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The Economic Determinants of Internal Migration Flows in Russia During Transition

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The Economic Determinants of Internal Migration
Flows in Russia During Transition

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Abstract: I analyze the patterns of migration by testing the influence of traditional economic and amenity factors and of housing market reform on the direction of migration flows. I improve on the few previous studies of Russian migration during transition by analyzing gross flows rather than net flows in order to properly distinguish effects, and by analyzing a much wider set of factors. The results indicate that even early in transition, migration responds to average wages and prices. In particular, higher average wages and lower prices positively determine inmigration. Higher average wages also positively determine outmigration. Apartment privatization significantly affects migration even after only the first year of the reform. Amenity and demographic factors generally influence migration as expected. Several checks confirm the robustness of these results. *Journal of Economic Literature*, Classification Numbers: J61, P20, R23 .

Non-technical summary: Economic transition requires an enormous reallocation of resources, in particular a reallocation of labor. This reallocation includes movements from state firms to private firms, movements from the military-industrial complex to consumer industries, and often movements across regions within a country, or labor migration. In this paper I examine the economic and other determinants of labor migration within the Russian economy during transition. I analyze both the determinants of inflows into Russian oblasts, or provinces, and the determinants of outflows from Russian oblasts. This analysis of gross flows allows us to distinguish the processes at work better than previous analyses of net flows. I find, not surprisingly, that migrants are more likely to choose oblasts that have higher average wages, but also that oblasts with higher average wages have higher rates of outmigration. It seems that people in oblasts with higher wages are more able to migrate, and thus labor migration during this period does not facilitate the equilibration of regional wage differentials. Migrants are also more likely to choose oblasts with higher rates of apartment privatization, reinforcing the importance of housing market reform to transition. High rates of apartment privatization also lead to higher rates of emigration, which reflects the fact that apartments inherited from the Soviet period embody wealth, and the ability to transfer this wealth into income makes people more willing or more able to leave the country. Finally, I find that oblast-level employment indicators do not explain migration inflows or outflows, and I suggest several reasons why this might be the case.

INTRODUCTION

Two simple and non-controversial facts motivate the analysis in this paper. The first is that the transition of an economy from state to private and from plan to market requires the reallocation of resources, in particular the movement of labor between firms and sectors, and consequently often between cities or regions. The second is that regional differences in Russia are great. In fact, regional differences within most of the transition economies are great, but in Russia—a gigantic country spanning eight time zones, enjoying vast resources and varied climates, and embracing a myriad of ethnicities—the regional differences are momentous and have been widened by economic and political transition. Economic policies like that of the United States' government, which grants aid money only to certain successful Russian regions[2], will entrench these differentials unless labor migration can equilibrate them by moving people from the depressed regions into the growing regions. Without an inflow of labor to complement the capital inflows, even the growth of the successful regions will be limited.

In this paper, I analyze the patterns of migration in Russia during in order to address two basic questions. First, is migration reallocating labor? And second, is migration mitigating or equilibrating regional differentials? I test the influence of traditional economic and amenity factors and of economic reforms, especially those affecting housing markets, on the direction of migration flows. I analyze gross flows rather than net flows in order to properly distinguish effects, and I examine inmigration into Russian oblasts from both within and outside Russia and outmigration from Russian oblasts to both within and outside of Russia. The results indicate that

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[2]"An old-fashioned, modern look," *Economist*, June 14, 1997, p. 40.

even early in transition, migration responds to average wages and prices. In particular, higher average wages and lower prices positively determine inmigration as theoretically predicted. Higher average wages also positively determine outmigration. Apartment privatization significantly affects migration even after only the first year of the reform—positively determining inmigration and positively determining emigration, both as theoretically predicted. Amenity and demographic factors generally influence migration as expected. Several checks confirm the robustness of these results. The paper proceeds as follows. In the next section I briefly review the literature. After that I derive the models used for estimation. I then present and discuss the results of the estimation, and finally, I conclude.

LITERATURE ON RUSSIAN MIGRATION

Very little has been written on Russian migration during transition. Heleniak (1997) provides an excellent overview of net migration patterns during transition and links them to demographic changes. He finds that there are two migration streams, one being the return of Russian nationals to Russia and the other being movements from the 'Far North' to western and southern portions of the country. His calculations also suggest that there has been a decline in the level of internal migration so far during transition compared with the Soviet period. Kumo (1997) analyzes a small set of determinants of net migration both during and after the Soviet period. He also finds net movements out of the Far North during transition. His results suggest that the effects of wages have changed from the Soviet period to transition, but these results cannot be fully interpreted because the dependent variable of net migration confounds the influences on inmigration and outmigration.

Mitchneck and Plane (1995) analyze the relationship between net migration and

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employment change before and during migration.[3] They tentatively conclude that although net

migration was related to concurrent employment change during the Soviet period, there is no

clear relationship between labor market forces and net migration during transition. They do not

include information on wages, however. This paper improves on previous studies by analyzing

gross rather than net flows and by testing a much broader set of determinants.

