

UNEMPLOYMENT RISK FACTORS IN ESTONIA, LATVIA AND LITHUANIA¹

This paper investigates the relationship between unemployment and individual characteristics. It uses multivariate regressions to estimate the impact of each potential risk factor while holding the others constant.

Three dependent variables are used: the expected unemployment according to labour force surveys (LFS), long-term unemployment (over one year, also according to surveys) and the probability of being registered unemployed at a labour office (measured by LFS questions about this registration). "Risk" is defined as the expected rate of unemployment, or long-term unemployment, as percentage of the labour force in a given category of persons when other variables are controlled. The importance of each background variable is then expressed as a difference in unemployment risk compared with an average that was assumed, for simplicity, to be uniformly 14% for unemployment and 7% for long-term unemployment (close to the actual levels). The risk difference associated with a given variable is commonly referred to as its "effect" or "impact", but regression results cannot always be said to reveal the direction of causality (*cf.* below concerning marital status).

Unemployment according to labour force surveys

In the Baltic States as elsewhere, the population groups most likely to be unemployed include:

- ◆ New entrants to the labour market.
- ◆ Persons with little education.
- ◆ Non-married men.
- ◆ Ethnic minorities.

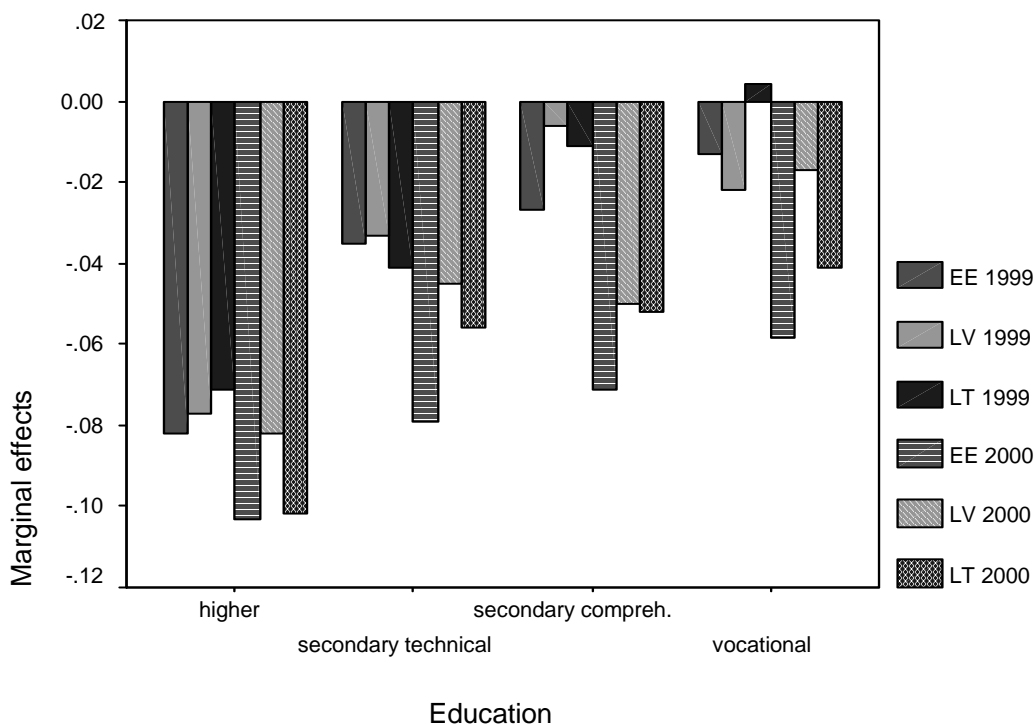
Other background factors have more varying impact from country to country. It has some special interest to consider how *education* can interact with experience and other age-related factors. As it appears, most forms of education offer the most general protection against unemployment in Estonia -- and, conversely, it is in Estonia that the negative effects of poor education are most difficult to remedy with work experience. Education is also important in Latvia and Lithuania, but there its role is more linked with individual chances of being hired in sectors with stable employment.

Educational effects increased from 1999 to 2000 in all three countries, and they were strongest in Estonia (Figure A1.1, Table A1.1). Higher education generally reduced the expected unemployment rate by as much as 8 to 10 percentage points compared with basic education – *i.e.* its impact on the

¹ A shorter version of this paper was published as *Annex 1* in *Labour Market and Social Policies in the Baltic Countries* (OECD, 2003). It reports the results of research conducted for the OECD by Mihails Hazans, Eurofaculty and University of Latvia, Raul Eamets, Eurofaculty and University of Tartu, and John Earle, Upjohn Institute for Employment Research, Kalamazoo.

unemployment risk was -0.08 to -0.1.² In Estonia, non-vocational secondary education also reduced the unemployment risk by .07 to .08 in 2000, and vocational education reduced it almost as much. But in Latvia and Lithuania, the effect of general (comprehensive) secondary education was insignificant in 1999 before rising to .05 in 2000, while the impact of vocational education was not statistically significant in any of the two years.

Figure A1.1 Marginal effects of educational attainment on unemployment risk



Note. Reference category: basic or less than basic education. See Table A1.1, Model 3. Further explanations under Figure A1.1.

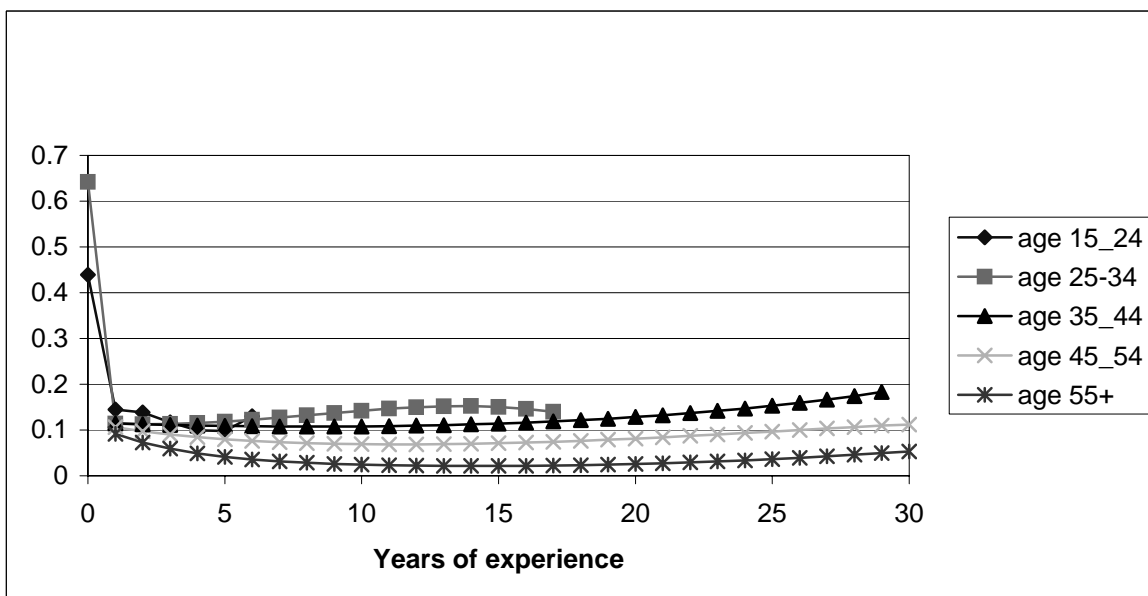
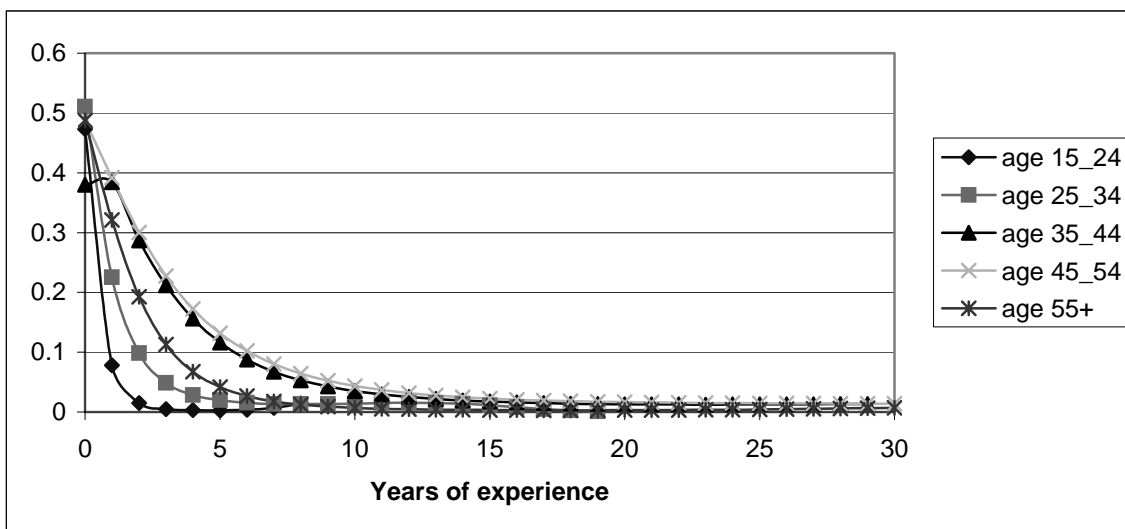
Age and experience. The high unemployment risk facing youth (if they are in the labour force) falls mainly on new entrants in Latvia and Estonia. ("New entrants" include re-entrants after at least 3 years of non-participation in the labour force.) If new entrants are excluded from the analysis, prime-age workers bear the highest risk in those two countries.³ The same also holds in Lithuania if one looks separately at men and women (Table A1.2) or urban and rural areas (Table A1.3). However, the unemployment risk in Lithuania looks relatively high on average for young labour force members (Table A1.1, Model 2), perhaps reflecting a special tendency for young men in rural areas to leave school relatively early and to enter employment of short duration, e.g. in agriculture.

