ECONSTOR
Make Your Publications Visible.

A Service of
ZBW
Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

Hazans, Mihails

Conference Paper

Looking for the Workforce - the Elderly, Discouraged Workers, Minorities, and Students in the Baltic Labour Markets

45th Congress of the European Regional Science Association: "Land Use and Water Management in a Sustainable Network Society", 23-27 August 2005, Amsterdam, The Netherlands

Provided in Cooperation with:

European Regional Science Association (ERSA)

Suggested Citation: Hazans, Mihails (2005) : Looking for the Workforce - the Elderly, Discouraged Workers, Minorities, and Students in the Baltic Labour Markets, 45th Congress of the European Regional Science Association: "Land Use and Water Management in a Sustainable Network Society", 23-27 August 2005, Amsterdam, The Netherlands, European Regional Science Association (ERSA), Louvain-la-Neuve

This Version is available at:
https://hdl.handle.net/10419/117597

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

WWW.ECONSTOR.EU

Mitglied der Leibniz-Gemeinschaft

45th Congress of the European Regional Science Association
23-27 August 2005, Amsterdam

Looking for the Workforce: the Elderly, Discouraged Workers, Minorities, and Students in the Baltic Labour Markets

Mihails Hazans

University of Latvia

Raina blvd.19, LV1586, Riga, LATVIA

E-mail: mihazan@lanet.lv

Abstract

This paper looks at the evolution of the labour markets in Estonia, Latvia, and Lithuania since the beginning of transition until 2003, with a particular focus on labour force participation. How did labour supply in the Baltic countries respond to changes in minimum wages, unemployment benefits and retirement regulation? Do the marked differences in labour market policies between the countries result in different patterns of participation? What are the obstacles to and driving forces of participation?

We find that relative contribution of participation and demographic trends to the dynamics of the labour force varied substantially both over the years and across the three countries. Participation, in turn, has been shaped by sometimes complicated interaction between educational choices, retirement, policy changes, and external shocks. Resulting differences in trends and patterns are quite substantial, indicating that there is a room for increasing participation in each of the countries.

Panel data analysis of determinants of participation and discouragement suggests that increasing after-tax real minimum wage has significant positive effect on participation and reduces discouragement in Lithuania. In Estonia, by contrast, positive effect of minimum wage on participation is found only for teenagers of both genders and for young males.

Ethnic minorities, especially females, in all three Baltic countries are less likely to be in the labour force, other things equal.

Key words: Labour supply; discouraged workers; minimum wages; ethnic minorities.

JEL: J14, J15, J22, P52**.**

Acknowledgements. Financial support from WIFO in the framework of the 5th Framework project "Regional Labour Market Adjustment in the Accession Candidate Countries" is gratefully acknowledged. I thank Peter Huber and Tiiu Paas for useful comments.

Introduction

Three reasons have motivated this paper. First, labour force mobilisation is one of the ways to rise employment-population ratio, which in the Baltic countries is currently well below EU-15 average, let alone the Lisbon targets. But in the Baltic countries the importance of rising participation is reinforced by demographic factors. Hence it is urgent to understand the patterns of labour supply and to identify obstacles and possible incentives for specific groups. Second, the three neighbour countries have adopted different labour market policies with respect to minimum wage, unemployment benefits, and old-age pension, three issues clearly related to labour supply. How are these differences reflected in labour market outcomes is a policy relevant question. This introduction provides a more detailed discussion of the two above mentioned reasons behind the paper. The third reason is related to sizable ethnic minorities (mostly Russian speaking) which exist in the Baltic countries. Previous studies (see Kroncke and Smith (2000), Chase (2001), OECD (2003a-2003b), Hazans (2005) have found that labour market outcomes (unemployment risk and earnings) are less favourable for ethnic minorities than for majority population. We shall test whether recent data support this conclusion with respect to labour force participation.

Effective policy making in the Baltic countries even more than in other countries of Central and Eastern Europe (CEE) is confounded by demographic trends. Figure 1, which displays combination of natural increase and net migration between 1989 and 2002, documents that Estonia and Latvia are the only countries in the region which experienced both negative natural increase and significant loss of population due to net migration. In Lithuania demographic boom of 1980s went on in 1990-1992, resulting in total positive natural increase over the period; however, in 1993 fertility slowed down, and since 1994 natural increase is negative, while net migration has been negative during the whole period. Overall, by the beginning of 2004, population of Estonia, Latvia and Lithuania went down by 13.7, 13.0 and 6.2 percent respectively, compared to 1989. In 2003, of European countries only Bulgaria experienced larger depopulation than the Baltic countries (Eurostat, 2004).

Given double-digit unemployment, in the short term labour shortage would not be a problem from the natural demographic perspective alone, because of comparatively large youth cohorts about to enter the labour force over the coming decade – before the effects of population ageing begin to have stronger influence (OECD 2003a). However, emigration, which has slowed down in 2001-2002, is likely to increase substantially in the years to come when restrictions on labour mobility between new and old EU member states will be

gradually removed. While there is still a good deal of uncertainty about the size of emigration, the fact that Baltic labour force is among the most educated in the EU-25 (see Table 1), combined with still low (especially in Latvia and Lithuania) average earnings makes to think that outflow of labour will not be negligible.

Preliminary research (Hazans, 2003a; 2003b) suggests that (i) Baltic population seems to be relatively mobile in comparison with other European nations; (ii) on the eve of accession significant proportions of skilled non-manual, clerical and service workers, and students (the survey was limited to Internet users) seriously considered the possibility of moving permanently or temporarily to one of the EU countries if this were possible. Available bits of post-accession evidence confirm these expectations and suggest that also many manual workers are looking west. In Latvia recently launched bus line to Ireland (one of the few restriction-free EU-15 countries) is booming, and flights to Ireland are in big demand, too. Table 2 presents official UK data on registered immigrants from the new EU members during the first 6 post-accession months, adjusted to countries' population figures. Lithuania and Latvia top the list very convincingly; Estonia, though slightly below Poland and Slovakia, still features a rate two times higher than Czech Republic and four times higher than Hungary.

According to UN/ILO projections, demographic limitations on labour supply are set to become gradually more critical in the years after 2015, and by 2040 the ratio of persons aged 65 or more to population aged 20 to 64 is going to almost double compared to the year 2000 level; in reality ageing might be even more pronounced because the projections for the post-accession emigration, which is likely to be "young". The OECD (2003a) report warns Baltic countries that "insofar as a possibly emerging scarcity of labour in the future would be unlikely to be offset by a steep rise in immigration or fertility, it will be all the more important to enhance the existing human capital and to ensure that it is productively employed".

This paper aims at identifying important patterns of labour force participation (including the discouraged worker effect) in the three Baltic countries, as well as relating the findings to the marked differences in unemployment benefit and minimum wage policies.

Figure 2 displays evolution of proportion of unemployment benefits (UB) recipients among registered unemployed, along with evolution of average UB – average wage ratio in the Baltic countries[1]. Of the three countries Latvia has the most generous UB system, which

[1] In Estonia (until 2002) and in Lithuania UB were not taxed, so the ratio of UB to average net wage is used. For Latvia, where UB are taxed, Figure 2 shows average UB – average gross wage ratio (the ratio of after-tax UB to net wage would be almost identical).

covered about 30 percent of registered unemployed prior to 1999 and more than 40 percent since then, with average UB between 25 and 30 percent of average wage in most years. In Lithuania the relative level of average UB has been roughly same as in Latvia until 2001 and somewhat higher since then, reaching 36 percent in 2003 due to special treatment of the elderly; however, the coverage in Lithuania since 1997 has been much lower than in Latvia and falling every year, with just 11 percent covered in 2003. Another important difference is that in Latvia UB are earnings related, while in Lithuania they depend only on number of years of contribution. In Estonia, before 2003 UB have been paid at a flat rate and in most years covered 49 to 60 percent of registered unemployed. Initially, in 1992, UB amounted to 31 percent of average net wage but this ratio felt sharply to less than 10 percent by 1995 and then varied between 6.4 and 11.4 percent until 2002. In 2003 new unemployment insurance system has started to pay benefits, raising total coverage to 76 percent, and overall average UB - wage ratio to 16 percent.

Both levels and dynamics of minimum wage also have been very different in the three countries (see Table 3). The ratio of minimum to gross average wage in Estonia dropped from 36 to 19 percent between 1992 and 1995; since then it has been gradually increasing and reached 32 percent by 2003, with nominal minimum wage changing once a year. In Latvia the same ratio has increased from 27 to 36 percent between 1992 and 1996; since then it has been fluctuating between 31 and 36 percent, with nominal minimum wage changing typically every second year (recently adopted new policy envisages annual adjustments in future). In Lithuania a major change took place between 1994 and 1997, when the minimum wage - average wage ratio has increased from 17 to 48 percent; since then it has declined to 41 percent, yet it is well above the ratio found in Estonia and Latvia; the last change in the nominal level of minimum wage took place in 1998, while in 2002-2003 non-taxable minimum has been raised instead. On top of these differences, there is substantial variation of minimum wage-average wage ratio across the regions in each country, due to inter-regional wage differentials (see Hazans 2003a for details).

The rest of the paper is organised as follows. Section 2 briefly surveys the literature and relates this paper to previous studies. Section 3 provides a comparative analysis of major trends in labour force participation in the three countries, focusing on annual changes in population, employment, unemployment, and inactivity of population aged 15-64, as well as of those aged 65-74; the latter group is of course of a special interest as a potential reserve for labour force mobilisation. Section 4 revises age and gender related trends and patterns of labour force participation. Sections 5 and 6 provide an econometric analysis of determinants

of labour force participation and discouragement, using panel data from recent Labour Force Surveys. Section 7 concludes.

Survey of the literature

Labour supply in transition countries has been subject of extensive research (see Svejnar (1999) and Huber et al (2002) for detailed surveys). Simple decomposition of changes in employment rates has led to conclusion that in some countries, like Hungary, Czech Republic and Bulgaria, reduced participation has been a major factor in declining employment in 1990-1996, while it played a minor role in other countries (Boeri, Burda, Kollo, 1998). Studies of flows between employment, unemployment and inactivity found, among other things, that flows into inactivity have represented a substantial part of the adjustment mechanism, while probabilities of transition from inactivity are lower than in matured market economies (Storm and Terrell, 2000; Boeri, 2001). According to Boeri (2001), Boeri and Terrell (2002) disincentive effects of non-employment benefits play important role in individual labour supply decisions and, accordingly, in shaping the labour market flows; Boeri (2001) has suggested a model which incorporates these effects.

Previous research of labour supply in the Baltic countries has been largely limited to studies of flows between employment, unemployment and inactivity in papers and reports whose main focus was other than labour supply: Haltiwanger and Vodopivec (2002) analyse annual flows for Estonia 1989-1995; Hazans, Earle and Eamets (2002) (reproduced in OECD 2003a, 2003b), inspect ten years flows between 1990 and 2000, as well as annual flows for Estonia, Latvia (1997-2000) and Lithuania (1999-2000); these annual flows are further discussed by Eamets (2004). Rutkowski (2003) and Hazans (2005) analyse annual flows in Lithuania (2000-2001) and Latvia (2000-2002) respectively. Econometric analysis of determinants of labour force participation in Latvia is provided by Chase (2001) and Hazans (2005). Eamets (2004) looks at simultaneous annual changes in employment, unemployment and inactivity in the late 1990s and finds some evidence for discouraged worker effect in Latvia and Lithuania but not in Estonia – a finding which is modified in this paper via more detailed analysis.

