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AND ROBERT A. LEWIS

*Internal Migration in Russia
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THE PURPOSE of this study is to describe and analyze the magnitude and direction of the appreciable internal migration that occurred in Russia during the last decades of the nineteenth century. The first part of the article is a description of regional migration patterns, the second part an analysis of these patterns, primarily in terms of economic differentials.

Migration is a complex phenomenon. The supply of migrants to an area is related to such factors as income, distance, size of population, distribution of information, social and cultural amenities, location of resources, and government policy. Some factors may influence potential migrants more than others at a particular stage of economic development. Economic factors seem to be crucial, especially in the early stages of economic development. A useful way to interpret economic data is to compare income differences between areas.¹ Specifically, we shall analyze the relationship between migration by guberniia and differences in indicators of income as inferred from socioeconomic data.²

Data for this study are primarily from the 1897 census, the first comprehensive census taken in the Russian Empire.³ Migration is measured by

¹ For example, differences in unemployment rates between areas were used in a study of labor mobility; see H. Makower, J. Marschak, and H. W. Robinson, "Studies in Mobility of Labour: A Tentative Statistical Measure," *Oxford Economic Papers*, I (1938), 83-123; "Studies in Mobility of Labour: Analysis for Great Britain," Pt. I, *ibid.*, II (1939), 70-97; and Pt. II, *ibid.*, IV (1940), 39-62. This approach has also been incorporated in a migration model by W. H. Somermeijer ("Een Analyse van de Binnenlandse Migratie in Nederland tot 1947 en van 1948-1957," *Statistische en Econometrische Onderzoekingen* (1961), pp. 115-74; English summary, p. 144).

² In this paper the term "guberniia" is also used to refer to an oblast.

³ Tsentral'nyi statisticheskii komitet, *Pervaia vseobshchaia perepis' naseleniia rossiiskoi*

This study was made possible by support from the National Science Foundation. We also acknowledge the aid of our able assistant, Richard H. Rowland, in the preparation of this paper, as well as the use of the computer services at Western Data Processing Center, University of California at Los Angeles, where we were assisted by George Diehr.

guberniia from place-of-birth data referring to the number of persons who, at the time of the census, lived in an *uezd* or guberniia other than the one in which they were born, and is related to socioeconomic data primarily from the census, but also from other sources. From place-of-birth data the relative magnitude and direction of migration—the most important factors in the analysis of migration—can be derived, but these data have certain limitations. They give only the net result of migration between the time of birth and the time of enumeration. The chief limitations are that the number of migrants in any given year cannot be determined, and migrants who have died or returned to their place of birth are not counted. Another problem is that guberniias and *uezdy* vary in area and configuration, and thus a move from the center of one unit might result in the crossing of a political boundary, whereas in another unit a move of an equal distance might not. Nevertheless, the availability of place-of-birth data permits an extensive analysis of internal migration in Russia.

Migration and such data as labor force and literacy are analyzed for total, urban, and rural categories. Unfortunately, the urban definition in the 1897 census is not entirely satisfactory, because it is not based on a standard criterion.⁴ Despite this deficiency, the data are representative of predominantly urban centers.

Data on migration to the east were also collected, mainly from 1896 to 1914, at migrant points,⁵ the chief one being at Cheliabinsk on the Trans-Siberian Railroad. However, these data were not used in this study because they measure only one migrant stream and are limited in terms of destination and origin information and, above all, because many migrants probably avoided registration. At the migrant points various surveys were made of the economic characteristics of the migrants, and this information is included in our analysis.

imperii, 1897 g. (St. Petersburg, 1899–1905), *Vypuski* 1–89; and TSK, *Naselennye mesta rossiiskoi imperii v 500 i bolee zhitelei* (St. Petersburg, 1905; “Pervaia vseobshchaia perepis’ naseleniia rossiiskoi imperii, 1897 g.”). Data in the 1897 census are based on the *de facto* population.

⁴ The urban population in the 1897 census comprises the *uezd* and guberniia administrative centers, including their contiguous built-up areas, as well as a significant number of legal cities (*zashtatnyi* and *bezuezdnyi*). A number of centers that were urban in terms of function were not legal cities; for example, thirty-five centers with populations between 15,000 and 41,000 were not included in the urban population. These centers had a total population of 694,674. Also very small *uezd* centers, which were actually little more than agricultural villages, were considered urban.

We have determined the urban population living in all cities of 15,000 or more according to the contemporary major economic regions of the USSR. This was necessary in order to compare population changes from 1897 to 1959 in conjunction with a study of internal migration. The larger study required the establishment of comparable territorial units within the USSR. The results were presented in our article, “Regional Population Changes in Russia and the USSR Since 1851,” *Slavic Review*, XXV, No. 4 (Dec. 1966), 663–68; and the methods are explained in detail in our monograph entitled *Population Changes in Russia and the USSR: A Set of Comparable Territorial Units* (San Diego: San Diego State College Press, 1966).

⁵ *Pereselencheskoe upravlenie, Itogi pereselencheskogo dvizheniia za vremia s 1896 po 1909* (St. Petersburg, 1910); and *Itogi pereselencheskogo dvizheniia za vremia s 1910 po 1914* (St. Petersburg, 1916).

I

A good deal of internal migration occurred in Russia after the Emancipation, largely in response to unfavorable economic conditions in the densely settled areas of European Russia. One major stream of migration went to sparsely populated frontier areas, where there was a surplus of land. The other major stream went to urban centers, where appreciable industrial and commercial growth provided the basis for an expanding urban population. According to the 1897 census, out of a population of 125,600,000 (which excluded the Finnish guberniias), 85.4 percent, or some 107,200,000 people, were classified as natives; that is, they lived in the same *uezd* or city in which they were born. Although the area of the political units varies considerably, making it impossible to derive precisely comparable distances for the various types of migration, a reasonably good approximation of the distance of migration can be obtained from available census data. Local or intra-guberniia migration can be measured from data on the number of people who in 1897 were living in the same guberniia in which they had been born but who had moved across an *uezd* or city boundary; 5.2 percent of the population of the Russian Empire, or some 6,500,000 people, are included in this category.⁶ Inter-guberniia migration, or the number of people in 1897 living in a guberniia other than the one in which they were born, subsequently referred to as in-migration, exceeded intra-guberniia migration and totaled 9 percent of the population, or some 11,300,000 people. This is less than interstate migration in the United States, where from 1850 to 1950 it normally varied between 20 and 25 percent of the total population.⁷ The remaining 0.5 percent of the Russian population consisted of immigrants from foreign countries.⁸

On a world basis, more migration usually occurs locally than over long distances; but according to the data above, migration in Russia did not conform to this pattern. There was, however, considerably more local migration in the Russian Empire than the data indicate, because a migrant who moved a short distance, but across a guberniia boundary, was included in the same category as one who moved across the entire country. However, data are available on the number of migrants to a given guberniia from each of the other eighty-eight guberniias and from foreign countries, and consequently migration from the surrounding areas to each guberniia can

⁶ In the census tabulation of place-of-birth data by *uezd*, cities are considered as separate units. Consequently, intra-guberniia urban migration must include migrants into a city from the *uezd* in which the city is located, and intra-guberniia rural migration includes migrants who moved out across the boundary of any city within the *uezd* into a rural area.

