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Using an Origin-to-Destination Matrix

Kazuhiro Kumo

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Kazuhiro KUMO

Institute of Economic Research
Hitotsubashi University
2-1 Naka, Kunitachi-shi, Tokyo 186-8604, Japan
Phone and fax: +81-42-580-8361
E-mail: kumo@ier.hit-u.ac.jp

[Abstract]

This study examines regional economic conditions and their effects on interregional population redistribution patterns in Russia. After reviewing striking changes in population flows before and after the collapse of the former Soviet Union, an application of the gravity model on population migration in Russia in 2003 is presented using a newly obtained interregional in- and out-migration flow matrix supplied by Rosstat (formerly Goskomstat). Gross migration patterns in since the year 2000, when large transformational population flows ceased, have not been investigated so far in the existing literature. The analysis conducted focuses on geographical factors, which have been basically omitted in existing literature on migration patterns in transformational Russia, and the attractiveness of Moscow regions and resource-mining areas is clearly presented.

JEL Classification Numbers: P36, R12, R23.

INTERREGIONAL POPULATION MIGRATION IN RUSSIA: USING AN ORIGIN-TO-DESTINATION MATRIX

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1. INTRODUCTION

More than ten years have passed since the collapse of the former Soviet Union. Various topics, such as the degree of privatisation, the development of corporate governance systems, institutional change in the financial system, have been investigated (Belov and Demin, 2002; Krueger, 2004; World Bank, 2004). During the Soviet era, many phenomena in the Soviet economy could not be analysed from a traditional economic point of view because of the Soviet Union's unusual centralised organisation and the extraordinary administrative power of the government. For example, under the socialist regime, corporate governance problems could not be discussed because many of the firms were controlled by the sectoral ministries directly. The banking system was completely different in the Soviet Union from that in Western countries because Soviet banks did not play any role in financial intermediation. Interregional labour distribution was largely controlled using the strict internal passport system introduced during the Soviet period.

The purpose of this study is to examine the factors affecting interregional migration patterns in Russia, where free population migration was restricted during the Soviet era because of the internal passport system and the residence registration system (Propiska). Regional analyses can be regarded as one of the main subjects in Russian economic studies. During the Soviet era, there were numerous obstacles in regional studies other than the lack of data. Industrial location and geographical labour distribution patterns were basically planned by the central government (Perevedentsev, 1966). Therefore, these were not the main subjects for regional economic analyses of Russia.

Such a situation has, however, already changed. Regional data in Russia has become more accessible than before. Since the end of centralized control in Russia, much attention has focused on regional disparities and the process of autonomous policy making and implementation by local governments during the early stages of the transition period. Regional analysis has been conducted intensively, and a lot of interesting findings have been published (Bradshaw and Palacin, 1996; Popov, 2001; Hill and Gaddy, 2003; Полынев, 2003).

This paper focuses on regional economic conditions and interregional population migration in Russia. During the Soviet era, interregional migration was restricted. Citizens were required to carry regional passports, and permission was needed to reside in

the major cities. The implementation of central-government-initiated regional development projects necessitated the strategic redistribution of labour between regions. Although there is much debate concerning the extent to which this redistribution was actually 'strategic' (Buckley, 1995), policy-related factors clearly played a major role, as witnessed by the massive inflow of people into the so-called 'Far North regions'[1] that occurred almost without interruption throughout the Soviet era (Вишневский, 1994, pp. 139-140).

The nature of such population dynamics, however, changed greatly following the beginning of transition. Among the changes, and one that has been subject to particular attention, has been the huge outflow of people from the remote Far North regions[2]. Changes like this were inevitable once the strategic distribution of labour stopped. The existence of such abnormal population mobility has made it all the more difficult to analyse. However, the repatriation of people between Russia and the former Soviet republics began to slow in around the year 2000, causing the debate on domestic interregional migration to focus more on the decline in migration rates (Моисеенко, 2004). Taking these phenomena into consideration, it is finally becoming possible to compare this analysis with previous studies[3].

This paper will focus on observing current transition processes through changes in interregional population migration dynamics. In other words, by exploring whether it is now possible to use a general framework to gauge population migration patterns, given that the strategic allocation of population among regions has now given way to the freedom to reside wherever one wishes, it aims to shed light on how Russia is making the transition towards becoming a market economy. Studying current interregional population migration may be of help in predicting future changes in interregional economic disparities in Russia, whose regional differentials have been strengthened since the beginning of economic transformation.

This paper is organized as follows: In the next section population migration patterns in Russia since the beginning of the transition period, and in order to provide a background to these patterns, interregional economic dynamics in the period after the break-up of the Soviet Union will be reviewed also. This will highlight the unique dynamics caused by Soviet-era policies concerning the Far North regions; the concentration of population in European Russia, especially around Moscow; and the

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[1] This term is used for regions in the far north and other regions that suffer from comparably harsh conditions. These regions received priority in the allocation of resources and were subject to preferential wage conditions. Although the Far North regions have continued to receive central government aid since the collapse of the Soviet Union, the aid is no longer of a type that would encourage workers to move to these regions. In fact, the government has also adopted policies to encourage people to leave them (World Bank, 2004; Thompson, 2005).
[2] Since the end of the Soviet era 10 years or so ago, some regions have lost more than half their population through natural attrition caused by interregional migration and sharp declines in their birth rates (Росстат, 2005).
[3] Between the collapse of the Soviet Union and the end of the 1990s, between 300,000 and 900,000 people a year moved to Russia from countries that were formerly part of the Soviet Union, while between 100,000 and 600,000 people did the reverse. However, since 2000, these figures have dropped to less than 100,000 and 50,000 respectively (Госкомстат РФ/Росстат, Численность и Миграция Населения Российской Федерации, Москва, various years).

vitality of resource-producing areas. Then previous researches are examined. Despite the difficulty of gathering reliable data, previous research has already indicated that factors such as regional economic conditions, market scale, and distance have played a part in the emergence of realized population migration patterns. In Section 4 main analyses are conducted. In contrast to Andrienko and Guriev (2004), which relied on a data set that was unable to cover the period after 2000, when Russia began to witness explosive growth on the back of soaring oil prices, this paper uses data acquired from Russian Federal State Statistics Service (Rosstat) to explore interregional population migration patterns in 2003. It introduces an analysis of factors that previous research has ignored, such as the predominance of Moscow and the prominence of the resource-producing areas, and shows that these factors have had a major impact on population redistribution patterns. Finally, taking into account the findings of the analysis presented in this paper regional economic policy in Russia from 2005 onwards will be considered.

2. THE CURRENT PATTERNS OF INTERREGIONAL POPULATION MIGRATION AND REGIONAL ECONOMIC DYNAMICS IN RUSSIA

In the Soviet era, citizens travelling between regions were required to carry internal passports, and had to acquire residency permits to move to most of the major cities. Even in cases where such permission was not required, residency registration was a precondition for receiving social services[4]. These requirements enabled interregional migration to be monitored.

After the break-up of the Soviet Union, freedom of movement was enshrined in the Russian constitution, and federal law now contains no restrictions on migration[5]. In addition to its use of the residency-permit system, the Soviet central government also controlled the distribution of the labor force through its policies, allocating workplaces for new university graduates, setting wages at high levels in certain regions, and so on (Иванова, 1973). These policies were reasonably effective in promoting the development of resources in the Far North regions, which had been sparsely populated since the days of the tsars, and developing the virgin lands of central Asia   Переведенцев, 1974; Iwasaki, 2004 . However, after the collapse of the Soviet Union, such policy-driven labour redistribution has either disappeared or ceased to be significant[6], meaning that labour

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[4] Even in the Soviet era there were no penalties for people failing to register their residency. Obviously, however, failure to register carried with it many disadvantages, as unregistered residents were unable to receive services for residents, pensions, medical services, and so on.

