

DETERMINANTS OF EARNINGS IN ESTONIA, LATVIA AND LITHUANIA¹

This paper investigates the factors that determine wages, using the conventional technique of estimating multivariate earnings functions. The dependent variable is net monthly earnings (in logarithmic form), permitting comparisons with several previous studies in transition countries.² Only full-time employees were included in the sample. Three models are used of which two – with and without the variable "occupation" – are almost fully comparable between the three countries; the third includes variables that are not available for all of them.

The wage impact of each explanatory variable is estimated for 1999 and 2000, beginning with human capital-related factors followed by gender, ethnicity, regional effects, unemployment and enterprise characteristics. Data were obtained from labour force surveys (LFS). The actual distribution of full-time employees according to relevant background variables are shown in Tables A3.21 and A3.22.

The text below and most charts express wage ratios and differentials as percentage differences relative to some comparison group. Tables A3.19 and A3.20 show the full results in 2000. Other tables show predicted wages for specific groups (obtained by exponentiation of the dependent variable resulting from the estimated earnings functions).

Human capital: education and work experience

The results suggest that especially higher education has greater impact on wages in the Baltic States than in many other countries, while the opposite holds for age and experience. Work experience and job-related skills acquired under the previous system have apparently lost much of their value, presumably as a result of the transition. On the other hand, the knowledge of foreign languages, computer skills and such characteristics as flexibility, market orientation and ability to learn have become more important. Evidently, young people are on average the most likely to possess these skills and personal characteristics.

¹ A shorter version of this paper was published as *Annex 3* 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.

² The literature about earnings functions in transition economies includes Paternostro and Sahn (1999), Kroncke and Smith (1999), Reilly (1999), Brainerd (2000), Orazem and Vodopivec (2000), Pailhé (2000), and Newell and Reilly (2001), which mostly use data from early transition years, or at best 1995-96. Juraida (2000), Puhani (2000), Blanchflower (2001), Newell (2001), Vecernik (2001) reach to 1997 or 1998 data. Baltic data from 1997-98 are analysed by Chase (2000), Abolins and Bockarjova (2000), and Smith (2001). But the former deals only with Latvia and uses Household Budget Survey data with poor wage measures and questionable sampling (key variables differ strongly from LFS), while the two last-mentioned papers only consider rough wage intervals. The results presented here are based on much larger samples and better-fitting models than many previous studies of earnings functions in transition economies.

The *educational attainment* is relatively high in the Baltic States. Of all full-time employees in 2000, the proportion with university education was 25% in Lithuania, 22% in Latvia and 17% in Estonia compared with, for example, 10% in the Slovak Republic, 13% in Poland, 15% in the Czech Republic and 18% in Sweden (Table A3.21).³ Secondary education had been completed by 60% to 70% of the employees in each Baltic country. Women have on average higher education than men.

In theory, schooling may affect wages 1) by improving productivity, 2) by facilitating access to better-paying enterprises and 3) by facilitating promotion to better-paid occupations. The estimation model that does not control for occupation can be assumed to cover the full effect (Model 1). It suggests that *higher* (i.e. university) education increased the wage by 66 to 80% compared with basic education. Most of this was due to a premium paid for higher *vs.* secondary education (of any kind), which alone varied from 44% in Latvia to 59% in Lithuania. The wage premium for secondary *vs.* basic education was only 13 to 14% in Latvia and Lithuania and 19% in Estonia. If the occupational group is controlled for, the marginal effect of each education type is reduced by approximately one-half, but still highly significant (Models 2 and 3).

University education has greater effect on wages in the Baltic States than in several other transition countries when no control is done for occupation (Figure A3.1). If the occupation is kept constant, however, only Lithuania's higher education appears to have unusually strong effects (Figure A3.2). The returns to secondary education are much lower by any measure in the Baltic States than in most transition countries, and also lower than in more advanced economies.⁴ (This is possibly a result of the relatively small proportion of workers with less than secondary education in the Baltic States.)

The wage payoff to a university degree is greater for *women* than for *men* in Estonia and Latvia, while in all three countries it is greater for members of the *ethnic majorities* than for *minorities* (Figure A3.3). In other words, education is more likely to be effective in reducing the effects of gender segregation than of ethnic segregation.⁵ To the extent that persons with higher education work in *rural areas*, they experience a relatively high wage premium.⁶

³ For the Czech Republic and Slovakia: own calculations referring to 1998 based on Juraida (2001), Tables A-2, A-3; for Poland in 1998: Puhani (2001), Table A1; for Sweden in 1997: Hansen and Wahlberg (2000), Table 1.

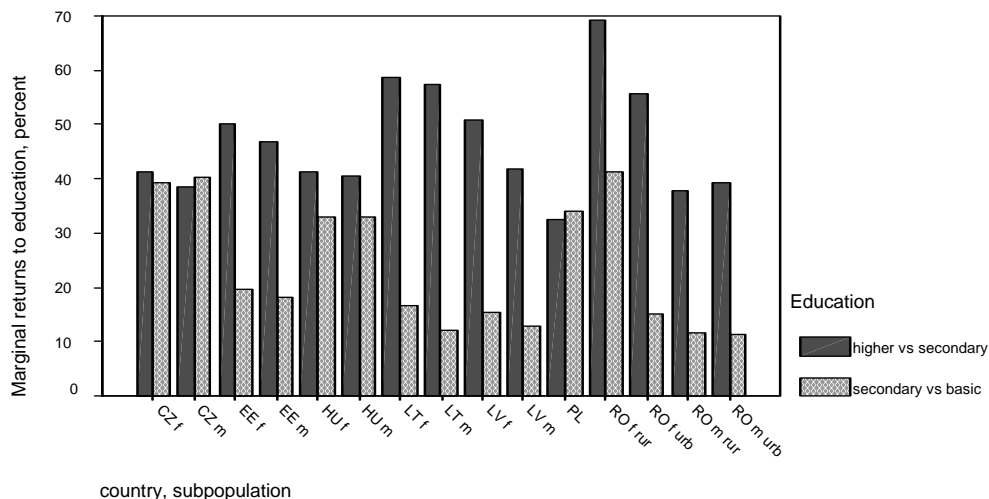
⁴ Recent estimates for Ireland suggest considerably higher returns to education, while estimates for Sweden suggest generally much lower returns to education (Barrett *et al.*, 2000, Hansen and Wahlberg, 2000).

⁵ While the *ethnic* difference in returns has narrowed since 1998 in Latvia but increased in Estonia, the opposite trends were observed for the *gender* gap.

⁶ The returns to education also appear relatively high in the public sector, but this result may be misleading because it does not take account of the greater under-reporting of wages in the private sector. For the same reason, the data may exaggerate the ethnic effect because minority members are over-represented in the private sector in Latvia.

Figure A3.1 Returns to education by gender (no occupation controls)

Baltic States (2000), Romania (1994), the Czech Republic, Hungary and Poland (1996).

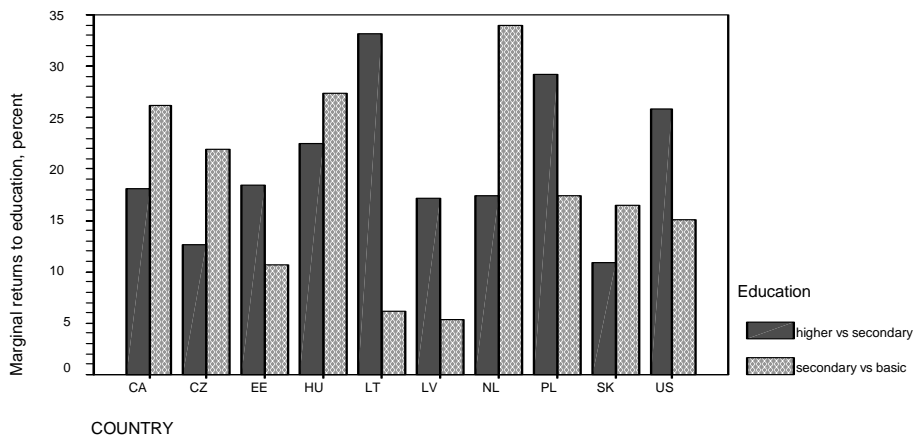


Notes: f=females, m=males, rur=rural, urb=urban. For Hungary, excluding the state budget sector.

Sources: EE, LT, LV: authors' calculations based on LFS data; RO: Paternostro and Sahn (1999); CZ, HU, PL: Vecernik (2001).

Figure A3.2 Estimated returns to education (controlling for occupation)

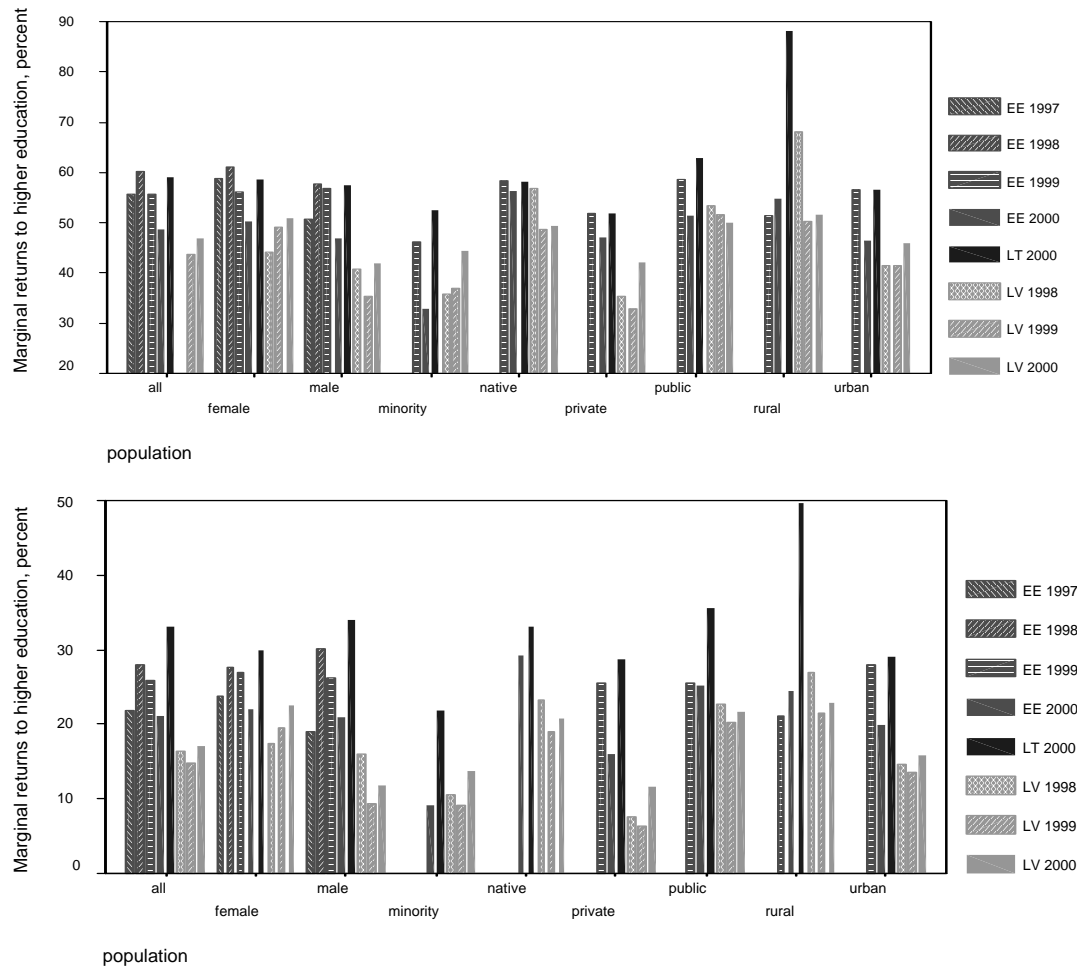
Baltic States (2000), Poland (1998), Czech Republic, Slovakia, Hungary (1992), Canada, Netherlands and US (1986-1991)



Sources: CA (1986), NL (1987-91): Blanchflower and Oswald (1996); PL: Newell (2001); CZ, HU, SK - Pailhé (2000); US (1990): Hellerstein et al (1999); EE, LT, LV: authors' calculations based on LFS.

