

***Labor Market Discrimination During Post-Communist
Transition: A Monopsony Approach to the Status of
Latvia's Russian Minority***

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LABOR MARKET DISCRIMINATION
DURING POST-COMMUNIST TRANSITION:
A Monopsony Approach to the Status of Latvia's Russian Minority

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Abstract

Conventional wisdom suggests that during communism, tastes for discrimination were suppressed. In partial explanation for ethnic tensions observed following central planning, economic liberalization allows those tastes to be expressed. This paper explores the feasibility of monopsony as an economic structure supportive of discrimination during transition, using Latvia's ethnic Russians as a case study. Measuring employment concentration and earnings differentials across regions, monopsony appears prevalent in the country. A monopsony explanation requires Russians to have lower labor supply elasticity than Latvians, a condition which estimates for participation probability confirm. Earnings decompositions show that though Russians are paid more than Latvians on average, given their human capital characteristics, they suffer earnings discrimination of between 5.5 and 7.3 percent. In addition, compared with Latvians the likelihood that Russians will be unemployed is greater, though Russians are less likely to register for unemployment services. This evidence suggests that the lack of integrated, flexible labor markets in Latvia, and the monopsony which results, have supported labor market discrimination against Russians during transition.

I. INTRODUCTION

In Central and Eastern Europe, political events suggest ethnic tension accompanies economic transition. From the violent dissolution of Yugoslavia to questions about minority citizenship rights in the Baltic states, disputes based on ethnicity appear more prevalent since central planners no longer officially pronounce the shared interests of all workers. If the strictures of central planning suppressed the expression of many tastes, excess demand for those tastes were likely pent-up. One of the prime benefits of economic liberalization is that it allows people to act according to their preferences. However, conventional wisdom suggests that ethnic tension has erupted following communism largely because majority populations express their tastes for

discrimination against minorities. A comprehensive examination of ethnic tension would naturally invoke historical, sociological and political insights. This paper will focus on what economics can offer a discussion of these issues. Specifically, it will consider the relation between earnings discrimination and imperfectly competitive market structures during transition.

A well-developed literature discusses the theory of discrimination in market-based economies. Classic work (Becker (1957)) frames the problem in terms of prejudicial tastes. In a perfectly competitive market, employers with such tastes would pay for them with lower profits. In the long-term, market forces would eliminate discriminating firms. This approach based on perfect competition and tastes for discrimination dominates the literature. However, it likely has limited applicability to analysis of post-Communist ethnic tension in the short term, where perfect competition obtains only in very limited situations.

Absent perfect competition, an alternative branch of the literature outlines how discrimination can be sustained. Building on Robinson (1934), it concentrates on how monopsony allows wage discrimination, defined as payment below labor's marginal revenue product. In monopsony, single buyers offer wages below the worker's marginal revenue product, which could account for discrimination against certain groups. However, industrial country empirical evidence has not supported the monopsony model as a central explanation for wage discrimination. Monopsony is unlikely to prevail in these settings and estimated labor supply elasticities run counter to this model's stipulations.

In contrast to industrialized countries, post-communist economies exhibit characteristics appropriate to a monopsony explanation for discrimination. A caricature of central planning would portray the economy as having a single employer, the state. While the comparative systems literature suggests that labor markets were much more competitive under Communism

than this extreme (see Bergson (1944) for a classic presentation), many local labor markets were dominated by single large firms introduced and maintained by central-planners. These firms would likely enjoy local monopsony power. During Communism restrictions on mobility within the country would reinforce these monopsonies.

Historical monopsonies likely persist through transition. While new firms eventually enter isolated labor markets, the pace at which monopsonies disband is slow and erratic, particularly given regional disparities in investment and growth following Communism. In addition, official measures, such as continued geographic restrictions on workers' movement, and structural problems, such as inadequately developed housing markets, limit mobility into and out of segmented labor markets. As a result of these institutional factors, the monopsony explanation might have particular resonance for an analysis of post-Communist labor market discrimination.

This paper will examine labor market discrimination during post-Communist transition, taking as a case study Latvia and its ethnic Russian minority. It will examine indicators of monopsony prevalence in Latvia. Since labor supply elasticity is central to the monopsony approach and its applicability, the paper will estimate labor supply elasticities across ethnic groups, ascertaining whether the group purportedly discriminated against has lower elasticity. Having established that a monopsony approach is potentially relevant, it will test for earnings differentials across groups that cannot be explained by factors directly related to productivity using classic decomposition techniques developed by Oaxaca (1973). Moving beyond wage discrimination, it will consider differences in unemployment across groups. Comparisons of ILO standard unemployment rates and officially reported unemployment rates, which are based on registration for benefits, suggest that official statistics underrepresent ethnic differences. To isolate possible ethnicity bias in unemployment and registration, the paper then analyzes the

probability of becoming unemployed and of registering for benefits, correcting for observed characteristics.

The analysis proceeds as follows. Section II reviews the literature on discrimination and on labor markets during transition. Section III presents a model of discrimination based on monopsony and describes the paper's empirical strategy. Section IV summarizes empirical results concerning the viability of a monopsony approach to wage and unemployment bias against Latvia's Russians. Section V concludes.

II. LITERATURE REVIEW

Economics defines discrimination as paying workers less than their marginal product based on characteristics with no relation to productivity. A well-developed theoretical literature presents two central approaches to analyzing wage discrimination. The more prevalent strand builds on Becker (1957), which established a framework of tastes for discrimination. With perfect competition and differing degrees of prejudicial tastes, employers with the least tastes for discrimination hire members of the minority group, paying them lower wages than equally well-qualified non-minorities. As payment for their tastes, these employers enjoy higher profits than those with greater taste for discrimination. Over time, profit-seeking capital increases the productive capacity and employment of the least prejudicial firms. Tastes for discrimination tend to disappear with bankruptcy for those with discriminatory tastes and the entry of entrepreneurial employers seeking profits arising from less prejudice. According to this framework, tastes for discrimination and lower wages for minority groups could persist where firm entry and entrepreneurial skills are inelastically supplied, both characteristics that likely obtain during post-communist transition.

Another branch of research discusses the potential for discrimination absent perfect competition. Robinson (1934) presented the classic model of monopsony and discrimination: with the ability to set prices, a single buyer of labor can offer wages below workers' marginal product. Madden (1973) updated and summarizes this approach, though Cain (1986) discusses its empirical difficulties. If monopsony is to generate lower wages for discriminated groups, those groups should have lower labor supply elasticity. But evidence suggests that, even though holding productivity constant US women are less-well paid, they have higher elasticity. Moreover, labor market integration has diminished the prevalence of monopsony in the US, while measured discrimination continues.

Despite these difficulties, Sharir (1995) evaluates how the literature has put less emphasis on the monopsony approach to gender discrimination than the approach merits. Several authors have considered monopsony in specific labor markets. Using historical evidence, Fishback (1998) relies upon monopsony to analyze American labor markets in the early 1900s. Ransom (1993) explores university monopsony power to discuss payments to seniority in academia.

More recent theoretical work seeks to expand upon the monopsony and Beckerian taste approaches to discrimination. Kolpin and Singell (1997) rely upon asymmetric information to describe the possibility of discrimination, while Naylor (1996) attribute it to asymmetric collusion in the presence of employer power. Gottfries and McCormick (1995) consider the link between discrimination and unemployment by focusing on segmented labor markets.

