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## Foreword

While many countries in the world are witnessing too rapid population growth, Europe is facing decreasing and ageing of the population. At the same time, demographic developments directly affect economic growth, labour market, financial markets and public finance.

Estonia is no exception in this respect. Although we rank among the average European countries in terms of the number of the working age population, the problems arising from low birth rates have been on the agenda for a while now. The future will bring us an increasing share of the elderly against the decreasing working age population.

After the accession to the European Union, the issue of emigration has become more topical also in Estonia. Thus, besides the ageing and decreasing population we are also facing the risk of able and skilled people emigrating elsewhere.

These and other matters are discussed in the present issue of Kroon & Economy, casting some light on the demographic developments in Europe and in Estonia. You will also find the latest labour market review.

# CURRENT STATE AND FUTURE PROSPECTS OF ESTONIA'S POPULATION

***Kristina Täht, Ene-Margit Tiit***

*Estonia along with many other countries is characterised by an ageing and declining population. The birth rate is low and so is the average life expectancy, whereas the death rate continues to be high. Given these and other factors, Estonia's working age population and national social and pensions systems will be facing a heavy burden of dependants. This article will look at the developments in the Estonian population over the recent years and compare them with other European countries.*

## POPULATION FORECASTS

Forecasting the size and composition of population provides valuable input in most fields but primarily for the policy-makers in the fields of economy, labour market and education as well as for employers. Forecasts of Statistics Estonia have used various expected birth and death rate and migration balance values and show that in 2015 Estonia's population will reach 1.248 to 1.295 million people[1]. According to the latest forecasts of the UN population experts, Estonia will have 1.128 million inhabitants in 2050. Thus, the current population of 1.342 million[2] will decline by over 200,000 people (15%) by that time. While earlier forecasts for Estonia have been even worse, a decline of "only" 200,000 seems almost positive.

Besides the balance of births and deaths, another crucial population characteristic is age distribution, and most importantly, the overall dependency ratio. Population forecasts often draw upon the following two figures: the total fertility rate, currently standing at 1.5 children per woman (below the replacement rate of 2.1 children per woman), and the average life expectancy at birth. The average life expectancy in Estonia is projected to be 79 years in 2050. Today, the average figure for both genders is 72.8 years but the difference between their life expectancy exceeds ten years. The largest unknown variable in Estonia's population forecasts is **migration**. The authorities do not have reliable statistics on emigration and it is difficult to suggest what the respective volumes or destinations might be by the mid-century. Therefore, the impacts of migration have not been included in the above-mentioned population forecast.

Estonia is facing an **ageing** and **declining** population. While population-related problems are more acute in a country of less than 1.5 million people (see also Figure 1), the Estonian Government has set two key strategic objectives in the population policy principles.

The first objective is to achieve a rise in the birth rate up to the replacement level[3]. Estonia's current birth rate of 1.5 is higher than the respective figures for Greece (1.28), Italy (1.32), Spain (1.33) or

[1] Rahvastik 2002. Population. Statistics Estonia, Tallinn, 2003.
[2] Ibid.
[3] The replacement level is the level of births ensuring the reproduction of a population. It is indicated by the number of children per woman, i.e. by the total fertility rate, which should be at least 2.1 according to the population policy principles.

Germany (1.36), but considerably lower than in Finland (1.80), Sweden (1.77), Norway (1.81), Denmark (1.80) and Iceland (2.05) as well as Ireland (1.99) and France (1.94) which rank first among the European countries.

The second objective is to achieve an increase in both women's and men's average life expectancy and the average active life to reach at least Europe's average level.

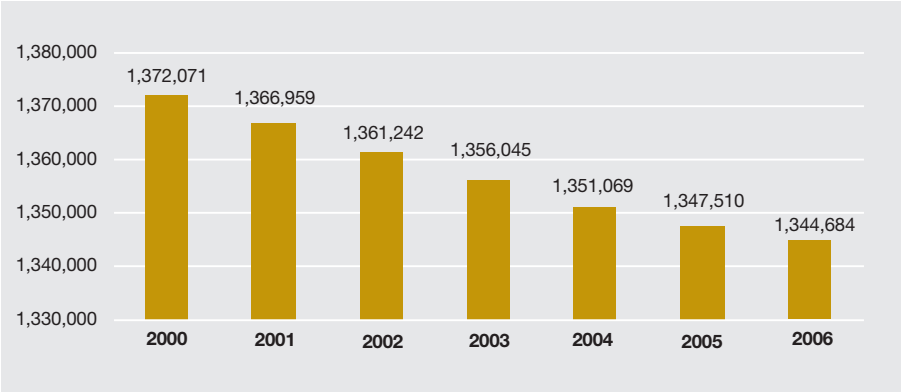


**Figure 1. Estonia's population in 2000–2006**

Source: Statistics Estonia

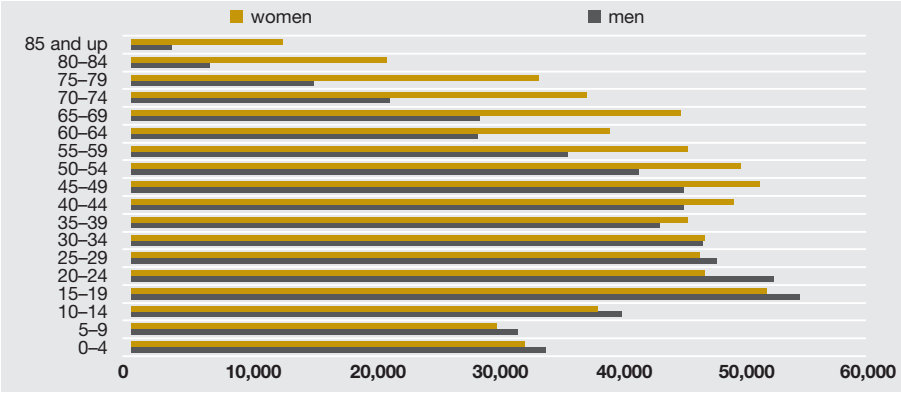


**Figure 2. Gender and age distribution on average in 2005**

Source: Statistics Estonia

The average life expectancy of Estonian men is the most serious issue, as it is 11 years shorter than the EU average (6 years shorter than Europe's average), mainly due to the high mortality of young and working age men. Risk behaviour has caused men to drop out of the labour force because of deaths and loss of working capacity resulting from alcoholism, occupational or traffic injuries or violence.

The **dependency ratio** shows the ratio of the total number of dependant generations (i.e. 0 to 14 year-olds and over 65 year-olds) to the number of working age population (15 to 65 year-olds). The lower the ratio, the smaller the burden for the working people to support the dependants. In Estonia, the children's generation is small and the average life expectancy is relatively low and thus the dependency ratio is also fairly low: two working age persons per dependant. A rapid growth in the dependency ratio is to be expected within 5 to 10 years when the small cohorts born in late 1990s will reach their working age. Figure 3 shows changes in the share of young and elderly dependants. These changes can be explained by a drop in the birth rate in the 1990s and its steadily low level which is insufficient for the reproduction of population.

The **index of demographic pressure on the labour market**, calculated as the ratio of 5 to 14 year-olds and 55 to 64 year-olds, shows the percentage of those entering the labour market against those leaving employment. In the course of natural developments the value of the index exceeds one, which actually describes a certain risk of unemployment for the generation entering the labour market unless preventive measures are taken. In Estonia, the value of the index was above one in 2000–2004 but declined rapidly to stand below one in 2005. This is a clear sign of risk and suggests a more acute labour shortage. Reasons are still the same: small birth cohorts come of age and the numerous generation born after the Second World War reaches the pension age.

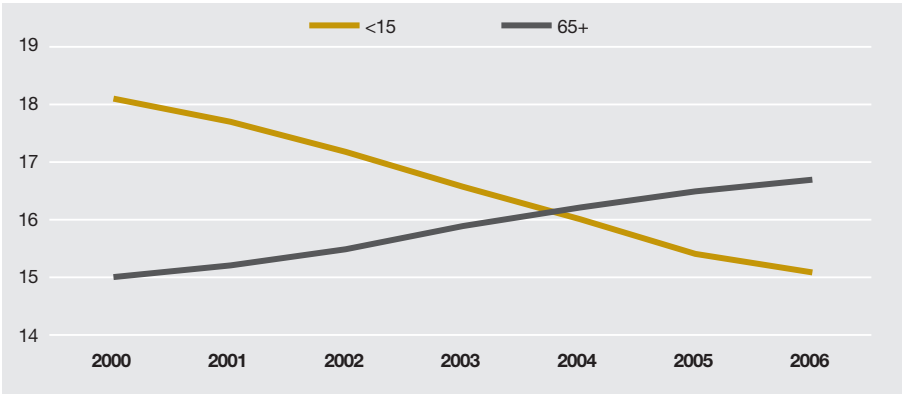


**Figure 3. Changes in the share of the young and the elderly**

Source: Statistics Estonia, authors' calculations

## BIRTH RATES

The problem of an insufficient number of births was unknown to the world and also Europe until the early years of the 20th century. Although birth rates have always been lower in urban areas, rural population which has always grown relatively faster has continued to supply towns with immigrants. The first countries to notice that the number of births was below that of deaths between the world wars were those in Europe, including France and Sweden. Natural increase was negative in some years in the early 1930s in Estonia too, following the economic recession period.

The Second World War decreased the European population heavily but it was followed by a 10 to 20 year period of high birth rates when the replacement level (2.1 children per woman) was exceeded considerably. Over the post-war period the birth rate increased by up to 1.5 times in a number of European countries since rising birth rates were accompanied by an remarkable decline in death rates and a rise in the average life expectancy. This was a result of a fall in the number of infectious diseases and advances in social and health care.

In comparison with other European countries, Estonia has witnessed both the highest and the lowest birth rates for a short period during the 1980s and 1990s among other countries of similar state and history. Countries of the former Soviet Union situated in Europe had low birth rates in the late 1970s, followed by a rise in the early 1980s. These countries enjoyed the highest birth rates in Europe of about 2.1 to 2.3 for nearly ten years, and were then hit by a drastic fall when the total fertility rate plummeted to 1.2 in the mid-1990s, being the lowest figure in Europe (even though birth rates in South Europe displayed a similar fall). Dramatic changes in reproductive behaviour usually necessitate structural changes in the entire society. Generations which are significantly larger or smaller in size create institutional problems when they start pre-school education. The situation persists when they start school as well as when they enter the labour market, not to mention when numerous cohorts reach the age of retirement. The “problem” of having twice as many births would still be more than welcome for Estonia and the policy aiming to increase the birth rate has been a primary task for the last two Estonian Governments.