ESTIMATING EQUATIONS

Modeling Migration

Models of net migration, although useful for understanding the general determinants of

regional growth, confuse the determinants of in- and outmigration in two ways. First, such

models do not reveal whether certain local conditions primarily affect inmigration or

outmigration, for example, whether negative employment conditions cause high rates of

outmigration or low rates of inmigration. Second, some factors may have the same predicted

effect on both inmigration and outmigration. For example, good housing markets should make it

both easier to move into and easier to move out of an area, meaning that estimates on net

migration would suggest this factor has no effect at all. To disentangle these effects, I estimate

equations for gross migration flows, both inmigration and outmigration. The distinction is not

only important for understanding economic relationships, it is also vital for informing policy

making related to labor mobility.[4]

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[3]Their article also provides a very useful overview of labor and migration policies during
the Soviet period.

[4]In addition, in the data used here, the Pearson correlation between inmigration and

There is an implicit behavioral model underlying gross flows specifications. The behavioral model depicts individuals as making two related decisions: one, the decision to migrate, or leave their current location and two, the destination choice. Such a model emphasizes that the determinants of outmigration can be different than the determinants of inmigration. Molho (1987) provides some empirical evidence in support of the separation of these decisions. The model is slightly different from that used in studies of place-to-place migration where the data allow the researcher to identify migrations from one specific location to another specific location (see for example Gabriel, Shack-Marquez and Wascher, 1993 and Cragg and Kahn, 1996). These studies depict individuals making migration decisions based on ordered differences between each destination and the origin and thus focus on whether people move from bad locations to good locations. Clearly, both behavioral models may apply in reality, and the differences do not lead to contradictory interpretations. For immigration and emigration flows, especially those currently affecting Russia, the former model is clearly more appropriate though. The decision to immigrate into Russia during transition, for example, may be based primarily on political considerations while the choice of destination oblast within Russia may reflect economic considerations.

Specifications

For internal migration, I isolate the determinants of destination choice by looking at each oblast's inmigration as a rate of total Russian outmigration, that is by looking at what share of those who choose to migrate within Russia choose each oblast. Call outmigration from oblast *i*

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outmigration across oblasts is quite high at 0.71 further emphasizing the importance of analyzing gross rather than net flows.

to another Russian oblast E_i. The rate of inmigration into oblast j is the number of inmigrants, M_j, over the number of outmigrants from other oblasts, $\sum_{i \neq j} E_i$. This rate of inmigration should increase with the population of j relative to the average oblast population and should increase with other positive characteristics of j relative to the averages of those characteristics over all oblasts. The rate should also depend on the distance of j from other oblasts weighted by the number of outmigrants from those oblasts. That is, the rate of inmigration to j should be higher if it is close to oblasts that have high levels of outmigration.[5] We can sum over these weighted distances to get a composite characteristic reflecting the possible effects of distance. Assuming that the inmigration rate is a stochastic linear function of the determinants, I estimate the following equation.

$$\frac{M_j^R}{\sum_{i \neq j} E_i} = \alpha \frac{P_j}{\sum_i P_i / N} + \beta_1 \sum_{i \neq j} \frac{E_i}{d_{ij}} + \beta_2 \sum_{i \neq j} \frac{E_i}{d_{ij}^2} + \sum_c \gamma_c \frac{X_{cj}}{\sum_i X_{ci} / N} + \varepsilon$$

P is population, d_{ij} is distance from i to j, X_c are the oblast characteristics, N is the total number of oblasts, and α, β_1, β_2, and γ_c are the parameters to be estimated.[6]

Estimating the determinants of destination choice for those who immigrate into Russia requires a slightly different specification. First, I use the total number of immigrants as a proxy

[5]The basic set-up of this specification is consistent with the classic Lowry (1966) gravity model of migration.

for emigrants from other countries who choose some destination in Russia. Second, it is no longer appropriate to use the weighted distance variable since the migrants are coming from outside Russia meaning the important distances to them are the distances between their origin and the various oblasts rather than the distances between the oblasts. The specification for the

$$\frac{M_j^{W-R}}{\sum_i M_i^{W-R}} = \alpha \frac{P_j}{\sum_i P_i / N} + \sum_c \gamma_c \frac{X_{cj}}{\sum_i X_{ci} / N} + \varepsilon$$

determinants of destination choice for immigration is then,

These models assume, as most migration models do, that agents are myopic. Instead of "rationally" assuming that migration will serve to equilibrate regional differentials and thus that the advantages of other regions will disappear over time, agents expect that favorable economic conditions in other regions will reflect on their individual outcomes .[7]

Gross outmigration from an area is determined by the first decision that migrants make—the decision to leave. In making this decision, individuals compare the characteristics of their origin i to the total of possibilities outside. Cragg and Kahn (1996) find that migrants do account for opportunities in other cities when deciding whether leave their initial city and that distance affects their sensitivity to these outside characteristics. In the specification employed

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[6]The one binary independent variable is entered directly, not relatively.

[7]If all agents behaved "rationally", moving costs would prevent them from responding to any differentials because expected migration would cause the differentials to be transitory. Of course in that case, the differentials would be permanent because no one would move, and it would not be rational for individual agents to not move.

here, the average of the characteristics over all oblasts represents a composite of outside opportunities. Individuals considering outmigration view their origin's characteristics relative to these outside opportunities. One of these characteristics is population; others are economic variables. The distance of the origin from possible destinations may deter migration; an oblast that is centrally located may experience more outmigration since the psychic and transport costs of migration are lower on average.