If the theoretical work on discrimination presents competing approaches, empirical work to measuring the degree of wage discrimination is based primarily on Oaxaca (1973) or elaborations thereon. As described in Section III below, this approach decomposes wage

differences into those attributable to measurable human capital factors and those due to discrimination based on gender or ethnicity.

The empirical microeconomic literature on labor markets in transition economies considers changing wage structures during and after communism and the effects on unemployment of labor market support policies. For example, Brainard (1998) analyzes the winners and losers from the early years of Russia's economic transition, decomposing the wage effects of human capital and unmeasured skill for men and women. Chase (1998) compares earnings information during Communism and that from early transition in the Czech Republic and Slovakia, making use of the split of these two previously joined republics to link the rapidity of transition policies to changed wage structures.

While these papers consider the gender earnings differentials and find them to be increasing with time, little research directly considers earnings discrimination by ethnicity in transition economies. One exception is Kroncke and Smith (1999), who evaluate the degree of earnings discrimination against Russians in Estonia. Using classic decomposition techniques, they find no evidence of discrimination against Russians in 1989 but significant discrimination in 1994. However, Kroncke and Smith (1999) do not explicitly relate economic characteristics prevalent following central planning to explain this wage discrimination.

III. THEORY AND EMPIRICAL APPROACH

Monopsony and Discrimination

Approaching ethnic discrimination primarily based upon monopsony, it is useful to review the theory of how this market structure leads workers of one ethnic group to be paid less than their marginal product. A profit maximizing monopsonist hires labor until workers' marginal product and marginal factor cost are equal. Her monopsony power allows her to pay wages

below this marginal factor cost. Wage discrimination results, though its extent depends inversely upon labor supply elasticity.

Somewhat more formally, in a given labor market the monopsonist faces the upward-sloping labor supply $L(w)$ with elasticity ϵ . If the inverse labor supply is $w(L)$, its first derivative with respect to L , $w'(L)$ will be inversely proportional to ϵ . Given total factor cost of labor which is $TFC = w(L)L$, marginal factor cost is $MFC = w'(L)L + w(L)$. The cost-minimizing monopsonist will hire labor L^* such that the value of the marginal product of labor (VMP) equals the marginal factor cost (MFC).

$$[1] \quad VMP = MFC = w'(L^*)L^* + w^*(L^*)$$

Monopsony power allows the firm to offer a wage below the VMP . The degree of difference depends on:

$$[2] \quad VMP - w^*(L^*) = w'(L^*)L^*$$

Because $w'(L)$ is inversely proportional to labor supply elasticity as the derivative of the inverse labor supply curve, the smaller the elasticity of labor supply ϵ , the greater the difference between VMP and the offered wage and the greater the wage discrimination.

Measuring Monopsony

To apply a monopsony approach to ethnic discrimination following communism, it is important to establish the existence of monopsony in local labor markets. Several institutional factors suggest that individual buyers of labor might exercise monopsony power in specific labor markets and that workers cannot move easily to other labor markets. Throughout transition economies, large regional disparities in unemployment exist (*e.g.*, Ham, Svejnar, and Terrell (1998) analyze the disparities in the Czech Republic). Where single industries dominated labor markets during central planning, during transition a limited number of firms likely dominating

Latvia's local labor markets. These communist-era firms, or those that succeeded them during privatization, would likely still exercise monopsony power.

If workers can move to other labor markets, then a single dominant demander of labor need not indicate monopsony. Several facets of Latvia's transition hinder labor mobility. Officially, workers need to have a stamp in their internal passbooks designating where they are allowed to live and work. While these stipulations might not bind universally, their existence points to limitations on labor mobility. Further, because the Latvian housing market has not been privatized, it is difficult for workers interested in moving to different areas to find permanent accommodation. Latvian monopsonies likely persist given the continuing existence of dominant employers in local labor markets and of constraints on local mobility.

Seeking empirical evidence of Latvian monopsony, the paper explores two alternative indicators, one direct based on employment concentration, the other indirect based on regional wage differentials. To exercise monopsony power, a firm must face few other competitors for labor in local markets. Labor markets where most workers are employed by a limited number of firms are potentially monopsonistic. The paper first presents evidence on employment concentration, defined by the percentage of workers in local labor markets who are employed in specific industries.

For monopsonistic labor markets to exist, there must be restrictions on labor mobility that keep workers from moving to areas with other employers that offer non-discriminatory wages. In an integrated labor market, after correcting for all other individual characteristics, the location of one's job should not influence wages: those differences should be arbitrated away. The magnitude of the regional disparities, as measured by coefficients on regional dummies, indicates the degree to which individual labor markets are segmented, and by extension, the degree of monopsony

prevalent in different geographic areas. While some of those regional wage differences will reflect alternative costs of living, in the absence of labor mobility, real earnings differences will persist, after correcting for human capital characteristics.

As an indirect indicator of monopsony in Latvia, we analyze the structure of earnings in the Latvian labor market. Using data on earnings and human capital characteristics, the paper presents ordinary least squares regressions on log earnings following Mincer (1974), including in the analysis regional indicator variables.

$$[3] \quad \ln W_i = \mathbf{a} + \mathbf{b}X_i + \mathbf{d}R_i + \mathbf{e}_i$$

Because of a broad human capital literature which has established their different earnings structures, men and women are treated separately. The aggregate wage effects \mathbf{d} of region R provide an indicator of the degree of monopsony in Latvia.

Beyond allowing this measure of regional disparity, these earnings regressions serve a second function. With information about earnings structure and individual characteristics (education, age, gender, nationality, etc.), we have an estimate of the returns to different observed characteristics in the labor market. With this information about payments to these observable traits, we can predict the wages of all people, regardless of whether they actually worked. These predicted earnings are useful for analyzing the effect of offered wages on labor supply and unemployment.

Measuring Relative Labor Supply Elasticities

To use a monopsony approach to discrimination, one must establish not only the existence of monopsony, but also test whether the group purportedly discriminated against has lower labor supply elasticity than the majority group. Based on predicted earnings, we obtain estimates of

labor supply elasticity. Because of data difficulties measuring continuous labor supply indicators such as hours worked, the more discrete measure of labor force participation is used. Elasticities result from the probit coefficient on (predicted) earnings. The probit estimate takes the form:

$$[4] \quad \Pr(S_i) = \Phi(\mathbf{a} + \mathbf{g}\bar{W}_i + \mathbf{b}Z_i + \mathbf{e}_i)$$

where the coefficient β is taken as an estimate of the labor supply elasticity. Interaction terms for those of Russian ethnicity establish the relative earnings elasticity of this group with respect to the Latvian majority.

Oaxaca Earnings Decomposition

Through a careful decomposition of these earnings differences based on Oaxaca (1973), we consider the sources and degree of earnings discrimination in the Latvian economy. Using earnings regressions in a form presented in [3], though stratifying this data not by gender but by ethnicity, we can establish the geometric mean earnings for Latvians and Russians:

$$[5] \quad \bar{W}_L = \mathbf{b}_L \bar{X}_L \text{ and } \bar{W}_R = \mathbf{b}_R \bar{X}_R$$

The gross (unadjusted) logarithmic wage differential results from the difference between these geometric mean wages by group:

$$[6] \quad \ln(\bar{W}_L) - \ln(\bar{W}_R) = \mathbf{b}_L \bar{X}_L - \mathbf{b}_R \bar{X}_R$$

However, any gross wage differential could be due to differences between the groups' mean level of observable characteristics (such as more experience or more relevant education). If those characteristics allow one group to be more productive than another, then some of this earnings differential can be explained as payments for higher productivity.

