
|--------|--------------|---------|---------|--------------|---------|---------|
| PHYS   | 0.931        | -0.222  | -0.174  | PHYS         | 0.851   | -0.321  | -0.320       |         |         |
| URB    | 0.764        | 0.550   | 0.190   | URB          | 0.727   | 0.605   | 0.182        |         |         |
| 20.39  | 0.823        | 0.459   | -0.481  | KOL          | -0.837  | -0.435  | 0.223        |         |         |
| KOL    | -0.893       | -0.382  | 0.114   | UNIV         | 0.057   | 0.954   | 0.189        |         |         |
| W_UNIV | 0.096        | 0.963   | 0.109   | W_UNIV      | 0.024   | 0.952   | 0.145        |         |         |
| UNIV   | 0.129        | 0.956   | 0.152   | MENT         | 0.266   | 0.884   | 0.012        |         |         |
| MENT   | 0.348        | 0.881   | 0.018   | SECOND      | 0.122   | 0.635   | 0.035        |         |         |
| SECOND | 0.209        | 0.848   | 0.131   | FIRST       | 0.087   | -0.019  | 0.441        |         |         |
| FIRST  | 0.050        | -0.943  | 0.070   | 60           | -0.280  | -0.137  | 0.925        |         |         |
| 40.59  | -0.033       | 0.021   | 0.988   | 40.59        | 0.005   | 0.208   | 0.920        |         |         |
| 60     | -0.438       | -0.042  | 0.859   | 20.39        | 0.435   | 0.309   | -0.768       |         |         |
| 0.19   | -0.098       | -0.394  | -0.873  | 0.19         | -0.022  | -0.275  | -0.933       |         |         |
aged (older_age) factors respectively because the factor loadings of these factors are inclined to the older aged group. The Slavic regions share their social factors of 1979 and 1989 with those of the Ukrainian SSR and those of the RSFSR in 1959 and 1979.

The Slavic regions' social factors of 1959 and 1970 are as complicated as those of the RSFSR in 1970 and 1989. PHYS, URB and KOL of 1959 indicate high absolute values on Factor 2 but the KOL is positive and URB and PHYS are negative. In other words, this factor's property is reversed by comparison with the urban physical labor factor in other regions. We therefore refer to it as "the minus urban physical labor factor" (-urb_phys) from the comparative point of view. UNIV, W_UNIV and MENT of 1959 indicate relative higher factor loadings on Factor 1. So this factor could be construed as the higher educational attainment factor, as was often observed. FIRST and 20_39 of 1959 show relatively higher factor loadings on Factor 3. This factor is therefore referred to as the low educational attainment and 20_39 age group factor (1_ed_20_39).

Social factors of 1970 also widely differ. Factor 2 of 1970 is the exception for this year. Because this factor has an affiliation with over-middle-aged variables, this factor is construed as the over-middle-aged (ov_mid_ag). Factor 1 has urbanization, relative higher educational attainments and the rate of kolkhoz workers. In particular, the urbanization and kolkhoz worker rates show the highest positive and negative absolute values respectively. We therefore refer to this factor as the urbanization and higher educational attainment factor (urb_hg_ed). The variables of FIRST and PHYS indicate relative higher absolute values of factor loadings on Factor 3 of 1970. So this factor could be interpreted as the lower educational attainment and physical worker factor (lw_ed_phys), as in the case of Factor 3 for the RSFSR in 1979.

Because of the difference in factor properties of 1959 and 1970, the comparison of regression analysis results is as complicated as in the RSFSR case. We have tried to array the factors in accordance with the results of the Ukrainian SSR and the RSFSR. For easier comparison, factors of the first line in the matrix are close to the urban physical labor factor in their attribution, the second line is close to the higher educational attainment factor, and the last line is the age distribution factor (Tables 8 and 9). Without exception, the factors in the first line that have physical labor properties explained most of Russian mother tongue rate (Table 8). To the contrary, without exception most of the retail
SOCIAL STRUCTURES AND THE RATE OF RUSSIAN