Also, for outmigration, there are characteristics that influence flows that are not compared across areas but instead determine the ability or propensity of people within the area to move out. For example, if people of working age are more likely to migrate, then an area with a higher share of working age people will have a higher rate of outmigration ceteris paribus. The estimating equation for the outmigration rate of the population thus incorporates just the origin

$$\frac{E_i^R}{P_i} = \alpha \frac{P_i}{\sum_j P_j / N} + \beta_1 \sum_{j \neq i} \frac{1}{d_{ji}} + \beta_2 \sum_{j \neq i} \frac{1}{d_{ji}^2} + \sum_h \gamma_h X_{hi} + \sum_c \delta_c \frac{X_{ci}}{\sum_j X_{cj} / N} + \varepsilon$$

values of these variables. I therefore estimate the following equation.

The above equation estimates the determinants of internal migration outflows. For emigration, the distance between oblasts loses explanatory power because the relevant distances are the distances between the origin and other countries. Also, the characteristics of other Russian oblasts are no longer relevant as the characteristics of outside possibilities. In order to examine the importance of origin characteristics on emigration decisions, I test whether relative origin characteristics influence relative emigration rates. Thus for the emigration specification,

all the variables are entered relative to the national average. I estimate the following equation.

$$\frac{\dfrac{E_i^{W-R}}{P_i}}{\dfrac{\sum\limits_j E_j^{W-R}}{\sum\limits_j P_j}} = \alpha \frac{P_i}{\sum\limits_j P_j / N} + \sum_c \delta_c \frac{X_{ci}}{\sum\limits_j X_{cj} / N} + \varepsilon$$

The dependent variables for most of the regressions come from Goskomstat statistics on

migration into and out of Russian oblasts during the year 1993. As official data on migration are

subject to suspicion[8], I check the validity of the inmigration data by using a completely separate

series for 1992 and 1993 inmigration derived from the February 1994 Microcensus data. For the

independent variables, I use 1992 data for the economic variables and, to avoid endogeneity,

1989 for the culture variables. Please see the Data Appendix for variable definitions and a full

description of the data including variable means.

RESULTS AND DISCUSSION

Destination Choice

Table 1 presents the estimations for internal migration into Russian oblasts. The core

results are in the first two columns, marked *Base*. Three economic factors have statistically

significant coefficients. As would be predicted, average wages positively correspond to

destination choice while prices negatively correspond to destination choice. As would also be

predicted, the development of housing markets, represented by the rate of apartment

privatization, positively relate to destination choice. The signs and significances of these three

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[8]Sjöberg and Tammaru (1997), for example, compare official statistics to polling data in Estonia and find that less than two-thirds of migration is registered during transition.

estimates are robust to almost every specification run, reported and non-reported. Clearly, economic factors do play a role in migration within Russia, even early in transition.

Table 1. Determinants of 1993 Internal Migration into Russian Oblasts

Specification	Base		Housing		Other Reform		Endogenous Moving Costs	
Variable[a]	Parameter estimate	Prob>|T|	Parameter estimate	Prob>|T|	Parameter estimate	Prob>|T|	Parameter estimate	Prob>|T|
Population 1992	0.0103	0.0001	0.0101	0.0001	0.0103	0.0001	0.0111	0.0001
Weighted distance	0.0004	0.7279	-0.0004	0.8209	0.0006	0.6519	0.0000	0.9978
Weighted squared distance	-0.0048	0.7316	0.0045	0.7863	-0.0059	0.6834	-0.0010	0.9375
Industrial production 1992/1991	-0.0007	0.8195	-0.0036	0.3801	-0.0004	0.8844	-0.0033	0.3256
Outflow to job rate 1992[b]	0.0011	0.1856	0.0010	0.2657	0.0011	0.2288	0.0004	0.6193
Average wage 1992	0.0089	0.0002	0.0103	0.0001	0.0085	0.0010	-0.0048	0.0557
Price of goods basket 1992	-0.0056	0.0431	-0.0059	0.0364	-0.0055	0.0587	-0.0040	0.0934
Apartment privatization through 1992	0.0018	0.0130	0.0018	0.0320	0.0019	0.0124	0.0009	0.1673
New apartments 1992			-0.0001	0.9482				
Urban housing shortage 1990			0.0076	0.0721				
Share of private housing 1990			-0.0019	0.3069				
Number of apartments sold 1993			0.0002	0.4731				
Sq m of housing per capita 1989			0.0049	0.3523				
Creation of joint stock companies					-0.0003	0.7632		
Ratio of privatized enterprises					0.0003	0.6652		
Small enterprise privatization					-0.0008	0.4958		
Northern territories	0.0008	0.6325	0.0001	0.9426	0.0012	0.5010	0.0012	0.3856
Air pollution per square km	-0.0009	0.0001	-0.0009	0.0001	-0.0009	0.0001	-0.0005	0.0102
Average January temperature	-0.0036	0.0001	-0.0035	0.0002	-0.0034	0.0005	-0.0030	0.0006
Share with higher education 1989	0.0072	0.0183	0.0056	0.0798	0.0070	0.0251	0.0003	0.9165
Share of urban dwellers 1989	-0.0091	0.0345	-0.0142	0.0079	-0.0094	0.0338	-0.0041	0.2911
Share of Russians 1989	0.0039	0.0192	0.0043	0.0338	0.0044	0.0372	0.0020	0.2068
Share of recent previous migrants							0.0077	0.0001
Share of nonmigrants							-0.0013	0.6874
Adjusted R-squared	0.95		0.95		0.94		0.96	
White statistic/Prob>Chisq	70.84/0.45						64.75/0.66	
F test on added variables/Prob>F			1.12/0.37		0.22/0.89		11.19/0.0001	

[a] All variables are entered relative to the national average except the dummy for Northern territories. Ruble values are in natural logs. See Appendix 1 for details.