Figure A3.3 Returns to higher vs secondary education (1997 – 2000) by gender, ethnicity, urban/rural areas and enterprise ownership

Upper panel: no occupation control Lower panel: occupation controlled



Notes: Economic sector is controlled for in both cases. Source: LFS and authors' calculations.

Age can be taken as a proxy for work experience. A typical “western” age-earning profile for men in most education groups is steadily increasing up to about age 50-52, after which it decreases; for women it often peaks somewhat earlier.⁷ This pattern is less clear in transition economies, including the Baltic States.⁸ In fact, the Baltic age-earnings profiles are almost flat for workers without higher education (apart from the small group of working teenagers; see the Figure A3.4 [after the tables]). To the extent that peaks can be discerned at all, they occur already at age 20-24 or 25-34 in Estonia and Latvia, but in Lithuania at age 35-44 for men and 45-54 for women. The profiles remain similarly flat if they are based not on actual wages (as in Figure A3.4) but on the earnings function of the above Model 1 (Figure A3.5). In this case, the peaks for all education groups tend to occur around age 35 to 40 – much earlier not only than in

⁷ See e.g. Ehrenberg and Smith (1997), pp. 301 – 303.

⁸ See Hazans (2002) for a discussion and empirical evidence.

western countries but also than in, for example, the Czech and Slovak Republics.⁹ The Estonian male profile stands out as an extreme case, with much steeper slopes before and after the peak than is found either for Estonian women or for men or women in Latvia and Lithuania.¹⁰

The positive impact of *tenure* – *i.e.* length of time in particular jobs, often considered a proxy for firm-specific skills – is also likely to have declined as a result of the high pace of change in transition economies. In 2000, the tenure effect on wages was significant but modest, at 0.5% per additional year of tenure in Estonia and 0.3% in Lithuania (Table A3.19, Model 3).¹¹ These figures are a little higher than in some Central European countries (Pailhe, 2000). In Estonia, women and Russians were found to benefit more from long tenure than did men and ethnic Estonians.

Gender

The average wage for women in Latvia and Lithuania was around 80% of the average for men in 2000 (Table A3.1). This was about the same proportion as in Poland, but more than the 75% reported for Estonia. Even wider wage gaps have been found in, for example, the Czech Republic.¹² Between 1997 and 2000, women tended to reduce their relative disadvantage in Estonia and Lithuania, but only marginally so in Latvia. A closer scrutiny shows that the relative improvement experienced by women in that period mainly concerned white-collar jobs in Lithuania, but mainly blue-collar jobs in Estonia (Table A3.2).

⁹ In the Czech and Slovak Republics, such peaks were found at age 46 to 47 in the private sector and 53 in the public sector based on 1998 data (Juraida, 2001).

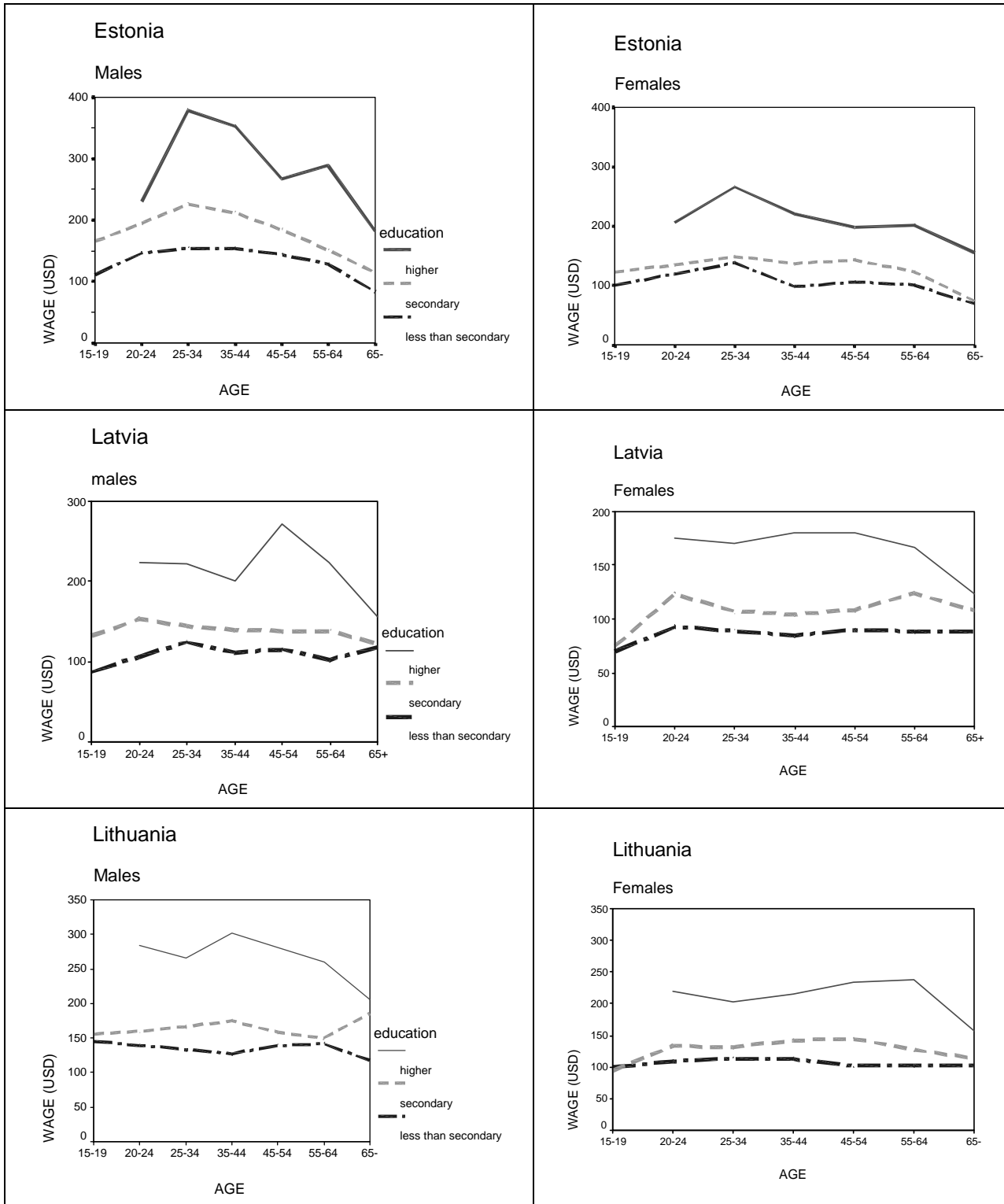
¹⁰ As elsewhere, however, new entrants to the labour market face a disadvantage in the Baltic countries. Based on Model 3, having worked less than one year reduces the wage by 10 percent in Latvia and 18 percent in Estonia.

¹¹ The Lithuanian data source uses a different definition of tenure: length of time "in the same activity".

¹² The Estonian ratio refers to hourly earnings, which shows a smaller gender gap than monthly wages because men have on average longer working time.

Figure A3.4 Actual age-earnings profiles in 2000

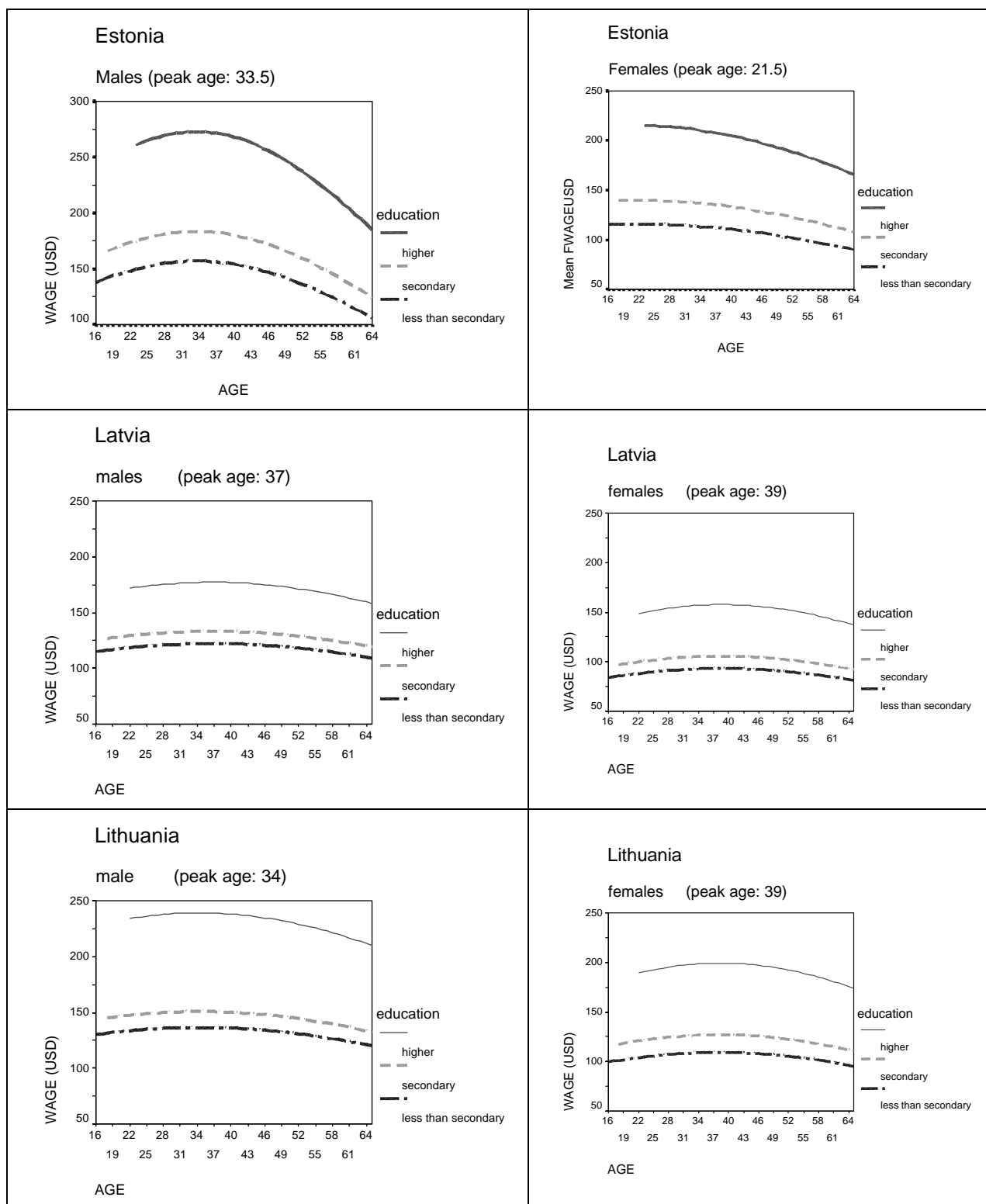
Observed after-tax earnings of full-time employees