² Most educational effects increase if experience is not controlled for (Models 2 and 3) and they are greatest in Model 3 which does not control for occupation.

³ The model that excludes new entrants is not shown in the tables. But the result is similar if the effects of occupation and being a new entrant are controlled, while experience is not (Model 2 of Table A1.1).

Figure A1.2 Unemployment risk and work experience for different age groups

Upper panel: Latvia Lower panel: Estonia



Note. Education, gender, ethnicity and place of residence are fixed at their mean values. In Latvia, persons who did not work in the past three years are counted as having no experience. In Estonia, however, all the unemployed are assigned their actual experience, and no respondents older than 34 had less than one year's experience.

Experience thus appears to have different effects depending on age and other factors. Being a new entrant to the labour market invariably increases the unemployment risk. But once a person is employed, the unemployment risk becomes much smaller already after one year of work, and the risk reduction then continues at a slower pace for several years (Figure A1.2). In Latvia, the expected unemployment rate is under 2% after 15 years of experience, and the reduction continues more or less throughout the working life. But in Estonia, only the first 5 to 10 years seem to reduce the unemployment

risk, so that it never falls below 10% for persons aged up to 45 and never below 7% for the 45 to 54-year group. (Here the data do not permit comparison with Lithuania.)

Economic sector. Manufacturing workers generally face relatively high unemployment risks, although construction workers are even more at risk in Estonia. Below-average risks are associated with work in public service, finance and business services (Figure A1.3). The unemployment risk also appears lower than average for farmers, especially in Latvia and Lithuania – an effect that probably can be explained by a tendency for under-employed farmers to keep working in their farms until they find better work. Perhaps for similar reasons, the self-employed in general face lower unemployment risk than paid employees.

Occupation. As expected, unskilled manual workers face higher unemployment risk than those who are semiskilled or skilled, and also higher than average for white-collar workers (Figure A1.4). The same holds for persons working in commerce and related services in Latvia and Lithuania, but not in Estonia, where the average commerce employee faces about the same risk as an unskilled manual worker.

Gender. The Baltic States are somewhat unusual in that unemployment tends to be higher for men than for women. This also holds when other factors are controlled (Figure A1.5). The unemployment risk in 2000 was 7 percentage points lower for Estonian women than for men with otherwise identical characteristics, and 2 percentage points lower for comparable Latvian and Lithuanian women. In the previous year, 1999, these ‘gender gaps’ had been wider in Lithuania (3.5) but weaker in Estonia (5.3) and insignificant in Latvia.

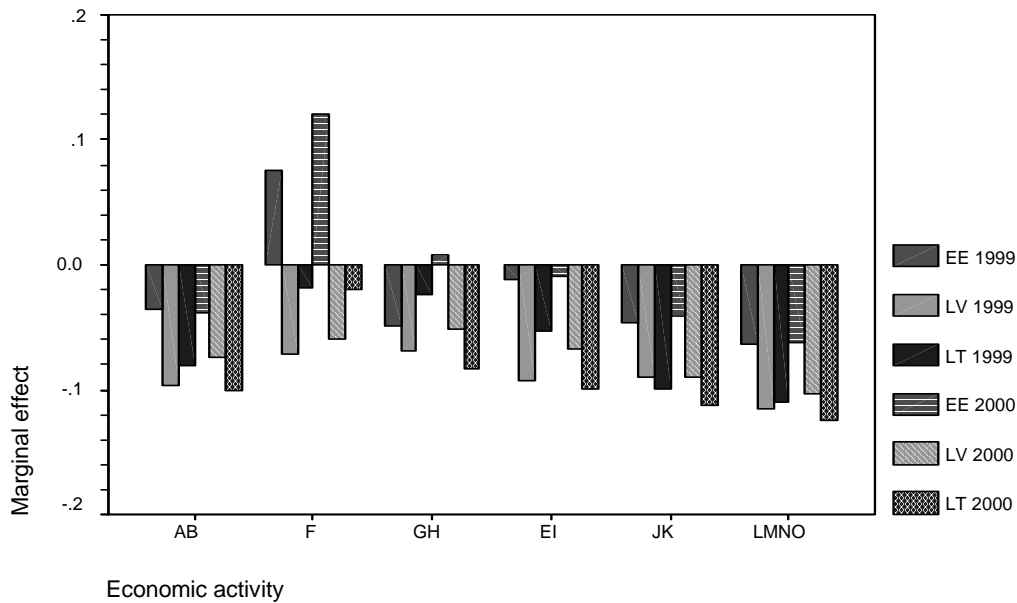
Both cyclical factors and country-specific industrial developments appear to play a role here. In 1999, unemployment was influenced by the Russian economic crisis, which in Estonia and Latvia led to job losses mainly in food and textile industry – with many female workers – while Lithuania suffered more job cuts in wood, machinery and electrical equipment industry.

Family situation. As in most countries, men are the least likely to be unemployed if they are married; in Latvia the risk is further reduced if they have children (Table A1.2). Being divorced or widowed is a risk factor for men; but this has little impact for women, although it also increases the female unemployment risk in Estonia.

Ethnicity. Belonging to an ethnic minority tends to increase the unemployment risk, but this effect weakened between 1999 and 2000. According to the estimates made here, the ethnic risk effect in Lithuania in 2000 was .06 (*i.e.* the expected unemployment rate was 6 percentage points higher than for the reference group), while it was .04 to .05 in Latvia. In Estonia, the ethnic effect was significant in the crisis year of 1999 but not in 2000.⁴ Where such an effect exists, it is less significant for young new-entrants to the labour market, perhaps because their language skills are better. The ethnic effects in Latvia and Estonia become stronger if occupation is controlled for, suggesting occupational segregation. (*I.e.* minority members are both more likely to work in occupations with high unemployment risk *and* more likely than other workers in those occupations to lose their jobs.)

⁴ That the ethnic risk factor is highest in Lithuania is remarkable, considering that the minority populations there are smaller and largely native to the country. However, this result must also be seen against the background of a much greater ethnic effect on wage differentials in Estonia (see below).