Below we will present a few hypotheses which seek to explain the reasons for a decline in Europe’s birth rates and the factors that have caused different reproductive behaviour in a more or less homogeneous cultural space of Europe.

The overall decrease in the birth rate can be attributed to a society which is more self-centred, giving higher value to personal freedom and self-development opportunities and being unwilling to be committed to children; development in social policy (the state replaces children through benefits and pensions); availability of birth control; urbanisation (urban areas have always had fewer children than rural regions where they had an economic role to play); a rise in women’s education and employment and subsequent changes in their role (women have a number of new roles in the society and those of a wife and a mother are given less importance to); a rise in expenses related to children (their upbringing); and a diminishing impact of religion.

The impact of the state's and individuals' economic status on the birth rate is paradoxical. On one hand, the birth rate has always been higher in poorer countries and poorer social strata. On the other hand, lack of economic opportunities, lack of money and inadequate living conditions come among the most frequent motives for not having children or delaying giving birth.

Quite naturally, the family policy is largely based on providing economic support to families with children. It appears that the relation between expectations and the reality is essential here: when an individual or a family has defined a desired standard of living, s/he tries to maintain it even at the price of not having children. Standards of living set as model standards are determined by general values of the society as well as the personal values of an individual or a family.

Estonia stands among the average of 25 EU Member States for its fertility rates. But since the birth rate was extremely low in Estonia during 1997–1999 (the total fertility rate in those years was 1.32, 1.28 and 1.32, respectively[4]), it has been increasing at a relatively rapid pace compared to the respective indicators of other EU Member States. Presumably, the radical political steps of last years focussing on families have played a role here.

Europe is currently characterised by mothers' relatively high age at giving birth. Mothers' average age exceeds 30 in several countries. In Estonia women give birth at a rather young age, women in Latvia and Lithuania and most transition countries give birth at even a younger age. Over the last ten years, the average age of women delivering their first child or next children has risen by about two years. A rise in mother's age continues on average by two months a year in Estonia. In 2000 the most active age for giving birth was between 20 to 24 years, from 2001 the age peak shifted to 25 to 29 years and from 2005 onwards the number of 30 to 34 year-old women giving birth has been exceeding that of 20 to 24 year-olds. Thus, we can conclude that many of the newborns of the last few years are the children of those mothers who delayed having children in the 1990s.

## MOTHERS' EDUCATION, SOCIAL STATUS AND NATIONALITY

Mothers' educational level has significantly increased over the last years: in 2005 over a quarter of them had higher education. The number of mothers with basic or secondary education has remained practically unchanged but the number of mothers with higher education has nearly doubled after 2000 (see Figure 4). Such a shift was well expected as it reflects a rise in the share of women with higher education as well as the shorter period of studies (generally women complete three or four year Bachelor's programmes before giving birth). Supposedly, the parental benefit system plays a role here, as it provides generous benefits to mothers with high salaries. Moreover, the number of employed mothers has considerably increased recently on account of other social groups (see Figure 5), exceeding 71% in 2005.

[4] Rahvastik 2002. Population. Statistics Estonia, Tallinn, 2003.

The number of women giving birth has primarily grown among urban residents. The number of rural mothers has remained unchanged but their share has slightly decreased. Probably birth benefits provided by cities encourage young mothers to register their place of residence in a city in order to qualify as benefit recipients. The percentage of ethnic Estonians reaches 68.6% of the total population, and the share of Estonians among women giving birth has slightly increased to 71.3 % in 2005 after a decline to 70% in 2002.

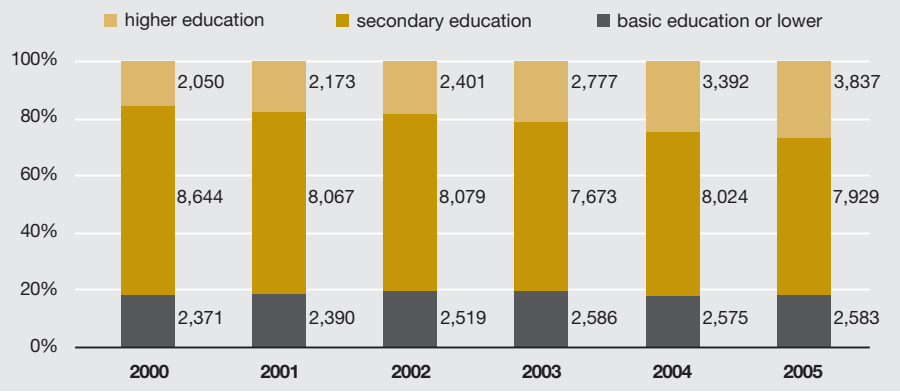


**Figure 4. Changes in the educational distribution of mothers in 2000–2005**

Source: Statistics Estonia

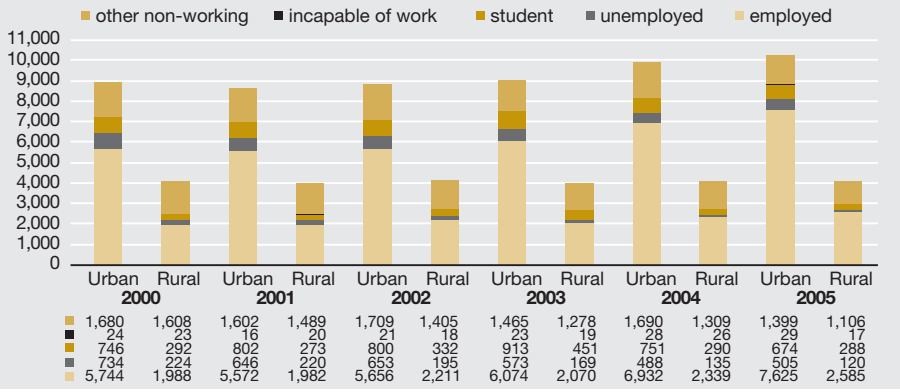


**Figure 5. Changes in mothers' employment status**

Source: Statistics Estonia

## MARRIAGE

Marriage as a population process is indicated by the marriage rate (the number of marriages per 1,000 residents). In Estonia the number of marriages per 1,000 residents has been on the rise for the last ten years. Even though the marriage rate is rather low in Estonia, it still exceeds the respective indicator for several older European countries (France, Italy) as well as transition countries (Slovenia, Hungary).

Another important indicator is the first marriage rate[5] which indicates the share of all women/men that would marry before becoming 50 years of age, should marriage behaviour remain similar to the reference year. Figure 6 shows that in Estonia the first marriage rate for both men and women fell below 40% by the year 2000 but started to improve slowly in recent years. The figure also displays the age of men and women at their first marriage which is continuously rising, being nearly 29 in case of men and over 26 in case of women. However, the Estonian young marry (if they marry at all) at a younger age in comparison to the young in Western Europe where the groom's age reaches 30 and the bride's 28 years of age. The difference between the East and the West is very pronounced since in the transition countries people get married younger than in "old" Europe.

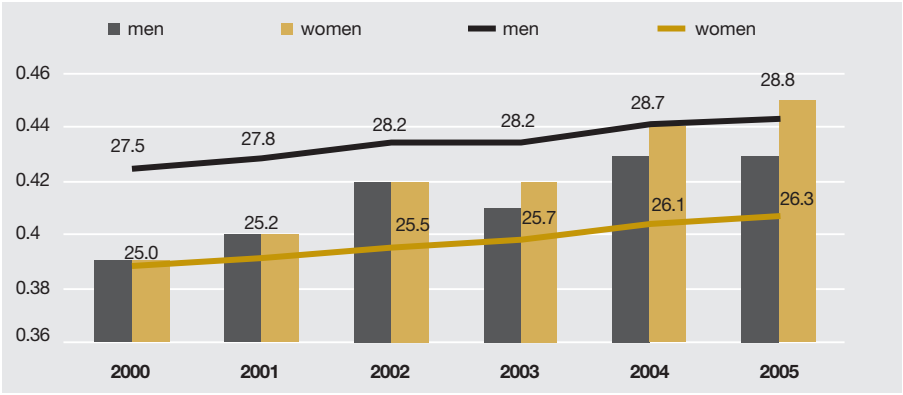


**Figure 6. Total first marriage rate for men and women (columns; left scale) and the average age of marriage (lines)**

Source: Statistics Estonia

[5] The total first marriage rate shows the likelihood of a person's first marriage on the precondition that the marriage behaviour of the population in the given period remains unchanged until this person becomes 50 years old.

## CONJUGAL RELATIONSHIPS AND PARENTS' COHABITATION PRIOR TO CHILDBIRTH

A decline in the marriage rate, though, does not suggest that Estonians mostly live alone but conjugal relationships are becoming more popular. While most children are born to parents not married to each other, the issue for the need to officially acknowledge cohabitation has come up every now and then in order to distinguish cohabiting parents from single parents legally and statistically. However, conjugal relationships are complicated to define and far more complicated to check, and have thus not been regulated. Consequently, cohabitation is not included in the official statistics.

The number of children born out of wedlock has risen in Estonia similarly to the rest of Europe, especially Northern Europe. In Estonia approximately 60% of children are born out of wedlock; in Iceland, for example, 63–65%. In Sweden the percentage of such children reached nearly 55% already in 2000 and has remained stable over the last seven years. In Norway this indicator has exceeded 50% in recent years. In the case of children born out of wedlock, there are actually two categories: children born to cohabiting parents who have a common household, and children born to single mothers, being actually and formally related only to their mothers. There are several options for making a distinction between the two: a formal document establishing paternal filiation, mother's statement at the maternity hospital, or actual cohabitation of the household which may yield different results.

Although surveys confirm that cohabitation is far more popular with the younger than with the elderly, a considerable number of the retired also cohabit with their partners without getting married. The cohabitation trend is clearly evident in the case of marital status of mothers giving birth. As said above, according to the estimates most mothers giving birth are cohabitees and predominantly they have cohabited for a minimum of one year before the child is born (see Figures 7 and 8). These figures also display that the average length of cohabitation is on the rise year-on–year. In 2005, a considerable number of women giving birth had cohabited with their partner for over ten years which contradicts the suggestions that people avoid marriage due to uncertainty about their relationship. While the share of children born out of wedlock is rising, the number of single mothers is declining, that is where the father of the child is not established (which usually takes place by the common consent of parents). Out of all births in 2005 children born to single mothers constituted 11.5% (see Figure 9).