In the decomposition analysis, one assumes that some earnings structure represents payments to characteristics based entirely on worker productivity. Each group's actual earnings

are compared to the earnings they would receive if paid strictly according to this non-discriminatory measure of productivity. We attribute the difference between actual and predicted earnings to discrimination (in the event that actual earnings are below predicted earnings) or favoritism (in the event that actual earnings are above predicted earnings). Because a prime difficulty is to determine the non-discriminatory earnings structure, most studies treat one group's earnings structure as based strictly on productivity and then test the converse, treating the other group's earnings structure as strictly based on productivity. Because the "true" productivity valuation is assumed to be bracketed between these two extremes, the true index of discrimination should fall between those generated by relying one group's structures.

$$\begin{aligned}
 [7] \quad & \ln(\bar{W}_L) - \ln(\bar{W}_R^*) = \mathbf{b}_L (\bar{X}_L - \bar{X}_R) \\
 & \text{or} \\
 & \ln(\bar{W}_L^*) - \ln(\bar{W}_R) = \mathbf{b}_R (\bar{X}_L - \bar{X}_R)
 \end{aligned}$$

Unemployment differentials

To augment this analysis of wage differentials, the paper also considers potential bias in unemployment. Many transition economies report unemployment rates based on who registers for unemployment¹. After comparing unemployment rates across different ethnic groups according to alternative definitions, the study explores the individual characteristics associated with higher probability of being unemployed.

$$[8] \quad \Pr(U_i | S) = \Phi(\mathbf{a} + \mathbf{b}X_i + \mathbf{e}_i)$$

¹ In fact, much of the literature on unemployment during transition is based on these officially reported figures for unemployment, figures based on administrative data of who registers for benefits. In early transition, these data were all that were available, for ILO standard unemployment figures, based on who is not currently working and has actively looked for a job in the past 14 days, requires extensive labor force survey information. In early transition, the costs of conducting such surveys was prohibitive. However, though many countries including Latvia have collected data allowing ILO standard unemployment statistics to be published, many still officially report the registration-based statistics.

Estimating these parameters allows one to identify the risk factors for unemployment, including gender, education, nationality, and location. Further, the paper estimates equation [8] for alternative definitions of unemployment, *i.e.*, the standard ILO definition versus those indicating who registers as unemployed with the state employment service. The difference offers insight into how a non-standard definition of unemployed masks some aspects of the Latvia's true unemployment situation.

When comparing the marginal effects of different characteristics, the common practice with probit analysis is to present the amount that the probability of an outcome, becoming unemployed in this case, changes with a change in characteristics. These marginal effects need to be reported with respect to some starting-point probability. Convention suggests using the probability estimates for an "average" person as a starting point for these marginal effects, where an average person has characteristics equal to the sample mean. However, it is then difficult to compare marginal effects of characteristics across different samples. Because samples have different probabilities at their means, slopes are evaluated at different starting points on a non-linear cumulative density function. Marginal effects are difficult to compare.

To facilitate comparison of marginal effects across different groups with different base probabilities, this analysis evaluates all the marginal effects based on a common starting point on the normal cumulative density function. It establishes one group's probability of being unemployed as the standard. Then, marginal effects of different characteristics are calculated from that same point on the CDF. For continuous variables, the marginal difference is:

$$[9] \quad \frac{\partial \Pr(U_c|S)}{\partial x_c} = \mathbf{f}(\bar{X}_r, \bar{B}_r) \cdot \mathbf{b}_c$$

where r subscripts stand for the reference group and c subscripts stand for the comparison group.

For discrete variables, the marginal effects with respect to the comparison probability are:

$$[10] \quad \Delta \Pr(U_c|S)|_{x_c=1} = \Phi(\bar{X}_r \bar{B}_r - \mathbf{b}_r x_r - \mathbf{b}_c) - \Phi(\bar{X}_r \bar{B}_r - \mathbf{b}_r x_r)$$

While having the detrimental effect of not having each probability calculated according to the actual point on the CDF which obtains for a given group, this procedure has the benefit of allowing more clear comparisons between the marginal effects of characteristics across groups.

To buttress this analysis of different unemployment definitions, a separate probit sheds light on who of the unemployed according to the ILO definition was also able to register as unemployed with the State Employment Service. Taking those who are unemployed according to the ILO standard as the population, this probit presents information about the factors which increase the probability that an unemployed person registers for benefits.

Data Available

To carry out this empirical analysis, the study uses three data sources. The Latvian Household Budget Survey (HBS) from the first quarter of 1997² is used to analyze the structure of earnings and predict how much people would expect to receive given their personal characteristics and location. When analyzing Latvian labor force participation and unemployment, the paper focuses on Labor Force Survey micro-data from the first quarter of 1998 (LFS 98). To offer some information about trends in these labor market outcomes, the paper compares these 1998 participation and unemployment findings with similar Labor Force Survey data collected in the second quarter of 1996 (LFS 96).

² I would like to thank Mr. Robert Ackland for extracting a sub-set of the HBS data including information on wages and relevant independent variables.

Table 1 presents descriptive statistics about the primary individual-level variables used in the analysis. Along with information about human capital, marital status and region, Table 1 offers information about nationality. In 1998, the population consists of roughly 62 percent Latvians, 27 percent Russians, and 11 percent people of other nationalities. In 1996, the percentage of Latvians was lower, at roughly 59 percent. Between 1996 and 1998 the share of non-Latvians in the country declined, perhaps because of emigration.

Because the HBS collected different information than the two LFS sources, it is worth drawing attention to difficulties comparing the three data sets presented in Table 1. Because the HBS data is comprised of people reporting non-zero wages from a main job, the 933 women and 914 men are not a random sample of the Latvian population but are selected because they work. As a result, their individual characteristics are not comparable with the respondents from the LFS surveys³, which consist of random samples of the whole population.

For example, among people in the HBS who work, the average age is 40 years. In the entire Latvian population, the average age is 47.7 years for women and 43.6 years for men.⁴ Educational attainment is higher in the HBS data (*e.g.*, 25 percent of women have higher education in the HBS data, though only 12 percent do in the LFS 98 data). The HBS and LFS surveys also used different categories to describe educational attainment: the HBS data distinguishes five categories, while the LFS data contains eight. This poses a problem for using the characteristics of the HBS data to predict the earnings of those included in the LFS (the rationale for which is described below). However, for predicting earnings it is possible to collapse the LFS data into five categories comparable to those used in the HBS. Those LFS respondents

³ When one selects from the LFS '98 and LFS '96 only those people who are currently working, the demographic characteristics are roughly comparable to the HBS sample.

who reported having “Secondary Specialized”, “Technical Secondary”, or “Comprehensive Secondary” education are grouped into the “Secondary Education” category when being compared with the HBS data.

IV. EMPIRICAL FINDINGS

Monopsony Indicators

Offering some indication of the prevalence of monopsony in Latvia, Table 2 contains summary statistics about employment concentration. Because of the stipulation that officially one must have a stamp in ones passbook certifying ones ability to live and work in a particular administrative district, for these indicators we consider as a separate labor market each of Latvia’s 32 administrative districts⁵. In each of these local labor markets, we tabulate the industry in which workers were employed according to two digit standard industry codes. Table 2 reports the percentage of non-farming workers employed by the most prevalent types of industry.