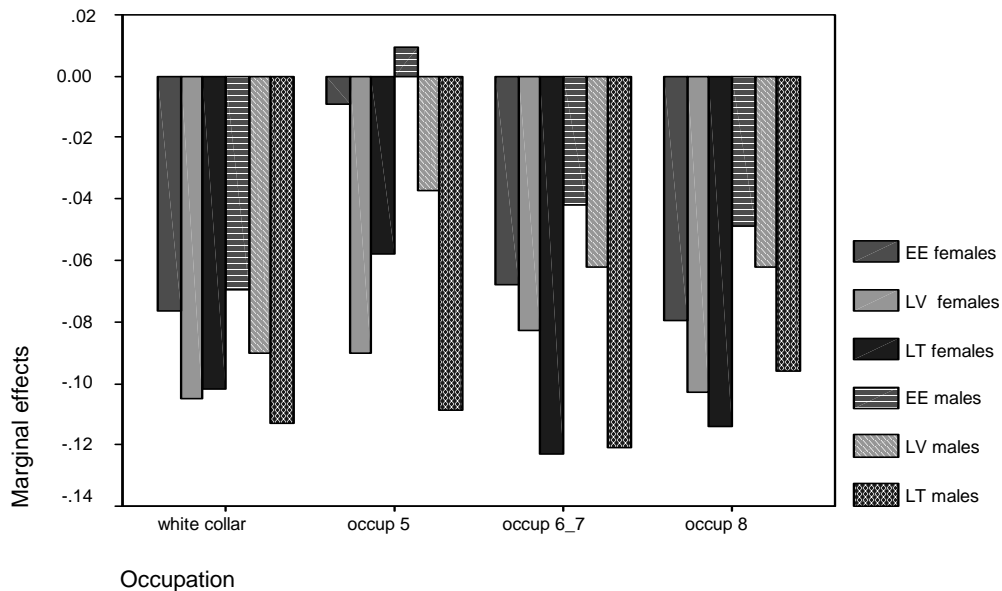
Figure A1.3 Marginal effect on unemployment risk of working in certain sectors



AB = agriculture, forestry and fishing. F = construction. GH = trade, hotels and restaurants
 EI = electricity, gas and water supply, transport, storage, communications
 JK = financial intermediation, real estate and other business activities
 LMNO = public administration, education, health care, and other community services

Note. Reference category: manufacturing and mining. Education, gender, ethnicity, age, experience, marital status, sector of economic activity, occupation and place of residence are controlled; see Table A1.1, model 2.

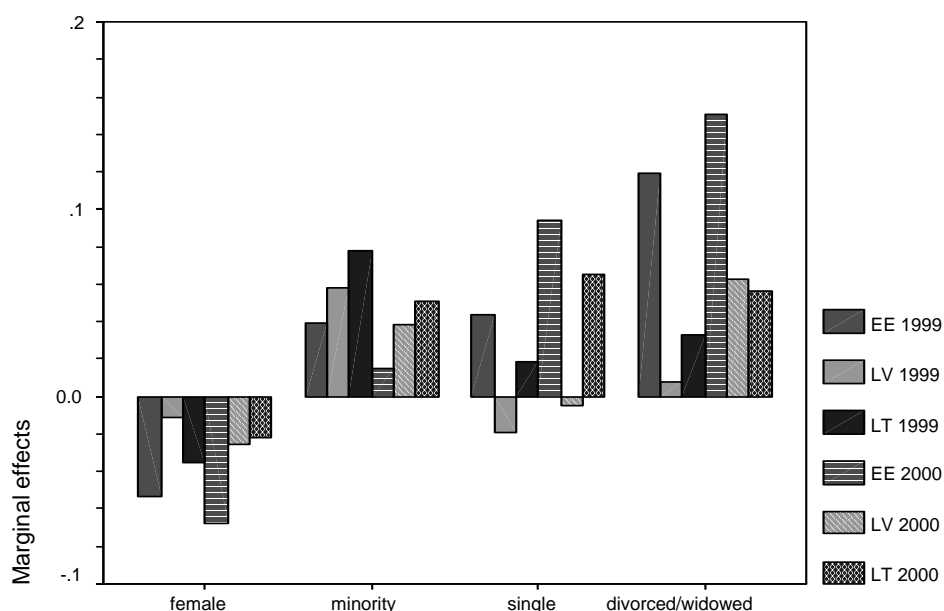
Figure A1.4 Marginal effect of occupation on unemployment risk by gender



Note. Reference category: unskilled manual occupations. Education, gender, ethnicity, age, experience, marital status, sector of economic activity, occupation and place of residence are controlled for; see Table A1.2.

Place of residence. The relatively low unemployment rates recorded in the capitals and some other cities are often a result of special factors, e.g. higher education attainment and different types of work⁵. Controlling for such factors, only Vilnius of the three Baltic capitals presents substantially lower unemployment risk than the national average (Table 2A.1, Model 3). Living in Tallinn actually involves an above-average risk; living in urban Riga has no significant effect although the surrounding Riga district reduces the unemployment risk (Model 1). Urban areas with particularly high unemployment risk are found in Ida-Viru, Estonia (.16) and Latgale, Latvia (.08). In Lithuania, only one of the relatively big cities – Siauliai – appears to present unusually high unemployment risk. Living in Lithuania's *rural* areas involves as much as 5 percentage points lower unemployment risk than small towns, a difference not found in Estonia and Latvia (Tables A1.2 and A1.3).

Figure A1.5 Marginal effects of gender, ethnicity and marital status on unemployment risk



Note. Reference categories: males; native Balts; married. Effects were calculated against the average unemployment probability, which in 2000 was about 14% in all three countries. "Risk" is the probability of being unemployed when other factors are controlled for (education, gender, ethnicity, age, marital status, economic sector, occupation and place of residence). See Table A1.1, Model 2. *Source:* Labour force surveys.

Long-term unemployment

The principal risk factors are much the same for long-term unemployment (LTU) as they are for becoming unemployed in the first place (Table A1.2):

- ◆ Lack of secondary education.

⁵ This appears to hold for the capitals and other big cities in most transition economies; cf. Puhani, P., "On the Identification of Relative Wage Rigidity Dynamics: A Proposal for a Methodology on Cross-Section Data and Empirical Evidence for Poland in Transition," IZA Discussion Paper No. 226, 2000. (2000).

- ◆ Ethnic minority.⁶
- ◆ Manufacturing work; construction work in Estonia and Lithuania.
- ◆ Unskilled work; semi-skilled production work in Lithuania.
- ◆ Being divorced or widowed; being single in Estonia and Lithuania.

Other observations:

Place of residence. Living in a region with high unemployment is a risk factor. Tallinn and Riga present about the same risk of LTU as other cities, while the risk is lower than average in Vilnius, Kaunas and Klaipeda, and in the surroundings of Riga. Rural areas present low LTU risks in Latvia and, especially, in Lithuania; the opposite holds in Estonia.

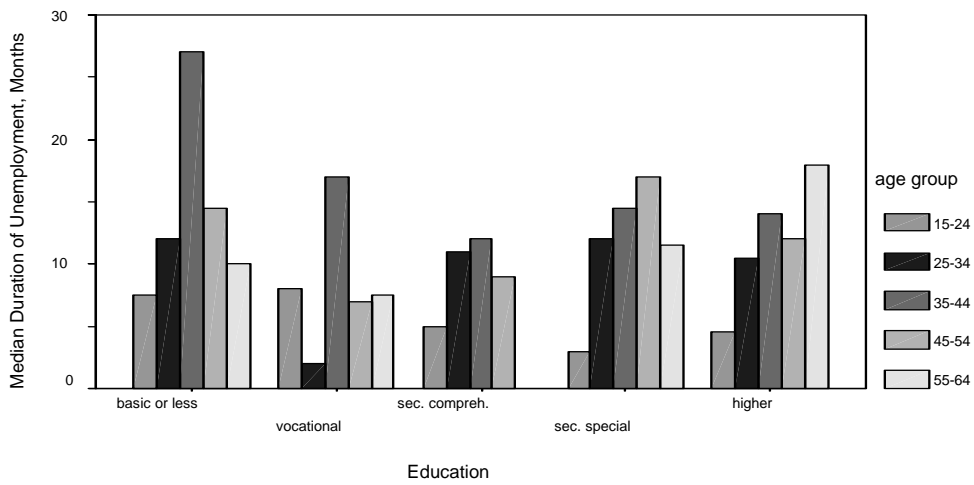
Gender and family situation. Childless women are less likely than men to become LTU in Estonia, but this difference is small or insignificant in the other countries. On the other hand, only in Estonia are women with children more likely than average to become LTU. A possible interpretation of the latter correlation is that the administration of benefits may be relatively generous, or lax, to parents whose motivation to take up jobs is reduced by child-care obligations.⁷