Structural changes in the marital status are underlined by the dynamics of marital status of the deceased over the period from 1990 to 2005. The percentage of married men shrank from 60% to 48% but grew by 3% on the account of cohabitees. The share of the divorced rose from 10% to 16%. The percentage of married women decreased from 21% to 18%; there was less than 1% of cohabitees at the time of death, whereas the percentage of the divorced rose from 6% to 11%.

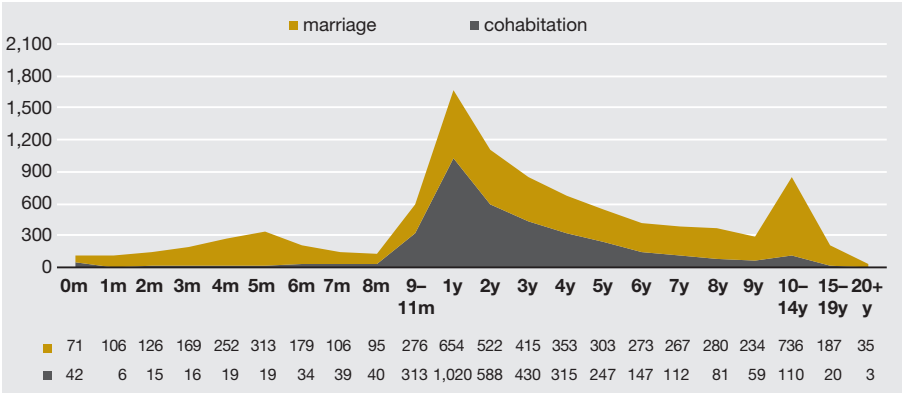


**Figure 7. Length of marriage or cohabitation prior to child's birth in 2000**

Source: Statistics Estonia

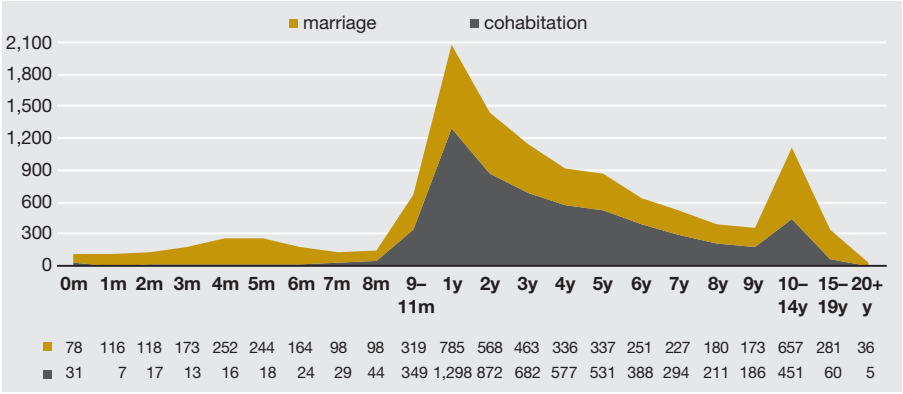


**Figure 8. Length of marriage or cohabitation prior to child's birth in 2005**

Source: Statistics Estonia

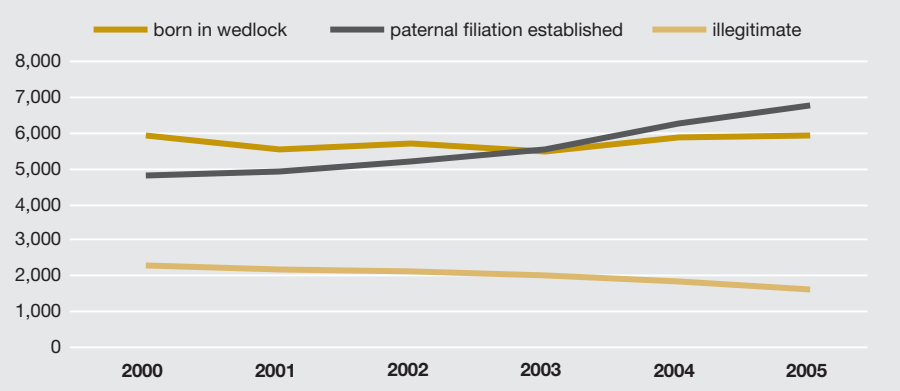


**Figure 9. Births by mother's marital status and the establishment of paternal filiation**

Source: Statistics Estonia

## ABORTIONS

The number of abortions is falling but even so, it is unacceptably high compared to the number of births (about 10,000 terminated pregnancies a year), accounting for about 80% of the number of births (about 30% in Finland, for instance). It is rather difficult to explain the fact that a typical woman making an abortion is married rather than cohabiting, she is 20 to 25 years old and already has one child. It makes it all the more complicated to understand as, on average, Estonian men and women want to have more than two children. However, various objective and subjective reasons prevent them from having the desired number of children and the second child is not allowed to be born. It is crucial to offer informed decision-making opportunities to pregnant women and their partners and every kind of information about state benefits to families with children.

Earlier, most women terminating pregnancies were those approaching their middle age and using abortion as a contraceptive measure but over the last years this tendency has been on the decrease. The average woman making an abortion is only a few months older than the average woman giving birth. Previously there were more non-Estonian than Estonian women among those making an abortion (probably information on contraceptives was less available to the former). The difference has decreased over time although still persists and is even larger in terms of percentages.

## DEATHS

The death rates are continually high in Estonia. In the case of men the high ratio of accidents caused by men's risk behaviour and resulting in disability or death is especially worrisome. Although natural increase in the two summer months of 2006 was positive over many years, the number

of deaths in the first nine months of the year had not decreased compared to 2005. The share of survivors has, however, slightly increased in both men's and women's age groups past the middle age in the last five years (see Figure 10).

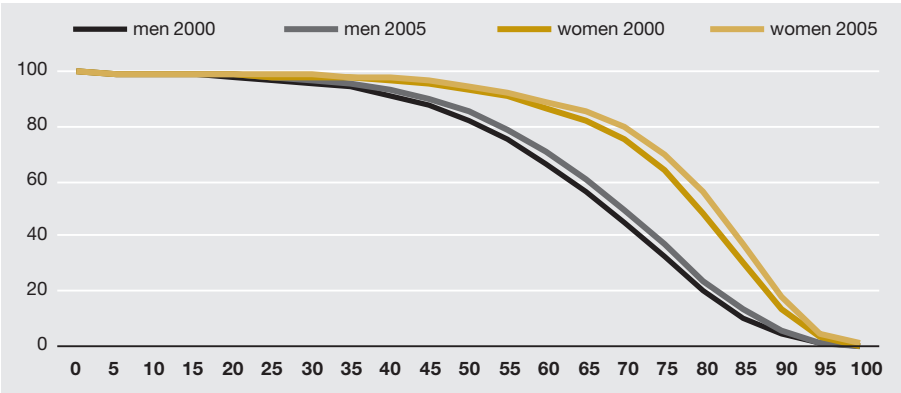


**Figure 10. Surviving men and women (% of the birth generation) in 2000 and 2005**

Source: Statistics Estonia

The structure of causes of death has not changed much in the past few years. Cardiovascular diseases are still at the top of the list (46% for men, over 60% for women); the percentage of tumoral diseases has slightly increased and reaches 22% for men and nearly 20% for women. Accidents rank third, having fallen from 17% to 14% for men but being still extremely high when compared to the 5% for women. According to the UN estimates, an average Estonian man lives 90% and a woman 87% of their life without disability, but it does not arise from a better health of older men but from their premature death.

## AVERAGE LIFE EXPECTANCY

The average life expectancy at birth for men and women has increased by over two years over the reference period but the age difference of men and women is persistently very high in comparison to other European countries, namely 11 years (see Figure 11). This difference stays around 8–9 years until the age of 50, but decreases to 6 years for 60 year-olds and to 3–4 years for 70 year-olds. Compared to other EU countries, the average life expectancy of the Estonian men is one of the lowest with only Latvia (65.5) and Lithuania (66.4) lagging behind us. Rather similar but still higher are the figures for Romania (67.7) and Hungary (68.8). Men of Iceland attain the age of 79.2, of Switzerland 78.6 and of Sweden 76.4 years of age, that being on average over 10 years longer than the Estonian men can expect to live. The average life expectancy for European men has been increasing by one or two percentage points a year. Although the average life expectancy at birth

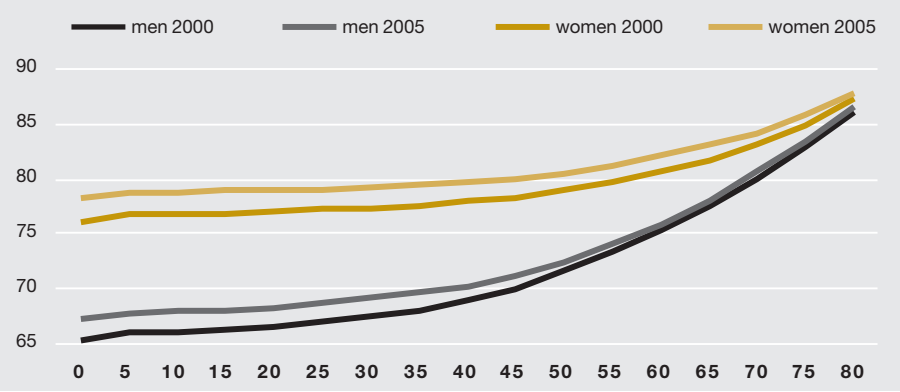


**Figure 11. Average life expectancy depending on age in 2000 and 2005**

Source: Statistics Estonia

for Estonian women is nearly 11 years higher than for men, it is still among the lowest in Europe and only exceeds the respective figure for Latvia, Hungary, Lithuania and Slovakia. The leading countries for women's life expectancy at birth are Spain and France with 83.8 years, followed by Switzerland with 83.7 and Sweden and Iceland with 82.7 years.

## TYPES OF HOUSEHOLD AND THEIR INCIDENCE

It is also interesting to analyse the composition of households as the smallest units of co-existence (see Table 1 and Figure 12). Reasons for household composition may be cultural or purely economic but as we can see, the most common type of households consist of two adult generations. Most of them are families with children who have just become of age, are studying and continue to live together with their parents. Such prolonged childhood is quite widespread in today's western world. The most numerous type of household is a single working age person (aged 18 to 64): students living on their own, employees as well as relatively old widows belong to this group.