As far as minimum wages are concerned, recent studies by Hinnosaar and Room (2003) and Kertesi and Kollo (2003) have found disemployment effect of increasing minimum wage in Estonia and Hungary, but this seems to be a demand side effect. Kollo (2001) have found no conclusive evidence on minimum wage effect on labour force participation.

Accounting the reallocation of labour

We start with looking at the major labour market trends in each of the three Baltic countries during the period from 1989 to 2003. Evolution of population, labour force, employment and real GDP is presented in Figure 3. Initial output decline, from nearly 50 percent in Latvia to 35 percent in Estonia, was substantially deeper than elsewhere in Central and Eastern Europe. While GDP decline has been reversed in 1995, labour force continued to fall faster than population until 1999 in Estonia; in Latvia and Lithuania this pattern prevailed until 2000 and 2001 respectively. Two or three years earlier, however, negative trend in employment has been either temporarily reversed (in Latvia, 1997 and Lithuania, 1998) or muted (in Estonia, 1997).

This suggests a natural breakdown of the whole transition period into three episodes:

(i) From the beginning of the transition until 1996 or 1997, when both labour force and employment were declining (this was also a period of growing unemployment);

(ii) A three or four year period from the initial recovery of employment in 1997 or 1998 until the end of labour force contraction period. Except for the first year in Latvia and Lithuania, this was also a period when employment and labour force were declining, although much slower than in 1992-1995. Unemployment trends were mixed (see below). The second part of this episode includes the period when the three Baltic economies were heavily affected by the Russian financial crisis of 1998. Negative GDP growth was observed, however, only in 1999 in Estonia and Lithuania.

(iii) A period of recovery of employment in 2001-2003 (for Lithuania, 2002-2003), with generally declining unemployment but mixed trends in participation.

Table 4 decomposes changes in labour force during each of the three sub-periods into contributions from trends in demographics and participation rates to labour force. Likewise, changes in employed population are tracked down to changes in demographics, participation rates, and unemployment rates. These results follow from the identities

$$LF = \frac{LF}{POP_{15-64}} \frac{POP_{15-64}}{POP} POP \,, \quad E = (1-u)LF \,, \qquad (1)$$

where LF is number of members of the labour force, POP and $POP_{15\text{-}64}$ – total population and population aged 15 to 64, E – number of employed persons, u – unemployment rate. Note that 97 to 99 percent of the labour force comes from the 15-64 age group, hence proportion of this group in population is an important determinant of labour supply.

Findings from Table 4 can be summarised as follows. Contraction of the labour force between 1989 and 1996/7 was almost 20 percent in Estonia and Latvia; demographic trends and declining participation contributed almost equally to this contraction. In Lithuania, by contrast, labour force declined in the same period by less than 12 percent, of which 8 percent were due to change in participation. Declining labour force and increasing unemployment rate contributed almost equally to fall in the number of employed persons in Latvia and Lithuania, while in Estonia contracting labour force was responsible for two thirds of the total change in employment. In this respect the Baltic countries are similar to Hungary, Bulgaria, and Czech R. (see Boeri, Burda, and Kollo, 1998), but demographic trends were much more important in the Baltic.

During next three or four years (encompassing the Russian crisis), labour force has declined further by 3 percent in Estonia and Lithuania, 8 percent in Latvia. In Estonia and Latvia, where negative population trend was partially offset by increasing share of working age population, the driving force was falling participation rate, but in Lithuania declining population was the major factor. During this period employment in Estonia and Lithuania has shrunk by 7 to 8 percent, of which over a half was due to rising unemployment rates, while contribution from the contraction of the labour force was about 3 percentage points. In Latvia falling unemployment has almost completely offset the effect of labour force contraction.

During the final episode (between 2000 or 2001 and 2003) employment growth was explained by falling unemployment rates completely in Estonia and Lithuania and by a major part in Latvia. Only Latvian labour force has changed significantly (by 2.6 percent, despite falling population), thanks to increase in participation and share of working age population.

Evolution of employed, unemployed and inactive population in each country is displayed in Figures 4 and 5. This time all indicators are in thousand, allowing for an accurate year-by-year balance. A detailed analysis will follow shortly, but one observation is hard to miss: For the core working age group, 15-64, the healthiest trends – declining unemployment and inactivity accompanied by growing employment, indicating rather flexible labour market, are found in Latvia in 2001-2003.

The early transition data are available only for Estonia. In each of the years 1990-1993 a substantial part of displaced workers in Estonia went to inactivity (Figure 4, middle panel). This might suggest an incidence of discouraged worker effect. Inspection of inactivity reasons

reported by LFS respondents confirms that number of discouraged workers[2] increased by some 10 thousand between 1989 and 1993, but total increase of inactivity was 65 thousand. Early retirement, ageing, and disability were major contributors (Table 6). Vork and Habicht (2001) suggest that rules for granting disability were eventually relaxed to enable displaced workers to cope. In 1994 – 1997 fall in employment was almost completely balanced by growth of unemployment and emigration, and increase in stock of discouraged workers slowed down. Number of disabled continued to increase.

Inspection of the labour market dynamics in 1998-2003 reveals that decrease in employment during the recession caused by Russian financial crisis (1998-1999 in Estonia, 1998-2000 in Latvia, 2000-2001 in Lithuania), as well as later decrease in unemployment in 2001-2002 in Estonia was partially absorbed by inactivity (Figures 4 and 5, middle panels). Number of discouraged workers went up. But discouragement was not the major factor. Inactivity growth was driven by sharply increasing number of students among the youth, which was partially offset by decreasing number of pensioners (see Tables 5 and 6). Increasing trend in the stock of discouraged workers was stopped in the last years of observation (2001-2003 in Latvia, 2002-2003 in Estonia and Lithuania), when employment went up in all three countries. The patterns of change were different, however. In Latvia, both unemployment and inactivity (including discouragement) were significantly reduced. In Estonia, number of discouraged workers and unemployed dropped in 2002, when total inactivity increased because of students; in 2003 total inactivity declined, while discouragement and unemployment did not change much. In Lithuania, unemployment and discouragement went down but total inactivity was not affected.

Age and gender dimensions of participation

Table 8 compares activity rates (1997-2003) in the three countries and EU-15. Baltic teenagers of both genders are much less likely to participate in the labour force than their counterparts in EU 15. Plausibly, recent fall in Baltic teenagers' participation is related to growing real income of their parents. Late entry into the labour market is of course a consequence of high participation in education, but as OECD (2003a) suggests, it may also indicate a shortage of temporary and part-time jobs of the type that would be suitable for combining with studies in secondary school. Unlike the United States, the United Kingdom and much of Northern Europe, there is also no strong tradition for teenagers to work.

[2] Here the term "discouraged worker" is used loosely, referring only to the reported reason for not seeking a job. According to the standard definition, only those inactive persons, who would like to work and are available for work, are categorized as discouraged. See further sections for a more detailed discussion of discouraged worker effect in the Baltic countries.

Activity rates of 20 to 24 year olds in the Baltic countries have also decreased since 1997-98, especially strongly in Lithuania. Females of this age in all three countries, as well as young males in Lithuania, have participation rates well below the average level of EU 15, which was not the case in 1998. As discussed above, education is the main reason of inactivity of this age group. However, Latvia, where tertiary enrollment rate was as high as in Lithuania and above the Estonian level, featured substantially higher youth labour force participation rates. Gender gap in participation of the youth in the Baltic countries is larger than in the EU 15, because females here are more likely to continue education than males.

In the prime age group, 25 to 54, all three countries by 1998 had men's activity rate very close to the EU 15 average, while women's participation was by 12 to 17 points higher in the Baltic countries. Five years later, Baltic prime age men's activity has slightly decreased and was 1.5 to 3.0 points below the EU 15 level, while women's participation was 8 to 13 points above the EU 15 average (the latter has gone up by 4 points).

Activity rate of men aged 55 to 59 has decreased somewhat since 1997-98 in Estonia and Latvia; yet it is slightly above EU 15 average in Latvia and substantially above this level in Estonia and especially Lithuania. Due to pension reforms in the Baltic countries (see Table 5), participation of women aged 55-59, as well as of men aged 60-64, has been growing much faster than in EU 15. By 2003, activity rate of Baltic women aged 55-59 was 10 to 16 percentage points above the EU 15 average. This is a remarkable development, given that in 1998 Latvia was 4 points behind EU 15, and Lithuania was just one point above. Likewise, in Latvia and Lithuania, activity rate of men aged 60 to 64 in 2003 was 5 to 7 points above EU 15 average, while in Estonia, where the pension reform has started earlier and provides the largest incentives to deter retirement, this rate was 17 points above EU 15 level.

Baltic females aged 60 to 64 are still eligible for retirement, yet their participation rates are on the rise and in 2003 were substantially above the EU 15 average, especially so in Estonia (almost 20 points difference).

As far as elderly are concerned, Estonian case suggests strongly that this age group can become a real asset in the labour market: after introduction, in 1996, of the possibility to receive old-age pension simultaneously with labour income, the number of economically active individuals aged 65 to 74, which was falling in the early years of transition, started to rise and almost doubled by 2003, while number of inactive persons has stayed constant (Figure 4, lower panel). The fact that income elasticity of supply is high for those in pre-retirement and retirement age[3] is confirmed also by Latvian and Lithuanian experience. In Latvia, elderly labour force has contracted by 19 percent in 2000, when restrictions on

[3] See Prescott (2004) for recent evidence on high elasticity of labour supply in G7 countries.

pensions for working retirees were introduced, but when the restrictions were eliminated by the Constitutional Court in 2002, number of economically active persons aged 65 to 74 returned to the previous level (Figure 5, lower panel); activity rates of men aged 60 to 64 and women aged 55 to 59 have also increased sharply, by 7 and 11 percentage points respectively, in 2002 (Table 8). In Lithuania, targeted (and somewhat higher than ordinary) unemployment benefits were introduced in 2002 for persons who will reach statutory retirement age in 5 years or less (this is the main reason behind increase in average UB in 2002-2003 reflected in Figure 2). On top of this, after-tax minimum wage went up by 4.4 percent in 2002 and by 5 percent in 2003 (Table 3). These developments clearly contributed to rise in activity rate of women aged 55 to 59 by 11.6 percentage points in 2002-2003 (while retirement age increased just by 6 months per annum, same as in 2001 and only by 2 months more than in 1998-2000).

In Lithuania, pensions are reduced when recipients have work income. Persons earning more than 1.5 times the minimum wage receive only basic pensions. With lower earnings, the supplementary pension is reduced if the earnings exceed the minimum wage (OECD 2003a). On the other hand, average pension benefits in Lithuania are somewhat higher than in Estonia and Latvia relative to average wage, while after-tax minimum wage exceeds average pension only in Lithuania (Table 7). This suggests that those Lithuanian elderly, who are not prepared to accept unskilled jobs with minimum wage, have less work incentives than their Estonian and Latvian counterparts. Indeed, labour force participation of the 65-74 years old in Estonia has reached 16 percent in 2003, while it was 12 percent in Latvia and less than 8 percent in Lithuania; moreover, in Lithuania less than a half of employed in this group were wage earners, while in Estonia this proportion was above three quarters.