Source: Calculations based on LFS data.

Figure A3.5 *Ceteris paribus* age–earnings profiles in 2000

Estimated after-tax earnings of full-time employees when other factors are controlled

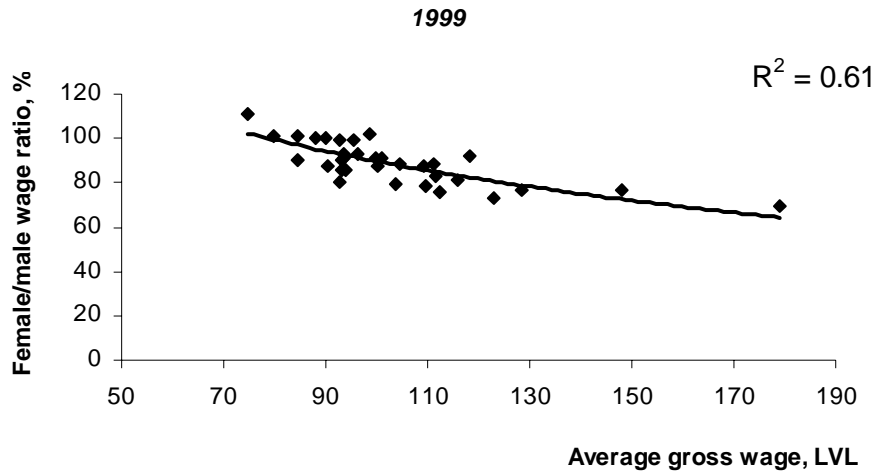


Notes: Controlled variables: see Table A3.1, Model 1.

The Latvian male profile refers to 1999. The corresponding data for 2000 also give a peak at age 37, but are not significant for all categories.

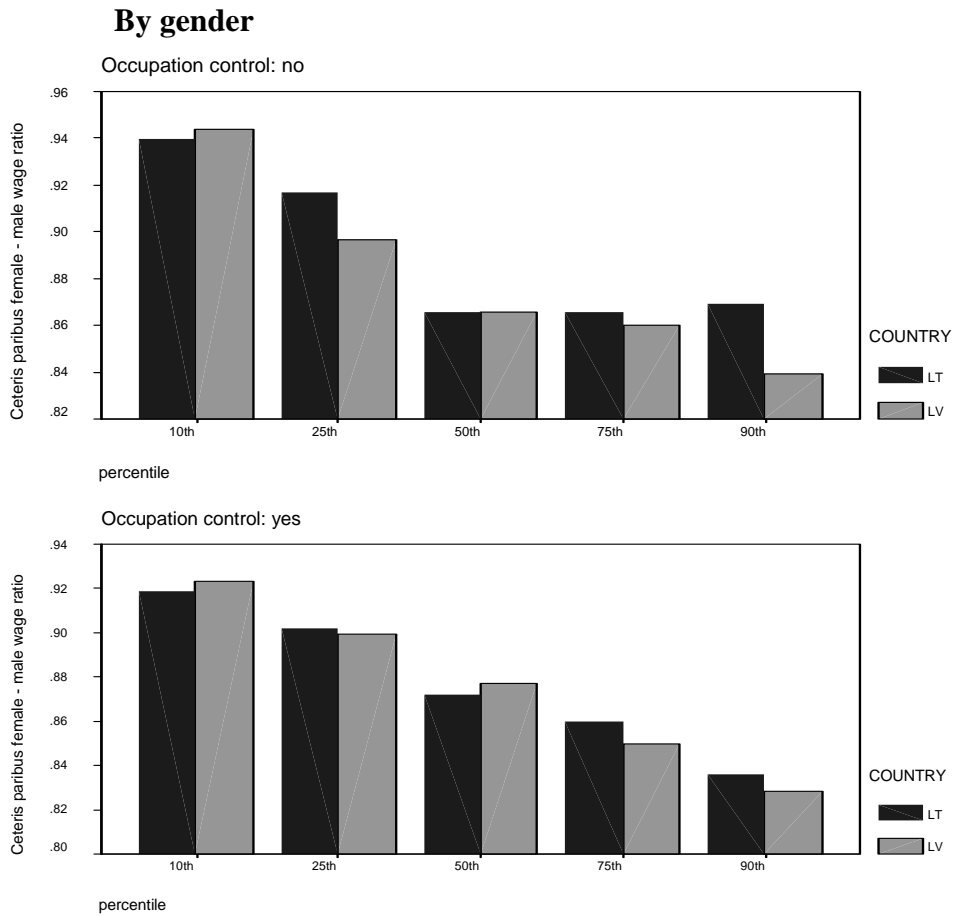
Sources: Calculations based on LFS data; for Latvia, partly, employer surveys.

Figure A3.6 Female-male wage ratio vs average wage in Latvian main cities and districts

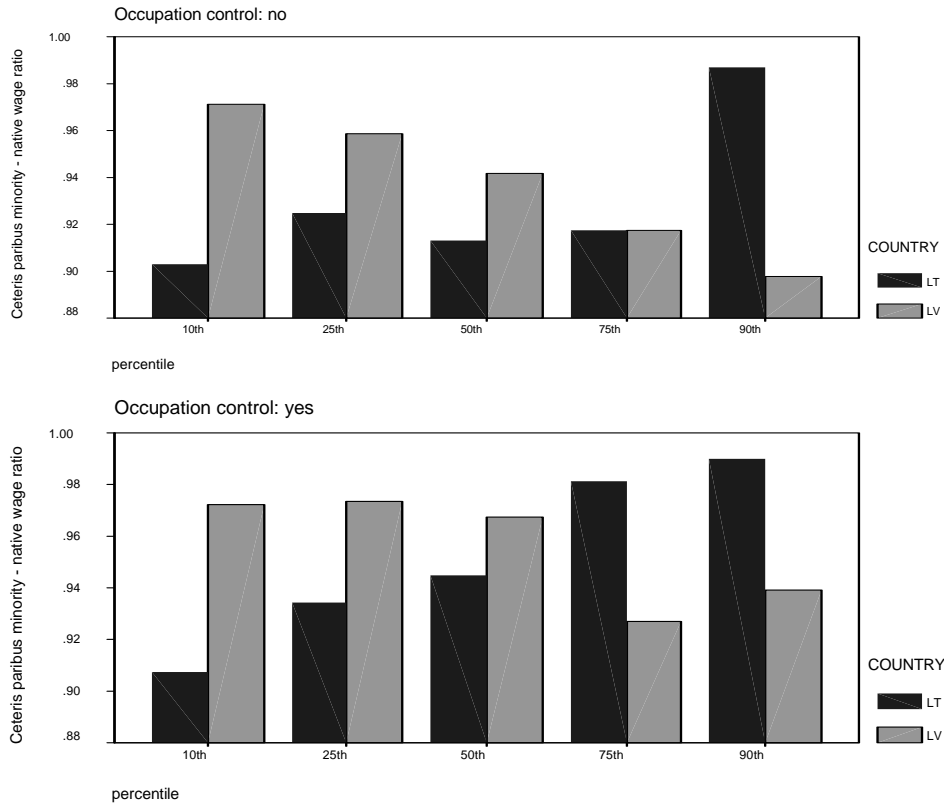


Notes: Each point represents one of the 26 districts and 7 main cities of Latvia. Fitted curve and R^2 refer to estimated relationship $wage\ ratio = 290 - 43.5 \ln(\text{average wage})$.
 Source: Rauhmane et al (2001).

Figure A3.7 Ceteris paribus wage ratios, by gender and ethnicity, at different percentiles of wage distribution, Latvia and Lithuania, 2000^a



By ethnicity



Notes: ^a Other things, including sector of economic activity being equal.

Sources: LFS data (for Latvia also earnings survey data) and authors' calculations.

The gender-related pay gaps are particularly wide in sales and commerce jobs, while they are narrow for semiskilled manual workers (machine operators), for whom there is practically no gender difference at all in Latvia. Wide gaps are often found in occupations and sectors with high average wages (e.g. financial services, not shown in the table) and they mainly concern regions with many high-wage jobs. In Latvia in 1999, women earned on average at least as much as men in six of the poorest districts (Figure A3.6). Indeed, even controlling for all known factors other than the income level, the gender-discrimination effect appears much stronger for medium and high-income groups than for low-income groups (Figure A3.7). This corresponds to previous results for Russia, Uzbekistan, Kazakhstan and Poland, while, on the other hand, gender discrimination has not been found to increase with the income level in the Czech Republic, Ukraine of Yugoslavia.¹³

Only a limited part of the observed wage gaps can be explained by included factors such as education, economic sector and nine main occupation groups. Baltic women are actually better educated than men on average, but they work more often in low-wage areas. Work experience is not important here because Baltic women have on average at least as long experience and tenure as men (albeit with fewer hours per week). Among the measurable characteristics, a principal factor operating to men's advantage is that wages are higher in some predominantly male activities (transport and communications, construction) than in some predominantly female activities (education, health care), and that public-sector employers, in particular, tend to give men the best-paid jobs (Table A3.20).¹⁴ Remarkably, the wage premium for professional occupations in Estonia is substantially higher for women than for men (a difference of 19 percentage points, compared to 3 in Latvia and Lithuania).