The typology of households follows this: a child is a member of the household who is up to 18 years of age and a pensioner is at least 65 years of age. Ages are stated as at 1 January of the year of the survey. The household is people who share the living accommodation and financial and food resources. Households and families frequently overlap whereas partners are not expected to be officially married. Figure 12 and Table 1 show that although households with children constitute only a third of all households, approximately half of the population lives in families with underage children. A major part of the rest of households is relatively old. As for working age couples, these are mostly people whose children have become independent and have left home.

**Table 1. Types of household and their incidence in 2005**

| Type of household | Number | % of house-holds | Members on average | Number of members | % of members |
|---|---|---|---|---|---|
| Single pensioner | 80,508 | 14.2 | 1 | 80,508 | 6 |
| Single working age person | 99,547 | 17.6 | 1 | 99,547 | 7.4 |
| Retired couple | 33,541 | 5.9 | 2 | 67,081 | 5 |
| Couple of working age people | 82,785 | 14.6 | 2 | 165,569 | 12.4 |
| Single parent with 1 child | 17,264 | 3.0 | 2 | 34,528 | 2.6 |
| Single parent with a minimum of 2 children | 7,738 | 1.4 | 3.42 | 26,461 | 2 |
| Couple with 1 child | 50,482 | 8.9 | 3 | 151,446 | 11.3 |
| Couple with 2 children | 35,915 | 6.3 | 4 | 143,661 | 10.7 |
| Couple with minimum 3 children | 13,708 | 2.4 | 5.45 | 74,719 | 5.6 |
| Couple with underage and adult children | 35,011 | 6.2 | 4.58 | 160,487 | 12 |
| Family with 2 adult generations | 74,516 | 13.1 | 2.76 | 205,555 | 15.4 |
| Family of 3 generations | 14,653 | 2.6 | 4.18 | 61,191 | 4.6 |
| Other | 21,180 | 3.7 | 3.11 | 65,770 | 4.9 |
| **Total** | **566,847** | **100** | **2.36** | **1,336,523** | **100** |

Source: Statistics Estonia, Household Budget Survey

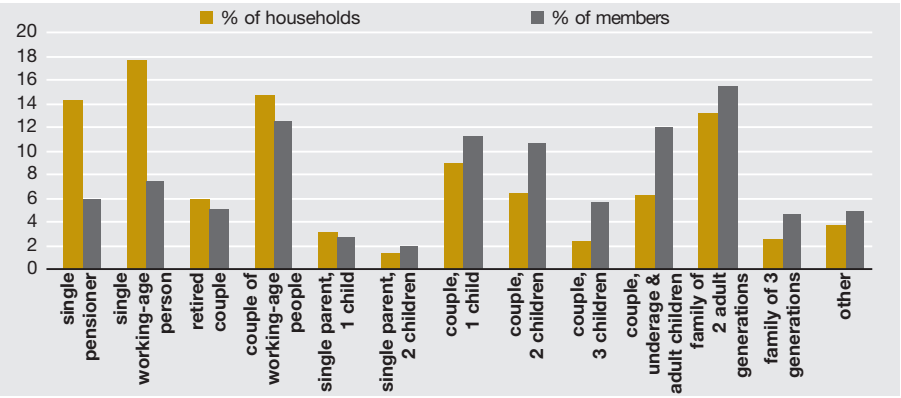


**Figure 12. Distribution of types and members of households**

Source: Statistics Estonia, Household Budget Survey

## HOUSEHOLD INCOME PER HOUSEHOLD MEMBER AND COPING (AS AT 2005)

Figure 13 shows that income per household member is the higher, the more wage earners and the fewer dependants the household has.

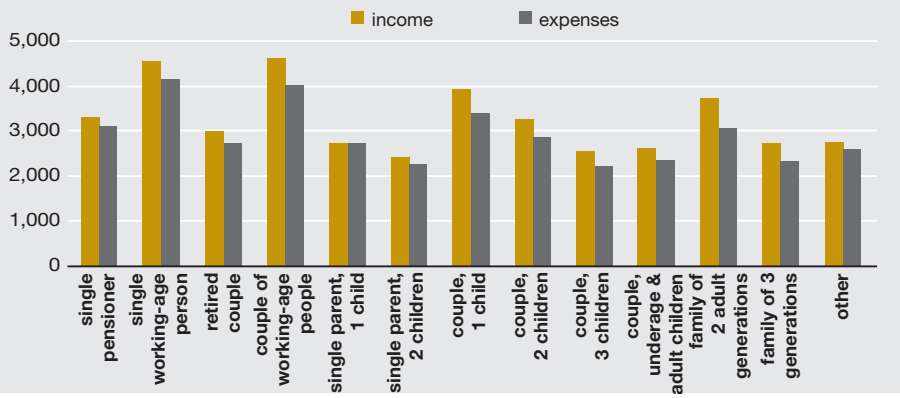


**Figure 13. Income and expenses of households per member in 2005**

Source: Statistics Estonia, Household Budget Survey

Thus, the income per household member is the highest for single working age persons and working age couples. As for families with children, only those with one child and two parents exceed the average level. The lowest income per household member occurs among single parents with children and among families with many children. However, the coping of the household is not determined by income per household member, as it does not consider the household's common expenses. For the inclusion of common expenses the so-called consumption scales are used which are based on a formal presumption that the first (sole) adult household member or consumption unit bears the common expenses (accommodation, car) and the rest of members only account for their personal expenses. The Organisation for Economic Cooperation and Development (OECD) has advised the use of two different consumption scales: the traditional one where the consumption of the second and each additional adult accounts for 70% and that of a child for 50% of the consumption unit. When using the OECD modified equivalence scale, the respective ratios are 50% and 30%. Figure 14 has used both OECD scales for comparison purposes.

Income which is equalised by using consumption scales suggests problems in single person households rather than in those with children. Analyses have shown that the OECD modified equivalence scale (recommended in international statistics) is actually not applicable in Estonia's socio-economic environment and the OECD traditional consumption scale is more suitable.

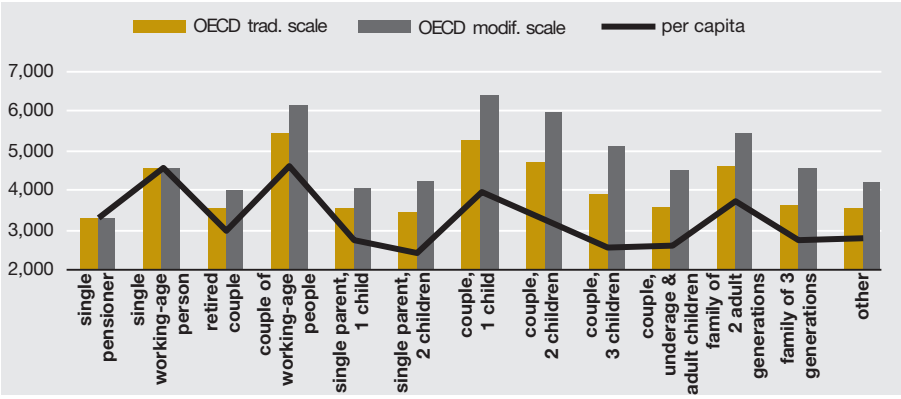


**Figure 14. Income of households per consumption unit per person and by OECD scales**

Source: Statistics Estonia, Household Budget Survey

## IS A DEMOGRAPHIC GAP INEVITABLE?

Men's premature death may be considered a disgrace for Estonia and it cannot be overcome only by introducing efficient social and health policies. Neither is there a single remedy for extending active life. It is obvious that the length of a healthy life depends on oneself and how one takes care of one's health. Healthy values are a foundation people lay their choices upon throughout their lives: whether to drive a car after "only a drink or two", whether to smoke or go for walks regularly. It also pertains to eating habits and daily exercise – our health is our own responsibility.

People also have the right to ask what the country has done to prevent premature deaths for which Estonia ranks among the first countries in the EU. While the state cannot be present at each birthday party, by each water body or road in order to punish those risking their health and life, the change in attitudes and values towards life and health should be an aim in all policies from school curricula to regional policies.

The decrease of population has stopped at below 3,000 people per year. When will Estonia reach the bottom of the demographic toilet (using the expression of a well-known Estonian political scientist, Professor Taagepera)? This may happen in about five years. At the beginning of 1994, Estonia's population contained nearly 83,000 people of up to 15 years of age more and 27,000 people over 70 less than in 2003. Owing to a double rise in births during the Singing Revolution (in 1987–1988 over 25,000 children were born in Estonia with the total fertility rate being 2.26[6]), the

[6] Rahvastik 2002. Population. Statistics Estonia, Tallinn, 2003.

ratio of the young and the elderly will remain stable in the near future. A deeper demographic gap will be seen after 2010 when the share of the elderly will start growing fast, as the large generation born after the war will be retiring in the whole Europe. Although in Estonia the birth rate was not that high after the war, the size of this age group has been boosted by the large number of immigrants. The pension and social systems will be heavily burdened because of the decreasing working age population. Many European countries will need extensive reforms, especially if the rapid economic expansion should slow down.

**Table 2. Estonia's population in 2000–2006**

| Period | Population as at 1 January | Live births | Deaths | Natural increase | Stillbirths |
|---|---|---|---|---|---|
| 2001 | 1,367,000 | 12,632 | 18,516 | -5,884 | 88 |
| 2002 | 1,361,000 | 13,001 | 18,355 | -5,354 | 73 |
| 2003 | 1,356,000 | 13,036 | 18,152 | -5,116 | 162 |
| 2004 | 1,351,000 | 13,992 | 17,685 | -3,693 | 63 |
| 2005 | 1,348,000 | 14,350 | 17,316 | -2,966 | 41 |
| 2006 | 1,345,000 | 14,819 | 17,435 | -2,616 | 54 |

The Estonian constitution states that it is the state's duty is to preserve the national language and culture. Moreover, the ageing society will introduce completely new ways of life: the number of working people against that of dependants is decreasing all over Europe, and roughly the choices are either to have a heavier tax burden, longer employment period and rising productivity or to promote immigration. In reality, countries are looking for a combination of these components which would balance the burden on the state budget imposed by ageing and decreasing population. In order to offset an ageing society and decreasing working age population, flexible types of work and policies are fostered that encourage to combine work and family life. Non-traditional types of work allow earning a living for such disadvantaged groups as the disabled, parents of young children or students who for various reasons cannot take up a job with fixed workplace and working time.