⁷ Conrad Taeuber and Irene B. Taeuber, *The Changing Population of the United States* (New York, 1958), p. 95.

⁸ Because this study is concerned with internal migration, data on migration to foreign countries were not considered. From 1860 to 1889 there was a net outflow of 1,100,000 people, and from 1890 to 1915, 3,300,000. The emigrants came predominantly from western Russia, and the largest single group was Jewish. The effect of our disregarding this emigration is to exaggerate slightly the percentage of out-migrants and in-migrants in a number of western guberniias. See Walter F. Willcox, ed., *International Migrations* (New York, 1931), II, 523.

be determined. Because it was much too laborious to calculate and analyze in-migration to each guberniia from each of the other eighty-eight guberniias or foreign countries (foreign countries were ranked among the top five areas providing migrants in only a few outlying guberniias), it was decided to consider for each guberniia only the top five suppliers of migrants, which in almost three-fourths of the guberniias included more than 50 percent of the migrants.

Two indices were used to analyze this migration. First we determined how many of the top five guberniias and foreign countries providing migrants to each of the eighty-nine guberniias were contiguous to the guberniia in question. Of the total number (445) of the top five suppliers of migrants, 61 percent were contiguous; of urban migrants, 54 percent; and of rural migrants, 63 percent. The other index used differs from the contiguity index only in that, in addition to contiguous guberniias or foreign countries, it takes into consideration also those that adjoin the contiguous units. We use the term "linked" to designate these two categories taken together. Of the 445 top five suppliers of migrants, 79 percent were linked; of urban migrants, 75 percent; and of rural migrants, 78 percent. Thus a considerable proportion of the in-migrants in all categories were from linked guberniias.

As might be expected, more men migrated than women; 86.8 percent of the female population were classified as natives in 1897, as against only 83.9 percent of the male population. Of the intra-guberniia migrants, however, there were 939 men per 1,000 women. But men predominated among the in-migrants, with 1,387 men per 1,000 women, or in the aggregate about 1,800,000 more men than women.

An investigation of total in-migration, that is, rural and urban in-migration combined, reveals that the guberniias in European Russia roughly north of the steppe had few in-migrants in proportion to their total population; generally less than 7 percent of the population of each of these guberniias were born in other guberniias (Fig. 1). In absolute terms, about three-fourths of these guberniias had fewer than 100,000 in-migrants each, and most of the remainder had fewer than 150,000. The more urbanized guberniias had the most in-migrants, up to more than 900,000 each.⁹

The steppe and southern Siberia were the areas of greatest in-migration, and here the proportion of in-migrants to the total population of most political units ranged from 12 to 33 percent. There were a few political units, chiefly those with a natural environment not suitable for agriculture, which had less than 12 percent. In the Far East very high relative gains, from 39 to 72 percent, were characteristic, primarily because of their small populations rather than because of a large number of in-migrants. Most guberniias, however, had fewer than 200,000 in-migrants, but two had over 600,000 and eight had between 200,000 and 450,000. Migration to the political divisions of the Transcaucasus and Russian Central Asia was not

⁹ These were St. Petersburg, Moscow, Petrokov (in Polish, Piotrków; containing the city of Łódź), and Warsaw guberniias.

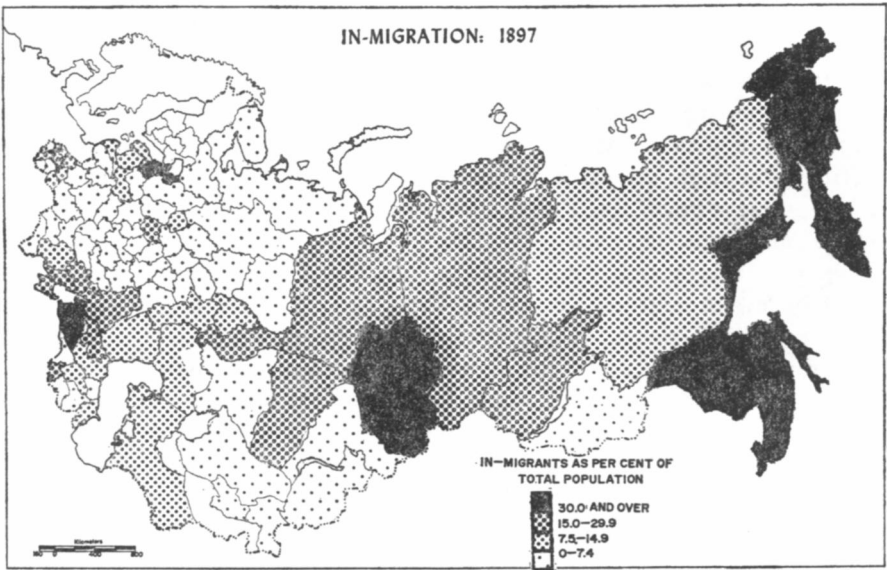


Figure 1



Figure 2.

great, generally less than 10 percent, or 50,000 in-migrants. In these areas the majority of the migrants came from nearby areas, probably reflecting cultural barriers to migration in addition to the deterrent of distance. A similar pattern is evident in the Polish guberniias.

To characterize further the regional variation in in-migration, data are grouped in Table 1 into seven regions of roughly homogeneous migration

characteristics. This table and the other tables that provide regional migration data contain a summation of the migration characteristics of all the guberniias in each region, and thus each region includes inter-guberniia migrants from within the region as well as those from outside the region. That these regions vary in the number and size of internal political units and in population should also be considered when analyzing the tables. Despite these drawbacks, the groupings provide a useful summation of regional migration patterns.