Education. Lithuania stands out as the country with the strongest effect of higher education and the weakest effect of secondary education, especially for the prime age (Figure A1.6). Vocational education gave roughly as much protection against long-term unemployment as did secondary education in 2000. However (as shown only for Estonia and Latvia in Table A1.4) the effect of vocational education is reduced or disappears if one takes account of experience. In Latvia, in particular, the effect of vocational education is mainly to facilitate access to safe occupations, an effect that is strongest for relatively young people. In any case, Estonia's vocational education system should be given credit for the result (see Figure A1.6) that 50% of the unemployed 25-34 year-olds with vocational education have been out of work for no more than 2 months, compared to 8 months in Lithuania and 16 in Latvia.

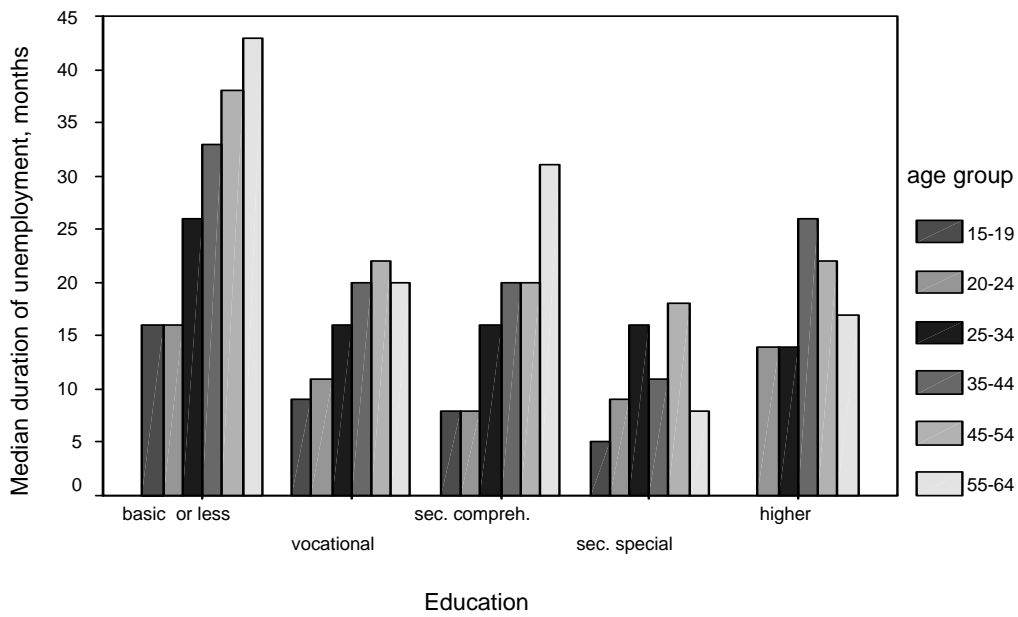
⁶ In contrast to the above-discussed ethnic effect on the risk of becoming unemployed, which was greatest in Lithuania, the effect on long-term unemployment in Lithuania was not significant in 2000. There is no obvious explanation, but the low level of statistical significance could be primarily a result of the limited size of Lithuania's minorities.

⁷ Moreover, in Estonia, only women with children can register as unemployed when their unemployment benefit rights have been exhausted, *e.g.* in order to obtain social assistance benefits.

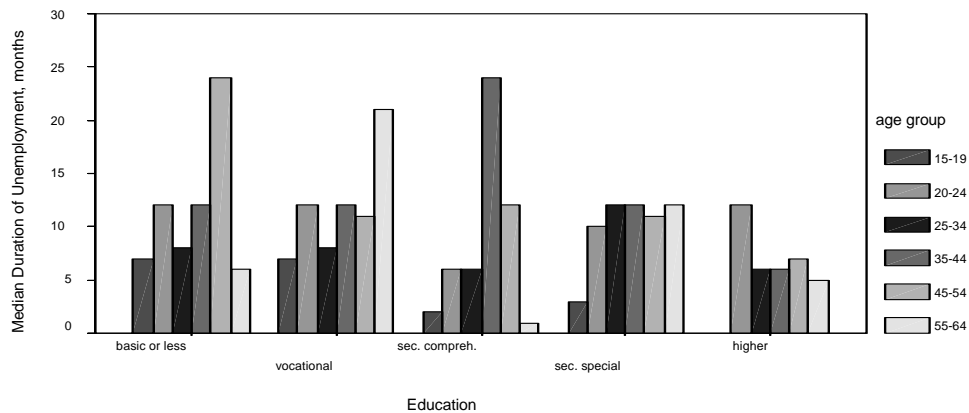
**Figure A1.6 Median duration of LFS unemployment by education and age
Estonia, 2000**



Latvia, 2000



Lithuania, 2000



Registration as unemployed at labour offices

The proportion of LFS-unemployed persons who were registered with the public employment service was 45-50 percent in Estonia and Latvia and 60 percent in Lithuania in 2000. Evidently, the determinants of unemployment according to the two definitions are neither identical nor completely different. Several of the factors found above to have significant impact on LFS-unemployment have no significant effect on registered unemployment; but none appears to have significant effect in the opposite direction (Table A1.5 compared with Table A1.1).

For example, in the three capitals, the proportion of LFS-unemployed persons that are also registered at the labour office tends to be low. As a result, the "unemployment risk" in the capitals appears lower if one considers the risk of registered unemployment instead of LFS-unemployment. A possible interpretation is that, in the capitals, relatively high proportions of the LFS-unemployed were not eligible for benefits. This probably has several explanations, including both a high proportion of new entrants and a relatively strict benefit administration. The benefit administration is most likely to be strict in big cities because, as many OECD countries have found, the legal requirement that benefit recipients must seek jobs is difficult to enforce in localities with few job vacancies.

Among the LFS-unemployed in all three countries, women are more likely than men to register. Ethnic effects are not significant. The economic sector in which an unemployed person used to work appears to have very different impact from country to country and from one year to the next. During the recession year of 1999, former manufacturing workers had the highest propensity to register in Estonia but the lowest one in Latvia, while in Lithuania it was highest for workers from transports, energy and farming. But in 2000, former employees of the finance sector generally showed relatively high propensity to register, followed by former manufacturing workers (and farmers in Latvia). Another change recorded in 2000 was that the LFS-unemployed in certain problematic regions (Ida-Viru, Estonia, and especially Latgale, Latvia) became much more inclined to register than one year earlier.

Technical notes for tables A1.1 – A1.5

1. A blank cell means that a variable is not included in the relevant model. All variables are dummies except *Experience* and *Local unemployment rate*. For example, *Children* is a dummy for those with children under 15, *Children 3+* for those with at least 3 children, and *Female+Children* is a dummy for females with children.

2. The *marginal effect* is the difference in unemployment probability for an economically active member of the relevant category compared (in principle) with the unemployment rate for the reference group. For comparability, however, the average unemployment rate of 0.14 (close to the real one) is assumed here to apply to all reference groups in all three countries; other rates were used for long-term and registered unemployment. For the continuous variables, the marginal effect is what would result from a unit change in the variable.

3. A more complicated model (not presented in table form) is needed to estimate true effects of *experience*. It was used in Figure A1.4.

4. The following reference groups are used for the categories mentioned:

* *Basic or less than basic education* for other education categories.

* *Males* for Females.

* *Ethnic Balts* for Minority.

* The *35 to 44-year* labour force for other age groups.

* *Married* persons for Single and Separated (divorced or widowed).