However, Estonia is not alone. As the entire Europe is facing an ageing society, the Council of Europe has invited the EU Member States to adapt to the so-called silver economy where the interests of elderly consumers are taken account of and ageing is considered a challenge rather than a problem. This means that we should develop and use the potential of the elderly, forget stereotypes and develop a positive image of the elderly in economy, research, civic society, public media and politics by valuing their experience, economic power and professional skills. Adjusting to silver economy is a way to mitigate the setback caused by the decreasing and ageing population. However, it will not cure the underlying problem – the unwillingness of the people in a welfare state to have more children. Even though Estonian men and women in their reproductive age would on average like to have more than two children, the reality remains at about 1.5 children per woman which is insufficient for stopping the decline in the size of population. The situation could certainly

be improved by higher birth rates in the next few decades. Since the state will have to operate on the basis of the taxpayers of the current small generations, we cannot ignore the need for pension, tax or any other reforms targeting redistribution of finances. Namely, all the state's policies should be viewed in terms of the ratio and cohesion of working and dependent generations. It should also be mentioned here that Estonia's current pension system is sustainable in financial terms.[7]

For people from outside the western culture it might seem strange that the state only considers people's work contribution. Should rearing children, related expenses and having temporarily to give up work not be considered an essential factor for calculating national pensions? Why should equal pension be paid to someone who has raised three children (i.e. taxpayers) and another person who has no children when retiring? Irrespective of whether having no children was a matter of choice or not, the latter has born no child-related expenses. Nevertheless, the person's pension will be equal to that of a parent (carer) whose pension is literally paid by their children. Thus, the size of a pension should be related to the number of children through a sizeable coefficient. The pension system would become fairer and would also provide another reason for economically minded young people to have their second or third child or even more children (i.e. pension pillars). Naturally, such a new pension model would call for an in-depth analysis in terms of financial sustainability as well as social impacts.

Developments of a democratic country are primarily influenced by elections and hence the growing generation of the elderly makes a considerable impact on the election results. There have been claims both in Germany and Estonia that this system makes the decisions that affect everybody to be retrospective rather than to be looking ahead. In order to make the society's future, that is the voice of families with children, heard in decisions, children should have the right to vote. In practice, this would mean giving parents additional votes according to the number of children they have.

## CONCLUSIONS

The future population policy should be characterised by securing the sustainability of the population and environment. A sustainable society places more importance on people's welfare and social cohesion than on economic growth. Production, consumption and burden on the human and natural environments should be decreasing both at the national and individual level. Self-centred consumption values should be replaced by cohesion in community and family and informal social networks. Several social scientists have pointed out the need for major changes in the globalising consumption society where traditional family values have been replaced by self-centred hedonistic values. Economic welfare has increased but people's subjective welfare has, on the contrary, decreased. Estonia has several good reasons to escape "the sinking ship" and seek alternative ways, but most importantly so because of the low absolute number of our population, and the decreasing and ageing society.

[7] L. Leppik, E-M. Tiit, A. Võrk. Eesti pensionisüsteem Euroopa Liidu ühiste pensionieesmärkide valguses [Estonian pension system in light of the common retirement objectives of the EU]. RiTo 9/2004, pp 81–90.

# CHANGE IN THE EUROPEAN LABOUR FORCE AND ITS IMPACT ON MIGRATION

***Mare Ainsaar***

*The numerousness of a nation has been the basis for power and competitiveness of the society for centuries. Nowadays human resources have spread relatively unevenly between different continents. At the time a large part of the globe is fighting against too fast growth of the population, Europe is worrying about the reproduction of the population. First and foremost, concerns arise about the smaller number of the working population compared with the generations quitting the labour market. Demographic differences and the spread between demand and supply on different labour and welfare markets form the basis for migration flows in Europe. Based on demographic projections, the present article tries to forecast possible global migration flows related to Estonia during the following twenty years. The initial source for population forecast is the UN medium forecast for the year 2006.*[1]

## ESTONIA AMONG THE AVERAGE IN EUROPE

Immigration has been the key factor affecting the size of population in the European Union since mid-1990s. The statistical indicators of Estonia point to the importance of natural increase from the standpoint of the total population (see Figure 1). However, insufficient data administration calls for caution in interpreting the small share of migration data. More or less reliable migration data for Estonia appear only once every ten years during the Population Census. In other times, Estonian residents crossing the border and those moving into Estonia determine themselves as people living temporarily elsewhere and do not register their absence. Due to the small number of

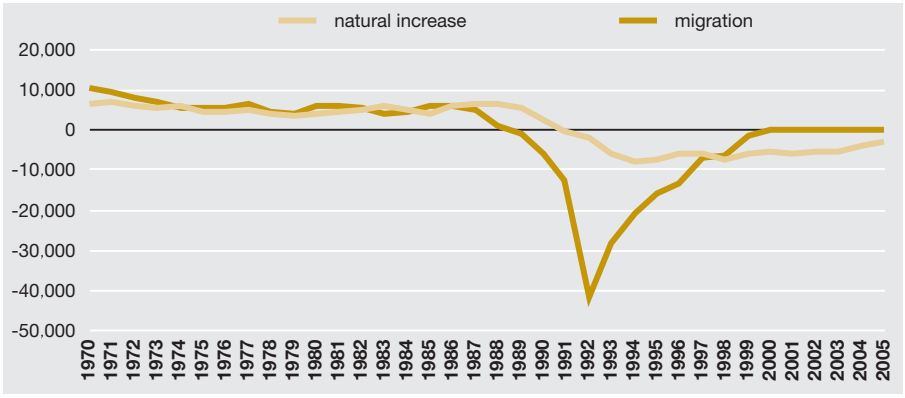


**Figure 1. Ratio of migration and natural increase in Estonia in 1970–2005**

[1] The input of the medium forecast presumes that the birth rate is growing and the lifetime is increasing moderately.

emigrants the migration increase of Estonia has until now been officially rather positive but these data are fairly questionable[2].

What is quite clear is that the Estonian population is decreasing because of the negative natural increase. The main headache for Estonia is its low birth rate. The aligned population indicators regard the birth rate in Estonia rather average compared with the rest of Europe. In 2005, Estonia's birth rate (1.5 children per woman) was among the average figures in Europe. It was higher only in nine and lower in fifteen countries. Thus, the relatively low birth rate which does not ensure reproduction of the population is rather a rule than an exception among advanced economies. At the same time, it is a major challenge to the sustainability of countries and many projections proceed from the standpoint that the total fertility rate of 1.5 and lower is rather an anomaly of the 1990s than a long-term process.

At the beginning of the 21st century, the greatest demographic problem for Estonia is the short lifetime of its people, particularly among men. There are only three countries in Europe – Latvia, Lithuania and Hungary – where the average lifetime of the population is even shorter. According to the breakdown of deaths by age and causes of death, the three Baltic States form a separate group in Europe[3]. They are characterised by premature deaths and a relatively large number of deaths caused by external factors (accidents, violence, drowning etc.) as well as cardiovascular diseases.

All in all, the decline rate of the Estonian population is still quite high compared to some other countries. Moreover, Estonia's population is very small, moving towards the critical point at which markets become economically less efficient and the maintenance of the nation and the culture as a whole becomes more expensive.

## DEMOGRAPHY AND ECONOMY

The demographic situation influences the whole country: from environmental protection to problems related to security and existence. From the perspective of economic development, population is important being the labour resource, which itself also responds quickly to economic factors. Great changes in the age structure of the population always bring along changes in the organisation of the whole society. For example, the issues of ageing population and necessary changes in pension insurance schemes have been addressed frequently in social politics during the last decade. Although low birth rate is a problem for many countries, the increase in the share of working age population has provided them with a better short-term position than the model with large families

[2] Tammur, A., Tammaru, T.,Tiit, E-M. (2006) Rändeandmete kvaliteet ja rändesuundumused Eestis aastatel 2000–2005 [The quality of migration data and migration trends in Estonia in 2000–2005]. Servinski, M., Kivilaid, M. (edit.). Cities and rural municipalities in figures. Statistics Estonia, 2006, pp 8–18.
[3] Niederlaender, E. Causes of death in the EU. – Statistics in Focus. Population and Social Conditions, 10/2006. Eurostat.

and a relatively lower share of working age population. On the whole, moderately increasing population is still the riches of a country. On one hand, the increase in population facilitates demand growth and economic development; on the other hand, the economic situation of a country influences the demographic behaviour of its people, i.e. the birth rate, mortality and migration. Out of these demographic factors, migration has undoubtedly the fastest impact in the course of time. Immigration is the only factor which can offset considerable population deficit in a relatively short period of time, whereas emigration can make the structure of population considerably more unfavourable because of its selective nature. The influence of immigration and emigration flows is not only mechanical but they also largely affect the birth and death rates. Therefore, the present article primarily addresses the possible relations between migration and demographic changes.

Macro level surveys have shown that unemployment and welfare (GDP) are related to international migration in several European countries.[4] However, due to economic barriers to migration, unemployment is not always related to migration at individual and regional levels[5] because the costs related to individual migration can be higher than resources. Surveys on the relations between regional income, unemployment and migration have been carried out also in Estonia[6], indicating that there are regions where migration is relatively in line with economic indicators, and counties where the so-called poverty traps can be suspected.

In case of cross-border migration people are undoubtedly influenced by language, information and cultural barriers which decrease potential migration and raise the costs of changing the place of residence. The actual migration volume is also regulated by administrative measures with quotas, laws and regulations.

## ESTONIA'S DEMOGRAPHIC FUTURE IN EUROPE

During the last eight years there has been an increase in the number of demographic projections which also reflect the size of Estonian population (see Figure 2). Based on the structure of the Estonian population, all projections quite expectedly foresee a decrease in the size of population also in the future. They differ only for the final size of population. According to the most negative forecast – the UN 2000 projection – Estonia's population is the fastest deceasing in the world. The most optimistic is the UN 2006 projection. The latter varies greatly from others which can, first and foremost, be attributed to the usage of birth data adjusted according to the population census data. Moreover, it contains also otherwise relatively optimistic future forecasts. Until 2015, the above-mentioned projection does not differ much from others but starting from 2020 the differences

[4] Jennisen, R. Economic determinants of the net international migration in Western Europe. European Journal of Population 19, 2003, pp 171–198.
[5] McConnell, Campell R., Brue, S.L. Contemporary Labour Economics. McGraw-Hill International Editors, 1986.
[6] Ainsaar, M. Ränne ja vaesus kohalikes omavalitsusüksustes 1990. aastatel [Migration and poverty in local municipalities in 1990s]. – Servinki, M. (comp.). Cities and Rural Municipalities in Figures 2003. Statistics Estonia, 2003, pp 9–27.