Determinants of participation

Table 9 presents results of panel estimates (population averaged probit, assuming equal error correlation within panels) of labour force participation of population aged 15-74 by gender, based on recent labour force surveys in Estonia and Lithuania. Basic controls include education (6 categories), 5-year age groups, ethnicity, marital status, dummies for having one or more children, residence in rural area, and region[4] fixed effects. To capture effect of minimum wages, as well as of average wage growth and local economic conditions,

[4] In Estonia we use 15 counties, but the capital city (400 thousand population) is separated from the rest of respective county; excluding capital city, average population these units is about 90 thousand. In Lithuania we use fixed effects for 10 counties and three large cities, but local wages and (registered) unemployment are measured at municipality level; there are 60 municipalities with average population 59 thousand.

we include one or two of the following macro-level trends: real minimum wage at the beginning of the quarter, last quarter's real national average wage and last quarter's unemployment rate, as well as region-specific last year's real average wage and last year's local unemployment rate (all these variables in logarithmic form; for Estonia quarterly county level wage data were used). Interactions of young and/or old age dummies with wage variables are included when relevant.

To account for the coordination of the labour supply decisions within the household we include spouse's or partner's wage (set to zero for singles), and interactions of young age dummies with parents' wage (set to zero for persons not living with parents). These measures of non-labour income are divided by the number of relevant core family members: spouse's wage by 2 plus number of children under 15; parent's wage by number of parents plus number of their children (in this household) under 20 or 25.

It turns out, however, that for women in both countries, as well as for men in Lithuania, partner's wage is extremely insignificant determinant of participation (Table 10). This is typical situation for transition countries (see e.g. Saget, 1999). Estonian men are significantly more likely to participate if their wives earn more, likely through correlation of partners' educational attainment. Parents' earnings effect has expected negative sign for people younger than 25, but is significant only for Lithuanian young females. Therefore in the baseline model we do not use non-labour income. In this model we also do not control for being a pupil or student (effects of including this variable are discussed later).

Comparison of the results reveals that other things equal, young and old age participation gaps for both genders (except female teenagers) are substantially wider in Lithuania than in Estonia. On top of this, young Estonians, as well as Lithuanian female teens have 5 to 10 points higher participation rates when there is no prime age persons in the household; surprisingly, for Lithuanian females aged 20-24 this effect has opposite sign, perhaps indicating that many of them live separately and receive external financial support.

Higher education, as well as vocational (without secondary) education has a much stronger effect on men's participation in Estonia than in Lithuania, but for women it goes the other way around. For both genders, postsecondary professional education boosts participation stronger in Estonia.

In both countries women belonging to ethnic minorities, have 5 to 6 percentage points lower participation rates than their otherwise similar majority counterparts (situation is not different in Latvia, see Hazans 2005). For men the ethnic participation gap is not significant; however, interestingly enough, it becomes significant when controls for being a student are included (see Table 10). Other things equal, minority males are less likely to be in the labour force

conditionally on studying or not studying, but this is compensated by being more likely in a group with higher participation (i. e., non-students).

Having children decreases activity of Estonian females a lot more strongly than their Lithuanian counterparts, suggesting less developed child care system in Estonia.

Ceteris paribus rural – urban participation gap is minus 4 percentage points for Estonian men, while it is plus 6 points for Lithuanian men.

Finally we turn to minimum wage and local economic conditions. According to the standard economic theory (Ehrenberg and Smith, 2003) rising minimum wage increases participation. But on the other hand, it negatively affects demand for labour, and hence, through discouraged worker effect can adversely influence participation. In Lithuania, increasing after-tax real minimum wage (via non-taxable minimum) appears to have, on average, positive effect on participation. Reported marginal effect implies that a modest 5 percent increase in after-tax minimum wage results in 2.7 percentage points higher participation for women and 1.2 points for men. In Estonia, by contrast, positive effect of minimum wage on participation is found only for teenagers of both genders and for young males. A 10 percent increase in real minimum wage boosts participation of these two groups by two and three percentage points respectively. For other groups estimated effect is negative. This is likely to be related to negative effect of increased minimum wages on labour demand for low skilled, which was found in Hinnosaar and Room, 2003 (our model controls for labour demand only indirectly, through unemployment).

In regions with higher unemployment, males in both countries, as well as females in Estonia are less likely to participate in the labour market: if unemployment rate doubles, other things equal, activity rate goes down by about 2 percentage points (3 points for Estonian females). This is indicative of *discouraged worker* effect. For Lithuanian females, by contrast, the effect has opposite sign (and same magnitude), suggesting that *added worker* effect is at work.

Table 10 reports the results with controls for non-labour income and studies (the original LFS samples, without the retrospective extensions, are used for both countries). In both countries non-student males aged 20-24, who are not living together with wage-earning parents, are as likely to be labour force members as otherwise similar males aged 40-44. However, when being a student is controlled, parents' wages tend to increase labour force participation of young males in Estonia, while in Lithuania an opposite effect is observed[5]. While each of the effects is not significant even at 10 percent level, the difference between the

[5] Dummy for the 20-24 age group is interacted with deviation of parental income per core family member from its mean value, standartised by national average net wage. Using deviation ensures that interaction does not distort the main effect of the age group dummy. Recall that

countries is. Parental wage effect is virtually absent for females aged 20-24 in both countries, but this because it works through participation in education.

In Lithuania non-students females aged 20-24 are relatively a lot more active: just 9 points behind the 40-44 years old, as opposed to 30 points in Estonia. For female students of this age, however, the participation gap is 61 percentage points, while it is just 45 points in Estonia. For male students aged 20-24 in both countries probability to participate in the labour force is 61 to 63 points lower than for otherwise similar males aged 40-44. But on top of this there is a negative effect of being single: minus 15 points for Lithuanian males, and minus 5 points for their Estonian counterparts.

Partner's wage has negative (though not significant) effect on participation only for Estonian women.

As mentioned before, controlling for studies makes the ethnic participation gap larger. Females of non-Estonian ethnicity are 10 percentage points less likely to be in the labour force than otherwise similar ethnic Estonian females; in Lithuania this gap is 7 points, but for males it is two times smaller than for females and significant only at 10 percent level (for females the effect is very significant).

Discouraged workers: a closer look

In section three above we have discussed the dynamics of inactive persons who reported discouragement as the reason why they do not look for a job. Strictly speaking, according to the standard definition, only those who nevertheless would like to work and are available for work, are categorised as discouraged workers. A relaxed definition includes all inactive persons who would like to work and are available for work, disregarding the reason for not seeking a job. Discouraged workers can be viewed as the immediate reserve of the labour force.

Proportion of discouraged workers (relaxed definition) among inactive population aged 15 to 74 is quite high in Estonia: 17 percent for males and 13 percent for females (year 2001 data) and even higher in Latvia (24 percent for males and 20 percent for females in 2002). In Lithuania (2002-2003), 5 percent of inactive men and 4 percent of inactive women aged 15-74 fall into this category.

Table 11 reports probit estimates of determinants of discouragement among inactive population aged 15 to 74 in Estonia and Lithuania. Conditional on inactivity, the probability of being discouraged (that is, being ready to take on a job) peaks at 41-42 years of age for females in both countries and males in Estonia, while for Lithuanian males it is maximal at 31 years of age.

Other things equal, females with secondary general and secondary vocational education in both countries, as well as with vocational (without secondary) education in Estonia are most likely to be discouraged. For inactive males in Estonia education does not affect likelihood of being discouraged, while in Lithuania inactive males with vocational (without basic) education are most likely to be available for work, followed by the ones with professional or vocational secondary education. Students and schoolchildren are significantly less likely to be ready for a job than otherwise similar inactive persons who are not studying, but in Lithuania this effect is less pronounced than in Estonia.

In Lithuania, inactive females with one child are more likely to be available for work than childless women, other things equal.

Ethnicity of inactive person in Lithuania does not have a significant effect on likelihood to be a discouraged worker (despite the fact that the proportion of discouraged workers among minorities was 5.7 percent and just 4 percent among ethnic Lithuanians; these are proportions out of inactive population aged 15 – 74, average for 2002-2003). In Estonia LFS provides information on state language skills, which reveals that inactive males who do not speak Estonian language, and especially those who do not even understand it, are most likely to be discouraged. For females this effect is not found. By contrast, in Latvia, inactive females belonging to ethnic minorities are more likely to be discouraged than otherwise similar ethnic Latvian females (Latvian results are available on request).

Local unemployment does not manifest itself as a factor influencing discouragement in Tale 10, but this is because region fixed effects are included, while small panel size (one to two observations) does not allow for the variation over time to play a role. In alternative models without region fixed effects, or with narrow definition of discouragement (in which case we have longer panels), local unemployment in Estonia has a strong positive effect on discouragement for both genders. In Lithuania it is not the case; the effect is positive as well but not significant even when both county dummies and local wages are removed from the model. These results are available on request.

Conclusions

The *discouraged worker effect* has been at work in all three countries, although the dynamics of discouragement was not always consistent with trends in participation, which were largely defined by the pension reforms, changes in regulations related to working pensioners, and increasing enrolment of the youth in further education. *In Lithuania*, there is also a recent evidence for *added worker effect in districts with higher unemployment*.

A dramatic *decrease in youth participation rates and sharp increase in participation of elderly* (females aged 55 to 59, as well as 60 to 64 years old men and women), took place in all three countries between 1997-8 and 2003. However, large differences between recent rates across countries suggest that *there is substantial room to increase labour supply*. The following recommendations are based on comparison of age- and gender-specific activity rates, as well as on the econometric analysis of labour force participation, which controls for also for factors other than age and gender.

First, *higher labour force participation by the teenagers, as well as students aged 20 to 24 in Lithuania and in Estonia, could be pursued*; in Estonia, this applies also to non-student females aged 20 to 24. Second, *higher participation is a realistic option for Latvian females approaching retirement age*, whose activity rate is currently 5 points below the level found in the other two countries. Another possibility is *mobilisation of both men and women in their early 60s in Latvia and Lithuania*, where participation rates in this age group are at least 10 points below those found in Estonia (although higher than in EU 15). Finally, *Lithuanian population aged 65 and older* has substantially lower participation (especially in paid employment) than Estonian population of the same age; moreover, activity of this group is stagnant in Lithuania, while it is rising in Estonia.

Why are the older segments of population in Estonia more active than in the other two Baltic countries? As far as Lithuania is concerned, the restrictions on pensions for working pensioners clearly play a role. While such restrictions are now removed in Latvia, they are likely to have a lasting effect as well, because it is more difficult for an older person to re-enter labour market. On the other hand, postponed retirement in Estonia enhances pensions stronger than it does in Lithuania. Perhaps one more reason is that average wages in Estonia are higher than in Latvia and Lithuania both absolutely and when compared to average pension (Table 7); this is also true for minimum wages when Estonia and Lithuania are compared.

In all three Baltic countries, *representatives of ethnic minorities (especially females) are significantly less likely to be labour force members than their majority counterparts*; closing this gap will substantially increase overall participation rates.

