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## RETURNS TO EDUCATION IN THE BALTIC COUNTRIES

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# RETURNS TO EDUCATION IN THE BALTIC COUNTRIES

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Labour Force Survey (2000) data are used to estimate returns to education in Estonia, Latvia and Lithuania. Results are compared with evidence from other countries. We also discuss gender, ethnic, and urban-rural gaps in payoff to education.

## NON-TECHNICAL SUMMARY

What are the returns to education in Estonia, Latvia and Lithuania? The author estimates skills wage differentials in Estonia, Latvia and Lithuania and compares the results with evidence from other countries. Major findings are:

- the stock of human capital in Baltic states is rather high
- employees with higher education earned on average 69 to 80% more than those with basic or less education in 2000
- most of this differential is due to the premium paid for higher versus secondary education, the lowest return in Latvia and the highest in Lithuania
- the premium associated with secondary relative to basic education is much smaller, ranging from 13–14% for Latvia and Lithuania to 19% for Estonia
- in all three countries, but especially in Latvia, returns to education are larger for women than for men
- after controlling for occupation in Estonia and Lithuania the extra benefit of higher education for women comes via access to higher positions rather than via larger wage premiums within occupational groups
- the above is true for secondary education in all three countries
- returns to secondary education in the Baltics are much lower than in the developed market economies and other Central European countries
- by contrast, returns to higher education in the Baltic countries (especially in Lithuania) seem to be high by international standards
- disaggregating by gender, the standard finding of larger returns for women compared to men is more pronounced in Estonia and Latvia than in the Czech Republic and Hungary; the gender difference is less pronounced in Lithuania
- minority employees gain from higher education much less than ethnic Estonians, while in Latvia and Lithuania the ethnic gap in returns to higher education is small and statistically not significant
- wages in Estonian rural areas are uniformly lower than in cities, while in Latvia and Lithuania wages of well educated employees are relatively less affected by rural-urban disparities.

To sum up, Baltic countries feature a combination of unusually low returns to secondary education with rather high marginal payoff to higher education. Positive female-male differences in returns to higher education and negative minority-majority differences suggest that education is more likely to be effective in reducing consequences of gender segregation than ethnic segregation. The gender gap in returns is the largest in Latvia, while the ethnic gap is significant only in Estonia.

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\* Part of the results presented in this paper were obtained while working (with John Earle and Raul Eamets) on the background paper for OECD (2003) publication “Labour Market and Social Policies in the Baltic Countries.”

**Introduction.** Much of the interest in the performance of transition economies has focused around changes in returns to human capital (see Svejnar, 1999, for a survey). In this paper we focus on returns to education in terms of earnings in the three Baltic countries after the first decade of transition. Recent literature about earnings functions in transition economies includes Kroncke and Smith (1999, 2002), Reilly (1999), Brainerd (2000), Orazem and Vodopivec (2000), Pailhé (2000), Munich et al (2000), and Newell and Reilly (2001), which mostly use data from early transition years, or at best 1995-96. Juraida (2000), Newell (2001), Vecernik (2001) reach to 1997 or 1998 data. Baltic data from 1997-98 are analysed by Chase (2000) and Smith (2001)<sup>1</sup>. But Chase deals only with Latvia and uses Household Budget Survey data with poor wage measures and questionable sampling (key variables differ strongly from LFS), while Smith uses ordered logit models which do not allow to estimate wage differentials.

**Main results.** Measured as the share of full-time employees with higher education, the stock of human capital in the Baltic states is rather high: the year 2000 figures were 25, 22 and 19 percent in Lithuania, Latvia and Estonia, respectively, compared with, for example, 10% in the Slovak Republic, 13% in Poland, 15% in the Czech Republic and 18% in Sweden.<sup>2</sup>

Table 1 presents estimated *ceteris paribus* monthly wage differentials associated with higher and secondary education in Estonia, Latvia and Lithuania.

The total effect of education is captured by Model 1 (where occupation is not controlled for). Other things equal, in the year 2000 employees with higher education earned on average 69 to 80 percent more than those with basic or less education. Most of this differential is due to the premium paid for higher versus secondary education, between 48 and 59 percent, the lowest return in Latvia and the highest in Lithuania. The premium associated with secondary relative to basic education is much smaller, ranging from 13 – 14 (Latvia and Lithuania) to 19 (Estonia) percent. In all three countries, but especially in Latvia, returns to education are larger for women than for men. The returns to education within major occupational groups (Model 2) are of course lower (5-10 percent for secondary and 36-42 percent for higher education) and in case of secondary education less significant than in Model 1.

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<sup>1</sup> See Hazans (2005) for more recent results for Latvia and Fleisher et al (2004) for a survey of recent literature.

<sup>2</sup> 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 (2000), Table A1; for Sweden in 1997: Hansen and Wahlberg (2000), Table 1.