The guberniias roughly north of the steppe in European Russia that had relatively few in-migrants comprised the chief area of out-migration (Fig. 2). Out-migrants—persons who moved out of the guberniia of their birth—were tabulated in the 1897 census according to the guberniia of their birth. To exclude the element of in-migration, out-migration was measured relative to the native guberniia population, defined as those living in the guberniia of birth, rather than the total population. Central Russia historically has been the main area of out-migration to the border areas. This pattern is substantiated by the data on out-migration from the 1897 census.¹⁰ In sixteen contiguous guberniias in central European Russia, out-migrants were from 10 to 24 percent of the native population of each. In absolute terms, these guberniias each had from 200,000 to 450,000 out-migrants, which totaled 4,591,371, or 41 percent of the total number of out-migrants in the Russian Empire. Around this core, out-migration of most guberniias was from 6 to 12 percent of their native population. There were, however, two other smaller areas of appreciable out-migration, the Polish guberniias and the guberniias along the Baltic coast, where out-migrants were also generally from 12 to 24 percent of the natives, but no more than 150,000 out-migrants from any one guberniia.

Elsewhere in the Empire out-migration was generally much less than in central European Russia. In the steppe of southern European Russia, excluding the North Caucasus, out-migration generally ranged from 5 to 10 percent of the native population of each guberniia, and in absolute terms from 100,000 to slightly over 200,000 from each guberniia. In the remainder of the Empire out-migration was relatively slight, usually less than 5 percent of the natives, or 50,000 persons per guberniia.

Regional patterns in out-migration can be observed in Table 2.

Economic conditions largely account for the substantial out-migration that occurred in the European guberniias north of the steppe. In the past the problems engendered by an expanding population resulted in out-migration and also in an intensification of agriculture, entailing an evolution from migratory agriculture to two- and then three-field rotation. With the introduction of serfdom, which was well established by the seventeenth century, the movement of the rural population was severely restricted, and a surplus population relative to its technology and resources was created.

After the abolition of serfdom, when migration continued to be severely restricted, these conditions intensified, resulting in the "agrarian prob-

¹⁰ No breakdown into urban or rural out-migration was given in the 1897 census.

TABLE 1. Regional Variations in Total In-Migration

Region ^a	Number of In-Migrants	Regional In-Migrants as Percent of Total In-Migrants	Regional Population as Percent of Total Population	In-Migrants as Percent of Population
European North	5,520,811	48.9	65.0	6.8
European Steppe	2,599,380	23.0	12.9	16.1
West Siberia	880,433	7.8	2.7	26.2
East Siberia and Far East	466,883	4.1	1.9	19.5
Stepnoi Krai	268,738	2.4	2.0	10.9
Central Asia and Trans-caucasus	479,052	4.2	8.1	4.7
Polish guberniias	1,070,996	9.5	7.5	11.4
Total	11,286,293	99.9	100.1	9.0

^a The European North includes the forty-four guberniias north of the steppe, but excludes the ten Polish guberniias. Bessarabia, Kherson, Tavrika (or Tavrida [Crimea]), Ekaterinoslav, Donskogo Voiska, Astrakhan, Kuban, Chernoe More, Stavropol, Terek, and Dagestan guberniias comprise the European Steppe. West Siberia includes Tobolsk and Tomsk guberniias, and East Siberia and the Far East include the seven political units to the east of these guberniias. Uralsk, Turgai, Akmolinsk, and Semipalatinsk guberniias comprise Stepnoi Krai.

TABLE 2. Regional Variation in Total Out-Migration

Region	Number of Out-Migrants	Regional Out-Migrants as Percent of Total Out-Migrants	Regional Native Population as Percent of National Total Guberniia Natives	Out-Migrants as Percent of Guberniia Natives
European North	8,628,914	77.7	66.8	11.4
European Steppe	913,456	8.2	11.8	6.8
West Siberia	184,502	1.7	2.2	7.4
East Siberia and Far East	74,438	0.7	1.6	4.0
Stepnoi Krai	69,744	0.6	1.9	3.2
Central Asia and Trans-caucasus	192,362	1.7	8.4	2.0
Polish guberniias	1,040,836	9.4	7.2	12.7
Total	11,104,252	100.0	99.9	9.8

NOTE. These data do not include out-migrants from unknown areas (persons who did not know their place of birth); consequently, there are some 182,000 fewer out-migrants than in-migrants.

lem.”¹¹ A relatively poor natural environment for agriculture, particularly in the mixed forest zone, a growing rural population, small landholdings, high taxes and redemption payments, high rents, a backward, almost stagnant agricultural technology, the limitations of the commune, an inadequate internal market, and declining agricultural prices on the world market all contributed to the impoverishment of a large portion of the Russian rural population. In central European Russia conditions were worse, particularly in respect to the size of the landholdings, because this was the area where serfdom was the most highly developed. After the Emancipation the average size of the holdings of the former serfs in European Russia was only 3.5 desiatinas, or about 40 percent of the size of the

¹¹ For a detailed treatment of this subject in English, see George Pavlovsky, *Agricultural Russia on the Eve of the Revolution* (London, 1930), pp. 61-146; and Geroid T. Robinson, *Rural Russia Under the Old Regime* (New York, 1949).

lands held by the former state peasants; and of the landholdings of the former serfs the smallest were in central European Russia. Also, redemption payments for former serfs per unit of land were about 50 percent higher than for state peasants.¹²

These conditions led to considerable out-migration from central European Russia to both rural and urban areas. Rural migrants were attracted by the unused agricultural land in the steppe, and with the building of the Trans-Siberian Railroad in the last two decades of the nineteenth century there was an accelerated settlement of the eastern part of the steppe.¹³ However, most of this migration was not sanctioned by the state, because of the restrictions on legal migration under the Emancipation decrees. Before a peasant could leave the commune in which he was registered, he had to prove that he was not currently liable for military service, had no arrears in state or communal levies, had paid his taxes through January of the following year, had no private obligations recorded against him at the township office, and had a certificate of admission from the commune to which he planned to migrate.¹⁴ Only a very few prosperous peasants could fulfill these requirements. Consequently, many of the migrants moved illegally (the Russian government termed them *samovol'nye*), although the laws were not enforced. In the 1880s, 72 percent of the migrations to Siberia were illegal, but the proportion declined to an annual average of about 40 percent by the end of the century.¹⁵ Although the government passed a series of decrees that attempted to regulate and, to a limited degree, to aid migration, it was never able to control it. These decrees did little more than to legalize the violations of the law. Finally, in 1904, migration was declared legal for everyone.