In the average local Latvian labor market, 48.0 percent of workers are employed by the three most prevalent industries in the district, 36.0 percent work for the two most prevalent, and 21.5 percent for the most prevalent industry. While the average degree of employment concentration is quite high, there is significant dispersion in its concentration across labor markets. For example, in one labor market, 32.7 percent of all workers are employed by the same industry. While difficult evaluate their relative magnitude, these employment concentration figures suggest dominant employers in many local labor markets, employers likely to exercise monopsony power.

⁴ While the rest of the LFS analysis uses sample weights to ensure that the information represents the Latvian population, these descriptive statistics are unweighted to show the characteristics of the sample itself.

⁵ For the purposes of Table 2, all of Riga’s administrative districts are collapsed into a single observation, for presumably workers can get to jobs anywhere within the city limits, so that the capital city is a single integrated

Table 3 presents an alternative, indirect method of measuring monopsony in Latvia, based on regional wage differentials. It includes the results of log earnings regressions for men and women as presented in equation [3]. They provide significant evidence for differences in labor markets across Latvia's regions, which supports the contention that Latvia's labor markets are not particularly well-integrated, as one would expect with persistent monopsony⁶. These regional effects are quite distinct between men and women. Compared to rural parts of the country and controlling for all other differences in individual characteristics, earnings in urban areas are 27 percent higher for men and 15 percent higher for women. Over and above this general urban benefit, men working in Riga receive an additional 14 percent wage premium. For women, the Riga labor market offers wages statistically indistinguishable from Latvia's other urban areas. Compared to the Kurzeme region, earnings in Vidzeme and Latgale are significantly less for both men and women. For example, men and women in Latgale receive earnings 26 percent less than in Kurzeme. This is likely due to the particularly difficult economic conditions there.

While some portion of these earnings differentials represents divergent living costs, the magnitude of the differences, particularly in a country as geographically small as Latvia, suggests a significant lack of national labor market integration. This segmentation suggests that monopsony is reasonably prevalent in the economy following the end of central planning.

The earnings regressions also offer insights into earnings structure more generally.

Consistent with an extensive human-capital literature, the Latvian labor market rewards those

labor market. Apart from the Riga district, the average population of these local labor markets is approximately 50,000 people.

⁶ The excluded geographic categories are "rural" and "Kurzeme". The "urban" dummy captures the general effect of living in any urban area versus living in rural areas, regardless of region. The regional dummies ("Riga Region", "Vidzeme", "Zemgale" and "Latgale") reflect earnings differences between Kurzeme and these other regions. Finally, the "Riga City" variable is an interaction term between "urban" and "Riga Region", thus

with more education. While the returns to education are generally larger for women than men, in Latvia, the opposite is true. However, consistent with the findings of Chase (1998) for the Czech Republic and Slovakia, the returns to general secondary education are larger than those to vocational education.

The earnings analysis also suggests that after controlling for educational differences and regions, it is possible to discern statistically significant differences only for Russian women, not other non-Latvian groups. While ethnically Russian men and women both receive approximately 7 percent lower earnings than Latvians, *ceteris paribus*, only for women is that statistically significant at the 90 percent confidence interval. However, this rough measure of discrimination does not take into account the ways that human capital might be valued differently for Latvian's and non-Russians. The section on discrimination below explores these differences with greater analytic sophistication.

Labor Supply Elasticities Across Groups

As noted above, this analysis estimates labor supply elasticity by considering the effect of predicted earnings for all respondents on the probability that a person participates in the labor force. Table 4 presents estimates of those elasticities. The positive, statistically significant coefficient on predicted earnings suggests that as predicted earnings increase 1 percent, the probability that a non-Russian will supply labor increases by 1.24 percent. However, the negative significant coefficient (-0.086) on the interaction term between predicted earnings and those of Russian nationality offers evidence that Russians have lower labor supply elasticity than non-Russians. While a similar relationship holds in 1996, the coefficient on Russian labor supply elasticity is statistically significant only given a 88 percent confidence interval. That Russians

capturing the extra benefit to living in Riga, over and above the general differentials for urban areas and for the

have lower labor supply elasticity supports the use of a monopsony model to describe wages more below their marginal product than that of Latvians.

Oaxaca Decomposition

Like Table 3, Table 5 presents ordinary least squares regressions on log earnings. However, rather than stratifying by gender, it stratifies by ethnicity, providing information about the different earnings structures of Russians and Latvians by individual characteristics. These coefficients on earnings measure productivity and help decompose gross earnings differentials into explained productivity differences and differences attributable to ethnicity alone.

Latvians and Russians receive different returns for their human capital characteristics. Most notably, returns to education are much higher for Latvians. Compared to those with only primary education, Latvians with higher education receive 59 percent higher earnings: for Russians, the return is only 29 percent. While general secondary education offers a 17 percent return to Latvians, to Russians it offers no statistically significant earnings return. The age earnings profile for Latvians is less steep and less concave than that for Russians, suggesting that earnings for Russians away from the prime earnings years drops off much more steeply than for Latvians.

Using these stratified earnings regressions, we analyze earnings discrimination between Latvian and Russian using a Oaxaca decomposition. On average⁷ working Russians get paid 2.4 percent more than Latvians, so there does not seem to be earnings discrimination against this group. However, given their observable human capital characteristics of age and education, if Russians were paid in the same way as Latvians they would receive 7.9 percent more than Latvians. As a result, Russians are paid 5.5 percent less than they should be if only their human

capital characteristics were considered according to the earnings structure of Latvians. If the Russian earnings structure is used as the standard for appropriate payments to human capital, then Russians would be paid 9.7 percent more than Latvians and the degree of discrimination against them would be 7.3 percent.⁸

Another way to consider this same information is to identify average earnings for men if they were paid as women and the average earnings of Russians if they were paid as Latvians. Figure 1 presents this information. If Latvian's were paid according to a standard established for Russians, they would receive 68 Lats per month, while they actually get paid 73 Lats. Russians, who are actually paid 74 Lats per month, would receive 79 Lats per month if they were paid in the same way that Latvians are paid.

Unemployment Bias

Beyond this evidence for earnings discrimination, the analysis considers whether or not ethnicity biases unemployment. Cross-tabulations in Table 6 overview unemployment rates for the ILO definition using the LFS 98 data, that based on those who registered as unemployed using the LFS 98 data, and the ILO definition using the 1996 data. There is a large difference between unemployment rates when measured with the ILO standard (14.5 percent) and when measured by unemployment registration (6.9 percent)⁹. According to these definitions, there was also a large drop in the ILO standard unemployment rate between 1996 and 1998: in 1996 the overall unemployment rate was 22.3 percent.

⁷ Again, these figures are based on the geometric mean.

⁸ The "human capital characteristics" on which this analysis is based does not include language ability, for that information was not in the data. Analysts in Latvia suggested that were differences in language included in the analysis, discrimination against Russians would be diminished, because Russians' inability to speak Latvian hinders their economic productivity.

According to both definitions, Russians have a higher unemployment rate: 21.0 percent versus 10.8 percent for the ILO standard and 8.5 percent versus 6.0 percent for the registration-based definition. However, the Russian unemployment rate is proportionately larger when the ILO standard definition is used. As discussed in the Appendix, if many Russians have ambiguous citizenship status or previously worked in firms that did not pay social tax, we would expect the registration-based definition to understate their unemployment.