[b] The out-to-job ratio is the average over the latter six months of 1992.

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The impact of housing markets on migration has been documented for other countries. McCormick (1993) and Hughes and McCormick (1981, 1987) show that housing markets, specifically council housing, impede labor mobility and may thus explain the lack of correlation between economic conditions and internal migration in the United Kingdom. Gabriel, Shack-Marquez, and Wascher (1993) show that housing prices in the United States negatively influence inmigration into regions. In this study, however, housing markets are still nascent as we observe just the first year of apartment privatization. The strength of the estimated impact of this particular reform on migration is thus striking and requires further analysis.

First, I expand the specification to include other indicators of housing markets. The results are in the third and fourth columns of Table 1, marked *Housing*. None of the other housing variables returns an estimate significant at 5 percent, and the inclusion of these variables does not change the sign or significance of the estimated coefficient on apartment privatization. Second, I test for the possibility that apartment privatization is serving as a proxy variable for other reforms that attract migrants. These results are in the fourth and fifth columns of Table 1, marked *Other Reform*. The estimates here show that none of the other privatization indicators— the rate of creation of joint stock companies and small and large enterprise privatization—has an impact on migration or changes the estimate on apartment privatization. Neither the *Housing* specification nor the *Other Reform* specification has a significant F statistic.

It may also be the case that the causation is reversed, that is, that people choose to privatize their apartments due to their forecast of future inmigration. Several arguments alleviate this concern. First, more factors produce the variance of privatization rates across oblasts than just the decisions of people to privatize their apartments. Local governments enacted apartment

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privatization legislation at different times during the first half of 1992 and these programs

· included different specific policies, for example, whether apartments would be privatized for free

(World Bank, 1995). Second, the average rate of apartment privatization by end

1992—privatization that occurred almost entirely during 1992—is almost 9 percent of apartments

slated for privatization. The average rate of inmigration as a share of the population is 1.6

percent. Depending on what share of total housing is represented by apartments slated for

privatization, 9 percent seems an excessive response to forecasted inmigration alone. Finally,

responses from the Russian Longitudinal Monitoring Survey indicate that the desire to sell the

apartment is by far the least important reason households have for wanting to privatize.[9] These

reasons all suggest that the rate of privatization is independent of expected migration. The

regression results then suggest that migrants view high rates of apartment privatization as a

signal of potential housing markets.

The labor market indicator, out-to-job ratio, does not return a statistically significant

estimate. This finding is consistent with the Mitchneck and Plane (1995) findings that

employment conditions and migration are not related during early transition. The measurement

problems with the employment data are so bad however (see Data Appendix), that I hesitate to

even draw this weak conclusion. The out-to-job ratio—the ratio of exit into jobs from

unemployment over the level of unemployment—should be the best indicator of the probability

that someone arriving to an area without a job could find a job, conditional on the migrant having

similar characteristics to the unemployed population. In a non-reported regression, I include

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[9]Brown and Foley (1997).

several other labor market indicators, including the unemployment rate[10]. None of these

indicators returns a statistically significant estimate, and their inclusion affects none of the other

estimates.

The economic health of oblasts, as represented by the change in industrial production

from the beginning to the end of 1992, seemingly has no effect on destination choice. The

predicted impact is unclear, however. A decline in industrial production early in transition could

indicate that an oblast is beginning serious industrial restructuring and lead migrants to expect it

to do well in the future. A complete analysis of the effects of industrial change on migration thus

requires more detailed measures and is reserved for future work.

Two climate variables perform well. The amount of air pollution per square kilometer

has a negative and significant coefficient estimate as would be predicted. Pollution reflects other

aspects of regional economies though, so the variable may be serving as a proxy rather than

reflecting people's choices about environment. For example, industries that emit air pollution

may also be industries that decline as a result of transition and therefore oblasts with these

industries are not healthy economically or environmentally. The production variable helps

control for this proxy effect, however. The coefficient estimate on average January temperature

is similarly negative and highly statistically significant. Since the average over all oblasts is

negative, higher values of the variable reflect colder relative temperatures and vice versa. Thus

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[10]The unemployment rate is probably the worst signal of labor demand relative to labor
supply. A low unemployment rate could result from labor demand that is so low that many
people drop out of the labor force. A high unemployment rate could result from high turnover
rates in an environment of short unemployment durations. A high unemployment rate could
also result from high inmigration to and low outmigration from an area that is deemed highly
desirable.

the negative sign means that warmer climes do experience greater inmigration.

All three culture variables also perform well. The share of the population with some higher education is positively related to destination choice. There are two possible explanations for this: one, a highly educated population is an amenity that migrants seek when choosing a destination, and two, if highly educated people are more likely to migrate, they choose destinations where the share of jobs for high-skilled labor is large as reflected by the share of highly educated people in the current population. The percent of the population that is urban negatively influences inmigration. This result does not necessarily mean that people are not migrating into urban areas, only that they are less likely to migrate to oblasts with high urban populations. Collinearity diagnostics, however, reveal that the estimates on the education and urban share variables are degraded by collinearity, so I refrain from interpreting them in detail.[11] The share of Russians also corresponds positively to inmigration.