As the aggregate data for the Russian Empire indicate, intra-guberniia migration was much less than inter-guberniia migration; variation by guberniia in intra-guberniia migration was also much less. In European Russia north of the steppe, generally from 4 to 6 percent of the total population, or fewer than 100,000 persons per guberniia, were intra-guberniia migrants. The chief exceptions to this pattern were the Polish and Baltic guberniias, where intra-guberniia migration ranged from about 7 to 16 percent of the total population but still remained fewer than 100,000 migrants per guberniia. In the chief areas of in-migration, intra-guberniia movements of population were generally below 5 percent of the total population, or below 100,000 migrants per guberniia.

Migration to urban areas was less than to rural areas but constituted a relatively large proportion of the total migration. Of the intra-guberniia

¹² Pavlovsky, pp. 76–79.

¹³ For detailed discussion of rural migration to the eastern area, see George J. Demko, "The Russian Colonization of Kazakhstan, 1896–1916" (unpubl. Ph.D. diss., Department of Geography, Pennsylvania State University, 1964); L. F. Skliarov, *Pereselenie i zemleustroistvo v Sibiri v gody stolypinskoi agrarnoi reformy* (Leningrad, 1962); Donald W. Treadgold, *The Great Siberian Migration* (Princeton, 1957); and I. L. Iamzin, *Pereselencheskoe dvizhenie v Rossii s momenta osvobozhdeniia krest'ian* (Kiev, 1912).

¹⁴ Treadgold, pp. 67–68.

¹⁵ Skliarov, pp. 61–68.

migrants, 40 percent went to urban areas; of the inter-guberniia migrants, 44.4 percent; and of the foreign migrants, 36.8 percent. A disproportionately large share of the intra- and inter-guberniia urban migrants, 46.2 percent, went to the nineteen cities in the Russian Empire with populations of over 100,000, which had 34.6 percent of the total urban population as defined in the 1897 census.

Almost half, or nearly 8,000,000, of the urban population were migrants, most of whom came from other guberniias: 29.8 percent were inter-guberniia migrants, 15.5 percent were intra-guberniia migrants, and 1.3 percent were foreign migrants. The proportion of urban migrants was greatest in the cities of over 100,000, generally ranging between 50 and 75 percent of their population, with Moscow and St. Petersburg having the highest proportions.

The guberniias in the area north of the steppe in European Russia, excluding the more urbanized guberniias (St. Petersburg, Moscow, Petrokov, and Warsaw), had few in-migrants relative to their total population, but in the aggregate 59 percent of the total urban in-migrants moved into the urban centers of this area (Fig. 3 and Table 3). In relative terms the greatest urban in-migration occurred in the European Steppe, Stepnoi Krai, Siberia, and the Far East, but these areas had only about 23 percent of the urban in-migrants.

Urban migrants were chiefly drawn by the increasing employment opportunities that arose in the latter part of the nineteenth century. The St. Petersburg, Moscow, and Donbas areas were notable centers of industrial development. Largely as a result of much direct state investment in industry, particularly in railroads, and governmental financial policy favorable to industry, the annual growth of industrial output averaged about 8 percent in the 1890s and was slightly over 6 percent between 1907 and 1913.¹⁶ However, in 1897, according to the definition of the census, only about 13 percent of a total population of 125,600,000 was urban; and of a labor force of 33,200,000, only 12.9 percent were engaged in industry and handicrafts. The economy was predominantly agrarian, with 74 percent of the population dependent on agriculture and 54 percent of the labor force in agriculture.

The other major stream of migration, which was to rural areas, was larger than the urban stream in respect to both intra-guberniia and inter-guberniia migration, constituting 60 percent of the former and 55.6 percent of the latter. Nevertheless, intra- and inter-guberniia rural migrants were only a small proportion of the rural population, 3.6 and 5.8 percent, respectively. Relative to the rural population there was little rural in-migration to guberniias north of the steppe in European Russia, the chief area of out-migration. It was normally less than 5 percent of the rural population of each guberniia (Fig. 4), but in the aggregate this area had 40.9 percent of the total rural in-migrants. In the European Steppe, Stepnoi Krai, Siberia, and

¹⁶ Alexander Gerschenkron, "The Rate of Industrial Growth in Russia," *Journal of Economic History*, VII (1947), 144-57.