Based on participation effects, it appears that *postsecondary professional education better suits labour market needs in Estonia than it does in Lithuania*; the same is true for higher and vocational (without secondary) education for men, while for women two latter types of education boosts participation stronger in Lithuania.

Increasing after-tax real minimum wage appears to have, on average, positive effect on participation in Lithuania (despite unchanged nominal minimum wage), while in Estonia

such effect is found only for teenagers of both genders and for young males. Targeted unemployment benefits seem to raise participation of pre-retirement age persons in Lithuania.

Significant portions of inactive population aged 15 to 74 in all three Baltic countries are not engaged in job search, although they are willing to work and available for work. When considered against total (rather than inactive) population of this age, this group, which can be seen as the immediate reserve of the labour force, represents more than 5 percent in Estonia, about 4 percent in Lithuania, and 8 percent in Latvia. Given that inactive persons are most likely to fall into this category (broadly defined discouraged workers) when they are around 40 years of age (even 30 for Lithuanian men), this is a real reserve. *In Estonia, inactive males who do not speak Estonian language, and especially those who do not even understand it, are most likely to be discouraged*. In Latvia, inactive females belonging to ethnic minorities are more likely to be discouraged than otherwise similar ethnic Latvian females.

References

Boeri, Tito (2001), "Transition with Labour Supply", *IZA* Discussion Paper No. 257, Bonn

Boeri, Tito, Michael Burda, and Janos Kollo (1998). „Mediating the Transition: Labour Markets in Central and Eastern Europe". EPI Report No. 4: CEPR, London

Boeri, Tito and Katherine Terrel (2002), „Institutional Determinants of Labor Reallocation in Transition", *Journal of Economic Perspectives,* pp 51-76.

Eamets, Raul (2004), "Labour Market Flows and Adjustment to Macroeconomic Shocks in the Baltic States", *Post-Communist Economies,* Vol. 16, No. 1, pp. 47-71.

Chase, Robert S. (2001),"Labor Market Discrimination During Post-Communist Transition: A Monopsony Approach to the Status of Latvia's Russian Minority," *William Davidson Institute* Working Papers Series, No. 381, http://eres.bus.umich.edu/docs/workpap-dav/wp381.pdf

Ehrenberg, Ronald G., and Robert S. Smith, "Modern Labour Economics, Theory and Public Policy" 8th edition (2003): Addison Wesley.

Franco, Ana, and Larus Blondal (2003). „Labour Force Survey Principal Results 2002. Acceding Countries". *Statistics in Focus*, Population and Social Conditions, Theme 3, 16/2003: Eurostat.

Haltiwanger, John and Milan Vodopivec (2002), "Gross Worker and Job Flows in a Transition Economy: An Analysis of Estonia," *Labour Economics,* vol. 9, No 5, pp 601-630.

Hazans, Mihails (2003a), **"**Determinants of Inter-Regional Migration in the Baltic Countries", *ZEI* (Center for European Integration Studies, Univ. of Bonn) *Working Paper* No. B17-2003 (available at *www.zei.de*) .

Hazans, Mihails (2003b), "Potential Emigration of Latvian Labour Force after Joining the EU and its Impact on Latvian Labour Market", Global Development Network discussion paper, *http://www.gdnet.org/cf/search/display.cfm?search=ALLKB&act=DOC&docnum=DOC14353*

Hazans, Mihails (2005) „Unemployment and the Earnings Structure in Latvia", *World Bank Policy Research Working Paper* No 3504, 90 pp. World Bank: Washington DC. http://econ.worldbank.org/files/41273_wps3504.pdf

Hazans, Mihails, John Earle, and Raul Eamets (2002), "Labour Markets in the Baltic States", Background paper for OECD (2003a, 2003b), *mimeo*.

Heleniak, Timothy (2004), "Migration In The Europe And Central Asia Region," *Mimeo*, Innocenti Research Centre, UNICEF (presented at World Bank policy seminar on migration, April 2004).

Hinnosaar, Marit, and Tairi Room (2003), „Labour Market Impact of the Minimum Wage in Estonia: An Empirical Analysis". In Hinnosaar and Rõõm (eds). „Labour Market Reseach in Estonia. Papersof the research Seminar. Talinn, May 9, 2003", Eesti Pank: Tallinn, pp. 61-92.

Huber, Peter, Herbert Brucker, Janos Kollo, Iulia Traistaru, and Tomasz Mickiewicz (2002), „Regional and Labour Market Developments in Canidate Countries: A Literature Survey." ACCESSLAB project paper, WIFO (available at http://accesslab.wifo.ac.at/)

Kertesi, Gabor and Janos Kollo (2003). „Fighting "Low Equilibria" by Doubling the Minimum Wage? Hungary's Experiment", *IZA Discussion Paper 970.*

Kollo, Janos (2001), "The patterns of non-employment in Hungary's least developed regions", Budapest Working Papers on the Labour Market 2001/1, Hungarian Academy of Science, Institute of Economics, Budapest

Kroncke, Charles and Kenneth Smith (1999), "The wage effect of ethnicity in Estonia"; *Economics of Transition*, Volume 7, No. 1.

OECD (2003a). "Labour Market and Social Policies in the Baltic Countries".

OECD (2003b). "Labour Force Dynamics in Estonia, Latvia and Lithuania", http://www.oecd.org/dataoecd/18/9/2493421.pdf

Prescott, Edward C (2004), „Why Do Americans Work So Much More Than Europeans?" *Federal Reserve Bank of Minneapolis Quarterly Review*, Vol. 28, No. 1, pp. 2–13.

Rutkowski, Jan (2003), „Rapid Labor Reallocation with a Stagnant Unemployment Pool: The Puzzle of the Labor Market in Lithuania", *World Bank* Policy Research Working Paper 2946.

Saget, Catherine (1999), "The determinants of female labour supply in Hungary", Economic of Transition, pp 575-593.

Storm, Vit, and Katherine Terrel (2000), „Sectoral Restructuring and Labor Mobility: A Comparative Look at the Czech Reopublic", *IZA Discussion Paper* No 111, IZA, Bonn.

Svejnar, Jan (1999), "Labour Market in the Transitional Central and East European Economies", in Ashenfelter, Orley and David Card, Handbook of Labour economics, Volume 3, Elsevier Science, pp. 2810-2857.

Vork, A, and J. Habicht (2001), "Disability benefits in Estonia - for the disabled or the unemployed?" Paper presented at 1st Nordic Econometric Meeting. Sandberg, May 24-27, 2001.

Table 1 Educational attainment of adult population and enrolment into further education of the youth in the EU-15 and selected countries of Central and Eastern Europe, 2002

Education	EU-15	ACC-12	SI	BG	HU	RO	EE	LV	LT
	Percent distribution of population aged 25-64 by highest level of completed education								
Basic or less	35.4	19.3	23.2	28.5	28.6	28.9	12.5	17.4	15.2
Upper secondary	42.9	66.2	62.1	50.4	57.3	61.1	57.9	63.1	63.3
Tertiary	21.8	14.5	14.8	21.1	14.1	10.0	29.6	19.6	22.5
	Enrolment in further education of population aged 18-24 with basic education or less								
	81.2	91.3	95.2	79.0	87.7	76.8	87.4	80.5	85.7

Notes: ACC-12 – average for the 10 new EU members, Bulgaria and Romania. Country abbreviations: SI - Slovenia, BG – Bulgaria, HU – Hungary, RO – Romania, EE – Estonia, LV – Latvia, LT – Lithuania.
Source: Franco and Blondal (2003).

Table 2 Immigrants from new EU member states registered in UK, May – October 2004 (per 1000 population of the sending country)

LT	LV	SK	PL	EE	CZ	HU
4.6	2.8	1.7	1.6	1.3	0.6	0.3

Notes: See Notes to Table 1 for country abbreviations.
Source: UK Home Office and own calculation.

Table 3 Minimum wage developments in the Baltic countries

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	Minimum wage – average wage ratio (percent, annual average)											
Estonia	36.4	21.1	20.2	18.9	22.8	23.6	26.7	28.2	28.5	29.0	30.1	32.1
Latvia	27.4	26.6	30.6	31.3	36.0	31.7	31.5	35.5	33.4	34.6	34.7	36.4
Lithuania	24.2	19.7	17.4	28.0	38.8	48.1	44.9	43.6	44.3	43.8	42.4	40.7
	Nominal increase during the year (December on December)											
Estonia		50.0	50.0	0.0	51.1	24.3	30.2	13.6	12.0	14.3	15.6	16.8
Latvia	226	100	86.7	0.0	35.7	0.0	10.5	19.0	0.0	20.0	0.0	16.7
Lithuania	240	182	35.4	177	66.7	33.3	7.5	0.0	0.0	0.0	0.0	0.0
	Number of changes during the year											
Estonia		1	1	0	1	1	1	1	1	1	1	1
Latvia	4	1	2	0	1	0	1	1	0	1	0	1
Lithuania	5	10	4	5	2	2	1	0	0	0	0	0
	Real increase in after tax[a] minimum wage during the year (December on December)											
Estonia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	19.3	9.4	6.6	9.7	12.6	15.6
Latvia	-69.2	48.3	47.8	-18.8	20.0	-6.5	7.5	15.4	-1.8	16.3	-1.4	12.6
Lithuania	-73.1	-2.2	-6.7	104.1	38.7	32.0	5.9	-0.3	-1.4	-2.0	4.4	5.0

Note: [a] For Estonia – gross minimum wage. *Sources:* National Statistical offices and own calculation.

Table 4 Break-down [a] of the changes in economically active and employed population

Percent

	Estonia			Latvia			Lithuania		
First year	1989	1997	2000	1989	1996	2000	1989	1997	2001
Last year	1997	2000	2003	1996	2000	2003	1997	2001	2003
Change in Employment	-26.8	-7.2	3.8	-32.7	-0.7	7.2	-22.8	-8.3	6.4
of which due to:									
Change in unemployment rate[b]	-9.2	-4.3	4.1	-17.9	7.9	4.5	-12.4	-5.6	6.0
Change in Labour Force	-19.4	-3.0	-0.3	-18.0	-8.0	2.6	-11.5	-2.8	0.4
of which due to:									
Change in Population	-10.2	-2.4	-1.2	-7.4	-3.6	-2.1	-2.4	-2.8	-0.7
Change in working age population %	-0.7	1.4	1.2	-1.5	2.2	1.5	-1.4	0.6	1.2
Change in participation[c]	-9.7	-2.0	-0.3	-10.3	-6.6	3.3	-8.2	-0.6	-0.1
Activity, unemployment and employment rates, age 15-64									
Activity rate, first year	78.9	72.3	70.4	81.9	71.7	67.2	77.6	70.1	69.4
Activity rate, last year	72.3	70.4	69.8	71.7	67.2	68.6	70.1	69.4	69.7
Unemployment rate, first year	0.5	9.3	12.8	0.0	20.5	14.6	0.0	12.6	17.6
Unemployment rate, last year	9.3	12.8	10.2	20.5	14.6	10.7	12.6	17.6	12.5
Employment rate, first year	78.5	65.2	60.7	81.9	57.0	57.3	77.6	61.3	57.2
Employment rate, last year	65.2	60.7	62.6	57.0	57.3	61.8	61.3	57.2	60.9

Notes: [a] Numbers in the table are changes in percent rather than log points, hence totals are not exactly equal to the component sums. Demographic indicators refer to beginning of the years. Labour market indicators are annual average.
[b] Numbers in this row are percentage changes in 1- *u*, so they are negatively related to changes in unemployment rate. [c] Participation here is ratio of total labour force to working age population, so it differs slightly from labour force participation rate for the 15-64 age group.