The results in the final columns of Table 1 address the theory of Carrington, Detragiache, and Vishwanath (1996) and others before them that moving costs are endogenous and decrease with the stock of migrants already in an area. In this specification I include a variable for the share of recent migrants (previous two to five years) and a variable for the share of nonmigrants (the inverse of the share of all migrants ever). The estimated coefficient on previous migrants is positive and statistically significant, and this alternative to the base specification is the only one with a significant F value. The estimate on previous migrants could thus support the theory of endogenous moving costs. However, it could also reflect serial correlation in the basic

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[11]In fact, when the regression is run with urban share as a single regressor, the estimated coefficient is positive.

specification, which is highly likely, and by "soaking" up this serial correlation, it reduces the power of the regression to estimate the effects of the other variables. The likely serial correlation does not bias the OLS estimates in the previous regressions but does make them inconsistent. The variable for previous migrant share is essentially a lagged dependent variable though. Thus this final specification suffers from both serial correlation and autoregression, causing the OLS estimates to be asymptotically biased.

Several large cities in Russia have experienced heavy inmigration during transition, and these focal points raise the concern that a few observations could be driving the regression results. Influence analysis reveals that six oblasts[12] are influential. Elimination of these oblasts does not qualitatively change the signs or significances on wages, prices, apartment privatization and most other variables though. In fact, eliminating these six plus four slightly influential oblasts[13] still does not qualitatively change the results. The White test for heteroskedasticity is insignificant in all specifications. The results are robust to entering nominal rather than logged values of the ruble variables.

Table 2 reports the results on the inmigration series from the Census data. The signs and significances of the estimates in the base specification essentially mirror those for the official migration data providing evidence that while the levels of migration reported in the official data may be biased, the relative flows are not.

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[12]Moscow City, Moscow Oblast, St. Petersburg, Leningrad, Krasnodar, and Tyumen.

[13]Nizhegorod, Belgorod, Primor, and Khabarovsk.

Table 2. Determinants of 1992 and 1993 Migration into Russian Oblasts

Specification	Base		Endogenous Moving Costs	
Variable[a]	Parameter estimate	Prob>|T|	Parameter estimate	Prob>|T|
Population 1992	0.0134	0.0001	0.0145	0.0001
Industrial production 1992/1991	0.0006	0.8766	-0.0022	0.5382
Outflow to job rate 1992[b]	0.0015	0.1314	-0.0001	0.8790
Average wage 1992	0.0090	0.0007	0.0027	0.3041
Price of goods basket 1992	-0.0099	0.0011	-0.0072	0.0027
Apartment privatization through 1992	0.0024	0.0042	0.0014	0.0531
Northern territories	0.0002	0.9355	0.0010	0.5203
Air pollution per square km	-0.0012	0.0001	-0.0006	0.0054
Average January temperature	-0.0029	0.0095	-0.0015	0.0960
Share with higher education 1989	0.0052	0.1178	-0.0054	0.0808
Share of urban dwellers 1989	-0.0108	0.0144	-0.0035	0.3569
Share of Russians 1989	0.0060	0.0031	0.0027	0.1081
Share of recent previous migrants			0.0115	0.0001
Share of nonmigrants			-0.0031	0.3623
Adjusted R-squared	0.95		0.97	
White statistic/Prob>Chisq	70.99/0.44		63.68/0.69	
F test on added variables/Prob>F			20.51/0.0001	

[a]All variables are entered relative to the national average except the dummy for Northern territories. Ruble values are in natural logs. See Appendix 1 for details.

[b]The out-to-job ratio is the average over all months in 1992.

Table 3 reports the results for immigration. The purpose of this analysis is to see whether and what economic factors affect the destination choice of immigrants who decide to move to Russia. All the estimates except on the distance variables are statistically significant and same signed as for internal migration. The estimates suggest that immigrants are attracted to areas with higher average wages, lower prices, and more progress in apartment privatization. They are also attracted to areas with higher shares of Russians. This result is not surprising given that much immigration is accounted for by Russians returning from former Soviet republics. For a detailed analysis of migratory flows among the countries of the Former Soviet Union see Azrael

and Payin (1996).

Table 3. Determinants of 1993 Immigration into Russian Oblasts

Variable[a]	Parameter estimate	Prob>|T|
Population 1992	0.0108	0.0001
Industrial production 1992/1991	-0.0043	0.4739
Outflow to job rate 1992[b]	0.0012	0.4876
Average wage 1992	0.0212	0.0001
Price of goods basket 1992	-0.0210	0.0001
Apartment privatization through 1992	0.0042	0.0022
Northern territories	-0.0072	0.0319
Air pollution per square km	-0.0021	0.0001
Average January temperature	-0.0061	0.0009
Share with higher education 1989	0.0165	0.0033
Share of urban dwellers 1989	-0.0176	0.0156
Share of Russians 1989	0.0139	0.0001
Adjusted R-squared	0.86	
White statistic/Prob>Chisq	70.36/0.47	

[a]All variables are entered relative to the national average except the dummy for Northern territories. Ruble values are in natural logs. See Appendix 1 for details.

[b]The out-to-job ratio is the average over the latter six months of 1992.