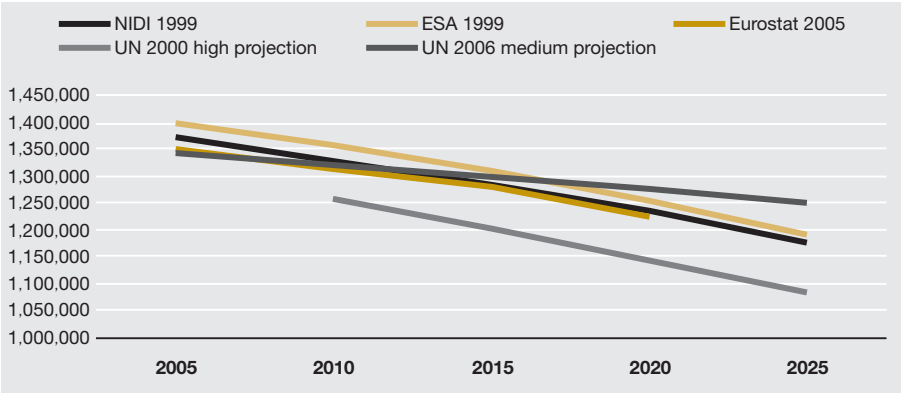


**Figure 2. Changes in Estonia's population according to different projections**

increase. Further calculations are based on the last version of the UN projection since different data about countries are quite easily accessible and the projection is evenly optimistic about all countries. Such an approach does not change the ratio of labour force across countries.

Presuming that the time when the young enter the labour market might be postponed in the future due to their studies and that the pension age would not change considerably, the present analysis uses the age group 25 to 64 as the working age population. Figure 3 shows that working age population is increasing the most in Africa, Latin America, Asia, Ireland and Albania, whereas in

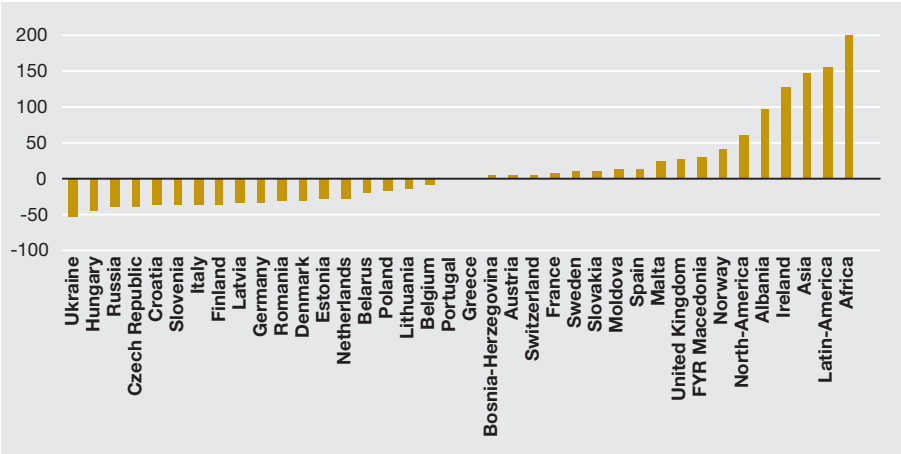


**Figure 3. Change in the number of people aged 25 to 64 per 1,000 inhabitants in 2005–2025**

the majority of Eastern European countries it is decreasing. The latter trend applies also to Finland, Germany, Denmark and the Netherlands. Estonia is among the average in Europe with respect to the change in the number of working age population per 1,000 inhabitants (see Figure 1) as well as to the ratio of change.

In countries where both the number and the share of working age population is growing, a considerable demographic pressure can be expected, increasing unemployment. This might bring along emigration in case of limited economic growth. Such countries include the Balkans, Ireland, Slovakia, Latin American, African and Asian countries (see Table 1). The second group consists of countries where the working age population is rising in absolute terms but decreasing in terms of share due to the growing percentage of the elderly. In these countries, the rise in unemployment cannot possibly be as high as in case of the first group. In general, the second group comprises North American countries and several Northern and Central European states. In addition to countries of Central and Southern Europe, countries geographically close to Estonia, such as Finland, Denmark, the Netherlands and Belgium, belong here as well.

The third group includes countries where the working age population is increasing in terms of share but decreasing in absolute terms. These are states where demand for labour force can be considered relatively stable. Although the number of working age population is declining (most probably causing problems on the labour market), the domestic market is also decreasing due to the decline in population which in turn inhibits domestic demand. This group comprises Eastern European countries, including Estonia. The countries in the fourth group have the strongest need for labour and they are facing a decrease in working age population both in absolute and relative terms.

Whether these demographic processes have an impact on migration largely depends on economic and cultural factors. Considering all factors would call for a much longer and more comprehensive analysis. The simplest model for cross-border migration intensity would be the gravity model introduced by Zipf. The gravity model (1) takes into consideration the size of population and the distance in calculating the migration intensity:

**Table 1. Breakdown of countries by the share and change in the number of people aged 25 to 64 in 2005–2025**

| In absolute terms | Share | |
|---|---|---|
| | **Increasing** | **Decreasing** |
| **Increasing** | FYR Macedonia, Bosnia-Herzegovina, Albania, Ireland, Slovakia, Moldova, Latin-America, Caribbean countries, Africa, Asia | Switzerland, France, Austria, Spain, Malta, Greece, United Kingdom, Sweden, Norway, North-America |
| **Decreasing** | Ukraine, Romania, Poland, Bulgaria, Belarus, Russia, Lithuania, Latvia, Estonia | Netherlands, Germany, Belgium, Slovenia, Portugal, Italy, Croatia, Finland, Denmark, Hungary, Czech Republic |

$$R = \frac{\text{population A} * \text{population B}}{(\text{distance between A and B})^2} \quad (1)$$

The development of this model (2) also allows taking into account other factors affecting migration. It is assumed that the larger the regional differences, the stronger the gravitational and centrifugal factors. The present article considers the differences between the populations of countries, distances between the most densely populated areas and changes in working age population in calculating the index of migration pressure. Thus, it is presumed that apart from the distance and the size of population migration also affects the share of working age population. For example, changes in the share of working age population influence unemployment indicators. If that share increases, so does the demand for jobs and the likelihood of emigration.

$$R = \frac{\text{population A} * \text{population B}}{(\text{distance between A and B})^2} * (\text{increase in working age population A - increase in working age population B}) \quad (2)$$

The ratio of working age population to other age groups is often called the Dependency Index. Presumably, this index shows the pressure on working people to maintain the unemployed in the society. In other words, the higher the index, the fewer dependants there are and the easier it is to achieve welfare. In the present article changes in working age population since the beginning of the period until the middle of the forecast horizon, i.e. until 2015, are used to measure the share of working age population (see Figure 4). It is assumed that (a) the situation in the middle of the period suits the best to calculate the figures for the whole period and evaluate the impacts, and (b) the differences between two countries express the difference between the situations on the labour markets.

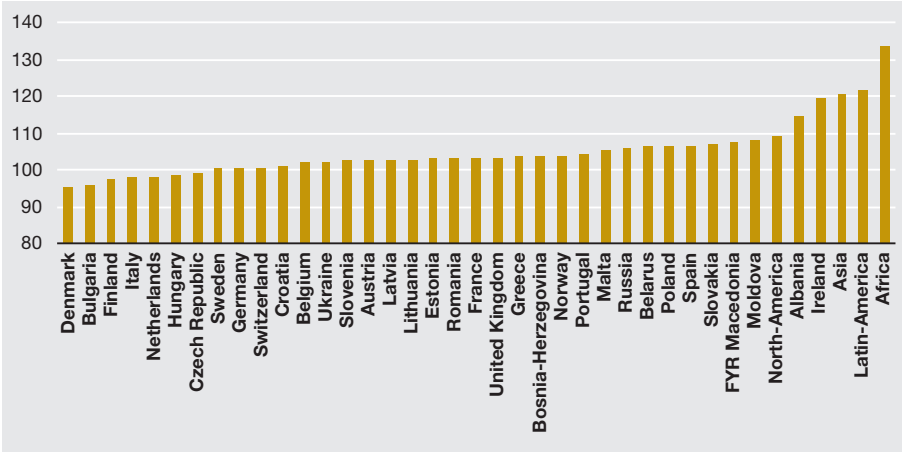


**Figure 4. Share of people aged 25 to 64 in 2015 compared to 2005**

The next step was to calculate the rough indexes for migration flows from other countries to Estonia and vice versa (see Figure 5). The intensity of cross-border migration flows was linked to the difference between the distances in the most densely populated areas of the countries and the number of the total population in the country and the change in working age population.

The model is created on simplified assumptions that there is free movement of labour, there are no legal or cultural barriers to migration, information exchange is free, and only economic factors (unemployment and GDP) act as gravitational and centrifugal forces.

Since all these assumptions are not always fulfilled in reality, other potential factors (e.g. state borders, laws and regulations, climate and language) that might influence the choice of a target country for migration should be taken into consideration.

Based on the simplified model that does not consider differences in income, Estonia faces the largest possible immigration from Africa, Asia, Russia and Poland. Finland, Germany and Sweden are the main destinations for Estonian emigrants (see Figure 6).

Income differences are one of the key factors of migration. Thus, projection could be misleading if differences in the living standards of countries were not taken into account. The second model used the simplest economic indicator – the GNP (gross national product) per person[7]. The differences

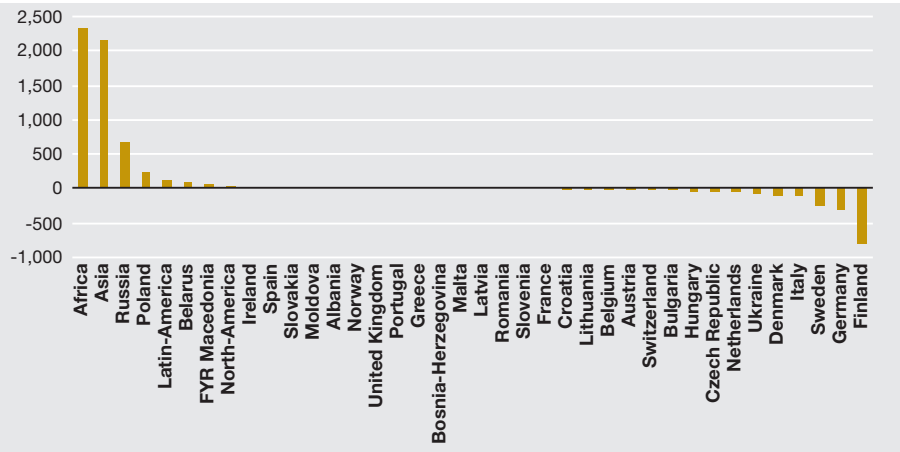


**Figure 5. Estonia's migration pressure index given the distance, migration potential and increase in the share of working age population**

[7] The World Factbook US Central Intelligence Agency, https://www.cia.gov/cia/publications/factbook/index.html 30/04/2007.