* *Employees* for Employers, Self-employed and Family workers.

* Residents of *small cities* (in Latvia: small cities outside Latgale) for other regional variables.

5. *New entrants* (and those with is less than one year's experience) include unemployed persons without work experience or out of work for 3 years or more. For other unemployed persons, variables describing occupation, labour force status, ownership and economic sector refer to the last job.

6. Economic sectors were classified according to NACE, occupations according to the International Statistical Classification of Occupations (ISCO 88). *White collar* covers the first four ISCO groups: managers and senior officials; professionals; associate professionals and technicians; and clerks. *Sales worker* is ISCO group 5: service, shop and market sales workers. *Skilled worker* includes ISCO groups 6 and 7: skilled agricultural and fishery workers and craft and related trades workers. *Operators and assemblers* are the "semi-skilled" workers classified by ISCO as group 8: plant and machine operators and assemblers. The reference category here consists of *Elementary occupations* (ISCO group 9).

7. *Public* includes central or local government enterprises, budget-sector institutions or enterprises with central or local government capital participation of at least 50 percent. The reference category is the private sector (all other jobs).

8. N= no unemployed in the category. The unemployed may be excluded from the sample (NX) or merged with the adjacent category (NM) or with the reference group (NR).

Table A1.1 Marginal effects of unemployment risk factors

Variable	1999						2000								
	Model 1		Model 2		Model 3		Model 1		Model 2		Model 3				
	EE	LV	EE	LV	LT	EE	LV	LT	EE	LV	LT	EE	LV	LT	
Higher education	-0.039*	-0.036	-0.048**	-0.022	-0.038	-0.077***	-0.071**	-0.078***	-0.047**	-0.090***	-0.026	-0.079***	-0.082***	-0.103***	-0.082***
Secondary techn/special educ.	-0.012	0.021	-0.017	0.018	-0.022	-0.035**	-0.041	-0.065***	-0.010	-0.071***	-0.008	-0.022	-0.045**	-0.079***	-0.052**
Secondary comprehensive educ.	-0.009	0.035*	-0.002	0.026	-0.003	-0.027*	-0.011	-0.061***	-0.030**	-0.065***	-0.030**	-0.034	-0.050***	-0.071***	-0.049**
Vocational education	0.003	0.006	0.000	0.009	0.021	-0.013	0.004	-0.045***	0.028	-0.051***	0.021	-0.017	-0.058***	-0.017	-0.034
Female	-0.053***	-0.011	-0.052***	-0.003	-0.035**	-0.050***	-0.037**	-0.068***	0.028	-0.067***	-0.020	-0.024*	-0.062***	-0.062***	-0.020
Minority	0.039**	0.058***	0.040**	0.064***	0.074***	0.059***	0.086**	0.015	0.038***	0.015	0.042***	0.060**	0.054***	0.025	0.062***
Age 15_19		-0.118***	-0.071***	-0.081**	-0.088**	-0.066***	-0.088**	0.045	-0.124***	-0.063***	0.071	0.071	-0.071***	-0.071***	-0.076**
Age 15_24/Age 20_24/ Age 20_24		-0.101***	-0.017	-0.012	-0.006	-0.006	-0.016	0.045	-0.120***	-0.072***	-0.045***	0.043*	-0.066***	-0.054***	-0.061***
Age 25_34		-0.078***	-0.001	0.006	0.012	0.006	0.013	0.089**	-0.095***	-0.004	-0.019	0.028	0.000	-0.024*	0.008
Age 45_54		-0.062***	0.191***	-0.038***	0.005	-0.029	-0.030	-0.054***	0.147***	0.006	-0.021	0.022	0.005	-0.020	0.014
Age 55+/Age 55_re/Age 55+		-0.105***	0.231***	-0.077***	-0.045*	-0.081**	-0.083**	-0.109***	0.248***	-0.035	-0.063**	-0.032	-0.027	-0.057***	-0.037
Age re_64		0.058	0.058	-0.058**	-0.058**	-0.044	-0.044	0.149**	0.149**	-0.079***	-0.079***	-0.079***	-0.066***	-0.066***	-0.109***
Age 65+		0.320***	0.223***	0.786***	0.304***	0.672***	0.737***	0.803***	-0.092	0.798***	0.339***	0.323***	0.802***	0.424	0.477***
New entrant		0.004**	-0.014***	0.044*	0.001	0.019	0.022	0.094**	-0.015	0.082**	0.012	0.053***	0.086**	0.019	0.059***
Experience, years		0.119***	0.008	0.119***	0.011	0.033	0.051*	0.151***	0.063***	0.154**	0.056***	0.061**	0.163***	0.048***	0.064**
Single		0.013	-0.027	0.009	-0.026	0.007	-0.027*	0.003	-0.024	-0.000	-0.023	-0.001	-0.001	-0.033**	
Children		0.024	-0.051**	0.023	-0.045*	0.027	-0.037	0.036	-0.051**	0.031	-0.049**	0.039	0.039	-0.045*	
Children 3+		0.002	0.066**	0.002	0.061**	0.007	0.062**	0.098**	0.047*	0.099**	0.037	0.097**	0.097**	0.049**	
Female+Children		-0.093**	-0.096***	-0.095***	-0.115***	-0.088**	-0.088**	-0.073**	0.096***	-0.074**	-0.114**	-0.093***	-0.093***	-0.093***	
White collar		-0.029	-0.095**	-0.032*	-0.108***	-0.066**	-0.066**	0.018	-0.068**	0.015	-0.086**	-0.067**	0.015	0.019	0.059***
Sales worker		-0.074***	-0.09***	-0.075***	-0.114***	-0.069**	-0.069**	-0.052***	-0.070***	-0.050***	-0.101***	-0.110***	-0.052***	0.163***	0.048***
Skilled worker		-0.065***	-0.087**	-0.065***	-0.113***	-0.077**	-0.077**	-0.063**	-0.072**	-0.062**	-0.105**	-0.078**	-0.062**	-0.001	-0.033**
Operator or assembler		-0.089***	-0.087**	-0.089***	-0.088**	-0.010	-0.088**	-0.082**	-0.067**	-0.084**	-0.066**	-0.067	-0.097**	-0.097**	-0.079
Employer		-0.071	-0.129***	-0.071**	-0.123***	-0.092**	-0.092**	-0.112	-0.128***	-0.111***	-0.122***	-0.112***	-0.111***	-0.129***	-0.123***
Self-employed		-0.138***	-0.138***	-0.137***	-0.137***	-0.102	-0.102	-0.138***	-0.138***	-0.138***	-0.136***	N	-0.137***	-0.137***	
Family worker		-0.052***	0.033*	-0.052***	-0.009	-0.052***	-0.052***	-0.060***	0.030	-0.062***	-0.006	-0.062***	-0.064***	-0.064***	-0.078**
Public sector		-0.036*	-0.097**	-0.036*	-0.111***	-0.081**	-0.081**	-0.038	-0.074**	-0.035	-0.091**	-0.082***	-0.036	-0.092**	-0.078**
Agriculture (AB)		0.075**	-0.072**	0.077***	0.090***	-0.018	0.059**	0.120***	-0.059**	0.122***	-0.081***	0.014	0.113***	-0.089***	-0.003
Construction (F)		-0.049**	-0.069**	-0.048**	-0.090***	-0.024	-0.053**	0.009	-0.052***	0.012	-0.079**	-0.064***	-0.000	-0.087**	-0.053**
Trade+Hotels (GH)		-0.046**	-0.093***	-0.047**	-0.104***	-0.053*	0.004	-0.010	-0.068***	-0.006	-0.088***	-0.086***	0.026	-0.098***	-0.084***
Transport+Energy (IE)		-0.046**	-0.09***	-0.047**	-0.100***	-0.099**	-0.046**	-0.041	-0.090***	-0.036	-0.103***	-0.105***	-0.039	-0.108***	-0.103***
Finance+Business activities (JK)		-0.064***	-0.115***	-0.063***	-0.121***	-0.110**	-0.066***	-0.063***	-0.103***	-0.059***	-0.111***	-0.124***	-0.056***	-0.114**	-0.112***
Public services (LMNO)		0.038*	0.017	0.039**	0.008	-0.052**	0.037*	0.039	0.022	0.041	0.013	-0.043**	0.038	0.010	-0.047**
Capital city		0.017	-0.048**	0.017	-0.018	-0.026	0.020	-0.028	-0.048	-0.026	-0.039	-0.051**	-0.023	-0.040	-0.045*
Capital district			0.136***		0.138***	0.039	0.039	0.077*	0.077*	0.062	0.062	0.013	0.061	0.061	0.018
Jurmalai/Shaulajaj			0.036*		0.036**	-0.031	-0.029	0.040**	0.040**	0.040**	0.041**	-0.017	0.043**	0.043**	-0.013
Other big cities		0.072**	0.082***	0.074***	0.086***	0.086***	0.086***	0.159***	0.084***	0.167***	0.081***	0.081***	0.160***	0.088***	0.088***
Ida-Viru/Latgale urban		0.028	-0.006	0.027	0.010	-0.047*	0.036*	0.028	-0.016	0.027	-0.009	-0.044**	0.030	0.001	-0.046**
Rural outside capital district		7160	8652	7160	8652	4588	8652	4406	8617	4406	8617	4451	4406	8617	4451
Number of observations		7160	8652	7160	8652	4588	8652	4406	8617	4406	8617	4451	4406	8617	4451