Decision to Leave

Table 4 presents the results of the regression on outmigration from Russian oblasts to other parts of Russia. Of the economic variables, only the estimated coefficient on average wages is significant at five percent. Average wages are positively associated with outmigration rates, a result that seemingly contradicts theories about labor migration equating wage differentials. This estimate could result, however, from the greater ability of those in high wage

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regions to incur the costs of migration.[14] High wage regions could also be associated with greater access to information about the rest of the country, which would facilitate outmigration. Only a few other variables are significant in the *Base* specification. Oblasts with greater relative populations experience lower rates of outmigration. Oblasts with larger shares of higher educated people experience higher rates of outmigration, a result consistent with the findings for many countries that people with more education are more likely to migrate. The share of urban dwellers is negatively related to outmigration rates, consistent with but not necessarily supporting the hypothesis that urban residents are less likely to leave.

We should expect that oblast characteristics have weaker explanatory power for outmigration than inmigration. The decision to leave one's home is based more on one's personal situation while the destination choice once the decision to migrate has been made will depend on destination characteristics. For example, an individual's decision to leave a location depends more on whether he or she is employed rather than what the unemployment rate is. The outmigration regressions do have fewer statistically significant estimates than the inmigration regressions and have lower R^2s.

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[14]The one-time costs of migration are usually not considered a significant barrier, but they may be more important in an economy like Russia's where credit markets are underdeveloped and thus moving costs or start-up costs must be paid out of pocket.

Table 4. Determinants of 1993 Internal Migration out of Russian Oblasts

Specification	Base		Propensity	
	Parameter		Parameter	
Variable[a]	estimate	Prob>|T|	estimate	Prob>|T|
Population 1992	-0.0041	0.0002	-0.0032	0.0006
Industrial production 1992/1991	-0.0019	0.7641	0.0025	0.6391
Outflow to job rate 1992[b]	-0.0009	0.4889	0.0005	0.6686
Average wage 1992	0.0159	0.0001	0.0066	0.0541
Price of goods basket 1992	0.0067	0.0779	0.0049	0.1069
Apartment privatization through 1992	0.0000	0.9523	0.0002	0.0578
Northern territories	-0.0043	0.0810	-0.0029	0.1469
Air pollution per square km	-0.0003	0.3359	0.0000	0.7774
Average January temperature	0.0008	0.5729	0.0022	0.0647
Share with higher education 1989	0.0011	0.0060	0.0007	0.0578
Share of urban dwellers 1989	-0.0002	0.0116	-0.0003	0.0026
Share of Russians 1989	0.0000	0.4034	0.0000	0.0072
Share of working age 1989	0.0004	0.0966	0.0012	0.0001
Average household size	0.0017	0.2782	-0.0045	0.0095
Share of recent previous migrants			-0.1341	0.0144
Share of nonmigrants			-0.0374	0.0001
Adjusted R-squared	0.89		0.93	
White statistic/Prob>Chisq	70.40/0.53		66.85/0.65	
F test on added variables/Prob>F			18.01/0.0001	

[a]The first through fifth, eighth, and ninth variables are entered relative to the national average.
Ruble values are in natural logs. See Appendix 1 for details.

[b]The out-to-job ratio is the average over the latter six months of 1992.

Again I include variables for previous migration in a companion specification labeled

Propensity. Here these variables address the hypotheses that people who have recently migrated

are likely to migrate again while people who have never migrated are less likely to migrate, that

is, the variables indicate the population's propensity to migrate. The estimates show that while a

large share of nonmigrants is associated with lower outmigration, a large share of recent migrants

is also associated with lower outmigration. This result is consistent with the story that previous

migrants were indeed reallocating themselves geographically rather than just frequent movers.

This specification, however, similar to the *Endogenous Moving Costs* specification in Table 1,

suffers from likely serial correlation combined with autoregression, because the nonmigrant

share is highly correlated with previous outmigration. So the estimates may be biased.

Table 5 presents the results from the regressions on emigration. Here again higher

average wages are associated with higher rates of outmigration, and if we think that moving costs

for emigration are even higher than for internal migration, this result is not surprising.

Table 5. Determinants of 1993 Emigration out of Russian Oblasts

Specification	Base		Propensity	
Variable[a]	Parameter estimate[c]	Prob>|T|	Parameter estimate[c]	Prob>|T|
Population 1992	-0.5010	0.0008	-0.4471	0.0018
Industrial production 1992/1991	0.4524	0.6063	0.7352	0.3682
Outflow to job rate 1992[b]	-0.1205	0.4963	0.0522	0.7580
Average wage 1992	2.2730	0.0001	1.6329	0.0027
Price of goods basket 1992	0.5530	0.2804	0.3229	0.4919
Apartment privatization through 1992	0.3010	0.0415	0.5028	0.0008
Northern territories	-0.7642	0.0252	-0.6644	0.0342
Air pollution per square km	-0.0714	0.1119	-0.0633	0.1445
Average January temperature	0.1173	0.5263	0.1935	0.2843
Share with higher education 1989	2.0641	0.0018	1.8060	0.0059
Share of urban dwellers 1989	-1.3442	0.1303	-1.9224	0.0361
Share of Russians 1989	-0.3564	0.3706	-0.6911	0.0793
Share of working age 1989	1.4179	0.4106	6.3858	0.0028
Average household size	-0.5883	0.3529	-2.4612	0.0018
Share of recent previous migrants			-0.9849	0.0148
Share of nonmigrants			-1.8241	0.0020
Adjusted R-squared	0.81		0.84	
White statistic/Prob>Chisq	64.62/0.72		70.79/0.52	
F test on added variables/Prob>F			7.30/0.0015	

[a]All variables, including the dependent variable, are entered relative to the national average.
Ruble values are in natural logs. See Appendix 1 for details.
[b]The out-to-job ratio is the average over the latter six months of 1992.