Table 8. Regression of Russian mother tongue rate in Slavic regions

|       | 1959 | 1970 | 1979 | 1989 |
|-------|------|------|------|------|
| urb phys | .52** | lw.edphys | .64** | urb phys | .72** | urb phys | .70** |
| higher edu | .18* | urb.he | .44** | higher edu | .08 | higher.edu | .14 |
| led.20.39 | .01 | ov.mld.ag | .06 | ov.mld.ag | .20** | older.age | .09 |
| ad r sq | .28 | ad r sq | .60 | ad r sq | .55 | ad r sq | .50 |

*adj_r_sq, adjusted R square
*p<0.05, **p<0.01

Table 9. Regression of retail turnover per capita in Slavic regions

|       | 1959 | 1970 | 1979 | 1989 |
|-------|------|------|------|------|
| urb phys | .59** | lw.edphys | .05 | urb phys | .41** | urb phys | .23** |
| higher edu | .85** | urb.he | .92** | higher.edu | .79** | higher.edu | .84** |
| led.20.39 | .38** | ov.mld.ag | .14** | ov.mld.ag | .01 | older.age | .03 |
| ad r sq | .91 | ad r sq | .87 | ad r sq | .78 | ad r sq | .78 |

*adj_r_sq, adjusted R square
*p<0.05, **p<0.01

turnover per capita is explained by the factor of the second line in the matrix (Table 9).

Hence, as in the RSFSR, Russian language selection in the Slavic regions is also thought to be generally unprofitable. This is because the Russian mother tongue rate is mainly explained by the physical labor attribution, but social profit is without exception oriented to higher educational status.

5. Conclusion and discussion

5.1. Conclusion
As analyzed and explained above, it can be concluded that the selection of Russian as one’s mother tongue was not profitable in the Slavic regions. If we follow the results of the HP and SIP, the fact that the selection of Russian as one’s mother tongue is correlated more with physical labor than higher educational attainment affirms the lesser profitability of Russian mother tongue selection because educational attainments themselves reflect relatively higher rewards and quality of life in the USSR. We checked the validity of this assumption using the data on “retail turnover per capita.” The resulting research using Soviet statistical materials confirms the results of the HP and SIP, which are based on questionnaires given to emigrants from the USSR, although we ought to carry out an analysis with other materials because this confirmation
Masayuki Kuwata

relies on an index. In any event, using Soviet statistical materials, this paper’s analysis both confirms the lesser profitability of Russian mother tongue selection and also testifies to the existence of social structures that are not far from other western developed countries, as indicated by earlier emigrant questionnaire-based research such as the HP or SIP. In the long run, the lesser profitability of Russian mother tongue selection is observed in the RSFSR and the Slavic regions as a whole. It is also detected in Ukraine after 1979.

5.2. Discussion
Regional and time-series analyses on the basis not of particular variables but of distilled factors leads us to an explanation of the inconsistency between Russians and minorities concerning their evaluations of Soviet language policy. The minorities’ discontent is clearly reflected in the Ukrainian analysis because Russian mother tongue selection is explained by higher educational attainments with a certain significance that could not been observed in other regions. In addition, the urban physical labor factor’s explanation rate on the wealth indicator exceeds that of the higher educational attainment factor in 1970 and the difference in explanation rate between the urban physical labor factor and higher educational attainment is not distinctive in 1959. In other words, the explanation rate for social profit was not so evident in the urban physical labor and higher educational attainment factors. Furthermore, in Ukraine prior to 1970, the urban physical labor factor might be construed as a profitable property even by comparison with higher educational attainment. Therefore, as with the other regions, Russian mother tongue selection was generally unprofitable, but those structures were not so obvious as in the RSFSR and the Slavic regions as a whole. If the urban physical labor factor was the main source of social rewards before 1959, Ukrainian social structures had been privileged by the urban physical labor factor throughout most of the Soviet regime, and the Ukrainian people had been inclined to think of themselves as repressed by the Soviet regime.

To the contrary, Russians in the RSFSR had long experienced quite a different situation. Without exception, Russian mother tongue selection was correlated with the age distributions, oriented to the older generation. This could be interpreted to mean that Russian mother tongue selection was explained more by aging ethnic Russians than any other factors. On the other hand, social rewards were correlated with higher educational attainment. This situation had also
SOCIAL STRUCTURES AND THE RATE OF RUSSIAN

remained static since 1959, without exception. We believe that the statistical reality endorses the Russian’s discontent, as explained above. This is because we have found that the selection of Russian as one’s mother tongue brought no tangible benefits. The Slavic regions as a whole shared this situation with the RSFSR.