[5] However, some regional governments have established their own rules, despite the fact that federal constitution courts have repeatedly ruled that this practice is unconstitutional. It has also been reported that some regions are still, even after 2000, continuing to operate the residency-permit system (*Moscow News*, 14 January 2004; Московские Новости, 25 March 2005). At the same time, however, with various legal loopholes have been pointed out (Ohtsu, 2005), and this paper will not consider the effect of the residency-permit system.

[6] For example, in 2000 the lower chamber of the Federal Assembly passed the Resolution to Guarantee the Stable Development of Far North Regions and Equivalent Regions. This resolution calls for the establishment of a regulatory

distribution is basically now in the hands of the people themselves.

As mentioned earlier, the dynamics that emerged were, on the whole, in sharp contrast to the Soviet-era trend. Once the strategic distribution of labour by the central government lost all practical significance, there was a large outflow of people from eastern and northern Russia, regions to which people had previously been relocated to enable the development of mining or for national defence purposes. At the same time, there was an inflow of people into European Russia, an area that had traditionally seen net outflows.

Table 1. Place of birth and place of residence observed in 1989 census and 2002 census (in thousand)

1. 1989 Census — Place of Birth

Residence	Central	North-West	South	Volga	Ural	Siberia	Far East
Central	31,623	628	580	1,473	266	496	268
North-West	1,565	10,436	286	759	158	252	124
South	930	214	16,949	782	220	455	189
Volga	978	283	327	27,447	443	390	187
Ural	555	165	355	1,872	9,180	505	116
Siberia	686	195	241	943	365	18,819	387
Far East	492	117	270	493	162	742	5,116

2. 2002 Census — Place of Birth

Residence	Central	North-West	South	Volga	Ural	Siberia	Far East
Central	29,818	662	714	1,358	316	620	384
North-West	1,038	9,768	256	565	142	241	133
South	690	206	18,018	643	227	441	228
Volga	721	249	318	27,163	378	369	199
Ural	322	102	226	1,182	8,873	363	98
Siberia	397	123	182	580	260	16,707	316
Far East	232	64	136	254	91	480	4,758

Source: Curriculated from ЦСУ СССР, Итоги всесоюзной переписи населения 1989 года, том 12, Москва, ЦСУ СССР; Росстат, Итоги Всероссийской переписи населения 2002 года, Том.10, Продолжительность проживавания населения в месте постоянного жительства, Статистика России, 2005.

Table 1 gives data from the 1989 and 2000 national censuses showing the number of people living in each federal district who were born in each federal district[7]. The data shows the cumulative effect of the interregional population migration that occurred during the interval between the two censuses. In 1989, fewer than 1.2 million people born in what is now the Central Federal District were living in what are now the Siberian and Far Eastern federal districts, while more than 760,000 people born in the

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framework for the provision of material aid to these regions. Even so, the proportion of the federal budget allocated to subsidies for the Far North regions is continuing to decline. See Footnote 2.

[7] The data from the 1989 national census has been adjusted to reflect current regional divisions.

Siberian and Far Eastern federal districts were residing in the Central Federal District. In 2002, however, the number of people born in the Central Federal District who were living in the Siberian and Far Eastern federal districts had dropped to a little over 600,000, while the number of people born in the Siberian and Far Eastern federal districts who were residing in the Central Federal District had risen to over 1 million. One can therefore infer that following the collapse of the Soviet Union, people born in Siberia and the Far East started flowing into European Russia, while many of the people born in central Russia who had been living in Siberia and the Far East returned to central Russia[8].

Although it cannot be denied that this trend was in large part a reaction to Soviet-era development policies (Heleniak, 1999; Hill and Gaddy, 2003), regional economic disparities in the former Soviet Union and Russia themselves obviously also had critical effects.

Figure 1. Regional Differentials in Russia

Coeffieicnts of Variation

——— Per capita Income · · · · · Per capita GRP – – – Unemployment rate
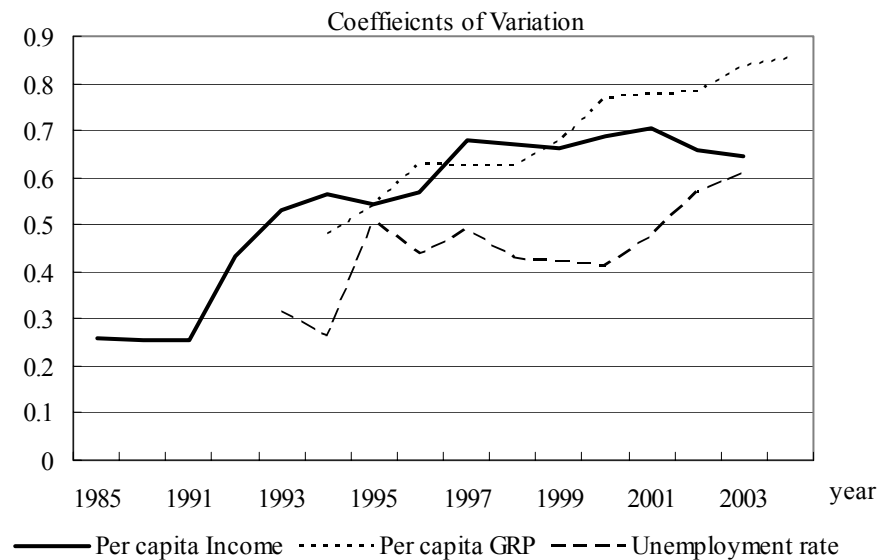
Source: Госкомстат РФ (Росстат), Регионы России, various issues.

Population density in the Soviet Union and Russia has traditionally been highest in European Russia, and it is well known that this has led to economic activity being concentrated there. Although the labour force was redistributed in an effort to overcome this imbalance, the inability to continue such policies and the introduction of freedom of movement has led to massive migration to already densely populated regions[9], with

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[8] In the period from the collapse of the Soviet Union through the 1990s until after 2000, the national census provided the only official statistics for estimating and partially capturing interregional migration between specific origins and destinations. Although the main body of this paper does not take into account natural increases and decreases for each region, its position is backed up to some extent by a table showing net migration between federal subjects that was probably created using a matrix of 1989 and current places of residence of people over working age and that was created at the time of the 2002 national census, and internal data from the Russian Academy of Science's Economic Forecasting Centre. See Мкртчян (2005).

[9] At the same time, while non-Russians returned to countries that were previously part of the Soviet Union and ethnic

'already densely populated regions' being Moscow and its hinterland. This region obviously boasts the highest population and gross regional product (GRP) in the Russian Federation, and retail sales there actually account for more than 30 percent of the Russian total (Госкомстат РФ, 2003). The supply of various goods is therefore concentrated in Moscow. While it is widely known that economic disparities were kept in check by the Soviet government, many studies have shown that disparities widened rapidly after the collapse of the Soviet Union. As Figure 1 clearly shows, macroeconomic indicators such as the per-capita GRP and income for each region have been increasing since the beginning of the transitional period.