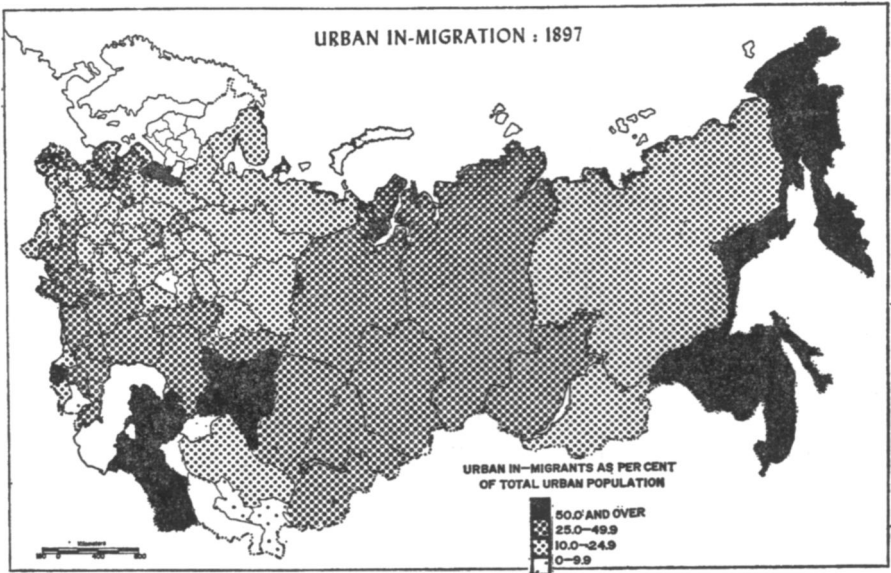


Figure 3

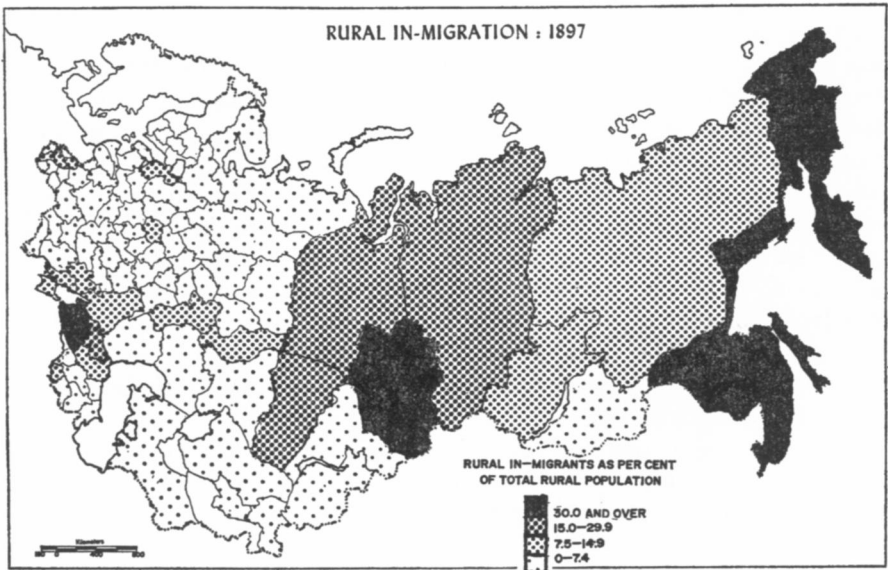


Figure 4

the Far East, rural in-migration was relatively much greater, but in absolute terms these guberniias had many fewer migrants than those in the chief area of out-migration. In Russian Central Asia and the Transcaucasus rural in-migration was slight both in relative and absolute terms. Regional patterns of rural in-migration are shown in Table 4.

TABLE 3. Regional Variations in Urban In-Migration

Region	Number of Urban In-Migrants	Regional Urban In-Migrants as Percent of Total Urban In-Migrants	Regional Urban Population as Percent of Total Urban Population	Urban In-Migrants as Percent of Urban Population
European North	2,953,571	59.0	59.3	29.6
European Steppe	888,613	17.7	15.2	34.8
West Siberia	84,766	1.7	1.3	39.4
East Siberia and Far East	110,584	2.2	1.6	21.0
Stepnoi Krai	85,611	1.7	1.2	41.9
Central Asia and Trans-caucasus	280,007	5.6	8.6	19.4
Polish guberniias	603,671	12.1	12.8	28.0
Total	5,006,823	100.0	100.0	29.8

TABLE 4. Regional Variations in Rural In-Migration

Region	Number of Rural In-Migrants	Regional Rural In-Migrants as Percent of Total Rural In-Migrants	Regional Rural Population as Percent of Total Rural Population	Rural In-Migrants as Percent of Rural Population
European North	2,567,240	40.9	65.9	3.6
European Steppe	1,710,767	27.2	12.5	12.6
West Siberia	795,667	12.7	2.9	25.3
East Siberia and Far East	356,299	5.7	2.0	16.7
Stepnoi Krai	183,127	2.9	2.1	8.1
Central Asia and Trans-caucasus	199,045	3.2	8.1	2.3
Polish guberniias	467,325	7.4	6.7	6.5
Total	6,279,470	100.0	100.2	5.8

II

In this section we shall attempt to determine whether migrants were attracted to guberniias having a higher per capita "income" than the guberniias of their birth. Because income data are scant, we shall approximate income differences from such substitute variables as labor force distribution, size of landholdings, rents, price of land, literacy rates, and level of urbanization. A move out of an agricultural into a manufacturing or mining guberniia can be interpreted as an attempt to raise one's income, and such a move would usually be to a more urbanized area.¹⁷ A move to a more literate area could also be interpreted as a move to an area of higher income, if we assume that more literate people are more productive. The agricultural variables that imply more land for the peasants also imply more income.¹⁸

¹⁷ Urban wages appear higher than agricultural wages. The average annual wage of workers in cotton manufacturing, one of the lower paid industries in Russia in 1897, was 180 rubles per year (see Peter I. Liashchenko, *History of the National Economy of Russia to the 1917 Revolution* [New York, 1949], p. 545). The median annual wage for agricultural workers in forty-three of the European guberniias from 1882 to 1891 was 57 rubles (see A. I. Chuprov and A. S. Posnikov, *Vliianie urozhaev i khlebnykh tsen na nekotorye storony russkogo narodnogo khoziaistva*, I [St. Petersburg, 1897], 176). The agricultural wage refers primarily to the landless peasants and those with small allotments, who probably predominated in the rural to urban migration.

¹⁸ Unfortunately, the noncensus data indicating the standard of living for the agricultural

Two techniques will be used to investigate the hypothesized relationships. Our top-five migration method provides a unique analysis based on place-of-birth and place-of-enumeration data. Rank correlation provides a standard statistical test for our analysis.

Basically, the top-five method seeks to compare the socioeconomic characteristics of the top five guberniias supplying migrants to each of the eighty-nine guberniias with the corresponding characteristics of the eighty-nine guberniias of in-migration. This procedure involves the following steps: (1) The five guberniias providing the most in-migrants to each of the eighty-nine guberniias were selected.¹⁹ (2) The value, expressed either as a proportion or as an absolute number, of each variable was determined for each of the eighty-nine guberniias of in-migration (for example, urban population as a percentage of the total guberniia population or the average size of peasant allotments in desiatinas). The variables that were selected are listed in Table 5. (3) The value of a given variable for each of the top five suppliers was then weighted by the number of migrants it provided to the guberniia of in-migration. The weighted mean of the variable for the top five suppliers of migrants was then obtained. This was done for each of the eighty-nine guberniias of in-migration. The following table is an example of how the weighted mean is derived:

	1	2	3
	<i>Supply of in-migrants to guberniia F from guberniias:</i>	<i>Percentage of labor force in manufacturing</i>	<i>Col. 1 × Col. 2</i>
A	10,000	.10	1,000
B	1,000	.05	50
C	2,000	.06	120
D	5,000	.08	400
E	20,000	.20	4,000
	<hr/> 38,000		<hr/> 5,570

$$\frac{\text{Col. 3}}{\text{Col. 1}} = \frac{5,570}{38,000} = 14.7 \text{ percent}$$

(4) This weighted mean was subtracted from the value of the same characteristic for the guberniia of in-migration. This subtraction was performed for each of the eighty-nine guberniias of in-migration and the weighted mean of its top five suppliers of migrants. For each variable in Table 5, except the percentage of the labor force in agriculture and the selling price of land, the difference will be positive if people moved into a guberniia with a higher standard of living, according to our interpretation of the data. For these two exceptions we have reversed the order of the variables when subtracting, so that a positive difference for these variables will also

sector (e.g., average annual peasant allotment) are available only for the fifty European guberniias. The eastern areas of Russia usually had higher proportions of rural migrants, and these were the areas with relatively more land. However, this part of the analysis is limited to European Russia.