Weekly working time is on average 1.5 to 2.5 hours shorter for female than male full-time workers (Table A3.21). Although working time was not included in the models used here, it may be considered to explain a limited part the pay difference. Estimates for Latvia (not shown) suggest that including working time in the model would reduce the unexplained wage differential by about one-third.

Otherwise (disregarding working time) the entire gender pay gap in Lithuania, most of it in Estonia and about half of it in Latvia remains unexplained. Apparently, it must be ascribed either to discrimination and occupational segregation within the main groups, or to other unobserved characteristics (Table A3.4, right column).¹⁵ The results for Lithuania and Estonia are similar to those previously obtained in the US, the UK and Germany, where the apparently unjustified pay gaps are also very considerable. On the other hand, the Latvian situation resembles that in Central European countries, where the known differences between men and women have been found to explain one-third to one-half of the total pay gaps, and where the gaps were substantially smaller within than between occupations.¹⁶

The wage gaps that remain after discounting the effects of controlled variables amount to around 10% in Latvia, 14 to 15% in Lithuania and 17 to 21% in Estonia in 2000. (See Table A3.5. The cited figures were obtained using pooled-sample earnings functions.) Controlling for main occupation groups

¹³ Newell and Reilly (2001, Table 4). For Latvia, using household budget survey (HBS) data for 1996, they found no variation in the gender pay gap across the wage distribution, and their estimate of the gap itself was much higher than found here based on LFS data. HBS is less suitable than LFS for estimating earning functions.

¹⁴ The gender difference in the premium to public-sector work is 19 percentage points in Estonia, 10 in Latvia and 3 in Lithuania. The gender segregation by sector is similar in the three Baltic States.

¹⁵ Considering hourly rather than monthly pay would narrow the unexplained gap by 2-3 percentage points.

¹⁶ For the US, the UK and Germany: Kunze (2000), Tables 7 and 8. For Central Europe: Pailhé (2000), Juraida (2001) and Laxton (2001).

(Model 2 compared with Model 1) reduced the gap by just 1 to 3 percentage points, indicating that if there is occupational segregation it occurs more within than between the main groups.

Wages aside, it has some interest to measure the occupational segregation as such. The results show that it has similar magnitude as in Central Europe (Tables A3.7 and A3.8). The so-called *dissimilarity index* – expressing the proportion of all women who would need to change occupations to achieve the same occupation structure for women as the actual one for men – can be estimated at 0.35 to 0.41. This is comparable to the Czech Republic, Hungary and Poland. The segregation in the Baltic States is relatively pronounced in the public sector, as in Poland. It has decreased slightly since 1997 in Estonia, where it was highest, and in Lithuania, but not in Latvia.

All told, Latvia appears as one of the least gender-discriminatory economies, comparable to Hungary and Slovakia, while the wage gaps observed in Lithuania are only marginally wider. Moreover, the occupational element of segregation appears unusually small in Lithuania. On the other hand, all models used here support the result that Estonian women suffer the greatest wage disadvantage in the Baltic region (Tables A3.5 and A3.6). But even wider gender gaps have been found in Bulgaria and Central Asia – and in English-speaking countries.

Ethnicity

According to LFS in 2000, the average wage differential between the Baltic majority populations and ethnic minorities was 16% in Estonia and 9% in Latvia and Lithuania. (LFS respondents' ethnicity was self-reported. Except for Estonia, it was not possible to connect it with information about language skills, which probably play a role.) The predominantly Russian minorities of the two northern countries hardly differed from the respective majorities in terms of *education* (apart from the languages). But in Lithuania's minorities – which include a significant rural element, often Polish – the proportion with university education was only 16% compared with 26% for ethnic Lithuanians.

Occupational segregation also appears strongest in Lithuania, while it is weakest in Latvia. (Table A3.7 shows an ethnic dissimilarity index for occupations of 0.29 in Lithuania – almost as high as for genders.) Nevertheless, the *pattern* of occupational segregation is similar in all three countries, with minorities over-represented among manual workers and under-represented among senior officials, managers and professionals, in Lithuania also among technicians.

By contrast, the segregation by *economic sector* is strongest in Estonia and weakest in Lithuania (Table A3.7 shows sectoral dissimilarity indices: 0.26 for Estonia, 0.14 for Lithuania). But here the impact on wages can go in both directions because the minorities are not only concentrated in low-wage sectors (Table A3.9, more detail in Table A3.21). Only in Latvia does the public sector employ relatively few minority members.¹⁷ Last but not least, in all three countries, relatively high proportions of the minorities have the advantage of working in the capital cities, where wages tend to be high.

Only in Lithuania can a substantial part of the gross wage differential be explained by measurable employee characteristics (Table 3.10). Occupation alone (nine main groups) explains pay gaps of 4.2% in Estonia, 3.4% in Lithuania and 2% in Latvia. In other words, occupational segregation explains 35 and 45% of the observed gross wage differential in each country. In Estonia and Latvia, however, the wage effects of occupational segregation is largely offset by other known factors that actually seem to favour minorities, including sector, region and – in Estonia – the size of enterprises. Some 55% of all non-Estonian employees compared with 30% of the Estonian employees worked in firms with over 50 workers.

¹⁷ Among employees, about 35% of the non-Latvians and 49% of the Latvians work in the public sector.

Because big enterprises pay relatively high wages, controlling for firm size *increases* the unexplained ethnic wage gap by 2 percentage points in Estonia (Model 3).¹⁸ In Lithuania, by contrast, there is no such effect because Lithuanian and minority employees have almost the same distributions by firm size.

As with the gender-wage gap discussed above, a residual part of the ethnic wage gap must be ascribed to unobserved characteristics (Tables A3.10 and A3.11). Although these probably include language skills, it has often been assumed in other countries that such residuals measure *discrimination*. Using Model 1 (to include the wage effect of occupational segregation) the apparently unjustified ethnic wage gaps were about 7% in Latvia and Lithuania in 2000, or approximately equal to the ones estimated for Black vs. White citizens in the United States (Table A3.12). The corresponding gap in Estonia was much wider: 18%. Comparison with a previous study in Estonia suggests that it has increased by about 4 percentage points since 1994.¹⁹

A closer scrutiny shows that the ethnic wage discrimination in Lithuania is stronger for men than for women and that it mainly concerns low-wage groups (Figures A3.7 and A3.8).²⁰ In Latvia, by contrast, it is strongest for high-wage groups. In Estonia it is stronger for urban than rural workers, and stronger in the private sector than in the public sector. Cyclical factors appear to play a role, as shown for example by a temporarily worse situation for women in Estonia and Latvia in 1998 and 1999.

Regional effects and commuting

As mentioned already, jobs in the capital cities tend to be relatively well paid. Contrary to the results in *Unemployment Risk Factors in Estonia, Latvia and Lithuania* (another OECD web paper) concerning unemployment – which showed that the lower unemployment risk in the capitals could be explained by such factors as job type, education and economic sector – the *pay* difference in favour of the capitals remains significant even when those factors are controlled (Table A3.13). The same applies to varying degrees for the districts surrounding the capitals, for other major cities (Kaunas and Klaipeda in Lithuania and Ventspils in Latvia) and for smaller cities compared with rural areas. Inclusion of dummies for these locations in the earnings functions generally has highly significant effects.

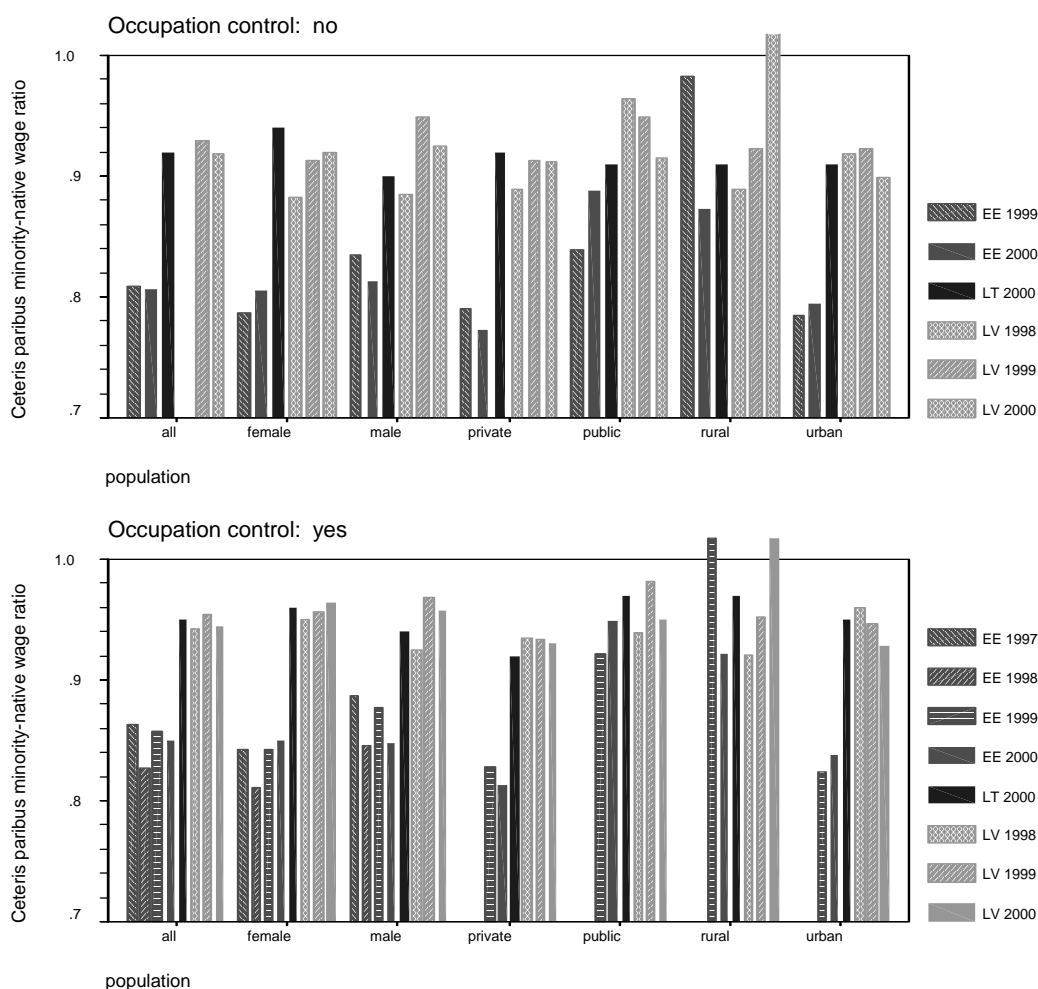
Compared with an employee working in a small city in 2000, an otherwise similar employee in a rural part of any Baltic country earned 8 to 9% less. Employees working in the capitals earned 21 to 23% more than those in small cities in Estonia and Latvia – similar to, for example, the difference between Warsaw and small cities in Poland in 1998 (Newell, 2001, Table 9). But the employees in Vilnius earned only 12% more than those in small Lithuanian cities.