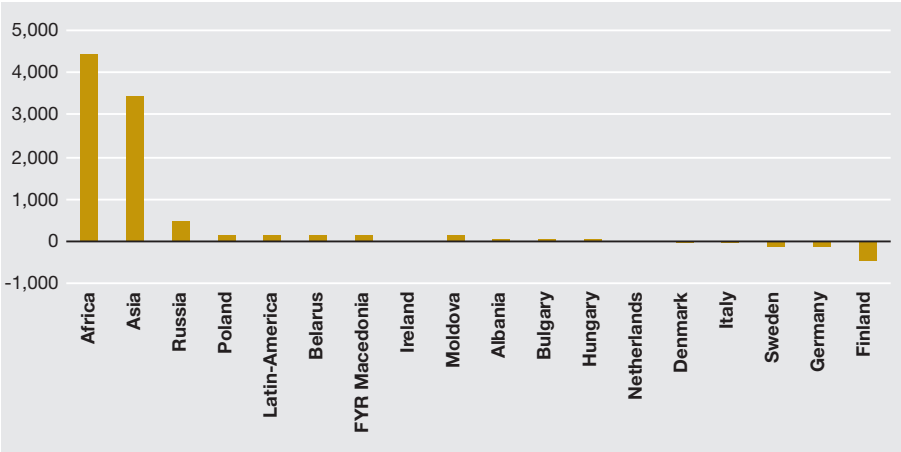


**Figure 6. Forecast of migration flows for 2005–2025 (index)**

between countries were added to the model. Future projections were made on the assumption that present growth trends would continue. This was considered sufficient for comparing countries since global changes do not affect the general level between countries. A major methodological problem occurred in case of countries where the unemployment rate and the living standard index were with opposite signs (see Table 2). Such regions included North America, Spain, Croatia, Lithuania, Bulgaria, Hungary and Ukraine. Bulgaria, Ukraine, Hungary, Croatia and Lithuania are countries where the working age population is decreasing rapidly both in absolute and relative terms and one would also expect that these countries have enough jobs available. Nevertheless, the higher living standard witnessed in Estonia could attract inhabitants of these countries to Estonia. At the same time, Estonia still does not attract that many immigrants compared to a few other countries with a lower living standard. Then again, Spain and North America could be the sources of labour for Estonia if their higher living standard would not make emigration to Estonia questionable. For the time being, the migration indexes of the above-mentioned countries have been excluded from the final table.

Figure 6 shows the migration flows related to Estonia over the next decades. The figure does not include countries with relatively marginal or otherwise indistinct migration volumes. For demographic and economic reasons, Estonia might expect immigrants primarily from African and Asian countries, Russia, Belarus, the former Yugoslavian Republic of Macedonia, Moldova, Latin American countries and Poland. In case of more distant areas (Africa, Asia, Latin America) the actual migration pressure is definitely somewhat lower than presently reflected by the migration index, namely because of climatic barriers and the existence of other potential target countries of similar attraction. The major destinations for Estonians are Finland, Germany and Sweden. Naturally,

**Table 2. Change in the number of people aged 25 to 64 and Estonia's migration pressure index in 2005–2025**

| Country | Change per 1,000 inhabitants in 2005–2025 | Change in 2015 compared to 2005 (%) | Migration pressure index | Migration pressure index considering GDP differences |
|---|---|---|---|---|
| Africa | 201.9 | 133.3 | 2,330.4 | 6,759.0 |
| Asia | 147.1 | 120.4 | 2,162.5 | 5,617.9 |
| Russia | -39.9 | 105.7 | 664.5 | 1,108.7 |
| Poland | -15.2 | 106.6 | 252.2 | 365.6 |
| Latin America | 156.1 | 121.8 | 139.4 | 291.3 |
| Belarus | -18.4 | 106.4 | 101.3 | 258.1 |
| FYR Macedonia | 29.7 | 107.5 | 81.0 | 206.0 |
| North America | 61.4 | 109.0 | 53.5 | |
| Ireland | 128.5 | 119.7 | 24.0 | 0.0 |
| Spain | 14.4 | 106.6 | 22.0 | |
| Slovakia | 10.5 | 107.1 | 16.0 | 18.3 |
| Moldova | 14.0 | 108.2 | 13.2 | 135.8 |
| Albania | 97.7 | 114.5 | 11.5 | 42.1 |
| Norway | 41.5 | 103.9 | 8.0 | 18.3 |
| United Kingdom | 28.2 | 103.2 | 1.9 | 2.8 |
| Portugal | -0.6 | 104.3 | 1.4 | 1.6 |
| Greece | 0.7 | 103.6 | 1.1 | 1.3 |
| Bosnia-Herzegovina | 5.8 | 103.8 | 1.0 | 3.7 |
| Malta | 26.2 | 105.4 | 0.2 | 1.0 |
| Latvia | -34.2 | 102.9 | -0.1 | 1.3 |
| Romania | -31.6 | 103.1 | -0.3 | 2.3 |
| Slovenia | -36.1 | 102.5 | -0.7 | 1.1 |
| France | 9.4 | 103.1 | -1.0 | 1.4 |
| Croatia | -36.6 | 101.3 | -4.4 | |
| Lithuania | -12.9 | 102.9 | -6.6 | |
| Belgium | -6.9 | 101.9 | -7.2 | -10.9 |
| Austria | 6.5 | 102.7 | -7.8 | -13.3 |
| Switzerland | 7.1 | 100.7 | -7.9 | -12.7 |
| Bulgaria | -91.2 | 95.9 | -22.3 | |
| Hungary | -45.4 | 98.4 | -34.4 | |
| Czech Republic | -39.6 | 98.7 | -41.5 | -44.2 |
| Netherlands | -26.8 | 98.0 | -56.7 | -85.9 |
| Ukraine | -51.8 | 102.1 | -60.1 | |
| Denmark | -31.5 | 94.9 | -89.8 | -159.0 |
| Italy | -34.9 | 97.9 | -90.2 | -126.5 |
| Sweden | 10.4 | 100.3 | -247.1 | -378.1 |
| Germany | -33.2 | 100.3 | -301.0 | -448.8 |
| Finland | -34.8 | 97.3 | -811.1 | -1,295.5 |

Finland has the largest influence as the closest neighbour given its extremely strong demand for labour and considerably higher level of welfare.

## CONCLUSION

The population forecast shows that Estonia is among the average countries in Europe with respect to the change in the number of working age population. There are a lot of regions in the world where the respective number is decreasing faster but also countries where the situation is relatively better. In the following fifteen years, Estonia will belong to the group of countries where the share of working age population in total population is increasing while in absolute terms it is decreasing. The demand for labour in this group can be considered relatively stable compared to other groups. The decrease in working age population is the fastest in countries relatively close to Estonia: Finland, Germany, Denmark and the Netherlands.

Applying the simplified migration models, which took into account the distance between countries, the size of population and the change in working age population, it appeared that Estonia might expect migration primarily from African and Asian countries, Russia, Belarus, the former Yugoslavian Republic of Macedonia, Moldova, Latin American countries and Poland. Estonians themselves are most likely to emigrate to Finland, Germany and Sweden. Finland is the strongest migration magnet for Estonia due to its proximity as well as demographic and economic differences.

# LABOUR MARKET REVIEW

*Diana Tur, Natalja Viilmann, Andres Saarniit*

## MAIN DEVELOPMENTS IN 2006

The extremely fast economic growth in 2006 had also a great impact on labour market indicators. The increasing demand for labour spurred the employment growth to 6.4% from 2.0% in the previous year. Higher employment brought along a decrease in unemployment and an abrupt fall in the number of the inactive. That is, 26,700 people entered the labour market from among the inactive.

A strong relation between economic growth and employment dynamics was also noticeable in the second half of the year when along with a slight slowdown in economic growth (from 11.7% in the first half of 2006 to 11.1% in the second half) also the employment growth rate fell (from 6.8% in the first half to 6.1%; see Figure 1 and Table 1).

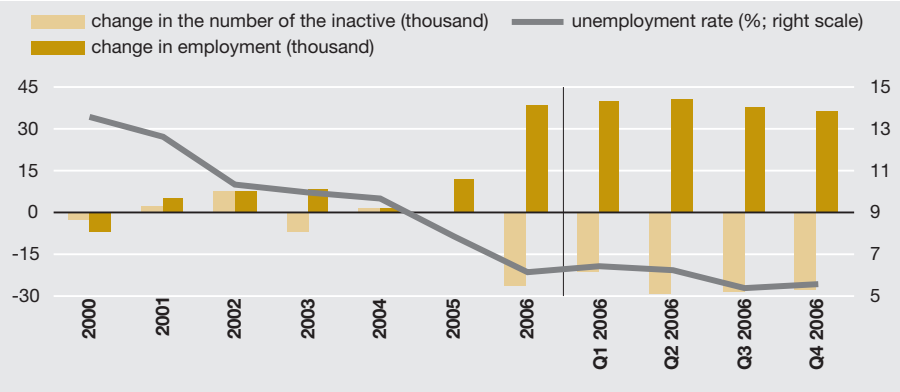


**Figure 1. Main labour market indicators**

In 2006, opening the labour markets of the EU Member States to Estonian citizens continued but the resulting outflow of labour appeared to be lower than initially estimated. Thus, several obstacles to Estonian citizens to start employment in another EU Member State disappeared. In relation to that, the impact of labour outflow on local enterprises and wage formation has strengthened.

The above processes – the increasing demand for and decreasing supply of labour, and the integration of the labour market with the EU – were reflected in faster wage growth which accounted for 16.2% in 2006 and even amounted to 17.5% in the fourth quarter. Wage growth picked up mainly in the private sector, being somewhat slower in the public sector.

Comparing the increase in wages and productivity, it can be said that in 2006 average wages grew considerably faster than productivity. Under other equal conditions, this should refer to a decrease in the competitiveness of Estonian enterprises. Nevertheless, profits rose even faster than wages.