Figure 2. Per capita GRP in 2002, in thousand rubles.
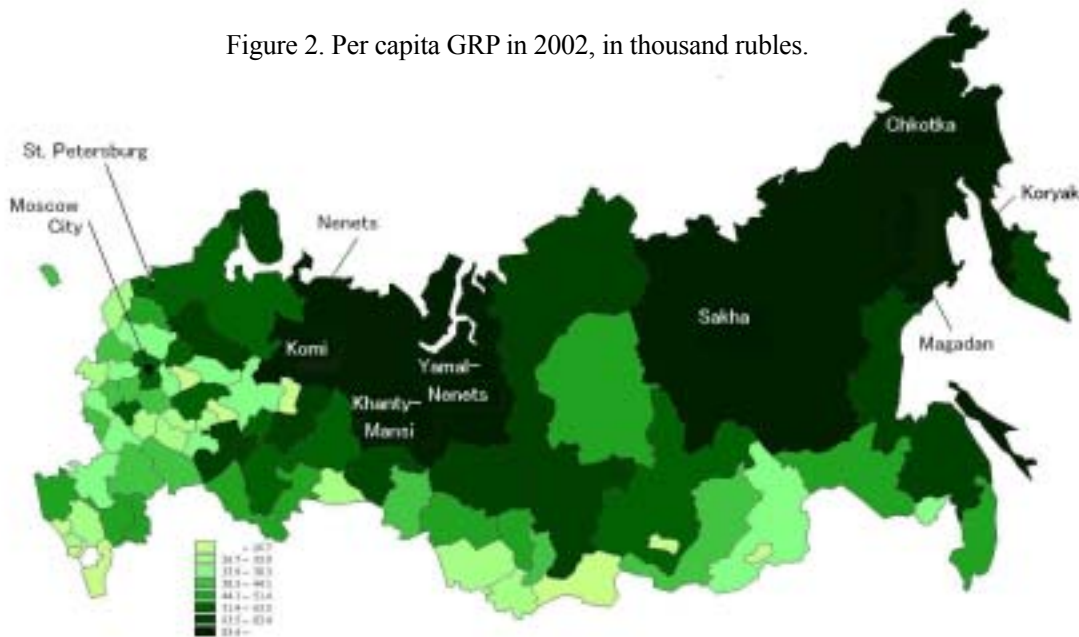
Source: Госкомстат РФ (2004) and http://www.gks.ru/wps/portal.

However, the distribution of booming regions does not indicate a general shift in economic activity to European Russia, because there is no striking maldistribution in favour of any specific region. This is because the beneficiaries of the sharp rise in crude oil and natural gas prices that has occurred since 1999, following the 1998 financial crisis, have been outlying regions far from European Russia. Figure 2 shows per-capita GRP for each region. The top regions for per-capita GDP are the Yamal-Nenets and Khanty-Mansi autonomous districts (Russia's biggest crude oil and natural gas producing regions) east of the Urals, Chukotka Autonomous District and Magadan Oblast (precious-metal and fuel-resource producing Far Eastern regions), Komi Okrug (a base for oil refining), Nenetsia Autonomous District (a sparsely populated Far North region in which oil has recently been discovered), and Koryakia Autonomous District (which, despite having the second smallest population of all the Russian federal subjects, is a centre for the export of


Russians returned to Russia in large numbers in the post-Soviet period of the early to late 1990s, this paper will not take up this issue (Tishkov, Zayonchkovskaya and Vitkovskaya, 2005).

marine products to Japan and South Korea). In addition, all these regions are classified as Far North regions[10]. Although the federal city of Moscow has the highest per-capita GRP in European parts, the per-capita GRP of the federal city of Moscow is lower than that of the Yamal-Nenets and Khanty-Mansi autonomous districts and the Nenetsia Autonomous District. Meanwhile, the per-capita GRP of Petersburg, Russia's second largest city, is lower than all the regions mentioned above. Looking at the scatter diagrams of population and GDP in Russian regions shown in Figure 3, the high GDP of the federal city of Moscow is what stands out. However, if we consider the GRP that would be predicted from population levels, the high GRP of the two crude oil and natural gas producing autonomous districts is what is really striking.

Figure 3. Population and gross regional products
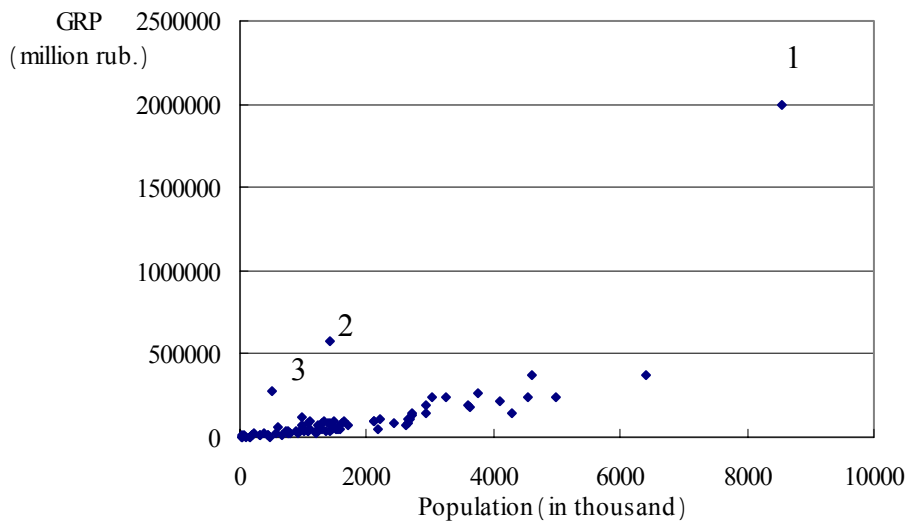
1. Moscow city; 2. Khanty-Mansi; 3. Yamal-Nenets

Source: Росстат (2005) and http://www.gks.ru/wps/portal.

The following points can be inferred from the above observations: The serious economic disparities that existed in the Soviet Union continue to exist in democratic Russia, and have, in fact, widened considerably. There is also a heavy maldistribution in terms of population and market scale in favour of European Russia, especially the federal city of Moscow. In addition, the prosperity of resource-producing regions, which is being driven by soaring oil prices, cannot be ignored. It has even been suggested that these regions are now the engines of the Russian economy (Tabata, 2006). These kind of regional economic conditions can obviously be expected to influence interregional population migration dynamics.

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[10] The same trend is also seen for per-capita nominal average income (Росстат, 2005).

3. PREVIOUS RESEARCH

Although interregional population migration patterns in Russia have undergone striking changes since the start of the economic transformation, analysis of the factors behind these changes has stalled. Analysis has been neglected partly because it has been difficult to carry out, with difficulties including the outbreak of regional conflicts such as the conflict in Chechnya, and ethnic factors such as the migration of non-Russians to former Soviet republics and the return of Russians from these republics. The lack of reliable data for analysis has also been a problem. Although a wide variety of regional statistics have been published since the collapse of the Soviet Union, information on population migration has remained limited. While the numbers of incoming and outgoing migrants to and from 89 regions have been published since 1992, including backdated figures to 1990, this data does not reveal much about interregional migration because it does not, for example, tell us where the people were migrating to and from.

Given these circumstances, researches conducted in Russia themselves have been based mainly on descriptive statistics. These researches have suggested that differences in the industrial structure of each region cause differences in factors such as the demand for labour, proximity between regions, and the development of infrastructure, and that this stimulates population migration (Сидоркина, 1997; Мкртчян, 2005). In addition, Моисеенко (2004) shows that, even in Russia, the age structure has a predictable impact on the population migration rate. However, very little of the Russian-language literature related to this issue contains quantitative analysis. The author of this paper and others have focused on studying net migration rates, and have sought to find out the overall directions in which people are moving in, and the causes of these movements (Wegren and Drury, 2001; Kumo, 2003). With this approach, however, it is obviously impossible to distinguish between push and pull factors behind population migration.