¹⁸ Wages and firm size are positively correlated both in raw data (Chapter 8) and in *ceteris paribus* equations (Table A3.19, Model 3).

¹⁹ Kroncke and Smith (1999) used a model equivalent to Model 1 here, with weighted Estonian and non-Estonian earnings functions. The analysis for Latvia in Chase (2001) is not directly comparable because it lacked sectoral dummies and used a different data source (household budget surveys instead of LFS), but the results are similar to those found here.

²⁰ The results about correlations with income levels rely on quantile regressions, also used by Reilly (1999) and Newell and Reilly (2001).

Figure A3.8 Ethnic wage ratio *ceteris paribus*: minority vs. majority employees
Estonia (1997 – 2000), Latvia (1998-2000), Lithuania (2000)



Note: Other factors (including economic sector) are kept constant. All shown ratios except for the rural population in Estonia (1999) and Latvia (2000) are significantly different from 1 (at least at 0.1, mostly at 0.001 level).

Sources: LFS, for Latvia also enterprise census data; and authors' calculations.

However, in Estonia and Latvia, the impact of location looks much smaller if it is measured by *residence* rather than *workplace*. This narrows the *ceteris paribus* wage gaps between the capitals and rural areas by 16 percentage points in Estonia and 11 percentage points in Latvia, and between the capitals and other cities by 9 percentage points in both countries. In Lithuania, on the other hand, there is little difference between the effects of workplace and residence, suggesting that commuting is less important than in the two northern countries.

In Latvia, every 10 km of distance between a job location and Riga decreases the *ceteris paribus* wage by 1.1% – except if the job is in Ventspils (Table A3.14, which shows results for five alternative specifications of the earnings function. Only the Latvian data allow such estimations.) The effect of the distance from Riga is only slightly reduced if one controls for the local unemployment rate. Every 10

kilometers of *commuting* increased the wage by 2.5 to 3%.²¹ The positive effect of commuting appears to have been greater in the crisis year of 1999.

The local unemployment rate

The relationship between wages and local unemployment can be measured as an *elasticity*, typically found to be about -0.1 in OECD countries.²² Based on the data used here combined with unemployment at the job locations,²³ the wage elasticity in Estonia was -0.24 in 1999 and -0.15 in 2000, in Latvia -0.11 in 1999 and -0.05 in 2000. In Lithuania, by contrast, there was practically no connection between local unemployment and wages.

Expressed differently, the *ceteris paribus* wage differential associated with a 1 percentage point difference in the local unemployment rate in Estonia was -2.0 in 1999 and -1.1 in 2000, in Latvia -1.2 in 1999 and -0.5 in 2000 (Table A3.15). Probably, the higher figures in 1999 reflected the impact of the Russian crisis, which likely influenced both earnings and employment in the localities concerned. In 2000, by contrast, such regionally concentrated developments appear to have been less decisive for earnings.

Wages of professionals and technicians are less sensitive to local conditions than those of other groups.²⁴ In Latvia, the observation that working or living in Latgale results in a wage cut of 11 to 14% compared to small cities elsewhere (cf. Table A3.14) is consistent with the relatively high unemployment there. A further result concerning Latvia is that the predicted wage is reduced by 11% if a worker has been registered as unemployed in the past.

Ownership, economic sectors and firm size

Wage statistics based on enterprise surveys have recently showed around 20% higher wages in the *public sector* than in the private sector, although the difference appears to have disappeared in Estonia in 2000 (Table A3.16).²⁵ These results must be used with great caution for several reasons, including a likely under-reporting of wages paid informally (in "envelopes"), especially in the private sector.

²¹ The results vary within this range depending on the inclusion or exclusion of occupation, Latgale, distance from living place to Riga, and local unemployment rate. Significance at least at the 0.001 level.

²² Elasticities of around -0.1 have been found in for example the US, the UK, Italy, Switzerland, Norway, Canada and some developing countries. Somewhat different observations have concerned Australia (-0.19) and Korea (-0.04). See Blanchflower and Oswald (1996) and Blanchflower (2001). The latter paper (using data from the early or mid-1990s, with fewer control variables) reports a similar result for eastern Germany, but higher elasticities (-0.18 to -0.36) for Poland, Bulgaria, Hungary, Russia, and Estonia (-0.3 in 1995) and Latvia (-0.5 in 1995-96, using a smaller sample, less disaggregated regions and a less accurate unemployment measure than this study), and almost no elasticity in Slovenia. Blanchflower's prediction that these elasticities are likely to fall in the late transition seems consistent with the results of present study.

²³ ILO unemployment for Estonia, registered unemployment for Latvia

²⁴ Adamaite (2001) studied the wage curve in Latvia using regional average wages, but with no controls for personal characteristics.

²⁵ In Estonia, the changing wage relationship between public and private sectors appears to result from an increase of municipal employment in the public sector, and, in the private sector, a growth of relatively high-paying foreign-owned enterprises. Cf. NBB results, quoted elsewhere in this report.

However, LFS data also point to the existence of a public-sector wage premium. The estimates made here indicate a *ceteris paribus* wage gap of 5 to 10% in all three countries, depending on which of the background factors are controlled for.²⁶

Similarly, the often very wide gaps between average wages in different *economic sectors*, as found in official statistics, are largely "explained" by various background factors, notably occupation, education and job location. (See Table A3.17, which – like the preceding table – compares average wages according to enterprise surveys with *ceteris paribus* wages, predicted from LFS data.) Nevertheless, the ranking of most of the sectors remains similar. Notable exceptions are Public administration, for which the reported relative wages are much higher and than they would have been if the observed background factors were equal, and Hotels and restaurants for which the opposite holds.

Firm size, finally, accounted for a differential in *ceteris paribus* wages of approximately 10% in Latvia and Lithuania and as much as 18% in Estonia, comparing firms with under 10 employees with those with over 50 employees (Table A3.18). This size effect of the same order as in Poland.²⁷

²⁶ While LFS may not under-report of "envelope" wages as much as enterprise surveys, they probably under-represent high-income earners, found especially in the private sector.

²⁷ Estimates for Poland suggest a *ceteris paribus* pay disadvantage of 10 to 14% for firms with under 20 employees compared with those with over 100 employees.

Table A3.1 Female/male wage ratios
Percent

Year	Source	Estonia	Latvia	Lithuania	Czech Rep.	Poland
1997	Enterprise survey on occupations, gross wages	72.0	77.1	74.5	73	79
1998		74.2	78.1	76.9	70	81
1999		73.5	78.5	81.9	69	80
2000		75.4	78.3	81.3		
2000	LFS, net wages	76.4	81.5	84.4		

Notes: Hourly wages for Estonia, otherwise monthly wages. Sources: National statistical offices and (for LFS) authors' calculations. The Czech Republic and Poland – Laxton (2001).

Table A3.2 Female-male gross wage ratio by occupation

Occupational group	Country	1997	1998	1999	2000
Legislators, senior officials and managers	Estonia	74.1	73.5	74.8	76.5
	Latvia	77.6	79.9	77.9	77.0
	Lithuania	73.7	70.2	79.3	n.a.
Professionals	Estonia	72.9	80.4	73.9	71.1
	Latvia	78.5	81.2	77.1	81.3
	Lithuania	69.2	74.1	77.9	n.a.
Technicians and associate professionals	Estonia	70.0	70.6	68.2	70.7
	Latvia	68.2	72.5	74.5	75.9
	Lithuania	74.0	75.7	81.7	n.a.
Clerks	Estonia	90.2	81.8	80.7	78.3
	Latvia	84.7	84.1	83.9	83.1
	Lithuania	78.4	78.1	82.3	n.a.
Service workers, shop and market sales workers	Estonia	63.2	64.0	63.4	68.4
	Latvia	66.7	67.8	69.4	64.6
	Lithuania	n.a.	n.a.	n.a.	n.a.
Skilled agricultural and fishery workers	Estonia	80.4	91.3	81.1	91.4
	Latvia	69.5	73.0	73.0	71.6
	Lithuania	86.4	89.0	91.3	n.a.
Craft and related trades workers	Estonia	74.3	76.9	78.5	84.1
	Latvia	88.4	84.6	80.8	80.5
	Lithuania	93.1	86.8	88.7	n.a.
Plant and machine operators and assemblers	Estonia	85.5	87.2	88.0	90.6
	Latvia	104.5	106.8	98.6	98.7
	Lithuania	84.6	83.4	82.6	n.a.
Elementary occupations	Estonia	75.6	74.9	71.1	74.6
	Latvia	76.0	71.4	75.9	75.0
	Lithuania	81.7	79.0	78.9	n.a.

Sources: Hourly earnings surveys.

Table A3.3 *Ceteris paribus* relative wages by main occupation

Occupations (major ISCO groups)	Estonia	Latvia	Lithuania	Poland
Legislators and senior officials		211	193	
Corporate managers	180 ^a	199	170	156 ^a
Managers of small enterprises		155	142	
Professionals	174	165	154	133
Technicians and associate professionals	145	147	139	126
Clerks	124	132	133	117
Service workers, shop and market sales workers	105	106	112	105
Skilled agricultural and fishery workers	134	113	123	n.a.
Craft and related trades workers	118	122	119	107
Plant and machine operators and assemblers	118	118	123	113
Elementary occupations	100	100	100	100

Notes: Education, age, gender, ethnicity, economic sector, job location were controlled for. Numbers are not comparable across columns.

^a Legislators, senior officials and all kinds of managers.

Sources: LFS data, for Latvia also earnings survey; authors' calculations. For Poland: calculations based on Newell (2001), Table 9.

Table A3.4 Male-female differentials in gross wages and in possible explanatory factors

	Gross wage differential	Explained gender pay gap (without occupation controls ^a)	Explained gender pay gap (with occupation controls)
Estonia	24	3	5
Latvia	19	7	10
Lithuania	14	-1	0

Notes: Wage differentials were calculated, following a conventional decomposition method, as $\exp(d)-1$, where d is the difference between mean log net monthly wages of males and females. Note that the ratios in Table A3.1, in contrast, refer to (arithmetic) mean wages. Outliers and influential observations were removed from the samples when estimating earning functions. The explained gender pay gap, sometimes called the productivity differential, refers to (geometric) mean predicted wages of males and females, using earnings functions estimated over pooled sample.

^aEconomic sector is controlled for.

Sources: Calculations based on LFS, for LV also enterprise census data.