**Table 1 Estimated *ceteris paribus* wage differentials<sup>a</sup> associated with educational attainment. Estonia, Latvia, Lithuania, 2000.**

	<i>Percent</i>								
	men and women			men			women		
	EE	LV	LT	EE	LV	LT	EE	LV	LT
Education (vs. less than secondary)	Model 1 (without occupation controls) <sup>b</sup>								
Higher	80.1	68.6	80.5	73.0	58.3	76.5	85.9	81.6	85.1
Secondary <sup>d</sup>	18.9	14.1	13.5	16.5	11.6	12.1	20.6	18.7	16.6
Number obs.	2516	4962	2440	1208	2546	1181	1308	2416	1259
R-squared	0.343	n.a.	0.405	0.329	n.a.	0.387	0.346	n.a.	0.415
	Model 2 (with occupation controls) <sup>c</sup>								
Higher	36.2	38.2	41.3	36.7	33.0	42.3	34.1	40.9	36.4
Secondary <sup>d</sup>	9.3	8.8	6.2**	9.9**	8.4	6.2**	6.6*	8.1	5.0 <sup>#</sup>
Number obs.	2516	4962	2400	1208	2546	1153	1308	2416	1247
R-squared	0.420	n.a.	0.499	0.370	n.a.	0.477	0.481	n.a.	0.524

*Notes:* <sup>a</sup> Controls include education, age and its square, gender (for pooled men-women sample), marital status, ethnicity, ownership sector, sector of economic activity (15 major NACE sectors), type of contract, dummies for job location in capital city, capital county or district, rural area, as well as some country-specific city dummies; for Estonia and Latvia also unemployment rate at job location (15 counties in Estonia, 7 main cities and 26 districts in Latvia). Model 2 includes also occupation controls (9 major ISCO groups). Only full-time employees included. Latvian LFS provides information on wages only in interval form, so interval regression method was applied. Latvian estimates, especially for model 2, are higher (and closer to Estonian and Lithuanian estimates) than the ones obtained in OECD (2003) using smaller sample and wage imputation from enterprise survey. Estonian and Lithuanian results refer to net monthly wages, Latvian – to gross monthly wages.

<sup>b</sup> All differentials in Model 1 are significantly different from zero at 1% level.

<sup>c</sup> In Model 2 all differentials are significantly different from zero at 1% level, except for the ones marked with \*\* (significant at 5%), \* (significant at 10%) or # (not significant).

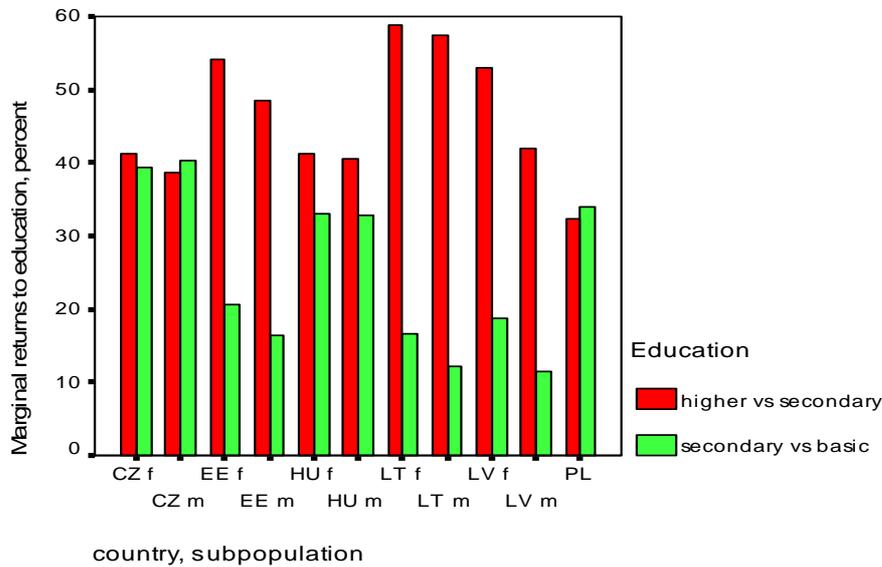
<sup>d</sup> Secondary education includes general and technical secondary education, as well as postsecondary vocational education. Likewise, vocational (after basic) education is not distinguished from basic or less education, thus the reference group is “less than secondary education.”

*Sources:* Calculation based on LFS 2000 data (EE: Q1 and Q2; LV and LT: May).

Interestingly, after controlling for occupation the gender gap in returns to higher education disappears in Estonia and changes sign in Lithuania. In other words, in these two countries the extra benefit of higher education for women comes via access to higher positions rather than via larger wage premiums within occupational groups. The same is true for secondary education in all three countries.

**International comparisons.** Estimated returns to secondary and higher education by gender, together with some comparisons to other transition and more advanced economies, are shown in Figures 1 (without occupation controls) and 2 (controlling for occupation). Returns to secondary education in the Baltics are much lower than in developed market economies and other Central European countries. Although results for comparison countries refer to earlier periods, it is very unlikely that returns to secondary education in these countries could fall substantially in the recent years.