Note: Effects were converted into probabilities, expressed as variations against the standard probability 0.14 (=the actual unemployment rate in 2000 for all three countries). Method: logit. Data: LFS. Variables significant at the 0.1, 0.05, and 0.01 level are denoted by *, **, and ***, respectively.

Table A1.2 Marginal effects of unemployment risk factors by gender

Variable	1999						2000					
	Females			Males			Females			Males		
	EE	LV	LT	EE	LV	LT	EE	LV	LT	EE	LV	LT
Higher education	-0.041	-0.068**	-0.067	-0.040	-0.006	-0.055	-0.015	0.014	-0.086**	-0.103***	-0.078***	-0.069*
Secondary techn/special educ.	-0.026	0.010	-0.070	-0.004	0.017	-0.011	0.016	0.061	-0.038	-0.088***	-0.038	-0.018
Secondary comprehensive educ.	-0.028	0.005	-0.063	0.001	0.051*	0.037	-0.007	0.013	-0.042	-0.074***	-0.047**	-0.029
Vocational education	-0.015	0.063	-0.043	0.011	-0.018	0.034	0.006	0.172**	-0.012	-0.058***	-0.015	-0.022
Minority	0.033	0.071**	-0.180***	0.045*	0.049***	0.028	0.043	0.044**	0.131***	-0.003	-0.124***	0.019
Age 15_19		-0.115***	-0.103*		-0.122***	-0.068		-0.124***	-0.077		-0.124***	-0.027
Age 15_24/Age 20_24/Age 20_24		-0.105***	0.018		-0.102***	-0.018		-0.121***	-0.033		-0.120***	-0.038
Age 25_34		0.099*	0.002		-0.089***	0.025		-0.093***	0.021		-0.097***	0.026
Age 45_54		-0.038	0.229**	0.013	0.170***	-0.056**	-0.052*	0.203***	0.015	-0.054*	0.129***	0.042
Age 55+/Age 55_re/Age 55+		-0.102***	0.394***	-0.135***	-0.105***	-0.051	-0.117***	0.203	-0.061	-0.098***	0.206***	0.004
Age re_64		0.157**	0.051		-0.037			0.016			0.229**	
Age 65+		0.738***	0.220**	0.670**	0.814***	0.685***	0.826***	-0.101	0.399**	0.802***	-0.080*	0.285***
New entrant		0.003	-0.015***		0.004**		0.008**	0.212***		0.007**	0.274***	
Experience, years		0.005	-0.029	-0.021	0.101**	0.051	-0.007	-0.017***	0.01	0.201***	-0.013***	0.106***
Single		0.081**	0.001	-0.021	0.190***	0.103**	0.147***	0.035	-0.001	0.142**	0.144***	0.204***
Separated		0.007	0.035*		0.041		0.057	0.019		0.040	-0.023	
Children		0.036	-0.011		0.012		-0.005	-0.046		0.053	-0.055*	
Children 3+		-0.097***	-0.092***	-0.092**	-0.086***	-0.076**	-0.076***	-0.105***	-0.085***	-0.069***	-0.090***	-0.101***
White collar		-0.041*	-0.097***	-0.074**	0.041	-0.100*	-0.009	-0.090**	-0.021	0.009	-0.037	-0.103**
Sales worker		-0.081***	-0.098***	-0.111***	-0.065***	-0.036	-0.068**	-0.083***	-0.107***	-0.042*	-0.062***	-0.112***
Skilled worker		-0.108***	-0.093**	-0.100**	-0.041**	-0.060**	-0.079***	-0.103***	-0.094**	-0.049*	-0.062***	-0.078***
Operator or assembler		-0.012	-0.088&	-0.006	-0.104***	-0.005	-0.113***	-0.039	-0.014	-0.050	-0.077**	-0.077
Employer		-0.061	-0.124***	-0.088	-0.077**	-0.090*		-0.116	-0.106**	-0.120***	-0.137***	-0.111**
Self-employed												
Family worker			0.189		-0.137***						-0.135***	
Public sector		-0.041	0.022		-0.055***		-0.094***	0.035		-0.024	0.031	
Agriculture (AB)		-0.067***	-0.112**	-0.105*	-0.023	-0.079**	0.035	-0.089**	-0.101***	-0.061**	-0.068**	-0.078***
Construction (F)		0.007	-0.087**	-0.124*	0.103***	-0.019	0.159	-0.012	0.071	0.115**	-0.062***	0.008
Trade+Hotels (GH)		-0.074**	-0.072**	-0.010	-0.041*	-0.050	0.008	-0.052**	-0.087**	0.005	-0.051**	-0.043*
Transport+Energy (IE)		-0.065***	-0.107***	-0.080*	0.033	-0.084***	0.026	-0.065*	-0.075**	-0.044	-0.070***	-0.093***
Finance+Business activities (JK)		-0.060**	-0.095***	-0.107**	-0.050*	-0.099*	-0.100***	-0.092***	-0.101**	0.010	-0.088**	-0.108**
Public services (LMNO)		-0.084***	-0.123***	-0.122***	-0.071***	-0.097***	-0.053	-0.110***	-0.118***	-0.044	-0.097***	-0.114***
Capital city		0.037	0.004	-0.083***	0.041	-0.033	0.025	0.023	-0.049	0.048	0.024	-0.04
Capital district		-0.020	-0.077**	-0.001	0.034	0.010	-0.035	-0.009	0.045	-0.032	-0.072**	-0.071**
Jumalar/Shaulaj			0.165**	0.027	0.145**	0.030		0.214***	0.045		0.000	0.000
Other big cities			-0.010	-0.044	0.082***	-0.019		0.080**	0.018		0.020	-0.029
Iida-Viru/Latgale urban		0.110**	0.088**		0.055		0.160**	0.077*		0.146**	0.093**	
Rural outside capital district		0.039	-0.016	-0.046	0.018	-0.054**	0.056	0.015	-0.004	0.001	-0.031	-0.066***
Number of observations		3414	3803	2253	3746	2268	2174	3859	2170	2232	4479	2281

Note: Effects were converted into probabilities, expressed as variations against the standard probability 0.14. Method: logit. Data: LFS. Variables significant at the 0.1, 0.05, and 0.01 level are denoted by *, **, and ***, respectively.