Table A3.5 Unexplained gender wage gap in the Baltic States (1999-2000),

Various countries, 1992-1996

Percent

Model	Base ^a	Year ^b	EE	LV	LT	PL 96	CZ 92	SK 92	HU 92	BG 95	YU 96	RU 96	UA 96	UZ 95
1	M	1999	28	13		22	36	39	28	38	14	35	28	25
	F	1999	29	12		26	38	36	28	36	15	26	22	30
	P	1999	23	10		35	27	30	18					
	M	2000	28	14	19									
	F	2000	24	14	16									
	P	2000	21	11	15									
2	M	1999	27	17						25	14	34	20	30
	F	1999	27	16						34	16	21	17	30
	P	1999	18	12		17	16	19	9					
	M	2000	28	16	22									
	F	2000	26	17	14									
	P	2000	18	9	14									
3	M	1999	26	18										
	F	1999	26	17										
	P	1999	17	13										
	M	2000	27	14	23									
	F	2000	26	15	14									
	P	2000	17	10	14									

Notes: Monthly wages except for Poland (1996), Bulgaria, Yugoslavia, Russia and Ukraine, where hourly wages were used. Monthly wages exaggerate discrimination if men work longer hours. Brainerd (2000) and Newell and Reilly (2001) show that the evolution of the gender gap has been slow in most transition countries, so the comparisons with 1995-96 and earlier should have some relevance.

Controls in Model 1: education, age, ethnicity, sector of economic activity, ownership, region.

Controls in Model 2: same as Model 1 plus occupation.

Controls in Model 3: same as Model 2 plus tenure and firm size (EE, LT), new entrant (EE, LV).

^a Earnings function assuming non-discriminatory wages. M = male, F = female, P = pooled.

^b Only for EE, LV, LT.

Sources: EE, LV, LT: LFS data and authors' calculations. PL, CZ, SK, HU with pooled base: Pailhé (2000); PL, CZ, SK, HU, BG, YU, RU, UA, UZ with male and female base quoted from Newell and Reilly (2001).

Table A3.6 *Ceteris paribus* female – male wage ratios

Various countries

Percent

Baltic States	Wage Ratio	Central and Eastern Europe	Wage Ratio	Former SU	Wage Ratio	OECD Countries	Wage ratio
Occupation controls included				Occupation controls included			
Estonia	79	Bulgaria	78	Kazakhstan	76	UK	61
Lithuania	84	Hungary	81	Uzbekistan	77	Canada	68
Latvia	86	Poland	84	Russia	79	US	70
		Yugoslavia	87	Ukraine	82	Ireland	74
Occupation controls not included						Germany	82
Estonia/private	82	Czech R./private	77			Netherlands	83
Estonia/public	76	Czech R./public	86				
Lithuania/private	84	Slovakia./private	82				
Lithuania/public	85	Slovakia/public	93				
Latvia/private	86						
Latvia/public	91						

Notes: Economic sector was controlled for. All ratios are significantly different from 1 at 0.01 confidence level.

Sources: LFS and authors' calculations. Hungary (1992): Pailhé (2000); Bulgaria (1995), Poland (1996), Yugoslavia (1996): Newell and Reilly (2001); Czech R. and Slovakia (1998): Juraida (2001). Former SU: Newell and Reilly (2001); UK (1983-89), Canada (1986), Ireland (1988-99), West Germany (1986-91), Netherlands (1987-90): Blanchflower and Oswald (1996); US (1990): Hellerstein et al (1999).

Table A3.7 "Dissimilarity index" for 2000: Occupational and sectoral segregation of full-time employees by gender and ethnicity

Segregation	Estonia	Latvia ^a	Latvia ^b	Lithuania
Genders by occupation	0.41	0.38	0.41	0.35
Genders by economic sector	0.31	0.31	0.35	0.29
Ethnic groups by occupation	0.15	0.11	0.11	0.29
Ethnic groups by economic sector	0.26	0.21	0.22	0.14

Notes: The *dissimilarity index* is a number between 0 and 1, with 0 indicating equal distribution between occupations and 1 indicating complete segregation. It shows the minimal proportion of females that would have to change occupations to make the distribution equal (assuming that all men stay where they are). Main occupation groups according to ISCO 88, sectors according to NACE (A, B,...,O).

^a Full-time employees in the LFS sample (5 750).

^b A sub-sample used to estimate earning functions (3 960 persons whose wages could be imputed from enterprise survey data).

Sources: Calculations based on LFS.

**Table A3.8 "Dissimilarity index": Occupational segregation of employees by gender
Various countries 1997 – 2000**

	Whole economy				Public sector				Private sector			
	1997	1998	1999	2000	1997	1998	1999	2000	1997	1998	1999	2000
<i>EE</i>	0.432	0.423	0.411	0.408	0.439	0.442	0.426	0.410	0.373	0.370	0.366	0.364
<i>LV</i>	0.405	0.407	0.407	0.409	n.a.	n.a.	n.a.	0.385	n.a.	n.a.	n.a.	0.382
<i>LT</i>	0.335	0.339	0.312	n.a.	0.376	0.361	0.328	n.a.	0.208	0.231	0.232	n.a.
<i>PL</i>	n.a.	n.a.	n.a.	n.a.	0.468	0.458	0.465	n.a.	0.362	0.345	0.342	n.a.
<i>CZ</i>	0.340	0.340	0.375	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<i>HU</i>	0.390	0.380	0.390	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Note: Main occupation groups.

Sources: Calculations based on official statistics (enterprise census results for LV and LT, LFS for EE); Laxton (2001) for Poland, Czech Republic and Hungary.

Table A3.9 Ethnic segregation by economic sector

	Estonia	Latvia	Lithuania
Sectors where minorities are under-represented	Public administration		
	Education		
	Agriculture		
	Finance		Finance
Sectors where minorities are over-represented	Transport, storage and communications		
	Manufacturing		
	Energy		Energy

Notes: Sectors in bold pay significantly above-average wages, the other sectors paying below average (see Table A3.17 for details).

Sources: Calculations based on LFS data for 2000.

Table A3.10 Ethnic differentials in gross wages and in possible explanatory factors
Per cent wage difference between majority and minority employees in 2000

	Gross wage differential	Explained ethnic pay gap (without occupation controls ^a)	Explained ethnic pay gap (with occupation controls)
Estonia	12.2	-4.6	-0.4
Latvia	4.7	-2.0	0.0
Lithuania	8.7	1.8	5.2

Notes. The wage differentials are based on mean log wages. Outliers and influential observations were removed from the samples when estimating earning functions. The *explained pay gap*, sometimes called *productivity differentials*, refer to the (geometric) means of predicted majority and minority wages, using an earning function estimated over a pooled sample.

^aEconomic sector is controlled for.

Table A3.11 **Unexplained ethnic wage gap**

Percent

Controls	Non-discriminatory wage structure based on observed averages for:	Year	EE	LV	LT
Model 1: Education, age, gender, economic sector, ownership, regional unemployment rate, region (capital, capital district, port city, rural).	All employees	1999	18.6	6.3	
	Native	1999	24.0	7.3	
	Minority	1999	17.8	6.5	
	All employees	2000	17.6	7.2	6.8
	Native	2000	22.3	9.1	10.5
	Minority	2000	21.7	6.8	1.8
Model 2: Same as Model 1, plus occupation	All employees	1999	13.4	4.0	
	Native	1999	16.7	4.9	
	Minority	1999	12.4	3.7	
	All employees	2000	12.6	4.8	3.8
	Native	2000	15.9	6.4	6.7
	Minority	2000	15.4	4.2	-0.7
Model 3: Same as Model 2, plus tenure, firm size (EE, LT), and new entrants (EE, LV)	All employees	1999	14.2	4.5	
	Native	1999	18.0	4.7	
	Minority	1999	13.6	3.5	
	All employees	2000	14.7	5.3	3.8
	Native	2000	19.3	6.1	6.5
	Minority	2000	15.7	4.0	-1.1

Note: Net monthly wages.

Sources: Calculations based on LFS, for Latvia also enterprise census.

Table A3.12 *Ceteris paribus* wage differentials by ethnicity

Wage ratio (per cent) between minority and majority employees
Baltic States (2000), Romania (1994), Slovenia (1992), US (1990)

Occupation control	Baltic States	Wage ratio	Other country	Wage ratio
No	Estonia	81***	Slovenia (males)	100
	Latvia	92***	Slovenia (females)	98
	Lithuania	92***	Romania (males)	93*
			Romania (females)	98
Yes	Estonia	85***		
	Latvia	94***	US	93-95**
	Lithuania	95**		

Notes: Economic sector and occupation were held constant. "Minority" refers to all non-majority ethnic groups except for Romania (Hungarian) and the United States (Black).

*** (**, *) Ratio significantly different from 1 at 0.001 (0.01, 0.05) level.

Sources: Calculations based on LFS, Paternostro and Sahn (1999), Orazem and Vodopivec (2000), Hellerstein et al (1999), Francois and van Ours (2000).

Table A3.13 *Ceteris paribus* urban-rural wage differentials and effects of commuting, 1999-2000

	Type of wage ratio	Estonia		Latvia		Lithuania		Year
		Working place	Living place	Working place	Living place	Working place	Living place	
Model 1 (without occupation controls)	Capital city/ Small Cities ^a	1.260	1.181	1.207	1.103			1999
		1.233	1.136	1.227	1.151	1.120	1.093	2000
	Rural/ Small Cities	0.910	0.911	0.902	0.853			1999
		0.891	0.933	0.923	0.913	0.928	0.909	2000
	Capital city/ Rural	1.390	1.296	1.338	1.294			1999
		1.380	1.220	1.330	1.260	1.207	1.203	2000
Model 2 (with occupation controls)	Capital city/ Small Cities	1.250	1.180	1.198	1.101			1999
		1.210	1.117	1.227	1.140	1.103	1.083	2000
		0.920	0.932	0.911	0.892			1999
	Rural/Small Cities	0.910	0.948	0.927	0.943	0.922	0.930	2000
			1.354	1.267	1.315	1.235		
	Capital/Rural	1.340	1.180	1.323	1.210	1.196	1.164	2000

Notes: Other things including economic sector being equal. Locations distinguished: Capital, Capital district, Kaunas, Port city (Ventspils and Klaipeda), Rural.

^a Small cities cover all urban areas excluding: Tallinn; Riga, urban areas in Riga district, Ventspils; Vilnius, urban areas in Vilnius county, Kaunas, Klaipeda.

Sources: Calculations based on LFS, for Latvia also enterprise census data.