The descriptive statistics above indicate the risk factors for unemployment, for unemployment rates are higher among Russians, among the young (see Figure 2 for an age breakdown of unemployment rates), and among people living in certain regions (particularly Latgale). However, they do not allow us to decompose carefully the individual characteristics that lead one to be more likely to be unemployed. For example, the Latgale unemployment rate could be particularly high because that region contains a high percentage of Russians, or potentially more young people. To distinguish between these separate effects of individual characteristics, we again use probit analysis. This allows us to determine the marginal effects of different characteristics on the probability that one will be unemployed, controlling for all the other characteristics present for an individual. As such it isolates aspects that unemployment policies should focus on.

Table 7 presents probit analyses of the risk factors for unemployment. To allow comparison between the ILO standard definition and a definition based on who registered as unemployed, it includes similar probits for both definitions. To consider whether the risk factors for unemployment have changed across time, it also includes analysis based on the LFS 96 data.

⁹ The institutional appendix includes information about who is able to register for unemployment benefits, presenting the categories of who could be unemployed and still not be able to be included in the official unemployment statistics.

Table 7 includes separate probit analyses for men and women. As Section III noted, to ease comparison of marginal probabilities, all the marginal effects across different samples in Table 7 are evaluated at the same probability. The standard comparison probability for all columns is that for men in the LFS 98 of 13.5 percent.

Controlling for education and region, those of non-Latvian nationality are significantly more likely to be unemployed. On average, being Russian entails a 7 percentage-point increase in the risk of being unemployed for men and a 10 percentage-point increase for women. Those non-Latvian men of nationality other than Russian are 4 percentage-points more likely to be unemployed and non-Latvian women are 6 points more likely.

After correcting for human capital, nationality and labor demand, differences in regional unemployment rates are not particularly large. Men living in urban areas are 12 percent more likely to be unemployed than those in rural areas, while women are 9 percent more likely. Beyond this overall urban increase, the city of Riga has a statistically different unemployment rate: men living in Riga are 5 percentage-points more likely to be unemployed, while women face an 8 percentage-point higher unemployment risk living there. Latgale also has an unemployment rate significantly different than Kurzeme, where unemployment rates are 9 percentage-points higher for men and 5 points higher for women

It is particularly interesting that nationality does not have as large an effect on registration as it does on unemployment. Russian and other non-Latvian men are no less likely to register for unemployment benefits than Latvian men, even though, as seen from the left column, they are more likely to be unemployed. Russian women and women of other nationalities are more likely than Latvians to register after controlling for human capital, marital status, and region, though the marginal effects of nationality on registration are less than on unemployment. Using those who

register for benefits as a measure of unemployment underestimates the true effect of nationality, particularly for men.

As mentioned above, the ILO standard unemployment rate measured in 1996 was much higher than in 1998, e.g., 23 versus 16 percent for men and 22 versus 13 percent for women. Summarized in the right-most columns of Table 7, different risk factors for unemployment generate this overall change in level. As in 1998, non-Latvian's unemployment rates were significantly larger than Latvians, though the degree that ethnicity influences unemployment is not very different between 1996 and 1998.

Selection into Registration

Tables 6 and 7 call attention to important differences between the official ILO definition of unemployment and the Government of the Republic of Latvia's definition of the registered unemployed. Comparing the first two sets of columns of Table 7, we gain some insight into the factors that lead to being registered from those who are unemployed. Table 8 presents direct information about the characteristics of those from the pool of unemployed people who choose or are able to register with the State Employment Service. This gives us direct insight into how the definition of unemployment based on registration biases the picture of true unemployment.

Nationality has an interesting effect on one's ability to register for unemployment benefits. In 1998, Russians were 9 percentage-points less likely to register for benefits than Latvians. However, in 1996 they were 6 percentage-points more likely to register. This change suggests that the potential to register for non-Latvians in general and Russians in particular lowered dramatically during this time period. While there appear to be few increases in Russians' unemployment probabilities, their likelihood of registering for unemployment benefits appears to be falling rapidly across time.

VI. CONCLUSIONS

Conventional wisdom suggests that ethnic tensions existing during central planning but were suppressed. Economic liberalization has allowed those tastes for discrimination to be expressed. However, the lack of perfect competition existing during post-communist transition provides an environment that supports discriminatory outcomes. Revisiting a monopsony approach to discrimination, this paper has explored the relationship between the lack of labor mobility in Latvia and the observed outcomes of ethnic wage differentials and labor market biases.

While there has been extended discussion over whether a monopsony model is an appropriate approach to discrimination in industrialized countries, there are several reasons that such a model would be particularly appropriate to post-Communist economies. During Communism, given the lack of geographic mobility and the presence of large employers with market power in discrete areas, labor markets were likely monopsonistic. As these economies move away from central-planning, monopsony likely persists. Investment in these economies is unevenly distributed, and there are several impediments to labor mobility. As a result, discrimination during transition can be partially attributed to monopsony, while it also likely results from prejudicial tastes that have only recently been expressed through market liberalization.

Examining discrimination against the Russian minority in Latvia, this paper offers evidence for the appropriateness of the monopsony approach. It is difficult to justify such an approach in industrialized countries because of market integration and problematic evidence concerning labor supply elasticities: according to the evidence presented, these difficulties do not arise in Latvia. Using employment concentration as a direct indicator, the paper offers evidence of monopsony in many local labor markets. Regional dummies in earnings equations show significant regional

earnings disparities. These suggest labor markets in this geographically small economy are not particularly well integrated, providing further indirect evidence of monopsony. As estimated by the earnings effect on participation, Russians have labor supply elasticities significantly lower than Latvians. In the context of monopsony, this would suggest that Russians be paid earnings further below their marginal product than Latvians.

Earnings decompositions confirm earnings discrimination against the Russian minority. Although on average Russians are paid 2.4 percent more than Latvians, correcting for their human capital characteristics they should be paid 7.9 percent more, suggesting discrimination of approximately 5.5 percent when the Latvian earnings structure is used as the standard of labor market productivity. With the Russian structure as standard, discrimination is 7.3 percent.

Beyond that represented by wages, the paper provides evidence of biases in Russians' treatment with regard to unemployment and registration for unemployment benefits. With most of the transition unemployment literature, in Latvia most officially published unemployment data is based on who registers for benefits. According to this definition, there is little significant difference between Russians and Latvians after correcting for human capital characteristics. However, if one analyzes unemployment based on the ILO definition, there are significant differences in the probability of who is unemployed. Employing a new standardization technique to isolate the marginal effects of a particular variable across different groups, the paper illustrates that the probability of becoming unemployed is much higher for Russians using the ILO definition.

Among the pool of unemployed, those who are selected to register for unemployment benefits are much less likely to be Russian, *ceteris paribus*. This may offer some evidence of bias in the regulations concerning benefit registration. Despite the lower probability of registering for unemployment benefits, the paper offers some evidence of longer unemployment spells among

Russians. This reinforces the findings of the literature concerning unemployment duration during transition: benefits packages have little effect on duration.