[c]The dependent variable has been rescaled to make the parameter estimates easier to report.

For emigration, the rate of apartment privatization positively determines the rate of

outmigration. This result is consistent with theory and with evidence from other countries. Housing constitutes wealth, and the ability to transfer wealth affects a household's willingness and ability to migrate. In Russia, most long-time residents of a location live in apartments that were provided by the government or by an enterprise. Before transition, people were able to realize the wealth embodied in their apartments by renting them or trading them on the unofficial housing market. Because they did not own these apartments though, it was extremely difficult to transfer this wealth from one location to another. Apartment privatization and the legalization of apartment sales allow a person to realize the wealth of her current accommodations and use that stake to acquire housing in the destination market. Analogously, in Great Britain, residents of council housing may easily move to other council housing within their city, but their status as a council housing resident does not give them priority to receive council housing in other locations. Hughes and McCormick (1981) find that although council housing residents have a higher propensity than homeowners to move within a city, they have a low propensity to migrate out of their city.

CONCLUSION

During transition, regional differentials of political and economic conditions across Russia have widened significantly. Other than migration, there seem to be few forces for convergence. Whether and how internal migration responds to these signals will determine in large part not only the distribution of transition gains across Russia, but also the ability of the successful regions to continue to grow. The two central questions for the analysis of labor migration are whether migration is reallocating labor and whether migration is mitigating or equilibrating regional differentials. I improve on previous studies by analyzing gross migration

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flows rather than net flows, and I examine a much broader set of determinants.

The results suggest that the first question is unanswerable with these data. The employment indicators have no measurable effect on gross migration flows. The results for on wages are not inconsistent with reallocation, but are also not conclusive. The answer to the second question seems to be no. While oblasts with higher average wages and lower prices are more likely to be destination choices, higher average wages are also associated with higher rates of outmigration, suggesting that rather than reallocating from low-wage regions to high-wage regions, people are moving from high-wage to high-wage. Such a finding does not mean that labor is not reallocating, instead it suggests that the characteristics motivating reallocation may finer than wages. For example, people may be reallocating according to skill differences. In such a case, they may be more likely to have the information and/or money necessary to migrate if they come from a high-wage region, and they will want to choose a region where there is an excess demand for their specific skills and where wages are relatively high. While not inconsistent with reallocation, these results are inconsistent with equilibration or convergence. They suggest that migration activity is between successful regions rather than from declining to growing regions.

Housing reform influences migration flows. Inmigrants are more likely to choose oblasts with higher rates of apartment privatization, and oblasts with higher rates of apartment privatization experience higher rates of emigration. Such strong results emerging so early after the beginning of the housing reforms emphasizes the importance of housing markets to labor migration. Finally, demographic and amenity factors correspond to migration flows generally as would be predicted. In continuing research I update the analysis to later years of transition.

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DATA APPENDIX

For the analysis of migration flows, I use data from the State Committee on Statistics in Russia collected from several Goskomstat publications (Goskomstat Rossii, 1994 and 1995) and from outside publications that rely primarily on Goskomstat data (Russia Today, 1994; World Bank 1994 and 1995). For migration flows, I use two series. The first is the government's official numbers on migration during the year 1993 and includes data by oblast for inmigration from other Russian oblasts, total inmigration, outmigration to other Russian oblasts, and total outmigration. These data are collected from residence registration data and are undoubtedly under-reported. The under-reporting is likely less severe for inmigration as individuals do have an incentive to register in new locations in order to receive local benefits. There is no reason to believe that there is a systemic bias across oblasts however, especially for outmigration. The Pearson correlation between gross inmigration and gross outmigration is quite high at 0.71 emphasizing the importance of analyzing gross rather than net flows.

The other migration series comes from the 1994 micro-census. Inmigration is inferred from the question that asks how long a person has lived in the place where she now lives.[15] The advantage of this indicator is that it should pick up the inmigrants who did not register. I use the number of people who have lived in the same place for less than two years and, since the census was performed in February of 1994, use it to represent inmigrants in 1992 and 1993. Neither the registration nor the census data are ideal, but having both allows me to double-check the findings on inmigration. The Pearson correlation between the two dependent variables is 0.96.

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[15] On the questionnaire "place" is defined as oblast, however, there is certainly the possibility that the question occasionally picked up intra-oblast migration.

Distances between oblasts are calculated as the great circle distances in kilometers between the capital cities of the oblasts. Population is official population in 1992. The industrial production index is the index of 1992 to 1991 production.

The employment statistics were collected by the World Bank, see Commander and Yemtsov (1995) for a description. The number of registered unemployed is a notoriously under-counted indicator of unemployment. The incentives for the unemployed to register depend somewhat on the quality of their local unemployment bureau and thus the bias varies over oblasts, but not in any way we can identify. Outflows from registered unemployment to jobs under-count the total flows in and out of total unemployment, but if the unregistered unemployed are similar to the registered unemployed, then registered outflows as a percent of registered unemployment should still be representative of overall outflows.