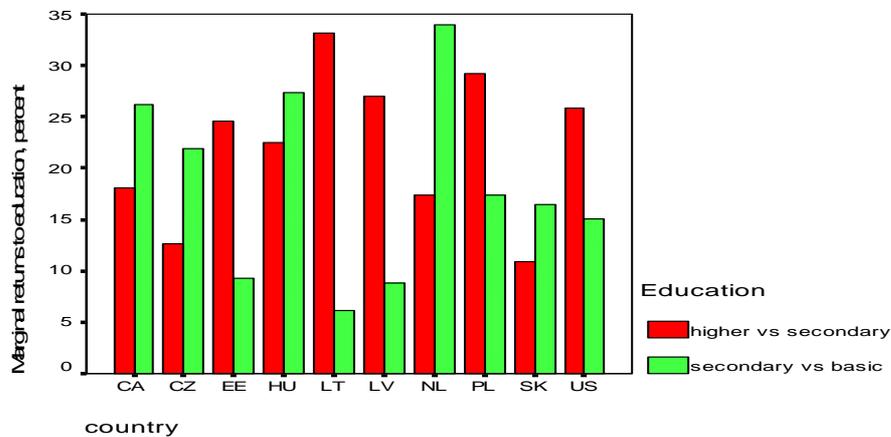
**Figure 1. Returns to education by gender (no occupation controls)  
Baltic States (2000), the Czech R., Hungary and Poland (1996).**



Notes: Abbreviations: f – females, m- males. Hungary: only non-budget sector employees.

Sources: EE, LT, LV – author’s calculations based on LFS data; CZ, HU, PL – Vecernik (2001).

**Figure 2 Estimated returns to education (controlling for occupation)  
The 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 data

By contrast, returns to higher (vs secondary) education in the Baltic countries (especially in Lithuania) seems to be high by international standards. Disaggregating by gender, Figure 1 also shows that the standard finding of larger returns for women compared to men is more pronounced in Estonia and Latvia than in the Czech Republic and Hungary; the gender difference is much slighter in Lithuania.

**Ethnicity effects on returns to schooling.** Do ethnic minorities gain from education as much as Estonians, Latvians and Lithuanians? Table 2 reports returns to higher vs secondary education (without occupation controls) estimated when samples are split by ethnicity, as well as estimates from pooled samples with interaction terms between higher education and ethnic minority dummies.

**Table 2 Returns to higher education vs. secondary education by ethnicity (no occupation controls). The Baltic countries, 2000.**

<i>Percent</i>												
<b>Estonia</b>				<b>Latvia</b>				<b>Lithuania</b>				
Estonians		Non-Estonians		Latvians		Non-Latvians		Lithuanians		Non-Lithuanians		
a	b	a	b	a	b	a	b	a	b	a	b	
Returns	64.4	62.2	31.8	34.1	49.2	49.2	45.8	45.8	58.8	61.1	56.1	55.7
Obs.	1776	2516	740	2516	3124	4962	1838	4962	2098	2542	444	2542

*Notes:* <sup>a</sup> Estimates from split samples; <sup>b</sup> Estimates from pooled samples with interaction terms.

See Notes to Table 1 for details of estimation procedures.

Difference in returns for Estonians and non-Estonians is statistically significant at 1% level. Difference in returns for Latvians and non-Latvians, as well as for Lithuanians and non-Lithuanians is not significant even at 10% level. *Sources:* Calculation based on LFS 2000 data (EE: Q1 and Q2; LV and LT: May).

Both approaches lead to the conclusion that other things equal, minority employees gain from higher education much less than ethnic Estonians, while in Latvia and Lithuania ethnic gap in returns to higher education is small and statistically not significant.

**Higher returns in rural areas.** Sectoral composition of employment, as well as patterns of labour supply and demand, are different in cities and countryside, therefore one can expect to find also variation in returns to education. Indeed, Table 3 shows that wage differentials associated with higher (as compared to secondary) education are a lot higher in Latvian and Lithuanian rural areas than in cities.

**Table 3 Returns to higher education vs. secondary education by workplace in urban or rural area (no occupation controls). The Baltic countries, 2000**

<b>Estonia</b>		<b>Latvia</b>		<b>Lithuania</b>		
Urban	Rural	Urban	Rural	Urban	Rural	
Returns	50.4	56.9	45.1	69.1	57.8	87.4
Obs.	1778	738	3743	1219	2175	367

*Notes:* See Notes to Table 1 for details of estimation procedures.

*Sources:* Calculation based on LFS 2000 data (EE: Q1 and Q2; LV and LT: May).

In Estonia, by contrast, the difference is small and not statistically significant. In other words, wages in Estonian rural areas seems to be more or less uniformly lower than in cities,

while in Latvia and Lithuania wages of well educated employees are relatively less affected (see Hazans (2004) for discussion of urban –rural wage differentials).

**Conclusions.** The Baltic countries feature combination of unusually low returns to secondary education with rather high marginal payoff to higher education. Positive female-male difference in returns to higher education and negative minority-majority difference suggest that education is more likely to be effective in reducing consequences of gender segregation than ethnic segregation. The gender gap in returns is largest in Latvia, while the ethnic gap is significant only in Estonia.

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