¹⁹ The median proportion of the total in-migrants provided by these top five guberniias was 57 percent.

imply a move to an area with a higher income.²⁰ (5) The eighty-nine guberniias of in-migration were divided into three groups on the basis of the percentage of in-migrants in their total population.²¹ The comparison involving subtraction that was explained above was performed for each variable listed in Table 5 for each of the guberniias in each group. The median difference for each group was derived and used as the measure for comparison in Table 5.²²

It is our hypothesis that larger median differences should be associated with larger proportions of in-migrants. It can be seen in Table 5 that the

²⁰ When comparing differences in these variables from census data for 1897, we are not examining the differences at the time the migrants moved. The data indicate merely where people were living in 1897 and where they were born, not the year they moved. A person may have been born in guberniia A and then have moved to guberniia B in 1890, where he was enumerated in 1897. At the time he left guberniia A, the socioeconomic characteristics were undoubtedly different from those in 1897. This is also true for guberniia B. However, if guberniia B had an increase in the proportion literate between 1890 and 1897, guberniia A probably also experienced an increase. Therefore the differences might remain fairly constant.

Another possible distortion is that migrants themselves might influence the value of the variables. This bias, however, works in both directions and probably was not great, because in-migrants as a proportion of the total guberniia population amounted to less than 10 percent in about three-fourths of the guberniias.

Still another problem is that differences alone do not take into consideration other factors, such as whether an area was newly developing. If so, although it might not have been highly industrialized, its potential might have attracted many migrants. Such limitations are found in any single statistical measure. What the top-five method does show, however, is the net movement as of a certain date and the difference in the socioeconomic characteristics as of that date.

²¹ The three groups are defined below for the total and rural population.

<i>Total population</i>	<i>Percent of in-migrants</i>	<i>Number of guberniias</i>
Low	0-4.99	33
Medium	5-9.99	29
High	10 and over	27
<i>Rural population</i>	<i>Percent of in-migrants</i>	<i>Number of guberniias</i>
Low	0-2.99	28
Medium	3-5.99	33
High	6 and over	28

An urban group is not given because it would be devoid of any significance. In the total category there is no problem—people have left the guberniia of their birth and are now living in another. For the rural category, it can be assumed that very few people move from urban to rural areas. Therefore, this grouping generally shows the movement of people from the rural area of one guberniia to the rural area of another. For the urban category, people enumerated in an urban area may have come from the urban area in another guberniia as well as from its rural area, and probably the rural out-migrants dominated. The urban category would have value for comparison only if we could compare migrants from the urban area of one guberniia with the urban area of another, but for this we lack data.

²² As noted earlier, we are relating only economic differences by guberniia. Obviously other factors, such as cultural differences, distance, and availability of transportation, also influence migration and will vary by guberniia. The effect of economic factors alone on migration cannot be isolated, and, as a consequence, the observable relationship between the two, the proportion of migrants and income variables, will be weakened. However, if it can be assumed that each of these noneconomic factors in each of the three groups of guberniias has a somewhat random distribution, the effect on migration of each of these factors will tend to be offset by one another within the same group.

TABLE 5. Socioeconomic Differences Between
Guberniias of In- and Out-Migration
(By Migrants as a Percent of Total Population)

Independent Variable	<i>Total In-Migrants</i>			
	Median Difference for Low, Medium, and High Groups ^a			
	0-4.99	5-9.99	10 and over ^b	Spread ^c
Urban population (percent), 1897 (census definition)	-2.5	-1.8	+4.5	+7.0
Urban population (percent), 1897 (cities 15,000 and over)	-3.3	-2.2	+4.0	+7.3
Percentage of total labor force, 1897, in:				
Agriculture	-7.6	-1.8	+9.7	+17.3
Mining	-0.1	-0.1	0.0	+0.1
Manufacturing (handicrafts)	-3.0	-2.8	-1.2	-0.2
Population ages 10-49, literate (percent), 1897	-6.4	-1.6	+1.2	+7.6
Independent Variable	<i>Rural In-Migrants</i>			
	0-2.99	3-5.99	6 and over ^d	Spread
Percentage of rural labor force, 1897, in:				
Agriculture	-4.3	-2.8	+4.5	+8.8
Mining	-0.1	0.0	0.0	+0.1
Manufacturing (handicrafts)	-1.0	-0.8	-1.2	-0.2
Population ages 10-49, literate (percent), 1897	-3.3	-4.4	+0.9	+4.2
Average size of peasant allotment, ^e 1905	-0.8	+1.5	+5.1	+5.9
Average size of allotment per male peasant, 1880	-0.4	+0.1	+2.2	+2.6
Average arable peasant land (per rural household, 1899-1901)	-1.0	+0.5	+2.6	+3.6
Average annual agricultural wage, 1882-91	-0.7	+1.8	+23.2	+23.9
Selling price of land (average for 1860s)	-3.9	+2.0	+14.5	+18.4
Selling price of land (average for 1889)	-11.6	+3.4	+28.1	+39.7
Plowed allotment land for 1893 (per person dependent on agriculture in 1897)	-10.8	+13.6	+29.8	+40.6

^a For definition of groups see note 21.

^b Median percentage of in-migrants in this group is 17.

^c Difference between the value for the 10-and-over group and the 0-5 group.

^d Median percentage of in-migrants in this group is 12.

^e All land measurements are in desiatinas, and one desiatina equals 2.7 acres.

Sources other than census data: A. I. Chuprov and A. S. Posnikov, *Vliianie urozhaev i khllebnykh tsen na nekotorye storony russkogo narodnogo khoziaistva* (St. Petersburg, 1897), Vol. I; Glavnoe upravlenie zemleustroistva i zemledeliia, *Statisticheskie svedeniia po zemel'nomu voprosu v evropeiskoi Rossii* (St. Petersburg, 1906); N. P. Oganovskii, ed., *Sel'skoe khoziaistvo Rossii v XX veke* (Moscow, 1923).

differences are positive for each variable in the high category, with the exception of the percentage of the total and rural labor force in manufacturing. Thus, according to our interpretation of the variables, relatively more migrants moved to guberniias with a higher per capita income. In the low and medium categories all the differences are negative, with the exception of some in the medium group for rural in-migrants. Therefore, some migrants moved into guberniias with a lower income. Such perverse movements of relatively few migrants, in number as well as proportion, can be accounted for by ignorance or noneconomic factors such as cultural differences²³ or desperation.

For each variable, with the exception of the proportion of the rural labor force in manufacturing and the proportion of the total labor force in mining, as one moves from low to medium to high categories, there is a progression from negative to positive, or negative to less negative. The spread between the low and high groups is very slight for manufacturing and mining, although sharp differences are manifested by the other variables.