While offering support for a monopsony model to consider discrimination during transition, the paper suggests several avenues for future research. With increased information about the dispersion of firms across Latvia, it would be useful to generate a more region-specific monopsony measure. Further, it would be worthwhile to extend this inquiry to other transition economies for comparison. Using this geographic variation, it would be interesting to analyse whether earnings discrimination varies by the degree of monopsony, as we would expect. Further, with improved labor supply measures, it might be worthwhile to directly link elasticity to wage differentials. These innovations will be incorporated into future research, establishing more thoroughly how much a monopsony approach describes discrimination against ethnic minorities during post-Communist transition.

Institutional Appendix

Latvia's Unemployment Registration

According to the Law on Employment, in Latvia those who are granted official unemployment status must:

- ◆ Be citizens of the Republic of Latvia or residents who have a permanent residence permit and a stamp of the population register in their passports;
- ◆ Be of working age;
- ◆ Be able to work;
- ◆ Not receive any salary or incomes of any kind of at least the size of the minimum wage;
- ◆ Not undertake any business activities;
- ◆ Be looking for a job;
- ◆ Be registered with the state employment service associated with his or her place of permanent residence; and
- ◆ At least once a month, visit the state employment service.

While many of its elements overlap with the ILO standard, under this definition, a person must register with the state employment service to gain unemployment status. These unemployment offices register those who¹⁰:

- ◆ Have a stamp in their passports certifying that they live in the same jurisdiction as the employment office;
- ◆ Have received a labor registration document from their last employer certifying they no longer have a job; and
- ◆ Worked for an employer who paid social tax for nine of the previous 12 months.

As a result of these regulations, in Latvia one can identify several groups who cannot register as unemployed, even though they meet the ILO standard unemployment definition. For example, this definition of registration would exclude:

- ◆ Those with disputed Latvian citizenship, a situation arising given ambiguity about the rights of ethnic Russians or non-Latvian speakers;
- ◆ Those who have moved to a region of Latvia other than where their passports say they live, such as those who leave their homes in search of work;
- ◆ Those whose last employer faced financial difficulties before laying workers off, for those employers might be unable to pay social tax regularly in the 12 months prior to laying off workers;
- ◆ Those whose last job was as a self-employed worker or in a small entrepreneurial firm that would not issue labor registration documents;

¹⁰ Across countries, it is reasonably standard to stipulate conditions like these to register for unemployment benefits. For example, in the United States the regulations concerning eligibility for unemployment insurance are variable and complex. Each state has its own eligibility requirements that are generally based on arcane bodies of legislation. It is generally beyond an individual citizen to ascertain whether or not she is eligible for benefits. Rather questions about eligibility are referred to administrative specialists.

- ◆ Those choosing not to visit the state employment service once a month, perhaps because its benefits or services are unattractive; or
- ◆ Those unaware of the requirements necessary to register as unemployed.

These stipulations for registration create the potential for biased coverage in unemployment benefits.