Table 5 Statutory retirement age

	1989	1993	1994	1997	2000	2001	2002	2003
Estonia								
Men	60	60.5	60.5	61.5	62.5	63	63	63
Women	55	55.5	55.5	56.5	57.5	58	58.5	58.5
Latvia								
Men	60	60	60	60	60.5	61	61.5	62
Women	55	55	55	56.5	58	58.5	59	59.5
Lithuania								
Men	60	60	60	60.5	61	61.5	62	62.5
Women	55	55	55	56	57	57.5	58	58.5

Note: In Latvia changes for women in force since July 1 of corresponding year. Intermediate steps in 1995-96 and 1998-99 not shown. *Source*: National Ministries of Welfare.

Table 6 Inactive population by reason for not seeking a job

	Distribution, percent					Change vs. previous year, thsd					
Estonia, age 15-69	1989	1993	1997	2001	2003	1998	1999	2000	2001	2002	2003
Studies	34.5	27.0	26.2	31.6	36.1	6.7	9.6	-0.5	4.4	21.2	-6.1
Retirement	35.9	41.9	40.6	32.9	29.4	-1.9	-4.2	-8.6	-7.4	-15.1	4.0
Disability	8.9	9.7	12.7	13.1	13.3	-1.0	0.8	4.0	-1.5	3.0	-2.2
Discouragement	**0.6**	**3.3**	**4.8**	**6.8**	**5.5**	**1.9**	**1.7**	**0.2**	**3.3**	**-4.7**	**0.4**
Family & personal	16.0	14.2	12.3	11.2	11.3	-0.8	-0.7	-1.7	0.7	6.7	-6.3
Other	4.0	3.9	3.5	4.4	4.4	-1.6	-0.3	2.5	2.7	-3.1	3.1
Total	100.0	100.0	100.0	100.0	100.0	3.3	6.9	-4.1	2.2	8.0	-7.1
Latvia, age 15-64	**1996**	**1997**	**2000**	**2001**	**2003**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Studies	27.8	28.8	35.1	37.4	39.8	37.4	-18.9	27.7	7.4	-4.6	7.6
Retirement	29.0	32.0	30.8	32.2	21.4	-8.0	11.9	5.2	3.0	-48.8	-10.0
Disability	12.1	10.8	9.3	9.3	9.5	-2.7	7.4	-7.4	-1.1	-1.4	0.6
Discouragement	**7.3**	**9.6**	**9.6**	**8.3**	**8.1**	**-5.7**	**5.3**	**4.5**	**-7.5**	**5.0**	**-8.0**
Do not know where and how to seek	4.4	3.6	2.5	1.1	n.a.	-1.5	-1.3	-1.0	-7.2	n.a.	n.a.
Family & personal	10.1	9.2	8.7	6.5	14.2	-6.2	6.2	2.0	-12.0	30.3	5.0
Other	9.3	6.1	4.1	5.2	7.0	-6.8	7.4	-7.9	4.9	9.8	-2.1
Total	100.0	100.0	100.0	100.0	100.0	6.5	17.9	23.3	-12.5	-15.3	-7.0
Lithuania, age 15-64		2000	2001	2002	2003				2001	2002	2003
Studies		41.7	43.2	46.0	49.6				17.0	23.9	22.4
Retirement		24.8	23.0	20.5	18.5				-8.1	-15.6	-15.0
Disability		11.6	14.0	15.2	15.5				18.5	9.7	1.2
Discouragement		**6.8**	**5.9**	**5.2**	**3.9**				**-5.3**	**-4.2**	**-9.3**
Family & personal		8.3	8.2	8.3	7.8				0.6	1.6	-3.9
Other		6.8	5.8	4.8	4.7				-6.1	-6.1	-1.0
Total		100	100.0	100.0	100				16.5	9.2	-5.5

Sources: Estonia – Statistical Office of Estonia (www.stat.ee); Latvia and Lithuania – calculation based on LFS data.

Table 7 Average old-age pensions as per cent of average and minimum wages

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Estonia											
Av. pension/Av. gross wage	22	22	26	31	31	29	35	32	28	26	27
Av. pension/Av. net wage	27	27	32	40	40	38	45	41	36	34	36
Av. pension/ Minimum wage after tax			na	na	na	na	na	118	110	99	99
Latvia											
Av. pension/Av. gross wage	47	43	40	41	39	42	43	40	39	37	35
Av. pension/Av. net wage	54	51	49	52	53	58	58	55	54	52	49
Av. pension/ Minimum wage after tax			163	143	163	178	161	161	136	143	131
Lithuania											
Av. pension/Av. gross wage			31	33	32	32	32	33	32	32	32
Av. pension/Av. net wage			41	43	43	43	44	46	45	44	44
Av. pension/ Minimum wage after tax			109	93	79	84	89	90	89	89	90

Source: National Statistical offices and own calculation.

Table 8 Labour force participation rates, 1997-2003 (annual average)

	Men							Women						
	1997	1998	1999	2000	2001	2002	2003	1997	1998	1999	2000	2001	2002	2003
Age 15 to 19														
Estonia	24.8	21.3	15.4	16.6	16.8	10.9	15.1	19.2	15.8	12.4	16.0	14.1	6.4	8.9
Latvia	27.0	23.5	21.9	16.4	14.1	18.8	15.9	20.1	15.8	12.8	9.8	9.6	11.5	10.9
Lithuania		23.5	21.3	16.2	11.1	8.6	8.8		13.5	14.3	6.8	6.1	4.9	6.0
EU 15	31.5	32.2	32.8	33.1	31.9	31.0	30.7	25.4	25.9	26.8	27.5	26.6	25.7	25.7
Age 20 to 24														
Estonia	79.5	79.1	78	80.4	78.3	70.5	71.2	58.3	62.3	57.6	56.5	54.8	51.3	53.9
Latvia	80.6	77.3	78.4	74.1	73.3	73.2	76.8	62.9	63.7	59.4	55	56.7	58.8	57.2
Lithuania		77.0	75.3	70.1	67.0	64.5	63.0		58.4	60.3	56.4	52.1	51.7	48.8
EU 15	69.7	69.6	69.7	69.8	69.1	68.8	69.8	58.8	59.3	59.6	59.9	59.0	59.1	59.8
Age 25 to 54														
Estonia	92.7	91.6	91.2	90.5	89.8	89.9	89.5	85.4	84.3	83.6	83.6	82.8	81.0	82.1
Latvia	89.7	91.4	90.3	88.0	89.4	89.2	89.6	83.7	83.2	82.5	83.4	83.5	82.4	82.9
Lithuania		92.1	90.6	89.7	90.1	90.8	90.4		87.4	89.2	87.9	88.0	87.4	87.1
EU 15	92.5	92.7	92.6	92.6	92.4	92.3	92.4	70.0	70.7	71.5	72.1	72.3	73.1	73.9
Age 55 to 59														
Estonia	78.5	76.9	74.1	76.0	74.6	72.4	75.2	52.3	54	52.8	52.3	56.9	67.7	65.3
Latvia	73.2	74.4	72.8	71.7	72.5	75.1	71.8	39.8	39.5	39.7	41.7	46.1	56.9	59.9
Lithuania		78.4	79.2	75.7	77.9	78.4	79.2		44.5	45.0	54.1	53.7	57.3	65.3
EU 15	69.7	70.0	70.0	70.0	70.3	71.4	71.4	42.6	43.4	44.4	45.5	46.4	48.0	49.4
Age 60 to 64														
Estonia	43.4	46.7	47.3	48.7	46.4	55.4	54.2	21.3	23.9	25.2	26.3	31.3	35.4	37.1
Latvia	36.8	32.5	34.2	35.9	34.1	41.3	42.1	20.8	17.6	18.5	17.6	22.0	23.8	26.9
Lithuania		35.8	36.6	38.3	39.6	40.3	44.5		16.2	17.6	18.0	14.2	17.5	20.5
EU 15	33.5	33.1	33.5	33.8	34.7	35.3	36.8	15.7	15.1	15.6	16.0	16.8	17.8	18.2
Age 15 to 64														
Estonia	78.5	77.4	76.0	76.1	75.2	74.1	74.5	66.7	66.5	65.2	65.3	65.4	64.3	65.5
Latvia	76.4	76.4	75.3	72.5	72.8	73.9	74.0	64.9	63.8	62.5	62.3	63.3	64.1	64.8
Lithuania		77.7	76.3	74.2	73.4	73.2	73.1		66.7	68.2	67.1	65.8	65.7	66.5
EU 15	78.2	78.4	78.5	78.6	78.4	78.4	78.6	58.1	58.7	59.5	60.1	60.3	60.9	61.6
	Men and women, age 15 to 64							**Men and women, age 65 to 74**						
Estonia	72.3	71.7	70.3	70.4	70.1	69.0	69.8	10.2	10.5	12.2	13.2	14.3	15.7	16.4
Latvia	70.4	69.8	68.6	67.2	67.9	68.8	69.8	12.0	11.3	12.4	10.2	9.9	12.6	11.6
Lithuania		72.0	72.1	70.5	69.4	69.3	69.7		9.3	8.4	10.3	8.3	6.9	7.8
EU 15	68.2	68.6	69.0	69.4	69.4	69.7	70.1	4.7	5.1	4.8	4.7	4.8	5.3	5.4

Sources: National statistical offices of Estonia, Latvia, and Lithuania; OECD.