Migrants were moving out of rural and urban guberniias into more urbanized and more literate, but not necessarily more industrialized, guberniias. That urban in-migration was to the less industrialized urban areas is surprising, because the decade of the 1890s was one of rapid industrial growth. The data refer to all of Russia, and it may be that the migration to the less industrialized east and out of the relatively industrialized guberniias around Moscow accounted for this trend. That the data for manufacturing also include handicraft workers, many of whom worked in rural areas, could also bias the results. With respect to agriculture, the rural to rural migration was to guberniias where agricultural wages were higher and land was more abundant, as inferred from the larger peasant allotment, larger average peasant holdings, and lower prices for land in the area of in-migration.

Rank correlation is a standard statistical technique that measures how closely two variables move with respect to one another, that is, how closely

²³ Because of the multinational character of the Russian Empire, cultural differences significantly influenced the movement of people. The most mobile group was the Eastern Slavs. However, even the Eastern Slavs migrated primarily to areas where they predominated, that is, the southern steppe, Siberia, and the North Caucasus. Of course, these were also areas where there was a surplus of agricultural land. In Stepnoi Krai, however, where there was surplus land, Slavs gradually displaced the native Kazakhs.

In areas not densely settled by Eastern Slavs, the influence of culture was more pronounced. Central Asia, the Transcaucasus, and the Polish guberniias had little unused land. Of the million out-migrants from the Polish guberniias, 68 percent went to other Polish guberniias and 13 percent went to adjacent guberniias in European Russia where there was a significant Polish minority. Also, intra-guberniia migration was significantly higher than the empire average in the Polish guberniias. Out-migration in the Transcaucasus was much less than in the Polish guberniias, but 66 percent of the 163,754 out-migrants went to other guberniias in the Transcaucasus. In Central Asia, excluding Stepnoi Krai, out-migration and intra-guberniia migration were very low, perhaps reflecting the influence of the tribal social organization. Of the 28,608 out-migrants, about half went to guberniias within Central Asia.

they are related statistically.²⁴ The top-five method was based on differences in variables between areas, but in the rank correlation analysis, the value of the variable will be used. These measures, however, are similar because the rankings will be the same for a given variable whether one uses a level by guberniia or a median difference comparing each guberniia with all others. Basically, we will measure to what degree our substitute variables, the same ones that were used in the top-five analysis, co-vary by guberniia, that is, spatially, with indicators of migration. Through the use of rank correlation, we can thus make a standard statistical test of our hypothesis that indicators of the standard of living move in the same direction as indicators of migration.²⁵

The results of the rank correlation are given in Table 6 for the proportion of in-migrants and intra-guberniia migrants for the total, urban, and rural population of each guberniia. In this analysis it is possible to correlate intra-guberniia migrants as well as in-migrants, whereas in the top-five analysis intra-guberniia migration was not analyzed for obvious reasons. In order to substantiate our hypothesis that migrants moved to areas of higher income, all significant correlations should be positive (have a positive sign), except the percent of labor force in agriculture and selling price of land.

In general, it may be inferred from the correlations in Table 6 that people were moving to areas with a higher standard of living. A number are significant for both dependent variables, in-migration and intra-guberniia migration, and in all cases at least one is statistically significant (the significant correlations have an asterisk). It should also be noted that correlations between these variables and the number of out-migrants as a percentage of the guberniia population also substantiate this trend, although these correlations are not presented.

With one exception, the significant correlations have the hypothesized sign. The one exception is that the proportion of the urban²⁶ labor

²⁴ For example, if two variables such as in-migration as a proportion of the total population and percentage of the labor force in manufacturing are to be compared, the values of each variable for each of the 89 guberniias would be ranked from the highest to the lowest, and the statistical agreement of these two ranks would be measured by Spearman's Rank Correlation Coefficient formula, and the significance of the relationship could be tested. A correlation with a plus sign would denote a positive relationship, and a minus, a negative one. It should be kept in mind that the correlation results merely support or do not support hypotheses, and thus do not definitively prove or disprove the existence of a cause-and-effect relationship.

²⁵ Rank correlation is used rather than more complex techniques such as standard correlation or regression, because the top-five method is based on a ranking of differences in the values for the variables and the use of the median difference. Thus, throughout we have used an ordinal measure. Such a measure is adequate for our purposes. Given the limitations of the data, it appears that other techniques such as multiple correlation, while not detracting from the analysis, would not provide any additional insights. In addition, we merely want to determine the direction of movement rather than the value for any coefficients associated with the variables in any complex relationship. Such a precise model is not warranted by the data.

²⁶ Unless otherwise indicated, "rural" and "urban" hereafter refer to the definition of the 1897 census.

TABLE 6. Rank Correlation Coefficients

<i>Total Population by Guberniia</i>		
Independent Variable	Total In-Migrants as Percent of Total Population	Intra-Guberniia Total Migrants as Percent of Total Population
Urban population (percent), 1897 (census definition)	+ .446*	+ .382*
Urban population (percent), 1897 (cities 15,000 and over)	+ .345*	+ .254*
Percentage of labor force, 1897, in:		
Agriculture	— .478*	— .593*
Mining	+ .335*	— .012
Manufacturing (incl. handicrafts)	— .019	+ .477*
Population ages 10-49, literate (percent), 1897	+ .252*	+ .718*
<i>Urban Population by Guberniia</i>		
Independent Variable	Urban In-Migrants as Percent of Urban Population	Intra-Guberniia Urban Migrants as Percent of Urban Population
Percentage of labor force, 1897, in:		
Mining	+ .442*	— .025
Manufacturing (incl. handicrafts)	— .443*	+ .360*
Population ages 10-49, literate (percent), 1897	— .166	+ .598*
<i>Rural Population by Guberniia</i>		
Independent Variable	Rural In-Migrants as Percent of Rural Population	Intra-Guberniia Rural Migrants as Percent of Rural Population
Percentage of labor force, 1897, in:		
Agriculture	— .413*	— .478*
Mining	+ .397*	+ .038
Manufacturing (incl. handicrafts)	— .024	+ .379*
Population ages 10-49, literate (percent), 1897	+ .228*	+ .622*
Average size of peasant allotment, 1905	+ .496*	+ .059
Average size of allotment per male peasant, 1880	+ .348*	+ .090
Average arable peasant land (per rural household, 1899-1901)	+ .427*	+ .002
Average annual agricultural wage, 1882-91	+ .404*	+ .273
Selling price of land (average for 1860s)	— .517*	— .239
Selling price of land (average for 1889)	— .414*	— .129
Plowed allotment land for 1893 (per person dependent on agriculture in 1897)	+ .346*	— .050

NOTE. Asterisk indicates that the correlation is significant at 5 percent confidence level.
Sources: Same as for Table 5.

force in manufacturing has a negative correlation with in-migrants but a positive correlation with intra-guberniia migrants. This seems to indicate that the people in areas near the urban centers migrated to these centers—if there was relatively more industry as well as a higher level of literacy; yet long-distance migration to cities, in-migration, was independent of the level of literacy and was associated with less industrialization but more mining. This interpretation is consistent with the long-distance migration to the less industrialized areas of the east. Again it must be stressed, however, that the inclusion of handicrafts in the manufacturing category probably biases the data considerably.