Brown (1997) used ordinary least squares to separately analyze data on the inflow and outflow of people to and from various regions from 1992 and 1993. This data came from a microcensus with a 5-percent sample that was carried out February 1994. The analysis revealed a positive correlation between the population size, average wage level, and progress with privatization of a region and the number of migrants to that region. On the other hand, there was a negative correlation between climatic conditions (expressed using dummy variables for the Far North regions or average January temperatures) and the number of inward migrants. Regarding the number of outward migrants, however, the population had a negative effect, while the impact of climatic conditions (Far North region dummy) was positive. At the same time, however, average wage levels had a positive effect on outward migration. This can only be explained by taking into account conditions in individual regions. As mentioned earlier, the so-called Far North regions were the target of Soviet-era development policies, and have continued

to receive financial support from the federal government since the collapse of the Soviet Union. As a result, average wage levels there are extremely high. Despite the fact that the financial support has been aimed at compensating for the harsh working conditions there, in the early to mid 1990s there was a large outflow of people from these regions. Although nominal wages are still higher than the national average, these former development regions lack infrastructure and tend to suffer from severe climates. During the period of hyperinflation from 1992 to 1995, many believed that the nominal wage variable would illustrate, in the words of Brown (1997), 'the capacity to withstand the interregional migration.' This interpretation may well be appropriate for understanding interregional population migration in the early 1990s.

Research based on reliable information about the origins and destinations of migrants began after 2000. Gerber (2005), in what is a rare type of migration research for Russia, used micro data to quantitatively demonstrate that the characteristics of individuals determine interregional population migration in Russia. His study was based on a population migration survey of more than 7,000 people carried out between 2001 and 2002 by the All-Russian Public Opinion Research Center (ВЦИОМ). The survey asked respondents to describe, from memory, their movements between 1985 and the time of the survey, for the purposes of analysing the impact of the characteristics of individual people on triggering migration. Among other things, it found that the population migration rate in Russia rose significantly at the start of the economic transition in 1992, that migration rates were high for highly educated people and young people, and that the migration rate was low for people who had lived for a long time in one place.

Andrienko and Guriev (2004) analysed an origin-to-destination table acquired from the now-renamed Russian Federation State Statistics Committee (Госкомстат РФ) that enables a clear distinction to be made between the origins and destinations of migrants during the period 1994 and 1999. They conducted panel data analysis using an extended gravity model, and showed that there was a significant, positive correlation between population, unemployment rate, and poverty rate at the origin and the number of outgoing migrants from that region. However, they also showed that there was negative correlation between the standard of infrastructure and income levels at the origin and the number of outward migrants. In addition, they concluded that the population, income levels, and standard of infrastructure at the destination had a positive effect on the number of inward migrants, while high unemployment and poverty rates reduced it. It is also important to point out that various studies have shown that there is a significant negative correlation between the distance between regions and the number of migrants moving between them. The first studies to explicitly incorporate interregional distance in analyzing migration in the former Soviet Union were Mitchneck (1991) and Cole and Filatotchev (1994). It is intuitively clear that, generally, economic relationships between regions are affected to a great extent by the distances between them, and it is no exaggeration to say that it would be impossible to make a list of all the Japanese,

European, and American studies attesting to this. However, Mitchneck (1991) and Cole and Filatotchev (1994) both show that in the former Soviet Union the effect of distance on population migration was limited, a finding that is predictable given the policy-driven placement of people that took place there. Andrienko and Guriev (2004) can therefore be said to have succeeded in illuminating the changes in population migration dynamics that have occurred since the start of the economic transition.

Among these previous researches, the most interesting for the author is Andrienko and Guriev (2004), because of the set of data it uses and the fact that it matches the author's own interests. Unfortunately, their analysis of population migration stops in 1999, so their study cannot tell us what has been happening since then. This is a shame because the Russian economy has been growing since oil prices started shooting up in 2000 (Tabata, 2006), and this can naturally be expected to have changed the dynamics of regional economies and affected interregional population migration. This means that it will be necessary to consider the special position occupied by the resource-producing regions. In addition, one must take into account not only distance, but also other geographical factors. Therefore, in the analysis that follows in the next section, particular emphasis is placed on the incorporation of such factors.

It is also important to point out that Andrienko and Guriev (2004) basically does not take into account the volume of migration. That is to say, in all their analysis, pairs of regions are included in the sample even if the migration between them amounted to just a single individual. When conducting analysis that employs regional socio-economic variables that are not based on micro data as explanatory factors, it is necessary to exclude patterns that can be strongly influenced by the characteristics of individuals. Keeping this point in mind, in the next section analyses will be conducted in order to capture the characteristic dynamics of regional economies in present-day Russia.

4. EMPIRICAL ANALYSIS

Given the findings of previous researches, and the current dynamics of regional economies, it may be possible to put forward the hypothesis that regions that have large populations or constitute large markets attract more migrants. Previous researches on population migration have already shown that a large distance between regions increases the financial and psychological costs of migrating and gathering information (Greenwood, 1997), which will likely have a negative impact on the scale of population migration. What is interesting here is the experience of the former Soviet Union and the results of quantitative research conducted in relation to it (Mitchneck, 1991). As mentioned earlier, in the Soviet Union, where the strategic distribution of people by the government was by no means insignificant, there were cases in which distance did not present an obstacle to population migration. However, as described in Andrienko and Guriev (2004), distance

has been seen to have a significant, negative effect in post-communist Russia.

To conduct an analysis of the determinants of population migration that takes into account distance and regional populations, this paper employs an extended version of the widely used gravity model. The basic form of the gravity model is as follows:

$$M_{ij} = g * \frac{P_i^{\alpha} * P_j^{\beta}}{D_{ij}^{\delta}}$$

M_{ij} is the number of migrants from region i to region j, P_i is the population of region i, P_j is the population of region j, and D_{ij} is the distance between region i and region j. By adding in the factors described above, this study tries to discover the effect of these factors on population migration patterns. To do this, the following equation will be estimated, where $\mathbf{Y}_i$ expresses the characteristics of the origin i, and $\mathbf{Y}_j$ denotes the characteristics of the destination j:

$$M_{ij} = g * \frac{P_i^{\alpha} * P_j^{\beta}}{D_{ij}^{\delta}} * \left(\frac{\mathbf{Y}_j}{\mathbf{Y}_i} \right)^{\gamma}$$

The interregional population migration statistics, which was obtained from the Russian Federal State Statistics Service (Rosstat), will be used in the analyses. The statistics are in the form of a matrix of interregional inward and outward population flows for the year 2003 for the 89 regions that make up Russia (federal subjects)[11]. Although the maximum sample size (if migration within regions is excluded) would have been 7,832, the complete omission of the Chechen Republic means that the actual number of region pairs included was 7,744.

Among the population migration statistics currently published by Rosstat is *Population and Population Migration in Russia*, which is issued annually. Until 1999 this data included an origin-to-destination (O-D) table based on the 11 economic regions that existed at that time, while since 2000 it has contained an O-D table for the newly established 7 federal districts. However, given the diversity in the land areas and internal characteristics of these regions, this classification cannot be said to be sufficient for the study of interregional population migration, and has therefore provided a serious obstacle to analysis[12]. In this paper, therefore, analyses based on an O-D table will be conducted.