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Figure 1

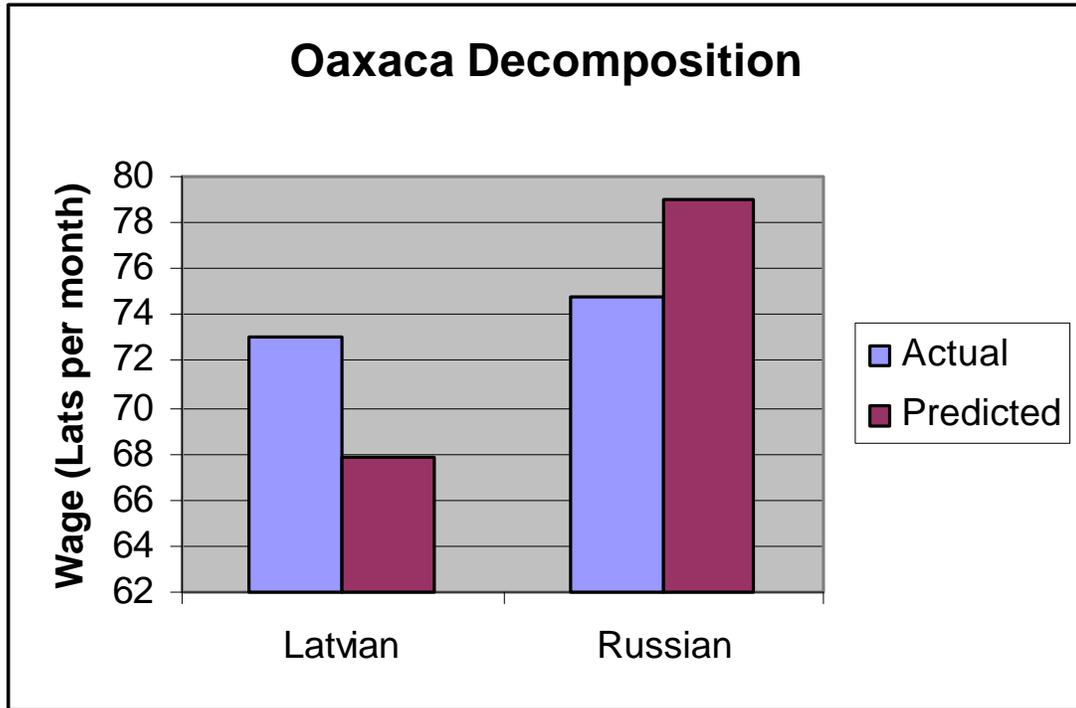


Figure 2

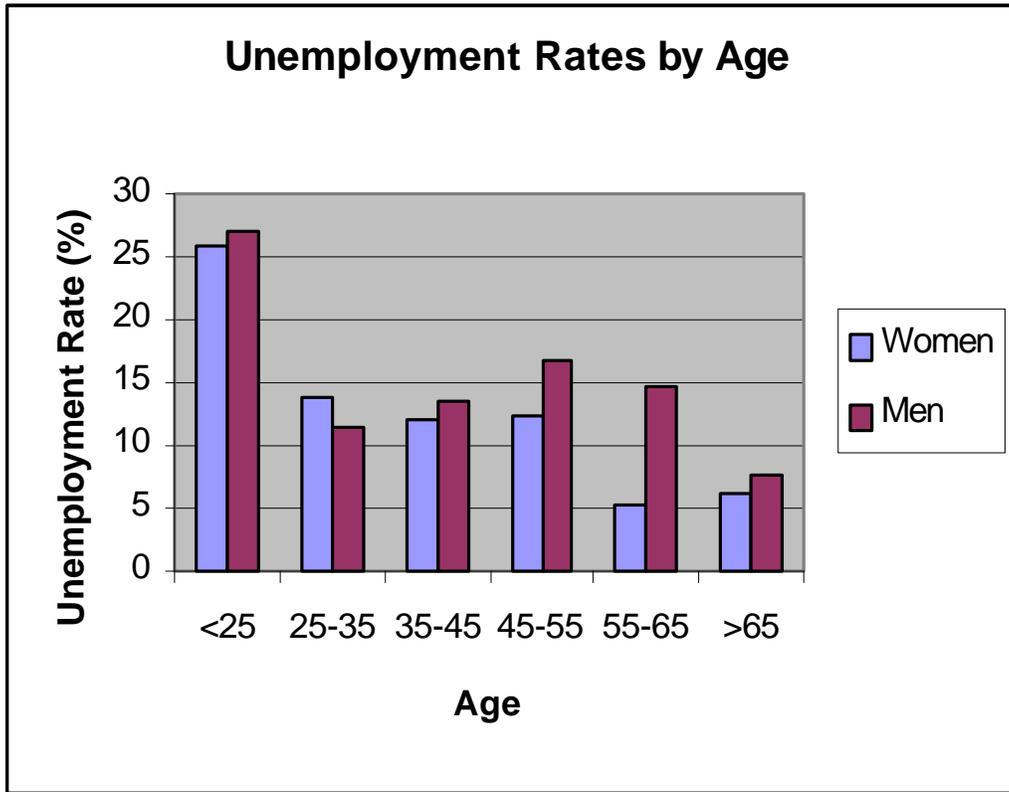


Table 1
Descriptive Statistics

	Household Budget		Labor Force		Labor Force	
	Survey 1997:Q1		Survey 1998:Q1		Survey 1996:Q2	
	Women	Men	Women	Men	Women	Men
Earnings: main job (lats/mo.)	74.47	95.47	-.	-.	-.	-.
[Log Variance]	[0.345]	[0.387]				
HUMAN CAPITAL						
Higher Education	24.8%	19.5%	-.	-.	-.	-.
Secondary Education	66.5%	61.8%	-.	-.	-.	-.
Vocational Education	2.4%	7.5%	-.	-.	-.	-.
Primary Education	6.2%	10.4%	-.	-.	-.	-.
Less than Primary	0.2%	0.8%	-.	-.	-.	-.
Higher Education	-.	-.	12.2%	10.1%	13.0%	10.8%
Secondary Specialized	-.	-.	19.7%	18.0%	22.6%	19.7%
Technical Secondary	-.	-.	7.0%	12.2%	6.8%	13.3%
Comprehensive Secondary	-.	-.	23.6%	19.5%	22.0%	18.7%
Vocational Education	-.	-.	1.9%	5.9%	1.8%	5.3%
Basic Education	-.	-.	22.6%	25.0%	21.7%	23.3%
Less than Basic	-.	-.	11.9%	8.9%	10.9%	8.3%
No Formal Education	-.	-.	1.0%	0.4%	1.2%	0.6%
Age	40.2	40.0	47.7	43.6	46.1	42.1
(Standard Deviation)	(11.3)	(12.8)	(19.5)	(17.9)	(18.5)	(17.1)
NATIONALITY						
Latvian	59.3%	59.4%	61.9%	62.9%	58.8%	59.7%
Russian	30.3%	30.7%	27.0%	26.0%	29.1%	28.3%
Other Nationalities	10.3%	9.8%	11.2%	11.1%	12.1%	12.1%
MARITAL STATUS						
Married	65.9%	80.1%	52.3%	63.7%	56.0%	65.4%
Single	14.4%	16.0%	20.5%	26.7%	18.5%	25.8%
Divorced	13.3%	3.2%	9.2%	5.4%	9.2%	5.6%
Widowed	6.4%	0.8%	17.9%	4.2%	16.2%	3.2%
REGION						
Riga City	35.4%	37.5%	23.6%	22.5%	29.1%	27.4%
Riga Region	15.3%	13.8%	10.6%	10.8%	10.3%	10.3%
Kurzeme	12.2%	15.1%	16.4%	16.7%	14.0%	14.5%
Vidzeme	10.3%	11.2%	16.6%	16.6%	16.6%	17.7%
Zemgale	13.0%	11.3%	14.5%	13.8%	13.7%	13.5%
Latgale	13.8%	11.2%	18.4%	19.7%	16.3%	16.5%
Urban	78.4%	75.6%	60.3%	57.7%	61.2%	59.1%
Number of Observations	933	914	8304	6844	6221	5265

Table 2
Employment Concentration
Percentage of Non-Farm Workers by District
Employed by Specific Industries

Indicator	Mean	Std. Dev.	Min.	Max.
Top Three Industries	48.0%	6.78	31.3%	60.3%
Top Two Industries	36.0%	6.13	22.1%	49.0%
Top Industry	21.5%	5.15	11.8%	32.7%
N(Districts)	32			

Note: "Specific Industry" defined by 2-digit SIC codes.

Table 3
Determinants of (Log) Earnings: Men vs. Women
Ordinary Least Squares Regressions
(Absolute Values for T-Statistics in Parentheses)

	Men	Women
HUMAN CAPITAL (vs. Primary)		
Higher Education	0.54** (7.62)	0.46** (5.68)
Secondary Education	0.23** (3.69)	0.028 (0.38)
Vocational Education	0.11 (1.32)	0.15 (1.10)
Age	0.023** (2.25)	0.040** (3.42)
Age Squared (x 100)	-0.033** (2.83)	-0.052** (3.76)
NATIONALITY (vs. Latvian)		
Russian	-0.066 (1.53)	-0.069* (1.64)
Other Nationality	-0.030 (0.47)	-0.094 (1.52)
MARITAL STATUS (vs. Married)		
Single	-0.29** (4.48)	-0.071 (1.14)
Divorced	-0.17* (1.64)	-0.009 (0.17)
Widowed	-0.15 (0.71)	0.12 (1.53)
REGION (vs. Kurzeme)		
Riga City	0.14** (2.37)	-0.045 (0.73)
Riga Region	0.065 (0.95)	-0.021 (0.30)
Vidzeme	-0.21** (2.91)	-0.15** (2.01)
Zemgale	-0.03 (0.42)	-0.077 (1.08)
Latgale	-0.26** (3.53)	-0.26** (3.71)
Urban	0.27** (5.52)	0.15** (3.01)
Constant	3.70** (16.70)	3.34** (13.25)
N	914	933
R-squared	0.24	0.16

*Statistically significant .10 level; ** statistically significant .05 level

Data Source: 1997 Household Budget Survey

Table 4
Determinants of the Probability of Participating in the Labor Force
Probit Estimates
(Z-scores in Parentheses)

	Participation 1998	Participation 1996
Predicted Earnings (Log)	1.24** (55.81)	1.09** (44.25)
Earnings * Russian	-0.086** (2.60)	-0.057 (1.57)
Russian	0.34** (2.90)	0.25* (1.84)
Male	-0.059** (6.10)	-0.022 (2.05)
REGION (vs. Kurzeme)		
Riga City	-0.059** (3.66)	-0.039** (2.19)
Riga Region	-0.016 (0.91)	-0.023 (1.10)
Vidzeme	0.21** (13.97)	0.19** (11.28)
Zemgale	0.056** (3.41)	0.053** (2.87)
Latgale	0.21** (13.67)	0.20** (12.00)
Urban	-0.30** (26.74)	-0.19** (15.39)
Number of Observations	15148	11486
Log-Likelihood	-7380.6	-5750.0
Observed Probability	0.576	0.619
Predicted Probability	0.590	0.647

*Statistically significant at the .10 level; ** statistically significant at .05 level

Data Source: Labor Force Surveys

Table 5
Determinants of (Log) Earnings: Latvians vs. Russians
Ordinary Least Squares Regressions
(Absolute Values for T-Statistics in Parentheses)