The employment statistics change by quite a bit over 1992, so for the regression on 1993 migration, I use the average monthly rates for only the second half of 1992. For the regressions on 1992 and 1993 inmigration, I use the average over 1992. The average wage data is over the whole year. Because average wages in 1991 are highly correlated with average wages in 1992, I use just average nominal wages in 1992 for both the 1993 and the 1992/93 regressions. I control for regional price differences using the 1992 nominal price across oblasts of a basket of 19 "essential" goods.

The primary indicator for housing markets is privatized apartments as a percent of apartments subject to privatization. There are no data for 1991, and in 1990 the percentages are trivial, so I use 1992 rates for both the 1993 and 1992-93 regressions. Although the average apartment privatization in 1992 is only 8.7 percent, it ranges from 0.7 to 29.1. To test further the

impact of housing availability on migration I include variables for the amount of new housing

built, the estimated urban housing shortage, and the share of private housing in urban stock. I

also include the number of apartments sold as an indicator of housing market activity, but I fear

this variable is very poorly measured. I control for overall housing conditions using the square

meters of housing space per person. The regional reform variables are the rate of creation of

joint stock companies as of June 1993, the ratio of privatized enterprises to prior total of state-

owned enterprises by October 1993, and the share of "small" enterprises privatized by October

1993. Although reform in early 1993 might influence migration in late 1993, ideally I would like

to have these variables measured only to the end of 1992. However, the data are unpublished

data from the State Committee on Ownership that are reported by Slider (1994), and so I am

limited to the information in Slider's tables.

The areas classified as the Northern Territories during the Soviet period do not conform

to precise oblast boundaries. The dummy variable used here is the best approximation of which

oblasts comprised the Northern Territories.[16] The air pollution variable is given in tons per

square kilometer.[17] The values for the culture variables are all for 1989, that is before transition,

to avoid endogeneity.

The data on previous migration comes from the micro census. The number of those who

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[16]Much thanks due to Timothy Heleniak for helping with this variable.

[17]The regressions were also run using tons of pollution without weighting by oblast size. While air pollution does spread over territory, we may also think that it will be concentrated in the high population areas, where the industries are, regardless of how big the rest of the oblast is. If so, the unweighted measurement of pollution is the most relevant. In most of the regressions, the pollution per square kilometer produced a better model fit, and so those results are reported here.

report having lived in the same place between two and five years (as of February 1994) are considered inmigrants during 1989 to 1991, or recent inmigrants. The number of nonmigrants is the number who report in the micro-census that they live in the same place they were born.[18] Table A1 lists the means of the variables without relative weighting.

The sample size is 73 oblasts although Checheniya-Ingushetia is dropped from all regressions and Buryatia from most regressions due to missing data. Autonomous Okrugs are included in the oblasts in which they are located. The number and names of oblasts has changed frequently over the last 10 years. I use essentially the lowest common denominator. Because of the small sample size, I run first what I consider the theoretically best specification, and then I run several specifications to examine in more detail labor markets, housing markets, local reforms, and migration propensities. All regressions are ordinary least squares.

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[18]There is a concern that the ambiguity of the census question leads this question to pick up some people who moved away and then moved back again.

Table A1. Means of Variables

Variable	Mean	Minimum	Maximum
Internal inmigrants in 93 as % of 92 population	0.96	0.43	1.78
Inmigrants in 92 and 93 as % of 91 and 92 population	1.63	0.3	2.5
Immigrants in 93 as % of 92 population	0.65	0.07	1.68
Internal outmigrants in 93 as % of 92 population	1.13	0.47	6.06
Emigrants in 93 as % of 92 population	0.38	0	2.78
Index of industrial production, 92 over 91	81.78	65	95
Avg monthly outflow to job rate July-Dec, 92	7.35	0.6	21.75
Avg monthly outflow to job rate, 92	8.71	0.97	26.33
Avg monthly nominal wage, 92	5912.93	2571	16261
Ruble price of basket of 19 basic goods, 92	4397.59	1926	7929
% prvtzd apartments of total subject to priv, as of end 92	8.73	0.7	29.1
1000 squ m new apts per 1000 people, 92	0.28	0.08	0.51
Estimated urban housing shortage: hhs/units, 90	1.27	0.85	2
Share of private housing in urban housing stock, 90	17.61	0.3	37.8
% apts sold of apts subject to privatization, 93	0.02	0	0.15
Sq meters of housing space per capita, 89	15.92	11.5	19.6
Rate of creation of joint stock co's, as of June 93	0.53	0	0.96
Ratio of privatized to total prior state ents, Oct 93	0.43	0.02	1.5
Share of small enterprises privatized by Oct 93	0.61	0.04	1.33
North, dummy equal to 1 for Northern Territories	0.22	0	1
Air pollution (1000 tons) in 92 / 1000 sq m territory	9.5	0.06	250.6
Average January temperature in Celsius	-12.74	-43.2	-1
Percent of population with some higher education, 89	11.67	8.4	29.9
Percent urban dwellers of population, 89	69.9	41.5	100
Percent Russian of population, 89	78.34	9.2	97.4
Inmigrants during 89-91 as percent of 92 population	4.76	0.11	· 8.37
Non-migrants (at beg 94) as percent of 92 population	56.12	9.83	82.86
Percent working age of population, 89	56.97	51.7	66.9
Avg household size in Feb 94 from Census	2.92	2.49	6.39

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