Table A3.14 *Ceteris paribus* regional wage differentials and effects of commuting in Latvia, 2000 (alternative specifications)

Percent

	By job location					By living place				
Riga (capital city)	16	13	25	23	22	14	17	10	17	19
Ventspils (port city)	37	37	27	26	24	19	23	38	23	27
Rural	-8	-6	-8	-6	-7	-6	-5	-8	-7	-6
Latgale (Eastern Latvia)			-11	-11		-11	-14			-13
Distance to Riga (per 10 km)	-1.2	-1.2						-1.4		
Commuting (per 10 km)								2.9	2.5	2.8
Unemployment control ^a	no	no	no	no	yes	yes	no	no	yes	no
Occupation controls	no	yes	no	yes	yes	yes	yes	yes	yes	yes

Notes: Education, age, gender, ethnicity and economic sector are controlled for.

Excluded categories: cities outside Riga district other than Riga and Ventspils, and – for specifications with the variable Latgale – cities outside Latgale.

All differentials are significant at 0.001 level except for Rural, which is significant at 0.01 level. Variable Riga district is included in all models but its effect is not shown.

^a Registered unemployment rate at the job location.

Sources: Calculations based on LFS and enterprise census data.

Table A3.15 *Ceteris paribus* wage differentials and local unemployment

Wage differentials (per cent) with a 1 percentage point difference in local unemployment rates
Percent

Year	Estonia			Latvia		
	all	men	women	All	men	women
1999	-2.0	-2.3	-1.7	-1.2	-2.0	-0.7
2000	-1.1	-1.5	-0.7	-0.5	-1.0	-0.3

Notes: Economic sector and occupation were held constant. All differentials are significantly different from zero at 0.001 level. Estonia: 15 counties, LFS unemployment. Latvia: 7 cities and 26 districts, registered unemployment (which had higher explanatory power than LFS unemployment).

Sources: Calculations based on LFS; for Latvia also enterprise census and official unemployment data.

Table A3.16 Public-private sector wage ratio

Percent

	Gross wage ratio (earnings surveys)				<i>Ceteris paribus</i> net wage ratio (LFS)					
	1997	1998	1999	2000	1999 ^a	1999 ^b	1999 ^c	2000 ^a	2000 ^b	2000 ^c
Estonia	119	115	113	99	109	107	104	113	112	108
Latvia	112	114	122	124	107	107	107	109	108	107
Lithuania	120	123	122	119	n. a.	n. a.	n. a.	110	108	105

^a Education, age, gender, ethnicity, sector of economic activity, job location were controlled for.

^b Occupation controlled for.

^c Tenure and firm size (EE, LT), new entrant (LV) controlled for.

Sources: Calculations based on official wage statistics and LFS.

Table A3.17 Relative wages by sector, 2000

Manufacturing = 100

Average and *ceteris paribus* (c.p.)

Sector	Estonia		Latvia		Lithuania	
	Average	C.p.	Average	C.p.	Average	C.p.
Financial intermediation	229	135	272	174	208	126
Electricity, gas and water	125	113	168	115	141	120
Construction	92	99	95	104	96	103
Public administration	132	91	140	102	155	109
Real estate and business services	104	86	121	101	132	94
Manufacturing	100	100	100	100	100	100
Transport, storage and communications	127	109	137	95	113	106
Hotels and restaurants	64	94	61	86	60	103
Mining and quarrying	124	141	109	81	128	109
Fishing	74	85	62	81	58	90
Other services	88	83	91	81	87	90
Commerce	99	93	73	81	82	96
Agriculture	69	77	82	80	67	76
Health and social work	92	78	88	77	85	92
Education	88	78	96	72	96	93

Notes: Education, age, gender, ethnicity, occupation, job location are controlled for.

Sources: For average wages: official wage statistics based on earning surveys. For *ceteris paribus* wage differentials: LFS.

Table A3.18 *Ceteris paribus* relative wages by firm size, 2000

Large firms' wages = 100

Size	Estonia					Lithuania				
	Number of employees	By gender		By sector		all	By gender		By sector	
all		males	females	public	private		males	females	public	private
1 – 9	82	84	82	90	79	91	86	92	89	89
10 – 19	90	89	91	93	87	90	85	89	93	86
20 – 49	92	92	92	95	90	96	91	98	99	92
≥ 50	100	100	100	100	100	100	100	100	100	100

Notes: Education, age, gender, ethnicity, occupation, economic activity, job location were controlled for.

Sources: LFS and authors' calculations.

Table A3.19 Estimated earnings functions for full-time employees, 2000.

Males and females together

	Model 1			Model 2			Model 3		
	EE	LV	LT	EE	LV	LT	EE	LV	LT
<i>Education (vs. less than secondary)</i>									
Higher	.572***	.507***	.590***	.279***	.210***	.346***	.276***	.208***	.354***
Secondary	.175***	.122***	.126***	.088***	.052**	.060**	.077***	.049*	.067***
Female	-.229***	-.145***	-.170***	-.237***	-.149***	-.178***	-.235***	-.149***	-.183***
Ethnic minority	-.215***	-.085***	-.088***	-.162***	-.057***	-.051*	-.175***	-.054***	-.048*
Age	.018***	.009*	.010*	.016***	.009**	.008*	.008	.008*	.004
Age squared (x 100)	.027***	-.014**	-.013**	-.024***	-.013***	-.011*	-.018**	-.012**	-.009*
<i>Marital status^a (vs. Married)</i>									
Single							-.036		-.043*
Divorced or Widowed							-.000		.007
New entrant ^b							-.203**	-.105*	n.a.
Tenure ^c							.005***	n.a.	.003***
Previously registered as unemployed	n.a.	-.119***	n.a.	n.a.	-.074***	n.a.	n.a.	-.074***	n.a.
Temporary or seasonal job	n.a.	-.151***	-.126***	n.a.	-.101***	-.082*	n.a.	-.101***	-.042
<i>Occupation (vs. Elementary)</i>									
Legislators; senior officials ^d				.586***	.746***	.594***	.573***	.745***	.640***
Corporate managers				.586***	.688***	.497***	.573***	.682***	.503***
Managers of small enterprises ^e				.586***	.436***	.291***	.573***	.440***	.311***
Professionals				.554***	.503***	.410***	.527***	.499***	.401***
Technicians etc.				.372**	.383***	.305***	.364***	.383***	.299***
Clerks				.212***	.274***	.246***	.199***	.275***	.237***
Service and sales workers				.045	.058**	.103***	.057	.055*	.098***
Skilled farm, fishery workers				.293***	.123*	.208***	.306***	.118*	.218***
Craft and related workers				.166***	.197***	.151***	.159***	.194***	.144***
Plant, machine op., assembly				.165***	.164***	.185***	.149***	.158***	.170***
Public sector	.122***	.084**	.108***	.111***	.074**	.078***	.075***	.067**	.051*

(continued on the next page)

Table A3.19 (continued) **Estimated earnings functions for full-time employees, 2000**

	Model 1			Model 2			Model 3		
	EE	LV	LT	EE	LV	LT	EE	LV	LT
<i>Economic sector (vs. Other community, social and personal services)</i>									
Agriculture, hunting and forestry	-.052	-.067	-.015	-.101*	-.072	-.021	-.168**	-.075	-.067
Fishing ^f	.077	.151*		.030			.002		
Mining and quarrying ^g	.538***		.155*	.537***		.192**	.421***		.176*
Manufacturing	.183***	.211***	.121**	.192***	.207***	.107**	.125***	.195***	.069*
Electricity, gas and water supply	.331***	.339***	.306***	.312***	.347***	.286***	.262***	.344***	.246***
Construction	.195***	.248***	.149***	.181***	.248***	.133**	.144**	.240***	.108**
Wholesale and retail trade etc.	.066	-.051	.075*	.119**	-.007	.062	.125**	-.012	.069*
Hotels and restaurants	.001	-.059	.108*	.126*	.053	.138*	.127*	.045	.160**
Transport, communication	.288***	.154***	.195***	.280***	.160***	.165***	.247***	.160***	.144***
Financial intermediation	.595***	.817***	.344***	.492***	.760***	.339***	.510***	.751***	.332***
Real estate, renting, business	.092	.229***	.042	.039	.216***	.040	.032	.212***	.036
Public administration and defence	.171**	.265***	.216***	.099*	.225***	.191***	.100*	.223***	.185***
Education	.018	-.088*	.038	-.054	-.120***	.030	-.078	-.123***	.015
Health and social work	-.012	-.007	.040	-.053	-.055	.021	-.076	-.059	-.009
<i>Job location (vs. other cities)</i>									
Capital city	.209***	.205***	.113***	.191***	.205***	.098***	.197***	.206***	.101***
Capital district (without city)		.159**	-.075*		.148**	-.088**		.151***	-.087**
Port city (Ventspils, Klaipeda)		.139*	.162***		.137**	.156***		.136**	.149***
Kaunas			.052*			.060**			.062**
Rural area	-.115***	-.08***	-.075**	-.098***	-.076***	-.080***	-.057**	-.081***	-.058**
Regional unemployment rate ^a	-.010***	-.01***		-.011***	-.005***		-.012***	-.005***	
<i>Firm size (vs. over 50 workers)</i>									
Less than 10 workers							-.194***		-.098***
10 to 19 workers							-.106***		-.109***
20 to 49 workers							-.081***		-.038*
(Constant)	7.497***	4.27***	5.929***	7.398***	4.104***	5.878***	7.728***	4.133***	6.007***
Number of observations	2678	3620	2440	2670	3581	2400	2627	3563	2400
R square	.307	.459	.405	.391	.568	.499	.413	.575	.513

Table A3.20 Estimated earnings functions for full-time employees, 2000.
Males and females separately

	Estonia		Latvia		Lithuania	
	Males	Females	Males	Females	Males	Females
<i>Education</i>						
(vs. less than secondary)						
Higher	.290***	.261***	.182***	.203***	.353***	.310***
Secondary	.100**	.062*	.071**	.000	.060*	.049
Ethnic minority	-.165***	-.162***	-.043*	-.036*	-.061*	-.037
Age	.024**	.009	.003	.013**	.010*	.008*
Age squared (x 100)	-.035***	-.015**	-.007	-.016**	-.014*	-.011*
Has previously been registered as unemployed	n.a.	n.a.	-.089***	-.060***	n.a.	n.a.
Temporary or seasonal job	n.a.	n.a.	-.141***	-.101**	-.091*	-.058
<i>Occupation (vs. Elementary occupations)</i>						
Legislators and senior officials ^e	.532***	.643***	.801***	.703***	.599***	-
Corporate managers	.532***	.643***	.597***	.825***	.473***	.538***
Managers of small enterprises ^e	.532***	.643***	.359***	.600***	.333***	.232**
Professionals	.449***	.621***	.506***	.534***	.419***	.418***
Technicians and associate professionals	.283***	.442***	.336***	.440***	.29***	.332***
Clerks	.291**	.230***	.207***	.323***	.315***	.236***
Service, shop and market sales workers	.055	.080*	.034	.092***	.192***	.050
Skilled agricultural and fishery workers	.186*	.289***	.210*	.148*	.221***	.152
Craft and related trades workers	.125**	.191***	.170***	.185***	.125***	.214***
Plant and machine operators and assemblers	.132**	.187***	.137***	.190**	.17***	.265***
Public sector	.201***	.033	.100**	.006	.081**	.07*
<i>Economic sector (vs. Other community, social and personal service activities)</i>						
Agriculture, hunting and forestry	-.132	-.038	-.075	-.106	.009	-.006
Fishing ^f	.158	-.216	-.140			
Mining and quarrying ^g	.603***	.193			.333***	.121*
Manufacturing	.198**	.179**	.145**	.265***	.122**	.071
Electricity, gas and water supply	.308**	.285***	.267***	.439***	.347***	.215***