Table 9 Determinants of labour force participation

	Estonia, 2000-2001				Lithuania, 2002-2003			
	Men		**Women**		**Men**		**Women**	
Mean Y	0.694		0.578		0.671		0.579	
	dy/dx	z	dy/dx	z	dy/dx	z	dy/dx	z
Education: Higher	0.289	10.62	0.322	9.4	0.215	13.00	0.370	19.77
Postsecondary professional	0.251	6.94	0.281	8.13	0.179	10.39	0.248	12.81
Secondary general	0.147	6.21	0.155	6.52	0.050	3.04	0.123	7.05
Secondary vocational	0.187	7.63	0.239	8.39	0.198	11.41	0.237	11.94
Vocational	0.190	7.30	0.095	2.56	0.108	2.09	0.192	2.11
Age 15-19	-0.358	-14.67	-0.477	-15.88	-0.647	-22.27	-0.724	-29.41
(Age 15-19) ×No prime age persons in the household	0.111	2.71	0.075	3.05	0.031	0.94	0.115	2.72
Age 20-24	-0.101	-6.87	-0.301	-11.13	-0.173	-8.22	-0.336	-16.45
(Age 20-24) × No prime age person in the household	0.070	5.57	0.048	1.93	-0.001	-0.06	-0.095	-2.24
Age 25 – 29	-0.013	-0.73	-0.165	-6.21	0.031	2.19	-0.069	-4.19
Age 30 – 34	0.018	1.06	-0.093	-3.56	0.029	2.04	-0.023	-1.65
Age 35 – 39	0.005	0.44	-0.008	-0.33	0.017	1.31	-0.027	-2.07
Age 45 – 49	0.006	0.56	-0.012	-1.2	-0.031	-2.17	-0.016	-1.18
Age 50 – 54	-0.026	-2.29	-0.091	-5.51	-0.062	-4.06	-0.051	-3.77
Age 55 – 59	-0.162	-8.14	-0.417	-14.99	-0.123	-7.09	-0.270	-13.92
Age 60 – 64	-0.436	-16.06	-0.580	-20.68	-0.452	-20.21	-0.648	-28.24
Age 65 – 74	-0.650	-18.8	-0.703	-25.6	-0.775	-31.9	-0.793	-36.16
Single	-0.074	-4.14	-0.100	-5.13	-0.165	-8.97	-0.062	-4.68
One child	0.105	8.16	-0.075	-2.33	0.071	2.99	-0.044	-2.36
More children	0.142	8.45	-0.202	-5.44	0.109	2.23	-0.103	-2.95
Ethnic minority	-0.009	-0.41	-0.064	-2.17	-0.022	-1.26	-0.048	-2.77
Disabled	-0.416	-6.96	-0.318	-5.84	n. a.	n. a.	n. a.	n. a.
Rural	-0.041	-2.51	-0.024	-1.27	0.059	4.16	0.005	0.35
MW=Log (min wage) (last Q): main effect	-0.141	-3.08	-0.079	-1.68	0.245	2.17	0.542	4.57
(MW-mean(MW))×(age 15- 19)	0.357	2.90	0.467	3.20				
(MW-mean(MW))×(age 20-24)	0.359	2.29						
AW=Log (avg. local wage) last year: main effect					-0.056	-0.94	-0.054	-0.81
(AW-mean(AW))×age 15-19			0.126	1.59				
(AW-mean(AW))×age 20-24			-0.146	-2.00				
(AW-mean(AW))×age 60-74			0.084	1.82				
Log (last year county unemployment rate)	-0.034	-1.32	-0.046	-1.74	-0.035	-1.56	0.033	1.44
County fixed effects (vs. capital city)	yes							
Min	-0.106	-2.60	-0.101	-2.01	-0.135	-3.26	-0.156	-3.87
Max	0.101	2.82	0.087	2.31	-0.016	-0.34	0.015	0.37
Average	-0.002	-0.09	-0.039	-1.07	-0.054	-1.22		
Panel size (min/max/av.)	5/8/6		5/8/6		1/2/1.6		1/2/1.6	
Error correlation within panels	0.7652		0.7994		0.7539		0.7567	
# obs	25302		30064		18461		20330	

Notes: Estimates are based on population averaged panel data probit model assuming equal error correlation within panels. z-values based on standard errors (robust conditionally on assumed correlation structure) for respective coefficients. [a] Marginal effects of explanatory variables on probability of positive outcome. Marginal effect for a dummy variable is calculated as increase in Pr(y=1) when respective variable changes from 0 to 1, while other variables (except those which are necessarily zero for the reference group) take their mean values. Reference groups not mentioned in the table: basic education or less; age 40-44; married or cohabited; no children; ethnic majority.

Source: Calculation based on LFS data.

Table 10 Determinants of labour force participation, controlling for studies and non-labour income

		Estonia				Lithuania			
		Men		Women		Men		Women	
	Mean probability	0.694		0.578		0.671		0.579	
		dy/dx[a]	z	dy/dx[a]	z	dy/dx[a]	z	dy/dx[a]	z
Education:	Higher	0.223	6.63	0.300	9.18	0.220	12.39	0.386	19.89
	Postsecondary professional	0.196	3.84	0.245	6.44	0.192	10.77	0.268	13.66
	Secondary general	0.148	5.37	0.171	6.28	0.118	6.53	0.193	10.39
	Secondary vocational	0.152	5.02	0.229	7.31	0.189	10.56	0.260	11.61
	Vocational	0.158	4.08	0.026	0.5	0.100	1.93	0.217	2.08
	Age 15-19	-0.576	-10.3	-0.643	-10.98	-0.581	-17.74	-0.647	-20.00
	(Age 15-19) × (Parents' wage per core family member)[b]	-0.066	-0.59	-0.126	-1.14	0.019	0.36	-0.064	-1.34
	Age 20-24	0.004	0.12	-0.302	-7.54	0.014	-2.76	-0.092	-4.06
	(Age 20-24) × (Parents' wage per core family member)[b]	0.079	1.24	0.037	0.61	-0.032	-1.41	0.024	0.41
	Student/pupil	-0.251	-4.83	-0.321	-5.77	-0.307	-8.82	-0.245	-7.04
	(Age 20-24) × Student/pupil	-0.356	-4.04	-0.127	-1.76	-0.336	-5.70	-0.367	-8.15
	(Age 25+) × Student/pupil	-0.102	-0.92	0.118	1.52	0.129	1.60	0.071	1.41
	Age 25 – 29	0.044	1.91	-0.173	-6.00	0.050	3.01	-0.028	-1.59
	Age 30 – 34	0.027	1.02	-0.087	-3.42	0.040	2.41	-0.005	-0.34
	Age 35 – 39	-0.012	-0.47	-0.029	-1.29	0.021	1.42	-0.019	-1.31
	Age 45 – 49	-0.009	-0.30	-0.058	-2.19	-0.038	-2.3	-0.021	-1.31
	Age 50 – 54	-0.009	-0.34	-0.118	-4.15	-0.068	-3.91	-0.063	-4.00
	Age 55 – 59	-0.068	-2.21	-0.441	-11.07	-0.133	-6.82	-0.295	-14.11
	Age 60 – 64	-0.480	-10.79	-0.716	-17.01	-0.463	-19.55	-0.657	-28.37
	Age 65 – 74	-0.756	-16.93	-0.834	-22.00	-0.763	-30.54	-0.779	-36.14
	Single	-0.042	-1.49	-0.007	-0.24	-0.147	-7.45	-0.044	-2.96
	(Wage of spouse)/(family size)[b]	0.247	3.20	-0.049	-1.17	0.019	1.25	0.003	0.24
	One child	0.110	3.77	-0.127	-3.71	0.110	2.24	-0.107	-5.65
	More children	0.141	3.63	-0.307	-8.46	0.141	1.90	-0.173	-5.09
	Ethnic minority	-0.052	-1.86	-0.097	-4.03	-0.034	-1.81	-0.073	-4.15
	Disabled	-0.724	-14.65	-0.491	-9.12	n. a.	n. a.	n. a.	n. a.
	Rural	-0.053	-2.43	-0.052	-2.63	0.050	3.46	0.003	-0.17
	MW=Log (min wage) (last Q): main effect	-0.253	-1.33	-0.167	-1.17	0.324	2.77	0.625	5.16
	(MW-mean(MW))×(age 15- 19)	0.682	1.33	0.363	0.81				
	(MW-mean(MW))×(age 20-24)	0.296	0.51	0.709	1.41				
	AW=Log (avg. local wage) last year: main effect	0.031	0.63	0.157	3.67	-0.053	-0.81	-0.110	-1.58
	(AW-mean(AW))×age 15- 19							0.138	1.71
	(AW-mean(AW))×age 20-24					0.186	2.76	0.246	3.00
	(AW-mean(AW))×age 60-74						-1.69		
	Log (last Q county unemployment rate)					-0.045	-1.97	0.032	1.35
	County fixed effects	yes				yes		yes	
	Panel size (min/max/av.)	1/2/1.7		1/2/1.7		1/2/1.6		1/2/1.6	
	Error correlation within panels	0.7452		0.7337		0.7444		0.7474	
	# obs	7432		8848		18461		20330	

Notes: Estimates are based on population averaged panel data probit model assuming equal error correlation within panels. z-values based on standard errors (robust conditionally on assumed correlation structure) for respective coefficients. [a] Marginal effects of explanatory variables on probability of positive outcome. Marginal effect for a dummy variable is calculated as increase in Pr(y=1) when respective variable changes from 0 to 1, while other variables (except those which are necessarily zero for the reference group) take their mean values. Reference groups not mentioned in the table: basic education or less; age 40-44; married or cohabited; no children; ethnic majority. [b] Parents' wage and spouse/partner's wage per family member are measured as deviations from their mean values divided by national average net wage.

Source: Calculation based on LFS data.

Table 11 Determinants of discouragement among inactive population aged 15-74.