We are now able to evaluate Soviet language policies in the Slavic regions. Language policy in the RSFSR is at no point construed as Russification because Russian language selection was in no way profitable. The Ukrainian situation is somewhat complicated. The selection of Russian as one’s mother tongue in Ukraine seems to have been profitable up until 1970. But this tendency does not continue after 1979. These results imply that language policy in the Ukrainian SSR could be perceived as Russification by Ukrainian citizens, but this perception does not mean that the government of the Ukrainian SSR or the Soviet regime only promoted the Russian language. If language policy was drawn up with the goal of deliberate Russification, the profitability of Russian mother tongue selection should have continued after 1979. Instead, social structures for reward attainment seem to shift from the urban physical labor factor to the higher educational attainment factor in Ukraine. This phenomenon is quite natural from the sociological point of view. It is therefore difficult to evaluate the language policy in Ukraine as consistent with Russification, insofar as this phenomenon is not attended by Russian mother tongue selection.

In summary, we conclude that when conducting regional studies of the USSR on large phenomena, they should be analyzed on the basis of both time-series and regional differences. This approach enables us to shed light on the entangled and contradictory ethnic cleavages.

5.3. Remaining challenges
This paper only focuses upon the Slavic regions but the method we have employed enables us to investigate the entirety of the USSR as well as other regions within it. In general, an economic datum is referred to in order to confirm social rewards. However, both phases need additional data, so our next challenge begins with data gathering. Another challenge concerns the statistical method. We made use of factor analysis by varimax rotation because earlier research on the extraction of social factors also used varimax rotation. But social factors like urban physical labor and higher educational attainment might have some
Masayuki Kuwata

correlation, so future studies ought to experiment with other rotation methods.

Notes
1. In this paper, we consider “social structure” to be a system organized by characteristic pattern of relationships.
2. “Indices” is used as an interchangeable term for variables.
3. Social factors are defined as clustered variables, each of which consists of highly inter-correlated variables.

References
Arel, D. (1993) Language and politics of ethnicity: The case of Ukraine. University of Illinois at Urbana-Champaign.
Arel, D. (1995) “Language politics in independent Ukraine: Towards one or two state languages.” Nationalities Papers, 23(3): 610-620.
Bahry, D. (1993) “Society transformed? Rethinking the social roots of Perestroika.” Slavic Review, 52 (3):512-554.
Clem, R. (1986) “On the use of Russian and Soviet Censuses for research.” In Clem, R (ed.) Research guide to the Russian and Soviet censuses. Cornell University Press, Ithaca, pp. 17-31.
Hattori, M. (2002) “The language situation in Belarus in figures.” Osnova, 1:89-125. (In Japanese)
Kuwata, M. (2000) “A method for deriving data from the Soviet censuses 1959, 1970, 1979, 1989: The case of the Ukraine.” Japanese Slavic and East European Studies. 21: 7-19.
Kuwata, M. Hayasaka, M. Nakagawa, M. (2003) “Language selection and social structure transition in Ukraine from 1959 to 1989.” In Yanai, H. Okada, A. Shigemasu, K. Kano, Y. Meulman, J. (eds.) New Developments in Psychometrics. Springer-Verlag, Tokyo, pp. 157-164.
Lewis, R. Rowland, R and Clem, R. (1976) Nationality and population change in Russia and the USSR: An evaluation of Census data, 1897-1970. Praeger Publishers, New York.
Liebowitz, R. (1986) “Education and literacy data in Russian and Soviet censuses.” In Clem, R (ed.) Research guide to the Russian and Soviet censuses. Cornell University Press, Ithaca, pp155-170.
Sacks, M. (1986) “Occupation and work force data in Russian and Soviet censuses.” In Clem, R (ed.) Research guide to the Russian and Soviet censuses. Cornell University Press, Ithaca, pp98-112.
Shiokawa, N. (1990) “The Significance of Ethnic Conflicts in Soviet Politics.” Soren Kenkyu (Soviet Studies), 11:8-37. (In Japanese)
Shiokawa, N. (1997) “Some problems in the history of Soviet language policy.” Occasional Papers on Changes in the Slavic-Eurasian World, Slavic Research Center, Hokkaido University. (In Japanese)
Silver, B. (1975) “Methods of deriving the data on bilingualism from the 1970 Soviet census.” Soviet Studies, 27(4): 574.
Silver, B. (1978) Language policy and the linguistic Russification of Soviet nationalities. In