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[11] On 1 December 2005 Perm Oblast and Permyakia Autonomous District merged to form Perm Krai, so that as of April 2006 there are a total of 88 federal subjects.

[12] The Soviet Union's national census for 1970 included data on current place of residence and registered domicile two years before the census, while the 1989 Soviet census recorded current place of residence and place of birth. The Russian national census for 2002 included place of birth and current place of residence, as well as the registered domicile and current place of residence for people 15 years or older at the time of the census who had moved between 1989 and 2002.

Table 2. Top 12 region pairs in terms of total interregional migration (which account for 10% of all migration)

Rank	Origin	Destination	number of migrants	distance	population of origin	population of destination
1	Moscow oblast (around the capital)	Moscow City (Capital)	18512	39.041	6409.7	8539.2 neighboring regions
2	Moscow City (Capital)	Moscow oblast (around the capital)	16141	39.041	8539.2	6409.7 neighboring regions
3	Chumen (Crude oil)	Khanti-Mansi (Crude oil and Natural gas)	11861	650.698	3272.2	1423.8 neighboring regions
4	St. Petersburg (Second largest city)	Leningrad oblast (around Petersburg)	11321	35.189	4596.2	1649.6 neighboring regions
5	Khanti-Mansi (Crude oil and Natural gas)	Chumen (Crude oil)	10942	650.698	1423.8	3272.2 neighboring regions
6	Leningrad oblast (around Petersburg)	St. Petersburg (Second largest city)	7920	35.189	1649.6	4596.2 neighboring regions
7	Rostov (Machine building)	Krasnodar oblast (port city)	5309	248.113	4286.2	4987.6 neighboring regions
8	Krasnoyarsk (non-ferrou metals)	Khakas Republic (non-ferrou metals)	4116	271.653	3015.3	575.4 neighboring regions
9	Yamal-Nenets (Crude oil and Natural gas)	Chumen (Crude oil)	3763	859.579	508.9	3272.2
10	Krasnodar oblast (port city)	Rostov (Machine building)	3759	248.113	4987.6	4286.2 neighboring regions
11	Chumen (Crude oil)	Yamal-Nenets (Crude oil and Natural gas)	3664	859.579	3272.2	508.9
12	Bashkortstan Republic (Crude oil)	Khanti-Mansi (Crude oil and Natural gas)	3532	1257.43	4090.6	1423.8

Regional characteristics or major industries are denoted in the parentheses.
Source: Prepared by the author from the material supplied by Rosstat.

This data only shows flows during a single year, and therefore cannot be used to give an overall picture of interregional population migration in Russia throughout the first half of the 2000s. Even so, this is the only interregional population migration data currently available for the post-2000 period, and offers insights that even national census data is unable to provide. It offers a snapshot of regional dynamics in post-2000 Russia, a period that has seen a slowdown in the migration on a massive scale that occurred following the collapse of the Soviet Union, as well as stable economic growth.

In conducting analyses, it is necessary to consider regional characteristics that are peculiar to Russia. This means taking into account the fact that, as mentioned earlier, there is a severe imbalance in favour of the oil and natural gas producing autonomous districts of Yamal-Nenets and Khanty-Mansi, which were number two and three in Russia for per-capita income in the period from 1998 to 2005 (Госкомстат РФ/Росстат, various years). At the same time, these two Far North regions suffer from an extremely harsh climate. The fact that these regions have been the focal point of population migration on a large scale is clear from Table 2, which shows the top 12 region pairs in terms of total interregional migration (which account for 10% of all migration). These regions must therefore be given attention. Thus, a dummy variable is introduced in order to capture the special characteristics of these regions by using an oil and natural-gas producing regions, the Yamal-Nenets and Khanty-Mansi autonomous districts, Russia's

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However, the 1970 national census data was restricted to 11 regions of the former Russian republic and 14 other union republics. Population and Population Migration in Russia has been published every year since 1992, but only records gross flows (the number of outward and inward migrants) for each of the 89 federal subjects.

main oil and natural-gas producing regions[13, 14].

Table 2 also reveals that migration between adjacent regions accounts for a large share of the total. Although this is intuitively understandable, it suggests that migration between neighbouring regions in Russia is of a fundamentally different nature to that which occurs in Japan or other small countries in terms of land scale. For example, when people in Japan move from, say, Tokyo to Saitama Prefecture, there are likely to be many cases in which they do not change their place of work. In Russia, however, when people move between, for example, the regional capitals of adjacent regions, the sheer distances involved, which are shown in Table 2, make it extremely difficult for people to avoid changing their places of work. One can therefore infer that migration will also involve a change in the migrant's place of work in Russia. This demonstrates the high physical cost of moving and the high cost of acquiring information that is a unique characteristic of Russia. These costs are high because of the size of the country and the immense difficulty in developing a transport infrastructure given the severe climate. Therefore, to accompany the distance variable described earlier, a dummy variable for migration between neighbouring pairs of regions is utilized.

In addition, the economy of Moscow Oblast and the federal city of Moscow is conspicuously large, and the size of its economy is larger than would be expected given its population. Its role as the centre of political life has not changed since Soviet times (Dellenbrant, 1986), and it is now also a hub for commercial activity and information (Лиухто, 2004). These factors would be expected to strengthen the Moscow region's attractiveness to migrants. According to the Rosstat data on the actual total numbers of inward migrants, Moscow Oblast and the federal city of Moscow are number one and two respectively. In addition, although residency registration data for 1 January 2002 put the population of the federal city of Moscow at just under 8.54 million, the national census conducted in October the same year found that the population of the federal city of Moscow was over 10.12 million. This means that the number of people living in Moscow was far higher than the number of people officially registered as residents. An investigation of the background to this phenomenon is beyond the scope of this paper. In the analysis dummy variables for the federal city of Moscow and Moscow Oblast are introduced to capture their unique characteristics.

To gauge the relationship between the process of economic transformation and interregional population migration trends, the percentage of all residences that are privately owned is used as an indicator of the shift towards privatisation following an approach taken in Brown (1997), Andrienko and Guriev (2004), and Gerber (2005). To capture regional economic conditions, per-capita incomes and poverty levels are

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[13] In 2002, Yamal-Nenets Autonomous District produced over 87 percent of Russia's natural gas, while Khanty-Mansi Autonomous District produced over 55 percent of its oil (Госкомстат РФ, 2003).

[14] It was not possible to obtain significant correlations for various dummy variable specifications, such as the top 5 or 10 crude-oil producing regions in terms of volume or for the top 5 or 10 natural-gas producing regions in terms of volume.

Table 3. Definition and descriptive statistics of the variables.