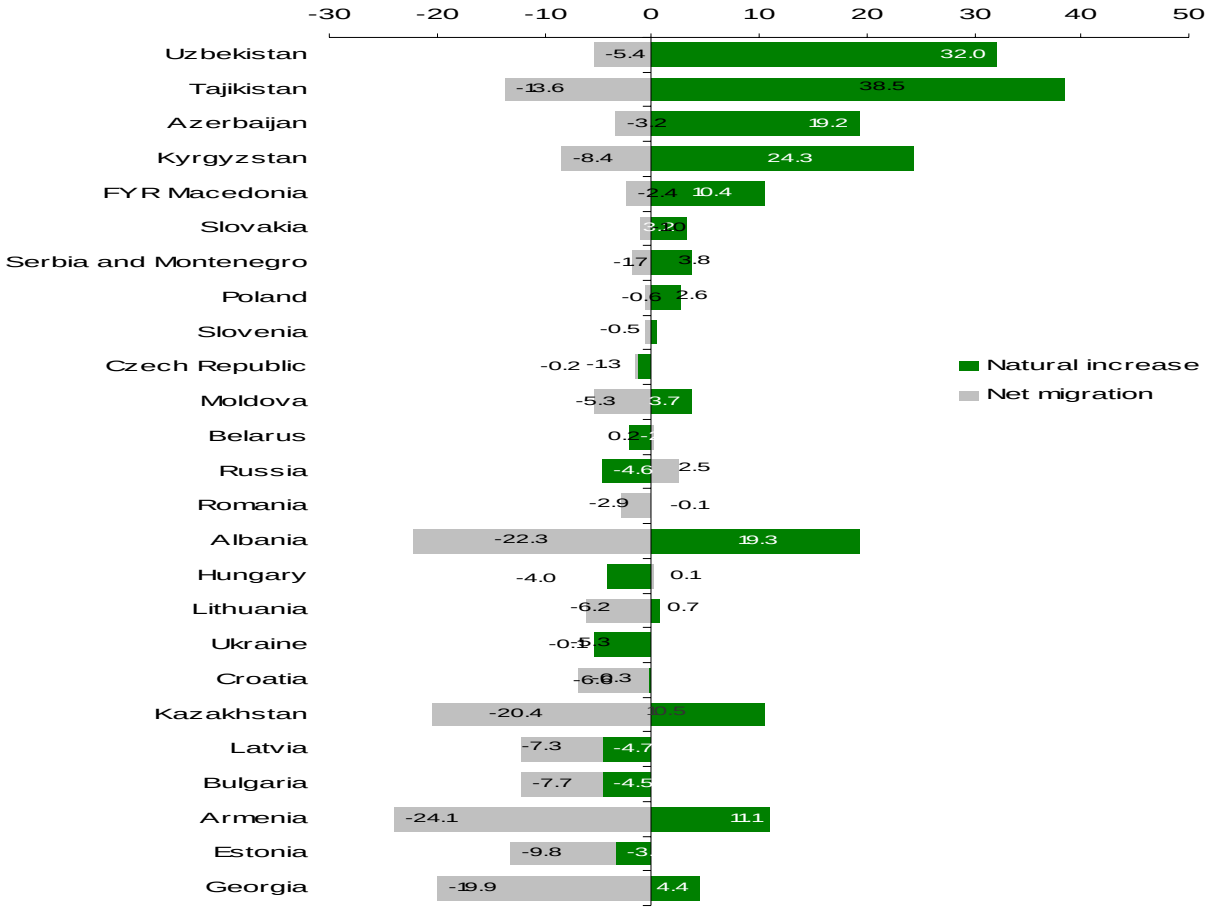
	Estonia, 2001				Lithuania, 2002-2003			
	Men		**Women**		**Men**		**Women**	
Mean probability	y=0.173		y=0.129		y= 0.049		y = 0.039	
	dy/dx[a]	z	dy/dx[a]	z	dy/dx[a]	z	dy/dx[a]	z
Education: Higher	-0.013	-0.33	-0.011	-0.49	0.013	0.88	0.012	1.41
Postsecondary professional	-0.021	-0.28	0.014	0.62	0.022	2.4	0.008	1.46
Secondary general	-0.015	-0.7	0.050	3.13	0.013	1.47	0.016	2.62
Secondary vocational	-0.018	-0.74	0.052	2.47	0.021	2.22	0.019	2.38
Vocational	0.012	0.36	0.056	1.91	0.046	2.09	-0.014	-7.93
Age	0.046	11.6	0.030	11.48	0.003	1.98	0.006	8.48
Age squared/100	-0.001	-11.57	-0.036	-12.44	-0.005	-3.27	-0.008	-8.86
Pupil/student	-0.081	-4.07	-0.036	-1.52	-0.024	-4.03	-0.013	-2.81
Single	0.011	0.54	0.019	1.07	0.000	0.04	0.004	0.94
One child	0.099	2.26	-0.022	-1.07	0.004	0.24	0.013	1.98
More children	-0.027	-0.56	-0.045	-2.60	0.006	0.20	0.009	1.42
Ethnic minority					0.000	-0.02	-0.001	-0.12
State language skills (vs. native speakers)								
Speaks	-0.044	-1.29	0.014	0.54	n. a.	n. a.	n. a.	n. a.
Understands, doesn't speak	0.087	1.45	0.032	1.18	n. a.	n. a.	n. a.	n. a.
Doesn't understand	0.066	1.87	-0.008	-0.41	n. a.	n. a.	n. a.	n. a.
Disabled	-0.134	-8.89	-0.065	-4.5	n. a.	n. a.	n. a.	n. a.
Rural (vs. cities except capital)	0.020	0.97	0.015	1.06	-0.003	-1.01	-0.005	-1.64
MW=Log (min wage) (last Q): main effect					-0.051	-1.01	-0.120	-2.78
AW=Log (avg. local wage) last year: main effect					-0.065	-3.66	-0.028	-1.79
(AW-mean(AW))×(age 15- 19)					-0.006	-2.47		
(AW-mean(AW))×(age 20-24)					-0.002	-0.82		
Log (last year county unemployment rate)					0.003	0.35	0.005	0.72
Age of max Pr(y=1)	41		42		31		41	
County fixed effects	yes		yes		yes		yes	
Panel size (min/max/av.)	1/2/1.7		1/2/1.7		1/2/1.6		1/2/1.6	
Error correlation within panels	0.3073		0.2887		0.3437		0.2604	
# obs	2513		3987		6366		8609	

Notes: The relaxed definition of discouragement applies: all persons who are willing to work and are available for work in two weeks time, but who are actively seeking job, are categorised as discouraged. Estimates are based on population averaged panel data probit model assuming equal error correlation within panels. z-values based on standard errors (robust conditionally on assumed correlation structure) for respective coefficients.

[a] Marginal effects of explanatory variables on probability of positive outcome. Marginal effect for a dummy variable is calculated as increase in Pr(y=1) when respective variable changes from 0 to 1, while other variables (except those which are necesserily zero for the reference group) take their mean values. Reference groups not mentioned in the table: basic education or less; married or cohabited; no children; ethnic majority.

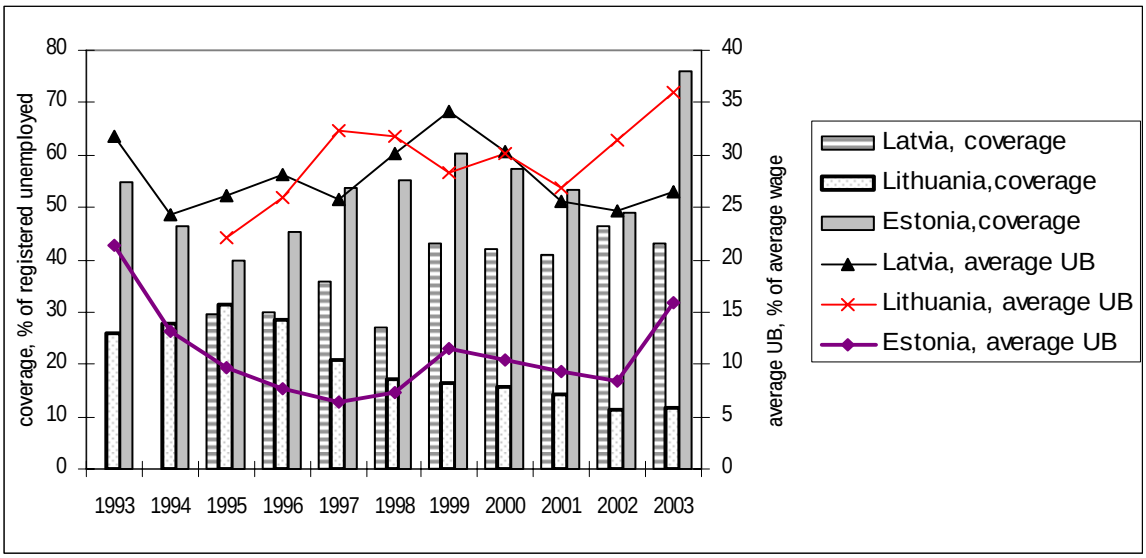
Source: Calculation based on LFS data.

Figure 1: Net Migration and Natural Increase by Country in the CEE-CIS Region, 1989-2002 (percent change)



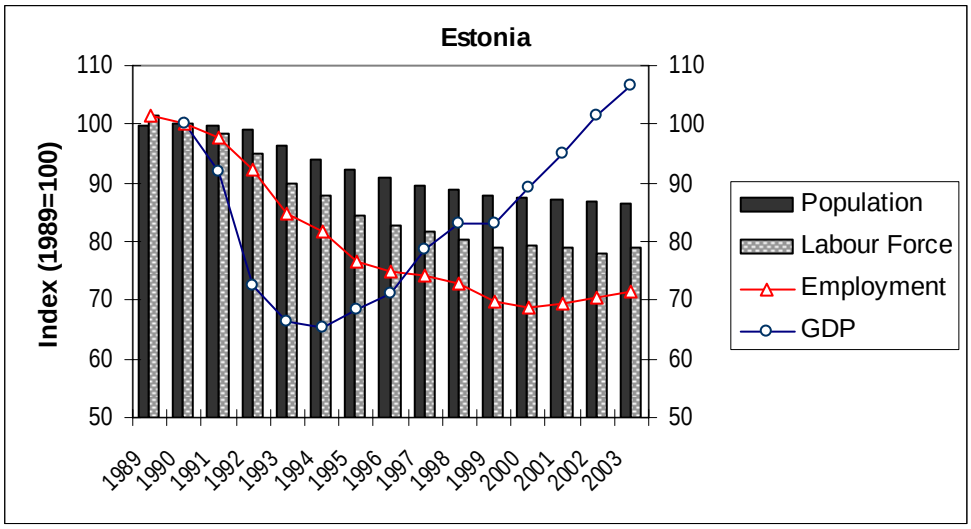
Source: Heleniak (2004).

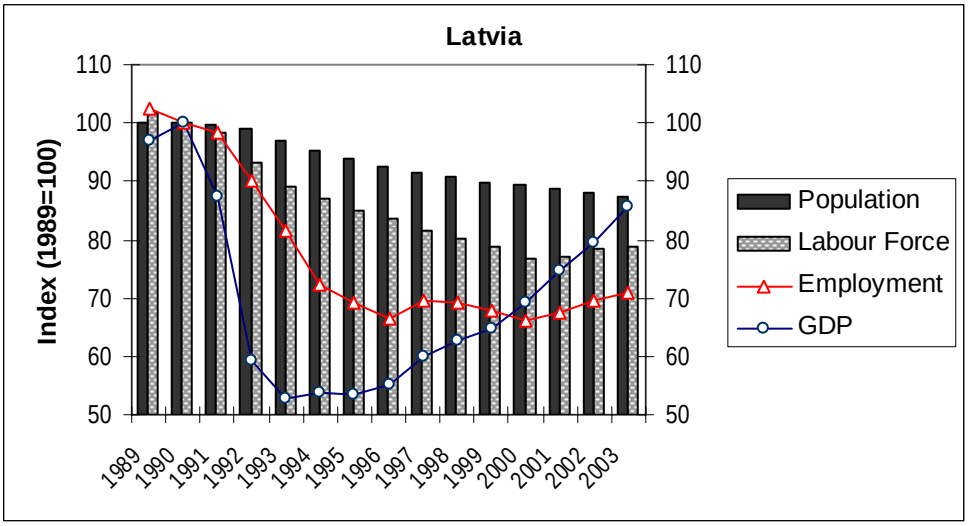
Figure 2. Unemployment Benefits in the Baltic countries, 1993-2003



Notes: Coverage is percentage of registered unemployed receiving unemployment benefits (UB). *Average UB* (after tax if taxed) is expressed as percentage of average net wage. The year 2003 point for Estonia includes both unemployment assistance benefits (UAB, flat at 7.8 percent of average net wage, coverage 52%) and new unemployment insurance benefits (UIB, coverage 24%, estimated average after-tax level 33 percent of average net wage). Maximal duration: 9 months for UB in Latvia and UAB in Estonia, 6 months for UIB in Estonia and UB in Lithuania. *Sources:* Estonian Labour Market Board (2004), Kuddo et al (2002), Statistical Office of Estonia (2004), State Social Insurance Agency of Latvia (2004), Central Statistical Bureau of Latvia (2004), National Labour Exchange of Lithuania (2004), Statistical Department of Lithuania (2004), own calculation.