The statistical significance for each of the noncensus agricultural variables indicative of the standard of living in the rural sector versus that of the in-migrants is noteworthy, because none is significantly correlated with the intra-guberniia migrants. As was previously noted, these variables refer only to the fifty guberniias of western Russia. In this part of Russia, at least, it appears that if the rural population migrated to other rural areas they were forced to leave their guberniia of birth in order to raise their living standards.

Within the rural area of guberniias throughout Russia, there was more movement among the *uezdy* if the rural area of a guberniia had relatively less agriculture and more manufacturing, and a higher degree of literacy. If people remained in their guberniia of birth, and land was poor or scarce, they tended to move to other *uezdy* where there was probably more manufacturing, and thus strove to raise their income in this manner.

Many of these correlations are relatively low, but because migration has a very complex relationship with many variables other than those presented here, indicators of income cannot be expected to be closely correlated with migration. Also, the relationship between the proportion of migrants and income differences might have been strengthened had the government given the people more freedom to move according to their self-interest.

Other significant correlations worth noting are the following. There was a positive relationship between the proportion of out-migrants and the proportion of intra-guberniia migrants for both rural and urban areas, $+.550^*$ and $+.441^*$, respectively. This probably reflects the reaction of residents to the low living standards in the areas of out-migration. Many moved to other guberniias, but many also sought opportunities within the same guberniia, as the following correlations also indicate. The greater the degree of urbanization, the greater was the total intra-guberniia migration, $+.382^*$. Oddly enough, the proportion of urban intra-guberniia migrants was negatively correlated ($-.294^*$) with the proportion of the population that was urban. This seems to indicate that intra-guberniia urban migrants went primarily to the smaller urban centers.

The proportion of urban in-migrants was negatively correlated with the proportion of urban intra-guberniia migrants, $-.397^*$. In the guberniias with a high proportion of urban in-migrants there was also a high proportion of rural in-migrants, and the correlation was $+.775^*$. This indicates

that the chief areas of in-migration offered both urban and rural opportunities. Consequently, the rural natives in the rural areas of large in-migration tended to remain in the rural areas rather than move to the urban centers in their guberniia, as is indicated by the negative correlation of $-.397^*$ described earlier.²⁷

The two methods of analysis, top-five in-migration and rank correlation, elucidate the analysis of migration and can be used as a check on one another. If the top-five method indicates that more migrants are associated with greater differences for a particular variable, then such a trend can be checked with the results of the rank correlation. If a statistically significant correlation is found, the inferences are more convincing. However, it is possible for the results of one method not to be confirmed by the other.²⁸

Nevertheless, comparison of the results of the rank correlations for the total and rural categories and the corresponding top-five results shows striking consistency. Each of the indicators of income has a statistically significant rank correlation coefficient with the expected sign for at least one of the dependent variables. Likewise, in the top-five results, with the exception of the proportion of the rural labor force in manufacturing, the proportion of in-migrants is directly related to increases in median income differences.

Other data also substantiate the importance of economic differentials. Migrant point data collected at Cheliabinsk in the Urals and agricultural surveys taken in Siberia indicate that migrants were seeking an improvement in their standard of living in the form of more land. For example, over 75 percent of the migrants questioned at the Cheliabinsk migrant point indicated that a lack of land was their reason for leaving European Russia.²⁹ Moreover, most migrants to Siberia belonged to the poorest group of peasants in their home guberniia, as is indicated by the data collected at Cheliabinsk around the turn of the century. The average size of household allotment for migrants in their home guberniias in European Russia was only 58 percent of the average for the fifty European guberniias.³⁰ The percentage of migrants who were landless was twice that of the population of the fifty European guberniias, and migrants had only about half as many heads of livestock and about three-fourths as many horses per household.

The present study does not presume to explain fully the complexities of

²⁷ To determine whether there were significant regional variations in the statistical relationships, data were grouped by guberniia into the following categories: chernozem, non-chernozem, Central Asia, Transcaucasus, Moslem areas, and European Russia. Selected variables were correlated according to these groupings; the correlations were generally not significant or were lower than those obtained from all eighty-nine guberniias. It can be inferred that within these groupings variables were not as closely related as between them.

²⁸ This is so for the following reasons: first, the top-five method is based on only about 50 percent of the in-migrants; and, second, median differences for the three groups used in the top-five method might increase with the proportion of in-migrants, and yet the corresponding rank correlation based on all guberniias might not be statistically significant.

²⁹ I. L. Iamzin and V. P. Voshchinin, *Uchenie o kolonizatsii i pereseleniakh* (Moscow, 1926), p. 39.

³⁰ I. L. Iamzin, *Pereselencheskoe dvizhenie v Rossii s momenta osvobodzheniia krest'ian* (Kiev, 1912), p. 181.

migration in Russia in the latter part of the nineteenth century. We have, however, demonstrated that differences in income, as inferred from a variety of socioeconomic characteristics, were related to internal migration. We have also provided insights into the migration processes in Russia by investigating the influence of select socioeconomic variables on migration. The common assumption that income differences are related to migration has been tested in few areas. There also have been few attempts to determine how the factors that influence migration vary with the stage of economic development. These represent two directions in which further research might be directed. International comparisons of internal migration would greatly contribute to our understanding of internal migration. Perhaps the techniques that we have used and those that we have devised can be applied profitably to other areas. We have also analyzed internal migration in the USSR with these techniques and data primarily from the 1926 census.³¹ We hope to clarify further internal migration in the USSR by analyzing the results of the 1970 Soviet census.

³¹ J. William Leasure and Robert A. Lewis, "Internal Migration in the USSR: 1897-1926," *Demography*, IV, No. 2 (1967), 479-96.