(continued on the next page)

Table A3.20 (continued). **Estimated earnings functions for full-time employees, 2000.**

	Estonia		Latvia		Lithuania	
	Males	Females	Males	Females	Males	Females
Construction	.207**	.190*	.183***	.103	.153**	.331*
Commerce	.195**	.040	-.020	-.009	.074	.070
Hotels and restaurants	.151	.078	.051	.035	.180*	.134*
Transport, storage and communication	.312***	.215***	.090	.274***	.204***	.104
Financial intermediation	.904***	.221**	.763***	.675***	.400***	.231**
Real estate, renting and business activities	.100	-.028	.222***	.260***	.023	.071
Public administration, defence, social security	.076	.085	.172**	.299***	.163**	.223***
Education	-.066	-.051	-.214***	-.055	.002	.037
Health and social work	-.128	-.046	.011	-.006	.134	-.002
<i>Job location (vs. other cities)</i>						
Capital city (Tallin (EE); Riga (LV); Vilnius(LT))	.154***	.217***	.194***	.183***	.127***	.068*
Capital district (without capital city)			.135*	.133*	-.077*	-.094**
Port city (Ventspils(LV); Klaipeda(LT))			.342***	.041	.189***	.115**
Kaunas					.103**	.027
Rural area	-.112**	-.082**	-.147***		-.101**	-.053*
Regional unemployment rate ^a	-.015***	-.007**	-.010***	-.003*		
(Constant)	7.313***	7.249***	4.331***	3.818***	5.810***	5.717***
Number of observations	1279	1391	1699	1835	1153	1247
R squared	.326	.440	.501	.661	.477	.524

Notes: Dependent variable: logarithm of monthly earnings. Method: Survey linear regression with White's heteroskedastic standard errors.

Variables significant at 0.1 (respectively, 0.01, 0.001) level are denoted by *, **, ***. Outliers and influential observations removed for each model.

^a *Marital status* variables for Latvia and Estonia and *Regional unemployment rate* for Lithuania are not significant; controlling for them does not change the results substantially but makes the estimates less accurate.

^b New entrant=less than one year's experience.

^c Number of years with current employer (Estonia); number of years with current employer or in current activity (Lithuania).

^{d, e} These occupations were merged with corporate managers in Estonia.

^f Too few respondents in *Fishing* for Latvia and Lithuania.

^g Too few respondents in *Mining* for Latvia.

Sources: Calculations based on LFS (January for Estonia, May for Latvia and Lithuania) and (in Latvia) wage imputation from the survey on occupations.

Table A3.21 Full-time employees by gender, ethnicity, education, experience, hours worked and occupation, 2000
Percent distribution (except for experience, tenure and hours)

	Estonia				Latvia				Lithuania					
	Men	Women	Estonia- nians	Minorities	All	Men	Women	Lat- vian	Minorities	All	Men	Women	Lithua- nians	Minorities
<i>Education</i>														
Higher	17.1	14.4	19.6	17.5	16.1	22.0	18.5	22.2	21.8	24.7	21.0	25.8	26.4	16.4
Secondary 2 ^a						38.1	37.5	37.2	39.2	44.7	44.7	38.7	45.0	43.7
Secondary 1 ^b						26.2	25.9	26.2	26.2	18.2	17.5	26.5	16.8	25.3
Secondary ^c	63.2	59.4	66.8	61.6	67.2	64.1	63.7	63.5	65.0	63.0	62.2	64.5	61.8	69.0
Vocational						4.1	6.1	4.1	4.1	5.3	8.3	2.0	5.2	6.1
Basic or less						9.6	12.0	10.3	8.7	7.0	8.4	7.0	6.7	8.5
Less than sec. ^d	19.7	26.3	13.6	20.9	16.7	13.7	18.0	14.4	12.8	12.3	16.8	9.0	11.9	14.6
Female	52.0	0.0	100.0	52.5	51.0	48.2	0.0	47.9	48.6	49.1	0.0	100.0	49.2	48.5
Minority	29.4	30.1	28.8	0.0	100	42.9	42.6	0.0	100	15.6	15.7	43.3	0.0	100
Experience, yrs ^{ef}	22.2	21.7	22.7	22.2	22.2	19.4	18.9	19.0	19.4	18.3	18.3	20.0	18.3	18.6
Tenure, years ^e	6.8	6.1	7.5	6.5	7.7	n. a.	n. a.	n. a.	n. a.	8.1	7.2	n. a.	8.1	7.9
Hours worked ^e	43.5	44.5	42.5	44.0	42.1	42.7	44.0	42.3	43.2	40.7	41.5	41.4	40.6	41
<i>Occupation</i>														
Officials, managers	9.6	11.7	7.7	10.8	6.9	8.4	9.6	9.6	6.8	9.2	11.3	7.1	11.9	3.1
Professionals	14.0	6.8	20.5	15.9	9.4	12.0	7.4	13.7	9.6	16.9	9.3	16.8	10.5	11.4
Technicians	11.9	7.4	16.1	12.7	10.2	15.7	11.6	16.3	14.9	9.5	6.4	20.1	18.1	10.0
Clerks	5.1	2.6	7.5	4.9	5.7	5.4	1.9	5.9	4.7	6.8	3.2	9.0	9.4	6.1
Service, sales work	12.2	5.5	18.4	12.8	10.9	15.1	8.8	14.3	16.1	12.1	8.5	21.8	7.0	12.4
Farmers, fishers	3.0	2.9	3.0	3.7	1.3	1.5	1.4	1.8	1.1	1.6	1.5	1.6	1.7	1.3
Skilled manual	17.1	28.3	6.8	15.3	21.3	16.1	24.2	13.5	19.5	19.3	27.0	7.4	11.9	24.7
Semiskilled etc.	16.3	25.1	8.1	14.2	21.2	12.5	20.5	12.6	12.4	12.0	21.1	3.9	18.2	15.3
Elementary occ.	10.9	9.7	12.0	9.9	13.2	13.5	14.6	12.4	15.1	12.6	11.7	12.4	11.3	15.7

^a Secondary special or secondary technical. ^b Secondary comprehensive.

^c Secondary 1+2. ^d Vocational after basic, basic or less.

^e Mean value in survey week. ^f 1999 data for Lithuania.

Sources: Calculations based on LFS.

Table A3.22 Full-time employees by gender, ethnicity, enterprise ownership, economic sector, job type and location, 2000
Percent distribution

Job location	Estonia				Latvia				Lithuania						
	All	Men	Women	Estonsians	Mino- rities	All	Men	Women	Latvians	Mino- rities	All	Men	Women	Lithua- nians	Mino- rities
	Capital city	36.8	35.8	37.9	29.8	53.5	39.5	38.6	40.5	31.2	50.5	21.4	20.9	21.9	16.4
Port city ^a						1.9	2.2	1.6	1.8	1.9	7.9	8.1	7.6	7.2	11.3
Rural areas	20.4	22.4	18.2	25.8	7.3	21.7	23.5	19.8	29.7	11.1	23.4	25.5	21.5	23.7	21.9
Temporary or seasonal work	n.a.	n.a.	n.a.	n.a.	n.a.	5.2	6.7	3.5	4.2	6.4	3.4	4.6	2.4	3.4	3.8
Public sector	34.0	25.3	42.2	33.7	34.9	42.8	35.4	50.7	48.9	34.7	42.9	34.5	51.9	42.8	43.6
<i>Economic sector</i>															
Agriculture	7.6	9.6	5.7	9.7	2.7	4.9	6.5	3.1	6.7	2.5	5.2	7.4	3.2	5.6	3.3
Fishing	0.5	0.9	0.1	0.4	0.8	0.3	0.3	0.2	0.3	0.2	0.2	0.3	0.0	0.1	0.5
Mining	1.4	2.3	0.6	0.4	3.9	0.2	0.4	0.0	0.2	0.1	0.4	0.4	0.4	0.4	0.5
Manufacturing	24.4	27.3	21.8	20.6	33.7	21.5	23.3	19.5	18.4	25.6	22.8	23.7	21.9	22.4	24.6
Energy, gas, water	3.1	4.1	2.1	2.2	5.1	2.6	3.4	1.6	2.8	2.2	3.3	4.3	2.2	3.0	4.6
Construction	6.2	11.7	1.2	6.5	5.6	6.2	11.0	1.0	5.4	7.3	6.1	11.5	1.0	6.1	6.6
Trade	12.1	9.8	14.2	13.0	9.9	15.7	12.7	19.0	14.3	17.7	14.4	13.3	15.4	14.8	12.2
Hotels, restaurants	2.5	1.0	3.8	2.8	1.8	2.7	1.4	4.1	2.5	3.1	2.0	1.4	2.6	2.0	2.0
Transport, comm..	9.8	13.3	6.6	8.1	13.9	9.8	13.6	5.7	6.9	13.7	8.3	11.0	5.8	6.7	16.2
Financial intermed.	1.0	0.8	1.2	1.2	0.6	5.1	5.4	4.9	4.9	5.5	1.1	1.1	1.2	1.3	0.3
Real estate etc.	4.9	5.1	4.8	5.1	4.4	1.5	1.1	1.8	1.7	1.2	3.1	3.7	2.7	3.2	2.7
Public adm.	6.8	6.2	7.2	8.4	2.8	9.3	10.5	7.9	12.1	5.5	6.9	8.6	5.3	7.4	4.8
Education	9.6	3.0	15.8	10.7	7.1	10.0	4.3	16.2	12.3	7.0	14.3	7.2	21.1	14.7	12.6
Health, social work	5.6	1.4	9.4	5.7	5.2	5.8	1.4	10.5	6.4	5.0	8.0	2.1	13.6	8.5	5.7
Other services	4.6	3.7	5.5	5.4	2.5	4.4	4.5	4.3	5.1	3.5	3.7	4.0	4.1	3.8	3.5

^a Ventspils (Latvia), Klaipeda (Lithuania).

Source: Calculations based on LFS.

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