Table A1.3 Marginal effects of unemployment risk factors in urban and rural areas

Variable	1999						2000					
	Urban			Rural			Urban			Rural		
	EE	LV	LT	EE	LV	LT	EE	LV	LT	EE	LV	LT
Higher education	-0.034	-0.030	-0.016	-0.066**	-0.071	-0.129**	-0.084***	-0.046**	-0.071**	-0.091***	-0.005	-0.116***
Secondary techn/special educ.	-0.022	0.027	-0.017	0.032	0.008	-0.032	-0.075***	-0.031*	-0.022	-0.045	0.052*	-0.021
Secondary comprehensive educ.	-0.003	0.031	0.031	-0.031	0.059	-0.063	-0.076***	-0.051***	-0.028	-0.015	0.034	-0.033
Vocational education	0.010	0.007	0.039	-0.027	0.027	-0.011	-0.058***	-0.006	-0.016	-0.014	0.070	-0.009
Female	-0.063***	-0.011	-0.042*	-0.007	-0.025	-0.009	-0.075***	-0.033**	-0.031**	-0.046	0.038	0.016
Minority	0.045**	0.061***	0.065**	-0.033	0.057*	0.174**	0.007	0.050***	0.068**	0.075	-0.043	-0.043
Age 15_19		-0.120***	-0.091*		-0.108***	-0.037		-0.067**	-0.077*		-0.054	-0.027
Age 15_24/Age 20_24/ Age 20_24		-0.106***	-0.043		-0.071**	0.062		-0.056***	-0.021		-0.009	-0.056
Age 25_34		-0.084***	-0.006		-0.056**	0.091		-0.026	0.026		0.008	0.014
Age 45_54		-0.051**	-0.026		-0.091***	-0.024		-0.033**	0.035		0.043	-0.01
Age 55+/Age 55_re/Age 55+		-0.104***	-0.083**		-0.110***	-0.066		-0.108***	-0.007		-0.037	-0.098***
Age re_64		0.057			0.143**			-0.076***			-0.128**	
Age 65+		0.420***			-0.050			-0.118***			-0.064	
New entrant		0.239***			0.087			0.416*			0.225***	
Experience, years		0.790***			0.790***			0.808***			0.807***	
Single		0.004*			0.005*			0.008**			0.008**	
Separated		0.042			-0.053**			0.101**			0.084	
Children		0.140***			0.056			0.168***			0.017	
Children 3+		0.011			0.026			0.001			0.023	
Female+Children		0.024			0.026			0.074			-0.036	
White collar		0.015			-0.033			0.095			-0.003	
Sales worker		-0.095***			-0.095***			-0.066***			-0.123***	
Skilled worker		-0.025			-0.061**			0.050			-0.087***	
Operator or assembler		-0.075***			-0.080***			-0.055**			-0.062*	
Employer		-0.064***			-0.068***			-0.058***			-0.102***	
Self-employed		-0.076**			-0.068***			-0.080*			-0.079	
Family worker		-0.076***			-0.059*			-0.105***			-0.079	
Public sector		-0.055***			-0.056**			-0.058***			-0.136***	
Agriculture (AB)		-0.013			-0.050***			-0.075**			-0.029	
Construction (F)		0.077**			0.090			0.131**			-0.089***	
Trade+Hotels (GH)		-0.052***			-0.017			0.005			-0.078	
Transport+Energy (IE)		-0.002			-0.048*			-0.014			-0.088***	
Finance+Business activities (JK)		-0.060***			0.103			-0.050*			-0.037	
Public services (LMNO)		-0.063***			-0.051			-0.080***			-0.112***	
Capital city		0.049*			-0.047*			0.037			-0.041*	
Jurmala/Shauljaj		0.025			0.028			-0.030			0.021	
Other big cities					-0.025			0.061			0.021	
Ida-Viru/Laigata urban		0.094**			-0.009			0.163***			0.040**	
Number of observations		4628	5285	3116	2532	1378	2887	5276	3028	1519	3341	1423

Note: Effects were converted into probabilities, expressed as variations against the standard probability 0.14. Method: logit. Data: LFS. Variables significant at 0.1, 0.05, and 0.01 level are denoted by *, **, and ***, respectively.

Table A1.4 Marginal effects of risk factors on long-term unemployment

Variable	1999						2000					
	Model 1			Model 2			Model 1			Model 2		
	EE	LV	LT	EE	LV	LT	EE	LV	LT	EE	LV	LT
Higher education	-0.055***	-0.051***	-0.049***	-0.038***	-0.021	-0.053**	-0.061***	-0.050***	-0.061***	-0.051***	-0.022	-0.055***
Secondary techn/special educ.	-0.033***	-0.034***	-0.033**	-0.020**	-0.010	-0.038*	-0.046***	-0.041***	-0.029***	-0.035***	-0.016	-0.023
Secondary comprehensive educ.	-0.034**	-0.018**	-0.041**	-0.024***	0.005	-0.025	-0.028**	-0.032***	-0.027**	-0.014	-0.019*	-0.035**
Vocational education	-0.027***	-0.017	-0.023	-0.018**	0.000	-0.013	-0.036***	-0.035***	-0.02	-0.023***	-0.011	-0.029*
Female	-0.031***	-0.005	-0.011	-0.030***	-0.008	-0.015	-0.033***	-0.013*	-0.012	-0.032***	-0.017*	-0.016
Minority	0.056***	0.071***	0.061**	0.030**	0.038***	0.046	0.066***	0.079***	-0.006	0.046***	0.043***	-0.024
Age 15_19			0.014		-0.069***	-0.006		-0.009	-0.014		-0.065***	-0.057
Age 15_24/Age 20_24/ Age 20_24		0.003	0.008	-0.031**	-0.061***	-0.013	-0.037***	-0.015	-0.002	-0.047***	-0.064***	-0.006
Age 25_34		-0.007	0.000	-0.035***	-0.048***	-0.005	-0.012	-0.001	-0.017	-0.017	-0.047***	-0.018
Age 45_54		-0.014*	0.003	-0.007	0.117***	0.002	-0.014	-0.001	-0.003	-0.011	0.174***	-0.003
Age 55+/Age 55_re/ Age 55_re		-0.043***	-0.016	-0.048**	-0.034***	-0.038**	-0.038***	-0.018	-0.013	-0.037***	0.239***	0.001
Age 55_64/Age re_64/ Retirement age		-0.036*	NM	NM	-0.045	NM	-0.038***	-0.050***	-0.064***	-0.037***	-0.030	-0.064**
Age 65+		-0.001	NM	NM	0.342***	NM	-0.053***	-0.053***			0.063**	
Experience, years				-0.001	-0.009***					-0.000	-0.010***	
Single	0.034**	0.030***	0.016	0.023	-0.001	0.028	0.070***	0.011	0.058**	0.063***	-0.018*	0.026
Separated	0.069***	0.029***	0.016	0.056***	0.011	0.064	0.077***	0.037***	0.050***	0.071***	0.056***	0.081***
Children	-0.020**	-0.017*		-0.021**	-0.017		-0.014	-0.030***		-0.010	-0.023**	
Female+Children	0.068**	0.028		0.056**	0.033		0.055**	0.026*		0.050*	0.021	
White collar				-0.052***	-0.054***	0.008				-0.054***	-0.050***	-0.044
Sales worker				-0.014	-0.054***	-0.051**				-0.053***	-0.045***	-0.037**
Skilled worker				-0.046***	-0.053***	-0.020				-0.053***	-0.040***	-0.048***
Operator or assembler				-0.047***	-0.044***	0.002				-0.051***	-0.041***	-0.025
Public sector				-0.070***	0.063***						0.051***	
Agriculture (AB)				-0.002	-0.058***	-0.031				-0.015	-0.059***	-0.05***
Construction (F)				-0.011	-0.034**	0.015				0.002	-0.025	0.013
Trade+Hotels (GH)				-0.023**	-0.036***	0.004				-0.042***	-0.034***	-0.023
Transport+Energy (IE)				-0.044***	-0.056***	-0.033				-0.004	-0.045***	-0.036**
Finance+Business activities (JK)				-0.041***	-0.049***	0.012				-0.049***	-0.058***	-0.038
Public services (LMNO)				0.010	-0.059***	-0.040*				-0.053***	-0.056***	-0.047***
Local unemployment rate, percent	0.007***	0.005***	0.005**	0.007***	0.004***	0.005***	0.005***	0.004***	0.002	0.005***	0.003***	0.002
Capital city	-0.003	0.002	-0.019	-0.000	0.013	-0.017	-0.013	-0.014*	-0.040***	-0.010	0.001	-0.029*
Capital district	-0.011	0.020	-0.023	-0.017	-0.001	-0.021	-0.001	-0.017	-0.016	-0.004	-0.037**	-0.008
Rezekne/Kaunas		-0.027*	-0.003		-0.032*	0.011		0.013	-0.040***		0.013	-0.046***
Ide-Viru/Laigale urban/Klaipeda	-0.019	0.045***	NR	-0.004	0.027	NR	-0.014	0.017	-0.030**	-0.012	0.008	-0.018
Rural outside capital district	0.028**	-0.005	-0.022	0.005	-0.005	-0.009	0.025*	-0.015*	-0.050***	0.016	-0.012	-0.042***
Number of observations	7160	8652	4384	7160	8228	4065	4406	8617	4385	4406	8211	3939
Number of long-term unemployed	394	670	182	394	577	78	338	694	369	338	597	177