	N	Average	Std. deviation	Min.	Max.	Source
The number of migrants	7656	131.58	483.20	0	18512	Obtained from Роccтаг.
Distance between regions	7656	2543.80	1900.82	18.35	7683.15	Географический Атлас России, Роскартография, 1998, Moscow.
Population (in thousand)	7656	1656.46	1483.58	18.2	8539.2	Госкомстат РФ (2002)
Sex ratio (# of females per 1000 males)	7656	1129.43	67.78	904	1250	Госкомстат РФ (2002)
Percentage of the population below working age	7656	19.12	3.71	14.3	30.9	Госкомстат РФ (2002)
Percentage of the population who are elderly	7656	18.90	4.48	8.2	26.6	Госкомстат РФ (2002)
Kilometres of paved roads per square kilometre of land area	7656	108.75	89.95	0.02	349	Госкомстат РФ (2002). As for the data for Moscow city and St. Petersburg city, the figures for Moscow oblast and Leningrad oblast are substituted because of the lack of data.
Average income as a percentage of the level of income required to maintain the minimum standard of living	7656	1.70	0.70	0.61	5.11	Госкомстат РФ (2002). If data are lacking, they were estimated by extrapolation from data for 2003-2005. For the data of autonomous districts, which lacks data except 2005, trends in income increases of the neighboring regions, to which the respective autonomous district belonged to, were utilized for estimation.
Percentage share of population with income below the minimum living standard.	7656	34.76	14.28	7.6	88	Росстат (2005)
# of telephone facilities per 1000 inhabitants	7656	205.75	50.90	42	402.7	Госкомстат РФ (2003)
Percentage share of privatized house	7656	50.3749	9.4428	34	82	Госкомстат РФ (2003)
Oil/gas producers dummy	7656	0.023	0.149	0	1	Unity for migration to/from Khanty-Mansh and Yamal-Nenets autonomous districts, zero for others.
Far north dummy	7656	0.182	0.386	0	1	Unity for regions classified as 'Far North', zero for others. Госкомстат РФ(2004), Экономические Показатели Районов Крайнего Севера и Приравненных к Ним Местностей за январь-март 2004 года, Москва, 2004.
Moscow city dummy	7656	0.0114	0.1060	0	1	Unity for migration from/to Moscow city, zero for others.
Moscow oblast dummy	7656	0.0114	0.1060	0	1	Unity for migration from/to Moscow oblast, zero for others.
Beighboring regions dummy	7656	0.0507	0.2193	0	1	Unity for migration between neighboiring regions, zero for others.

introduced. In order to eliminate the effect of price disparities between regions, income will be average income as a percentage of the level of income required to maintain the minimum standard of living. To measure the level of infrastructure in a region, the number of kilometres of paved roads per square kilometre of land area and the number of telephones per 1,000 residents are utilized. When analysing regional economies in Russia,

the level of social infrastructure is often measured using the number of doctors and hospital beds per 10,000 people, and the number of kilometres of railway lines per square kilometre of land area. However, in regions that are extremely sparsely populated and very underdeveloped, the number of doctors for every 10,000 people is very high, while in densely populated areas such as the federal city of Moscow it is low[15]. And as for railways, more than 10 percent of regions have no railways at all (Федеральная Служба Геодезии и Картографии России, Атлас Железные Дороги, Омская Картографическая Фабрика, Омск, 2002). Taking these circumstances into account, choice of the variables to assess levels of infrastructure was conducted. In addition, because previous studies suggest that the demographic structure has a predictable impact, the analysis included the sex ratio, the percentage of the population who are below working age, and the percentage of the population who are elderly. Finally, an Far North region dummy variable for administrative districts whose entire area is designated as an Far North region is introduced to capture the harsh climates in those regions[16].

The variables are converted to logarithms basically. The numbers of migrants, the distance between the regions, and the populations of the origin and destination are taken logarithms. A negative correlation with respect to the distance between regions and a positive correlation for regional population are expected. All explanatory variables have a one-year lag. Variables which express regional characteristics contain the relative disparity between the origin and the destination converted into logarithms[17]. The dummy variables are used separately for each origin and destination. For definitions, sources, and quantity of descriptive statistics, please refer to Table 3.

Table 4 shows the results of a ordinary least squares regression[18]. Total migration (one or more migrants), and samples for the first 80, 70, 60, and 50 percent of total migration are analyzed individually. The aim of the analysis is to study macro-variation-dependent determinants of interregional population migration, In the analyses the first 80 to 50 percent of gross migration are taken as separate subsets because it is reasonable to suppose that where the volume of interregional migration is extremely small, there will be cases where it would be impossible to identify the reasons for the migration based on macroeconomic data[19]. Therefore, while it is appropriate to identify and analyse major patterns in total migration, defining these 'major patterns' presents a problem. The common practice in population migration research of using the first 50

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[15] As well as initially looking at the number of doctors and hospital beds per 10,000 people, the author also did some preliminary analysis using infant mortality rates and average life expectancy at birth, as these factors could be expected to serve as good indicators of levels of medical care and health. However, this analysis did not yield any striking results.

[16] In the preliminary analysis, the author attempted to apply average January temperatures to migration to and from origins and destinations without converting them to logarithms. However, it was impossible to obtain any significant results.

[17] There was no major change in the results even when the ratios without converting them into logarithms were introduced.

[18] Heteroskedasticity was not observed for any of the subsets.

[19] Among the 7,744 region pairs (which exclude the Chechen Republic), 575 pairs saw no migration at all, while total migration between 2,147 of the pairs was only between 1 and 10 people.

Table 4   Result (I)

	1. Total migration (All samples)				2. 80% of the total migration (-127 migrants)				3. 70% of the total migration (-221 migrants)				4. 60% of the total migration (-370 migrants)				5. 50% of the total migration (-584 migrants)			
	β	Std. error	t		β	Std. error	t		β	Std. error	t		β	Std. error	t		β	Std. error	t	
Constant	-1.70	0.08	-20.21	**	2.37	0.12	19.49	**	2.59	0.14	18.78	**	2.47	0.17	14.78	**	2.83	0.22	13.13	**
Distance	-0.40	0.01	-27.03	**	-0.37	0.02	-19.95	**	-0.31	0.02	-14.05	**	-0.26	0.03	-9.74	**	-0.23	0.03	-7.20	**
Destination population	0.70	0.02	44.85	**	0.24	0.03	8.51	**	0.19	0.03	5.48	**	0.18	0.04	4.27	**	0.13	0.05	2.39	*
Origin population	0.79	0.02	51.11	**	0.13	0.03	4.67	**	0.12	0.03	3.52	**	0.17	0.04	4.29	**	0.14	0.05	2.91	**
Sex ratio	0.19	0.29	0.64		-1.20	0.50	-2.38	*	-0.72	0.61	-1.17		-0.14	0.76	-0.19		1.22	0.97	1.26	
Percentage below working age	-0.46	0.10	-4.73	**	-0.16	0.17	-0.96		0.04	0.20	0.20		0.20	0.23	0.89		0.34	0.28	1.20	
Percentage elderly	-0.03	0.08	-0.44		0.06	0.11	0.52		0.02	0.12	0.13		0.00	0.14	0.00		-0.03	0.18	-0.18	
Paved road	0.08	0.01	6.82	**	0.09	0.02	4.49	**	0.06	0.02	2.60	**	0.03	0.03	1.07		-0.01	0.03	-0.44	
Per capita income	0.26	0.07	3.87	**	0.18	0.08	2.09	*	0.12	0.10	1.15		0.00	0.11	0.03		-0.03	0.13	-0.23	
Below minimum standard of living	-0.02	0.06	-0.26		-0.05	0.08	-0.67		-0.03	0.09	-0.29		-0.05	0.11	-0.48		-0.14	0.12	-1.15	
Telephone facilities	-0.07	0.05	-1.47		-0.03	0.08	-0.35		0.05	0.10	0.52		0.05	0.12	0.39		0.03	0.15	0.19	
Privatized houses	-0.10	0.06	-1.58		-0.28	0.10	-2.83	**	-0.29	0.12	-2.47	*	-0.26	0.14	-1.83	+	-0.11	0.17	-0.65	
Samples	7081				1520				914				558				339			
D.F.	7070				1509				903				538				324			
F-stat	842.66			**	48.92			**	23.69			**	12.47			**	7.37			
Adj. R-sq.	0.56				0.26				0.21				0.18				0.22			