	Latvian	Russian
HUMAN CAPITAL (vs. Primary)		
Higher Education	0.59** (8.69)	0.29** (2.73)
Secondary Education	0.17** (2.70)	-0.023 (0.24)
Vocational Education	0.029 (0.31)	0.052 (0.38)
Age	0.027** (2.77)	0.048** (3.26)
Age Squared (x 100)	-0.038** (3.41)	-0.062** (3.48)
MALE	0.27** (7.56)	0.32** (7.13)
MARITAL STATUS (vs. Married)		
Single	-0.20** (3.50)	-0.17** (2.14)
Divorced	-0.035 (0.52)	-0.087 (1.11)
Widowed	0.091 (0.90)	-0.025 (0.23)
REGION (vs. Kurzeme)		
Riga City	0.069 (1.23)	-0.053 (0.70)
Riga Region	0.091 (1.47)	-0.13 (1.47)
Vidzeme	-0.16** (2.51)	-0.39** (2.55)
Zemgale	0.031 (0.49)	-0.33** (3.10)
Latgale	-0.22** (3.10)	-0.37** (4.13)
Urban	0.20** (4.89)	0.23** (2.96)
Constant	3.41** (15.79)	3.22** (10.01)
N	1097	564
R-squared	0.22	0.26

Table 6
Unemployment Rates
By Gender, Unemployment Definition and Year

	UE (ILO) 1998	UE (Reg.) 1998	UE (ILO) 1996
LATVIA	14.5%	6.9%	22.6%
Men	15.6%	6.2%	23.0%
Women	13.3%	7.6%	22.1%
NATIONALITY			
Latvian	10.8%	6.0%	17.4%
Russian	21.0%	8.5%	29.2%
GEOGRAPHIC AREA			
Urban	17.5%	7.6%	25.1%
Riga City	17.6%	5.3%	25.0%
Riga Region	11.7%	3.3%	20.5%
Kurzeme	11.3%	5.8%	19.9%
Vidzeme	11.0%	7.0%	18.4%
Zemgale	12.3%	6.6%	21.7%
Latgale	18.5%	16.0%	26.1%
AGE GROUP			
<25	26.5%	11.8%	33.7%
25-35	12.6%	6.2%	21.4%
35-45	12.9%	6.4%	18.6%
45-55	14.3%	7.3%	18.8%
55-65	10.9%	5.1%	24.6%

Data Source: Labor Force Survey

Table 7
Determinants of the Probability of Being Unemployed
Probit Estimates by Gender, Unemployment Definition, and Year
(Z-Scores in Parentheses)

	UE (ILO) 1998		UE (Registered) 1998		UE (ILO) 1996	
	Men	Women	Men	Women	Men	Women
HUMAN CAPITAL (vs. <Primary)						
Higher Education	-0.14** (9.59)	-0.11** (5.39)	-0.15** (6.45)	-0.12** (5.05)	-0.13** (9.13)	-0.13** (8.33)
Secondary Specialized	-0.12** (8.36)	-0.068** (3.20)	-0.11** (5.83)	-0.068** (2.81)	-0.11** (8.06)	-0.096** (5.92)
Technical Secondary	-0.084** (5.80)	-0.037 (1.52)	-0.067** (3.17)	-0.049* (1.79)	-0.080** (5.48)	-0.074** (3.67)
Comprehensive Secondary	-0.069** (4.87)	0.000 (0.02)	-0.044** (2.18)	-0.026 (1.07)	-0.057** (3.78)	-0.047** (2.66)
Vocational Education	-0.060** (3.00)	-0.011 (0.28)	-0.041 (1.51)	-0.013 (0.28)	-0.009 (0.39)	0.001 (0.03)
Age	-0.005* (1.77)	-0.009** (3.18)	-0.001 (0.42)	0.003 (0.68)	-0.012** (5.24)	-0.016** (7.03)
Age Squared (x100)	0.004 (1.30)	0.006* (1.84)	0.001 (0.24)	-0.007 (1.52)	0.012** (4.49)	0.019** (6.87)
NATIONALITY (vs. Latvian)						
Russian	0.066** (5.27)	0.10** (7.26)	-0.011 (0.74)	0.077** (4.64)	0.072** (5.65)	0.097** (6.80)
Other Nationality	0.039** (2.19)	0.058** (2.86)	0.012 (0.53)	0.043* (1.80)	0.050** (2.83)	0.11** (5.50)
LABOR DEMAND						
Long-Term Job Growth	-0.16** (2.34)	-0.044 (0.58)	-0.10** (3.07)	-0.12 (1.39)	0.026 (0.32)	0.017 (0.20)
Vacancy/Employment Ratio	-0.60 (0.15)	-6.690 (1.45)	-13.13** (2.44)	-3.96 (1.41)	8.48* (1.94)	-6.31 (1.21)
REGION (vs. Rural & Kurzeme)						
Riga City	0.048* (1.65)	0.078** (2.23)	0.10** (2.35)	0.025 (0.71)	-0.011 (0.50)	0.024 (0.92)
Riga Region	0.017 (0.79)	0.024 (0.99)	-0.022 (0.71)	-0.035 (1.37)	0.066** (2.84)	-0.048** (2.48)
Vidzeme	0.014 (0.60)	0.058** (2.17)	0.052* (1.65)	0.064** (2.14)	0.044* (1.96)	-0.022 (1.02)
Zemgale	0.019 (0.80)	0.014 (0.54)	0.065* (1.89)	0.023 (0.78)	0.022 (1.01)	-0.028 (1.43)
Latgale	0.091** (3.76)	0.052** (2.01)	0.23** (6.58)	0.11** (3.68)	0.091** (3.78)	0.023 (1.01)
Urban	0.12** (8.95)	0.088** (6.42)	0.094** (5.80)	0.055** (4.03)	0.050** (4.90)	0.062** (5.00)
Number of Observations	4507	4230	4148	4025	3727	3380
Log-Likelihood	-1792.8	-1511.0	-856.3	-998.8	-1869.2	-1628.6
Observed Probability	0.156	0.133	0.062	0.076	0.230	0.221
Comparison Probability¹	0.135	0.135	0.135	0.135	0.135	0.135

*Statistically significant at the .10 level; ** statistically significant at .05 level

¹ Marginal effects for all sub-samples are compared at the predicted probability for the male 1998 sub-sample.

Data Source: Labor Force Survey

Table 8
Selection into Registered Unemployed
Probit Estimates by Year
(Z-scores in parentheses)

	1998	1996
MALE	-0.12** (4.03)	-0.069** (2.97)
HUMAN CAPITAL (vs. <Primary)		
Higher Education	-0.074 (1.18)	-0.041 (0.89)
Secondary Specialized	0.018 (0.36)	-0.036 (1.04)
Technical Secondary	-0.015 (0.30)	0.018 (0.45)
Comprehensive Secondary	-0.005 (0.11)	-0.045 (1.37)
Vocational Education	0.026 (0.34)	0.041 (0.72)
Age	0.019** (2.44)	0.032** (5.49)
Age Squared (x100)	-0.022** (2.17)	-0.043** (5.84)
NATIONALITY (vs. Latvian)		
Russian	-0.093** (2.88)	0.057** (2.14)
Other Nationality	-0.070 (1.51)	0.029 (0.83)
REGION (vs. Rural & Kurzeme)		
Riga City	-0.18** (3.73)	-0.16** (4.29)
Riga Region	-0.21** (3.78)	-0.085** (2.01)
Vidzeme	-0.012 (0.19)	-0.096** (2.24)
Zemgale	0.005 (0.08)	0.080* (1.73)
Latgale	0.23** (3.99)	0.091** (2.03)
Urban	-0.054 (1.21)	-0.016 (0.53)
Number of Observations	1140	1516
Log-Likelihood	-658.5	-788.0
Observed Probability	0.353	0.264
Predicted Probability	0.337	0.236

Data Source: Labor Force Survey


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