Note: Effects are calculated against an average long-term unemployment probability of 0.07 (close to actual rates in 2000). Method: logit. Data: LFS. Variables significant at 0.1, 0.05, and 0.01 level are denoted by *, **, and ***, respectively.

Table A1.5 Determinants of registered unemployment and jobseekers' selection into registration: marginal effects

Variable	1999						2000					
	Registered unemployment			Selection into registration			Registered unemployment			Selection into registration		
	EE	LV	LT	EE	LV	LT	EE	LV	LT	EE	LV	LT
Higher education	-0.052**	-0.018	-0.048*	-0.056*	0.064	-0.259*	-0.037***	-0.043***	-0.079***	-0.089	-0.197**	-0.249**
Secondary techn/special educ.	-0.041**	0.035**	-0.023	-0.045*	0.097*	-0.042	-0.010	0.015	-0.037**	0.078	0.089*	-0.177**
Secondary comprehensive educ.	-0.011	0.042***	-0.016	-0.006	0.122**	-0.045	-0.0167	0.005	-0.047***	0.016	0.081	-0.207**
Vocational education	-0.022	0.073***	0.006	-0.034	0.223***	0.054	-0.001	0.032	-0.044**	0.049	0.084	-0.227**
Female	-0.017	0.016	-0.003	0.032	0.100*	0.040	0.002	0.012	0.009	0.132	0.148***	0.147***
Minority	0.041*	0.019*	0.059***	0.021	-0.026	0.055	0.026	0.027***	0.034	0.080	0.038	-0.005
Age 15_19	-0.006	-0.049**	-0.048*	-0.073**	-0.006	-0.170	-0.018	-0.056***	-0.042	-0.274**	0.002	-0.149
Age 15_24/Age 20_24/ Age 20_24	0.062*	-0.032**	0.02	0.009	-0.105	0.099	0.013	-0.044***	-0.003	-0.079	0.066	0.033
Age 25_34	0.008	-0.024**	0.008	0.009	-0.086	0.027	0.013	-0.030***	0.009	-0.079	0.023	0.032
Age 45_54	0.008	0.029**	0.004	0.135**	-0.094	0.158**	-0.011	0.002	0.013	0.018	-0.060	0.095
Age 55+/ Age 55_ retirement/Age 55+	-0.051	-0.011	-0.036	0.159	-0.211**	0.130	-0.038**	0.015	-0.041*	-0.004	-0.138	0.042
Retirement age	NM	-0.061*	NM	NM	NM	NM	NM	-0.049	NM	NM	NM	NM
New entrant	0.207***	0.036	0.205***	-0.103***	-0.004	-0.377***	0.338***	0.024	0.096***	-0.178***	-0.151**	-0.267***
Experience, years	0.002	-0.003**	-0.003**	-0.002	0.006**	-0.231**	0.001	-0.003**	0.017	-0.006	0.008***	-0.046
Single	0.042	-0.025**	-0.031	0.053	-0.125**	-0.022	0.015	0.005	0.03	-0.015	-0.018	0.011
Separated	0.123***	0.002	0.008	0.068*	0.002	-0.022	0.054**	0.017	0.03	0.038	-0.037	0.011
Children	0.080**	-0.023*	0.008	0.153**	-0.140**	-0.022	-0.039***	-0.006	0.03	0.038	0.059	0.011
Female+Children	0.049	0.046**	0.046**	0.089	0.210**	-0.190	0.222***	0.012	-0.059***	0.387***	-0.056	-0.005
White collar	-0.088**	-0.057***	-0.045**	0.016	0.100	0.060	-0.041***	-0.058***	-0.055**	-0.167**	-0.049	-0.093
Sales worker	-0.057***	-0.058**	-0.018	-0.023	0.022	0.020	-0.013	-0.040**	-0.055**	-0.105	0.054	-0.038
Skilled worker	-0.080***	-0.038***	-0.027*	-0.056**	0.052	-0.213*	-0.003	-0.022**	-0.066***	0.072	0.061	-0.038
Operator or assembler	-0.065***	-0.037**	-0.047***	-0.011	0.133	-0.344**	-0.019	-0.037***	-0.037**	0.056	0.091	0.075
Employer	-0.101***	-0.064**	0.012	-0.011	-0.359*	0.188	-0.019	-0.015	-0.076	0.056	-0.056	-0.298
Self-employed	-0.040	0.043	-0.069***	-0.070	-0.240	-0.389***	-0.016	0.001	-0.008*	0.117	-0.266	-0.303*
Public sector	-0.042*	0.013	-0.038***	0.040	-0.002	0.099	-0.003	0.038**	0.025	0.117	0.135**	-0.069
Agriculture (AB)	-0.057***	-0.038***	-0.02	-0.075***	-0.054	-0.202*	-0.003	0.005	-0.025	0.029	0.067	0.001
Construction (F)	0.053	-0.036**	-0.016	-0.027	0.022	-0.202*	0.063*	-0.046**	0.036	0.084	-0.151*	0.001
Trade+Hotels (GH)	-0.053**	-0.035***	-0.013	-0.054*	0.018	-0.170	-0.004	-0.009	-0.041**	-0.115	-0.030	-0.069
Transport+Energy (IE)	0.003	-0.049**	-0.014	-0.029	0.141	0.166	0.005	-0.038**	-0.062***	-0.039	-0.101	-0.151
Finance+Business activities (JK)	-0.063**	-0.041*	-0.066*	-0.080***	0.086	-0.336	0.024	0.001	-0.055*	0.185*	0.502***	0.191
Public services (LMNO)	-0.087***	-0.058**	-0.056**	-0.087**	0.146*	0.075	-0.027*	-0.050***	-0.082***	-0.073	-0.080	-0.164
Capital city	0.007	-0.044***	-0.037**	-0.044**	-0.305***	-0.142	0.006	-0.020	-0.057***	-0.013	-0.186***	-0.255***
Capital district	-0.063**	-0.064**	-0.016	-0.097**	-0.364***	-0.006	-0.027	-0.044	-0.042*	-0.152	-0.138	-0.177**
Jurmala/Shauljaj	0.008	0.008	0.035	0.052	-0.197	0.062	0.053**	0.086**	0.001	0.037	0.129**	-0.094
Other big cities	0.028*	-0.025	-0.025	0.052	0.059	-0.135	0.066***	0.066***	-0.033**	0.037	0.315***	-0.197***
Iida-Viru/Laigale urban	0.077**	0.039	-0.025	0.052	0.022	-0.135	0.053**	0.130***	-0.033**	0.037	0.315***	-0.197***
Rural outside capital district	0.047*	-0.004	-0.016	0.042	-0.004	0.022	0.014	-0.005	-0.021	0.000	-0.054	0.060
Number of observations	7160	8307	4588	807	1076	499	4406	8410	4610	648	1156	699
Effects calculated against probability $p=$	0.070	0.095	0.080	0.500	0.500	0.600	0.070	0.085	0.110	0.500	0.380	0.600

Note: Method: logit. Data: LFS. Variables significant at 0.1, 0.05, and 0.01 level are denoted by *, **, and ***, respectively.