Result (2): Introduction of Geographical Factors

	1. Total migration (All samples)				2. 80% of the total migraiton (-127 migrants)				3. 70% of the total migration (-221 migrants)				4. 60% of the total migration (-370 migrants)				5. 50% of the total migration (-584 migrants)			
	β	Std. error	t		β	Std. error	t		β	Std. error	t		β	Std. error	t		β	Std. error	t	
Constant	-2.98	0.08	-36.37	**	1.07	0.15	7.38	**	1.52	0.17	8.82	**	1.73	0.20	8.61	**	2.31	0.25	9.28	**
Distance	-0.26	0.02	-17.25	**	-0.25	0.02	-11.24	**	-0.26	0.03	-9.05	**	-0.26	0.04	-7.18	**	-0.29	0.04	-6.73	**
Destination population	0.80	0.02	53.12	**	0.32	0.03	10.39	**	0.28	0.04	7.25	**	0.27	0.05	5.75	**	0.20	0.06	3.56	**
Origin population	0.92	0.02	60.99	**	0.30	0.03	10.27	**	0.28	0.04	7.79	**	0.28	0.04	6.45	**	0.24	0.05	4.59	**
Sex ratio	0.73	0.27	2.70	**	0.34	0.52	0.65		0.40	0.67	0.60		0.62	0.87	0.71		2.01	1.16	1.74	+
Percentage below working age	-0.47	0.09	-5.26	**	-0.03	0.15	-0.22		0.15	0.19	0.80		0.25	0.23	1.10		0.40	0.30	1.34	
Percentage elderly	-0.05	0.08	-0.67		0.02	0.11	0.22		0.04	0.13	0.29		0.08	0.16	0.53		0.11	0.20	0.54	
Paved road	0.05	0.01	4.69	**	0.02	0.02	1.19		0.01	0.02	0.40		0.00	0.03	-0.09		0.00	0.04	-0.05	
Per capita income	0.10	0.07	1.31		0.04	0.12	0.34		0.12	0.16	0.74		0.04	0.20	0.22		0.22	0.24	0.95	
Below minimum standard of living	-0.06	0.07	-0.92		-0.03	0.11	-0.24		0.05	0.14	0.35		-0.01	0.17	-0.04		0.01	0.20	0.03	
Telephone facilities	-0.05	0.04	-1.06		0.10	0.09	1.14		0.17	0.11	1.63		0.09	0.13	0.73		0.05	0.16	0.33	
Privatized houses	-0.01	0.06	-0.09		0.02	0.10	0.17		-0.01	0.13	-0.07		-0.12	0.16	-0.75		-0.05	0.20	-0.23	
Oil/gus dummy (origin)	0.13	0.04	3.36	**	0.11	0.05	2.27	*	0.09	0.06	1.65	+	0.09	0.07	1.30		0.19	0.08	2.37	*
Oil/gus dummy destination)	0.30	0.04	7.66	**	0.26	0.05	4.96	**	0.20	0.06	3.23	**	0.23	0.08	2.88	**	0.39	0.11	3.68	**
Far North dummy (origin)	0.27	0.02	12.53	**	0.15	0.03	4.47	**	0.15	0.04	3.69	**	0.12	0.05	2.34	*	0.01	0.06	0.10	
Far North dummy (destination)	0.25	0.02	11.27	**	0.11	0.04	2.84	**	0.08	0.05	1.41		0.04	0.07	0.54		0.00	0.09	-0.05	
Moscow city (origin)	-0.14	0.05	-2.56	*	-0.15	0.06	-2.36	*	-0.13	0.08	-1.55		-0.20	0.11	-1.82	+	-0.15	0.14	-1.05	
Moscow oblast (origin)	-0.18	0.05	-3.76	**	-0.20	0.05	-3.93	**	-0.26	0.06	-3.97	**	-0.24	0.10	-2.45	*	-0.22	0.12	-1.79	+
Moscow city (destination)	0.35	0.05	6.47	**	0.19	0.06	3.32	**	0.05	0.07	0.67		0.00	0.08	0.03		-0.10	0.10	-1.01	
Moscow oblast (destination)	0.44	0.05	9.22	**	0.31	0.04	7.78	**	0.20	0.04	4.72	**	0.07	0.05	1.39		0.03	0.06	0.44	
Neighboring regions	0.76	0.03	30.35	**	0.31	0.02	12.96	**	0.21	0.03	7.63	**	0.13	0.03	4.14	**	0.09	0.04	2.61	**
Samples	7081				1520				914				558				339			
D.F.	7061				1500				894				538				319			
F-stat	698.54			**	52.58			**	23.48			**	10.87			**	6.82			**
Adj. R-sq.	0.66				0.404				0.33				0.26				0.26			

significant at ** 1%; * 5%; + 10%

percent of total migration or migration that represents 0.5 percent or more of the total (Ishikawa, 2001) does not constitute an arbitrary attempt to avoid complications. Rather, while bringing together several subsets and analysing them separately, it is an attempt to identify more robust and significant variables.

Result (1) presents the results of an estimate that excludes the dummy variables for the Far North regions, Moscow, resource-producing regions, and migration between adjacent regions, while result (2) shows the results of an estimate that includes all these dummy variables. Although all previous research has excluded geographical factors other than distance and climate from its analysis, it is doubtful that such an approach would be able to capture the characteristics of interregional population migration in Russia. Success therefore depends on comparing the results of two estimates.

Result (1) shows that if the estimated correlation is significant, the sign of the correlation will generally be predictable. As shown in Andrienko and Guriev (2004), the distance between regions yields a stable and significant correlation, despite the fact that Mitchneck (1991) showed that it did not do so in the Soviet era. A consistent and significant positive correlation for the population of the origin and destination is obtained. In addition, the result showed that economic factors generally yield a significant and intuitively understandable correlation. Average income showed a positive correlation, and there was also a positive correlation for paved-road density, a variable that is used to show the level of infrastructure.

Sex ratios generally did not yield significant results, a finding which is in line with the view set forth in Моисеенко (2004), which uses descriptive statistics[20]. As for children as a proportion of the total population, a negative correlation was only obtained with the estimate for all the samples. In the resource-mining autonomous districts of Siberia and regions like Sakha in the Far East, the working population as a proportion of the total population is high, and children as a proportion of the total population is also high. These regions might appear to be 'young' regions. It is more a case of them that although they are Far North regions, at the same time they are attracting people. On the other hand, in remote regions such as Magadan Oblast and Chukotka Autonomous District, where the proportion of young people was once high, everyone who was able to leave has now already done so, and by 2002 these regions had become relatively 'old', with their outward migration now less than a tenth of what it was at its peak in the 1990s (Thompson, 2004; Росстат, 2005). This diversity among regions may explain why unclear results were obtained.

Although the percentage of all residences that are privately owned, which is used as an indicator of the extent of privatisation and private ownership, yielded a

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[20] The percentage of women in Russia between the ages of 25 and 54 who are economically active has consistently been over 80 percent, far higher than the figure for Japan (Госкомстат РФ, Труд и Занятость в России, Москва, 2003). Therefore, if economic factors are assumed to be important in influencing migration, it is understandable that no significant difference is observed between men and women with respect to interregional migration patterns.

significant correlation for the first 80 and 70 percent of gross migration, a significant correlation could not be obtained for all the samples or the most frequent migration patterns. The fact that a negative correlation was observed suggests that an increase in private ownership increases the ability of people to sell their homes, which means that people at the origin who wish to leave are better able to do so. However, the reason this could not explain the first 50 percent of gross migration may be that the advancement of privatisation processes and private ownership has gone beyond a certain level. In the case of regions that have a sufficient ability to absorb migrants, differences between regions in the level of private ownership have ceased to be significant. To put it another way, in regions that are already advanced or economically powerful, the shift towards private ownership, and thereby the process of economic transformation, may already have progressed beyond a certain level.