Figure 3. Evolution of population, labour force, employment, and real GDP in the Baltic countries, 1989-2003





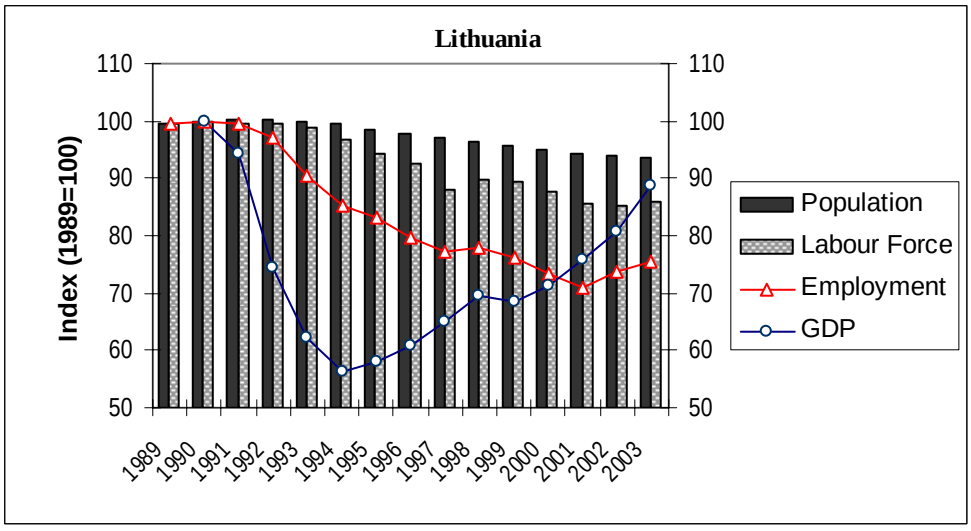


Figure 4. Labour market dynamics in Estonia, 1989-2003 (thousand population)

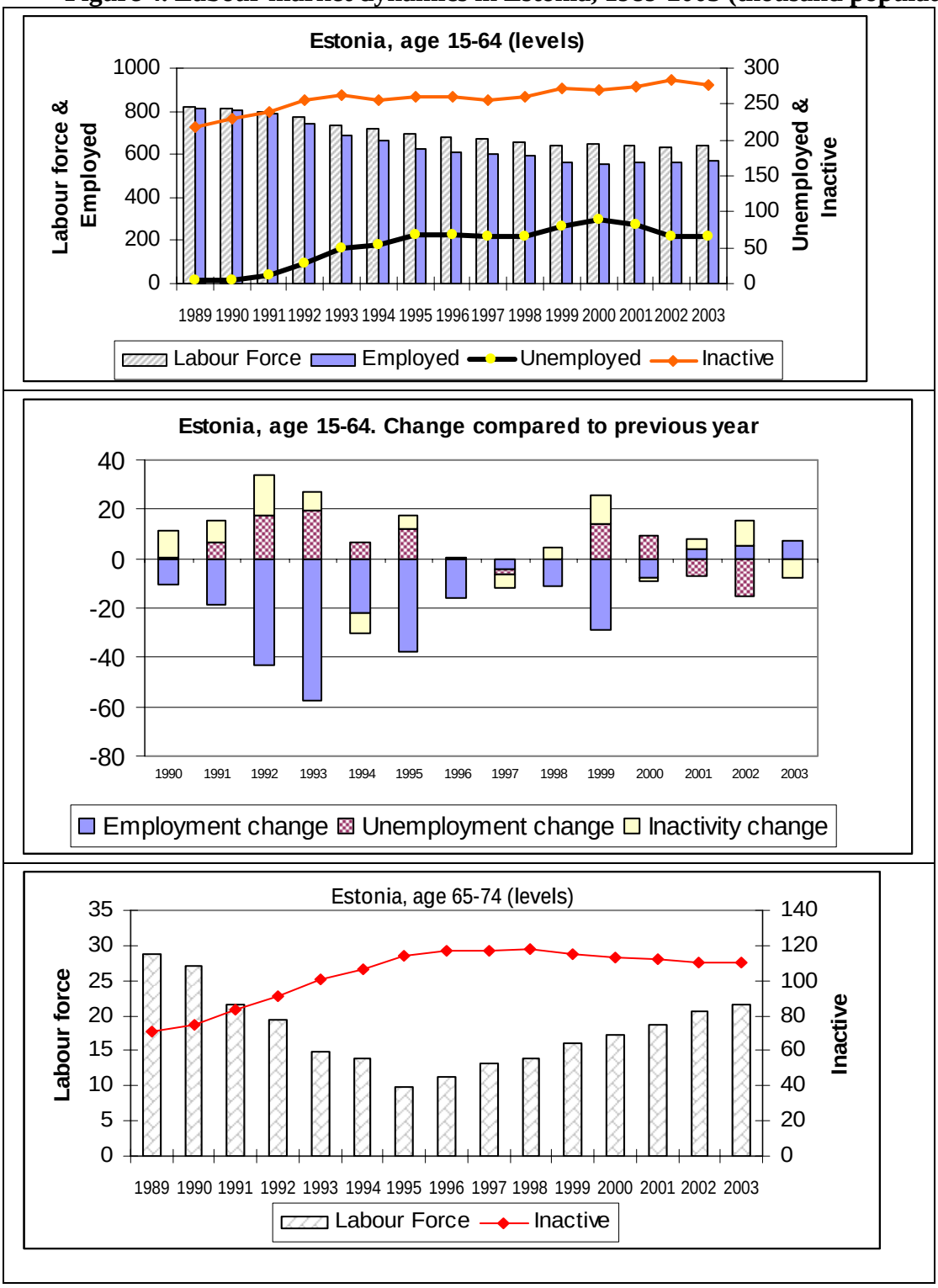
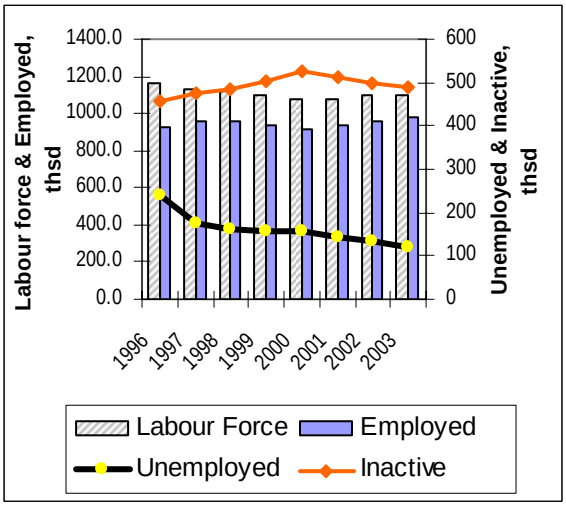
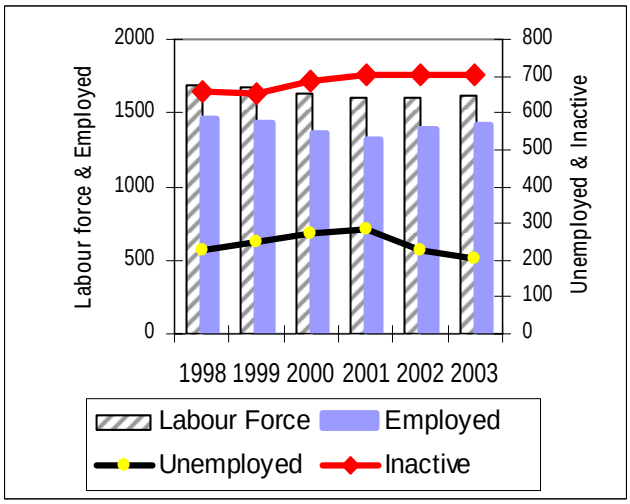
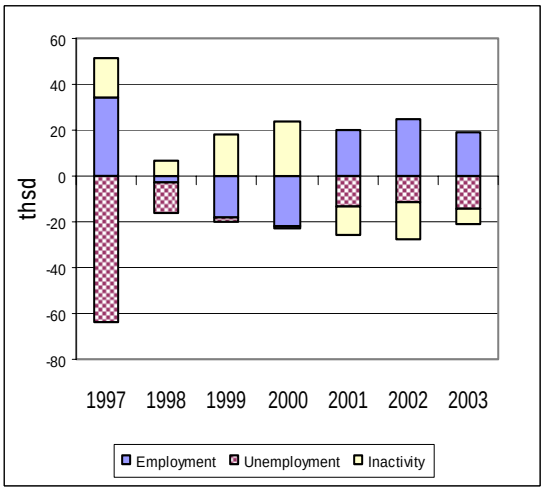
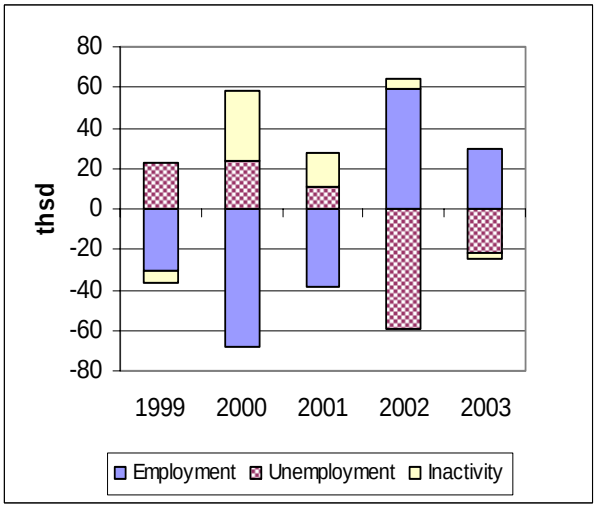
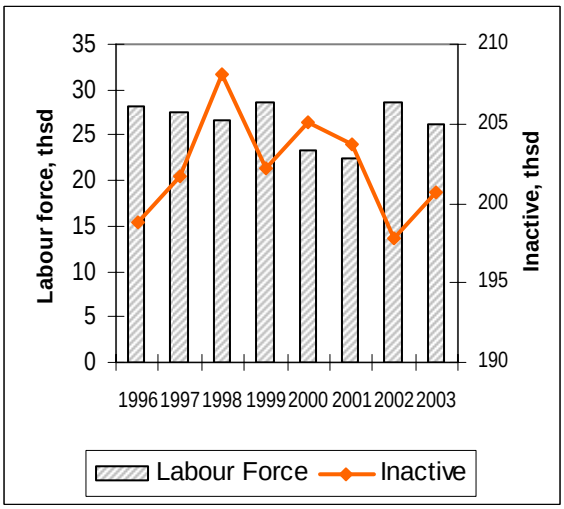
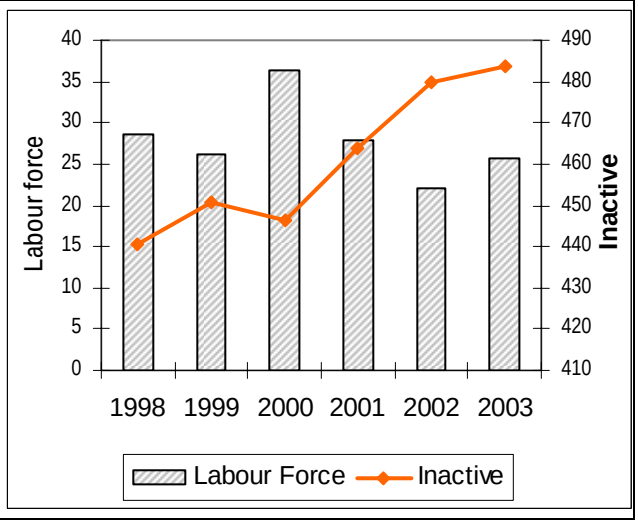


Figure 5. Labour market dynamics in Latvia (1996-2003) and Lithuania (1998-2003)

Latvia	Lithuania
Age 15-64, levels	
	
Age 15-64, change compared to the previous year	
	
Age 65-74, levels	**Age 65+, levels**