NII-Electronic Library Service
SOCIAL STRUCTURES AND THE RATE OF RUSSIAN

Azrael, J. (ed.) Soviet nationality policies and practices. Praeger, New York, pp. 269-301.
Vinokur, A. and Ofer, G. (1987) "Inequality of earnings, household income, and wealth in the Soviet Union in the 1970's." In Millar, J. (ed.) Politics, work, and daily life in the USSR. Cambridge University Press, Cambridge, pp. 171-202.

Data sources:
1. Soviet Censuses
TsSU USSR. (1962) Results of the All-Union 1959 census. svodnij volume, GOSSTATIZDAT, Moscow.
TsSU USSR. (1963) Results of the All-Union 1959 census, Belorussian SSR. GOSSTATIZDAT, Moscow.
TsSU USSR. (1963) Results of the All-Union 1959 census, RSFSR. GOSSTATIZDAT, Moscow.
TsSU USSR. (1963) Results of the All-Union 1959 census, Ukrainian SSR. GOSSTATIZDAT, Moscow.
TsSU USSR. (1972) Results of the All-Union 1970 census, Volume 1, Size and distribution of the USSR population. Statistika, Moscow
TsSU USSR (1972) Results of the All-Union 1970 census, Volume 2, Gender and age distribution of the USSR population. Statistika, Moscow
TsSU USSR (1972) Results of the All-Union 1970 census, Volume 3, Educational attainment of the USSR population. Statistika, Moscow.
TsSU USSR. (1972) Results of the All-Union 1970 census, Volume 4, Ethnicity and mother tongue distribution of the USSR population. Statistika, Moscow.
TsSU USSR (1973) Results of the All-Union 1970 census, Volume 5, Income sources and social strata in national economy, Statistika, Moscow.
Goskomstat USSR (1989) Results of the All-Union 1979 census, Volume 1, Size and distribution of the USSR population. InformTsentr, Moscow.
Goskomstat USSR (1989) Results of the All-Union 1979 census, Volume 2, Part 1-2, Gender and age distribution of the USSR population. InformTsentr, Moscow.
Goskomstat USSR (1989) Results of the All-Union 1979 census, Volume 3, Part 1-2, Educational attainment of the USSR population. InformTsentr, Moscow.
Goskomstat USSR (1989) Results of the All-Union 1979 census, Volume 4, Part 1, Book 1-3, Ethnicity and mother tongue distribution of the USSR population. InformTsentr, Moscow.
Goskomstat USSR (1992) Results of the All-Union 1989 census, Volume 1, Part 1, Size and distribution of the USSR population. East View Publication, Minneapolis.
Goskomstat USSR (1992) Results of the All-Union 1989 census, Volume 2, Part 1, Age distribution of the USSR population. East View Publication, Minneapolis.
Statistical Committee of CIS (1993) Volume 6 Part 1-4, Educational attainment of the USSR population. East View Publication, Minneapolis.
Statistical Committee of CIS (1993) Volume 7 Part 1-2, Ethnicity and language distribution of the USSR population. East View Publication, Minneapolis.

85
Masayuki Kuwata

Statistical Committee of CIS (1993) Volume 9, Social Strata of the USSR population. East View Publication, Minneapolis.

2. Annual Statistical books
   Goskomstat Belorussian SSR (1988) National economy of Belorussian SSR in 1987. Belorussia, Minsk.
   Goskomstat RSFSR (1988) National economy of RSFSR in 1987. Finans i statistika, Moscow.
   Goskomstat Ukrainian SSR (1988) National economy of Ukrainian SSR in 1987. Tekhnika, Kiev.