Now let us look at the effect of the dummy variables using Result (2) in Table 4, which incorporates geographical factors. In the analysis that uses dummy variables to express geographical factors, nearly all the previously significant variables for regional characteristics such as economic conditions become insignificant. It is obviously impossible to exclude the possibility that dummy variables for, say, the Moscow hinterland have become substitute variables for other regional characteristics. However, it is probably possible to say that geographical factors have played an extremely important role in determining interregional population migration patterns in Russia during its transition period.

Previous researches have shown that, on the whole, harsh climatic conditions lead to outward migration, and the analysis presented here backs this up. If the first 70 to 60 percent of gross migration are used as samples, a significant positive correlation is obtained when the origin is a Far North region. With the other samples, however, a significant positive correlation was seen not only when the origin was a Far North region, but also when the destination was, too. This may be because much depends on the volume of migration included in the samples. Even in Far North regions, there is a certain amount of migration between neighbouring regions. When regions experiencing little migration are also included in the sample, in the Far North regions of the Russian Far East and Northwest there are many cases where both the origin and destination are Far North regions. In addition, when the first 50 percent of gross migration is used as a sample, all data for the Far Eastern Arctic regions of Magadan Oblast, Kamchatka Oblast, Koryakia Autonomous District, and Chukotka Autonomous District is eliminated. Meanwhile, in the case of the first 60 percent of gross migration, only the outgoing migration from Kamchatka Oblast is included, for example. These factors probably explained the results found here.

The results for the dummy variable used for oil and natural-gas producing regions are striking, with significant correlations also seen when these regions are the origins. However, like the case of the Far North regions described earlier, this seems to be

because not only is the volume of in- migration in the Yamal-Nenets and Khanty-Mansi autonomous districts high, but outward migrants, while they vary in number, leave for places all over Russia. As shown in Figure 4, these two regions have comparatively large GRPs in Russia. With the first 80 to 60 percent of gross migration, a significant correlation was only observed when they were the destinations, which implies that they have the ability to attract migrants. Although mineral resources such as crude oil and natural gas accounted for only 40 percent of the dollar value of Russian exports in the 1990s, increases in output and soaring prices since 2000 have steadily lifted that figure to more than 50 percent, and the huge impact this has had on economic growth is well documented (Hanson, 2005; Tabata 2006). The analysis in this paper suggests that it also has a decisive impact on regional economic dynamics.

The densely populated regions centred on Moscow are seen to have a strong ability to absorb migrants. When these regions are the origins, and the correlation is significant, the correlation is always negative. On the other hand, when they are the destinations, the correlation is positive. Although the pattern for the first 50 percent is not significant, Table 2 shows that for pairs of regions with a high volume of migration, more attention should be paid to total employment in the resource-producing regions. In addition, a stable and significant positive correlation was obtained for the dummy variable for migration between adjacent regions. As with the distance variable, this shows that the shorter the distance is between regions, the higher the volume of migration is between them. This demonstrates that migration is relatively frequent between regions separated by extremely short distances comparatively to the vast territories of Russia. In addition, it may point to the high cost of interregional information exchange in large countries.

5. CONCLUSION

This paper has, like other researches that have preceded it, demonstrated that population migration patterns in Russia can be adequately analysed using general methods, even when using OD tables. The transition process has also been demonstrated through the mechanism of population redistribution among regions. As has been seen in the case of the federal city of Moscow and Moscow Oblast, densely populated regions experience a relatively high volume of inward migration, and the cumulative effect of this is likely to continue into the future. While this demonstrates the stable and significant effect of population size, it also indicates that the depopulation of remote regions that has occurred during the last 10 years or so, may lead to further stagnation in these regions. This paper has also made it clear that the prominence of the Yamal-Nenets and Khanty-Mansi autonomous districts, which are the country's top producers of oil and natural gas, is a major factor in the determination of interregional population migration patterns in Russia. Given conditions in the oil market now and in the near future, there is

no need to emphasize the extreme importance of the Arctic resource-producing regions.

Regarding future trends in the dynamics of regional economies, a key policy event has been the establishment, following a resolution on 26 January 2005, of the Russian Federation Regional Development Ministry[21], and subsequent issue by this ministry of the *Regional Social Economic Development Concept*[22]. This document makes clear that the Regional Development Ministry intends to target specific regions for development (Министерство Регионального Развития РФ, 2005). It states that resource allocation will be weighted in favour of core growth regions. Needless to say, it therefore differs fundamentally from Soviet-era development policies, which were aimed at achieving equal standards of living in all regions.

Since the collapse of the Soviet Union, the government has come out with numerous 'programs' and 'concepts', such as the *Far East and Zabaikalie Long-Term Development Program*[23], most of which have been in the same vein. However, it has been widely pointed out that a shortage of government funds has left these schemes without teeth, with most of them receiving well under half of the government funds they were supposed to get (Минакир, 2003)[24]. However, the Russian Federation Regional Development Ministry's *Regional Social Economic Development Concept* differs in that it is already on the same axis as actual policy, and a funding program for it has been drawn up that meshes with existing policy. Although 2006 government spending is set to be 1.4 times higher than it was the previous year, the year-on-year increase in financial support for the regions will be only 1.17 times. This is illustrative of the central government's policy of transferring taxation rights to regional governments and withdrawing central-government support. Behind this trend are the *Northern Restructuring Program* that have been established since 1997 with the aim of encouraging people to move out of the Far North regions. One of these programs has achieved steady results in Susuman, the second largest city in the remote oblast of Magadan, and it has been reported that the programs have been successful in reducing the populations of regions where the cost of maintaining the social infrastructure is high (World Bank, 2004; Thompson, 2005).

In addition, in July 2005 a federal law was passed that in November the same year saw several regions designated as 'special economic zones'. Although more than 20 regions had been designated as 'economic special zones' during the Yeltsin era, apart from Kaliningrad Oblast these zones have lost any real significance (Iwasaki and Suganuma, 2004). There are fewer of these new special economic zones than there were economic special zones, and they are in regions, such as the area around Moscow, that already have

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[21] Постановление Правительства Российской Федерации от 26 января 2005г. N40.

[22] Бюджетная Политика 2006-2008 годов, сентябрь 8, 2005, стр.10-11. (http://www1.minfin.ru/02_2005.htm)

[23] Постановление Правительства Российской Федерации от 15 апреля 1996 г. N 480.

[24] For example, although the *Far East and Zabaikalie Long-Term Development Program* was scheduled to provide the Far North regions with a total of 55.2 billion roubles in direct investment in 2002, in reality only 25 billion roubles were provided (45 percent of the amount budgeted) (Минакир, 2003).

a certain level of industrial infrastructure. All these initiatives are well integrated, and clearly indicate a unified approach to policy by the government.

The analysis of the determinants of population migration presented in this paper suggests that the flow of people to densely populated regions is set to accelerate. However, the total volume of migration is already declining. While the movement of people has slowed in recent years, the policies described above may encourage population redistribution. And as Hill and Gaddy (2003) have argued, they may lead to an easing of the burden on society, which is accompanied with the maintenance of the social infrastructure of the remote regions, something that could be described as a Soviet-era 'curse'. At the same time, they may also contribute to the further development of advanced regions and regions targeted for development.

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