**Table 1. Main labour market indicators**

| | Change y-o-y (%) | | | | | | | Change y-o-y (thousand) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | | | | | 2004 | 2005 | 2006 | | | | |
| **Population (as at 1 January)** | **-0.37** | **-0.26** | **-0.17** | | | | | **-5.0** | **-3.6** | **-2.3** | | | | |
| **Employment status (15 to 74 years old)** | **2004** | **2005** | **2006** | **Q1 2006** | **Q2 2006** | **Q3 2006** | **Q4 2006** | **2004** | **2005** | **2006** | **Q1 2006** | **Q2 2006** | **Q3 2006** | **Q4 2006** |
| Workforce | -0.2 | 0.1 | 4.1 | 3.3 | 4.5 | 4.4 | 4.3 | -1.4 | 0.5 | 27.2 | 21.7 | 29.7 | 29.0 | 28.3 |
| employed | 0.2 | 2.0 | 6.4 | 6.8 | 6.7 | 6.2 | 5.9 | 1.2 | 11.9 | 38.9 | 40.2 | 40.9 | 38.2 | 36.1 |
| manufacturing | 5.1 | -0.9 | -2.2 | 5.3 | -5.3 | -7.0 | -0.8 | 6.8 | -1.4 | -3.1 | 7.0 | -7.8 | -10.1 | -1.1 |
| unemployed | -3.9 | -17.9 | -22.4 | -29.7 | -20.7 | -19.6 | -17.0 | -2.6 | -11.4 | -11.7 | -18.5 | -11.2 | -9.0 | -7.9 |
| less than 6 months | -17.2 | -12.3 | -15.6 | -22.8 | -5.1 | -3.6 | -27.5 | -4.4 | -2.6 | -2.9 | -4.7 | -0.9 | -0.6 | -5.3 |
| 6 to 11 months | -9.8 | -38.0 | -7.0 | -32.6 | -10.8 | 80.6 | -16.7 | -1.0 | -3.5 | -0.4 | -2.8 | -0.8 | 2.5 | -0.6 |
| 12 months or more | 9.2 | -16.0 | -30.1 | -33.3 | -33.0 | -41.6 | -8.1 | 2.8 | -5.3 | -8.4 | -11 | -9.5 | -10.9 | -1.9 |
| 24 months or more | 7.0 | -15.3 | -37.4 | -29.9 | -40.5 | -56.4 | -24.1 | 1.4 | -3.3 | -6.8 | -6.0 | -7.9 | -9.7 | -3.9 |
| Inactive | 0.3 | 0.1 | -6.9 | -5.4 | -7.6 | -7.3 | -7.2 | 1.3 | 0.3 | -26.7 | -21.3 | -29.1 | -28.6 | -27.8 |
| Total | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| | **Level (%)** | | | | | | | **Change (percentage points)** | | | | | | |
| Participation rate | 62.9 | 62.9 | 65.5 | 64.7 | 66.0 | 65.40 | 65.70 | -0.1 | 0.0 | 2.6 | 2.1 | 2.8 | 2.7 | 2.7 |
| Employment rate | 56.8 | 57.9 | 61.6 | 60.5 | 62.0 | 61.90 | 62 | 0.1 | 1.1 | 3.7 | 3.8 | 3.9 | 3.6 | 3.4 |
| Unemployment rate | 9.7 | 7.9 | 5.9 | 6.4 | 6.2 | 5.40 | 5.60 | -0.3 | -1.8 | -2.0 | -3.1 | -1.9 | -1.6 | -1.4 |
| **Wages** | **2004** | **2005** | **2006** | **Q1 2006** | **Q2 2006** | **Q3 2006** | **Q4 2006** | **2004** | **2005** | **2006** | **Q1 2006** | **Q2 2006** | **Q3 2006** | **Q4 2006** |
| | **Level (EEK)** | | | | | | | **Change (%)** | | | | | | |
| Average gross monthly wages | 7,287 | 8,073 | 9,350.5 | 8,591 | 9,531 | 9,068 | 10,212 | 8.4 | 10.8 | 16.2 | 15.7 | 15.0 | 16.5 | 17.5 |
| manufacturing | 6,696 | 7,526 | 8,823.3 | 8,048 | 8,824 | 8,826 | 9,595 | 8.4 | 12.4 | 17.6 | 15.8 | 15.7 | 18.0 | 20.6 |
| Average net monthly wages | 5,675 | 6,411 | 7,524 | 6,952 | 7,659 | 7,310 | 8,175* | 9.6 | 13.0 | 17.4 | 17.2 | 16.3 | 17.7 | 18.2 |
| Minimum wages | 2,480 | 2,690 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 14.8 | 8.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 |

* authors' estimates

A more vigorous wage growth could be observed only in the second half of the year. Thus, given the fast growth it has been easy for firms to raise prices and thereby maintain their profitability. At the same time, this conclusion might be somewhat premature since there are controversies between different statistical data.

## LABOUR DEMAND AND SUPPLY

### Labour force participation and economic inactivity

The number of the inactive and the labour participation rate changed drastically in 2006. When in 2005 the rate of labour participation in the age group of 15 to 74 accounted for 62.9%, in 2006 it hiked to 65.5%. Compared with the previous year, 27,200 persons more entered the labour market.

The decrease in the number of the inactive was an all-time record, namely 6.9%. Across regions the most inactive were added to the labour market in Tartu County and Ida-Viru County (7,000 and 6,000, respectively). Over three thirds of employment growth could be ascribed to the former inactive.

The labour force increased in all age groups (see Figure 2). People in the prime working age (aged 25 to 49) formed the majority of entrants to the labour market. Their number grew faster in the first three quarters of the year (by 8,600, 12,200 and 16,800 people, respectively, year-on-year), whereas in the fourth quarter the growth rate decreased a little (13,200). While in the first quarter the number of the young (aged 15 to 24) in the labour force increased by 6,800 and decreased by 300 in the second quarter year-on-year, then in the third and fourth quarters the number rose by 1,900 and 7,400 respectively. The activity of the elderly (aged 50 to 74) increased too.

The labour participation or the activity rate reflects the percentage of workforce in an age group and population of a region. Apart from the economic situation the number of participants in the

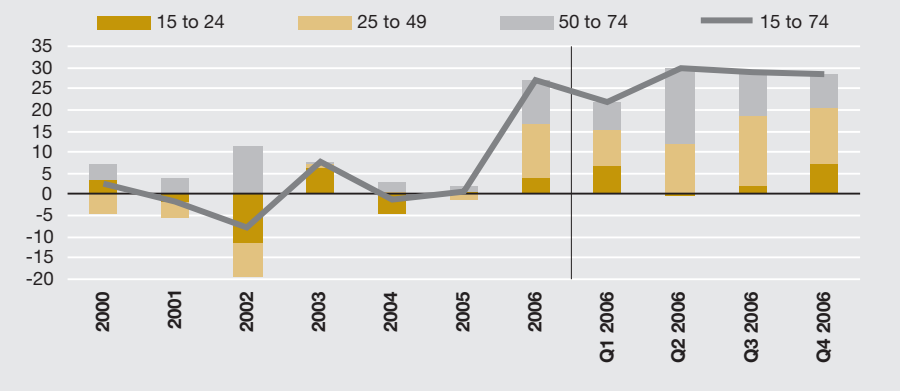


**Figure 2. Contribution to employment growth by age groups (thousand people)**

labour force also depends on population changes. The population increases or decreases and this process is subject to births, deaths and the inflow and outflow of labour. When in 2004–2005 the youth participation rate decreased, in 2006 it started to increase, rising to 35.5% from 34% in the previous year. This indicator rose quite steadily throughout the year and most probably will rise further. The survey of the Federation of Estonian Student Unions, which covered 4,532 students from the Estonian institutions of higher education and was published at the end of last year, showed that 59% of the students were employed full-time. In comparison, less than one third were employed in 2003. 88% of the working students stated that they could not continue studies without working. The favourable economic situation increased the opportunities of finding a suitable job. According to the survey, ever younger and younger students are being employed and the working conditions are becoming more flexible.

In order to relieve labour shortage at least partly, a continuous rise in the activity of the elderly (aged 50 to 74) is necessary. Compared with the previous year, it has risen by 2.6 percentage points. This has resulted from the gradual rise in women's pension age and wages and in the number of vacancies. Owing to the growing demand for labour, the labour participation rate of people in their prime working age increased as well.

Apart from age, people's behaviour on the labour market is also affected by their mobility in the regional context. Mobility can be defined as readiness to go to work far from home or to change the place of residence if the journey to work is long or travelling to work from the distance is hindered for some reason. However, the elderly are less active in changing the job. Although the differences between regions have reduced during the last years, the development of the Estonian labour market was still quite uneven across regions in 2006. In larger centres, like Tallinn, Tartu and Pärnu where the majority of foreign investment is accumulated, development remained stable; in smaller regions, the labour market indicators differed substantially (see Figure 3).

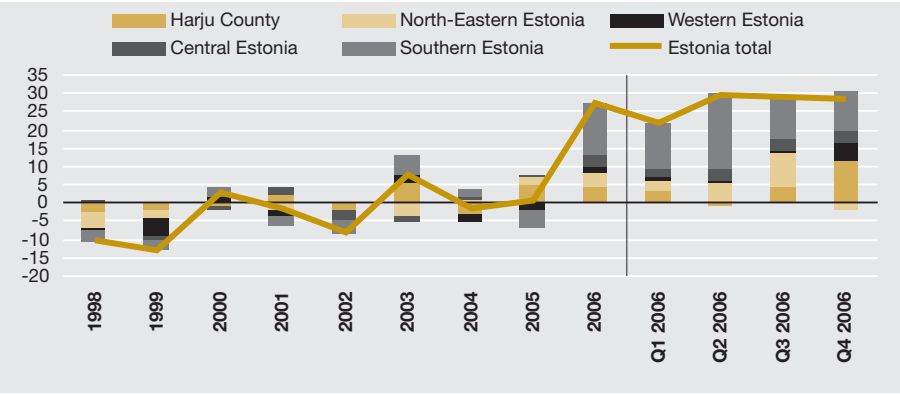


**Figure 3. Contribution to employment growth by regions (thousand people)**

Through times the activity rate has been the highest in Harju County and Tallinn (almost 69–70%) and the lowest in Võru County (about 50–51%). In 2006, higher activity was noted among the population of Southern Estonia and Ida-Viru County.

Based on the data of Statistics Estonia on the distance between the main job location and the person's place of residence, two thirds of the newly employed found work within 20 kilometres from their place of residence, whereas one third (11,700 persons) were ready to cover longer distances.

Labour outflow from Estonia most probably picked up in 2006. Since labour mobility within the European Union is not subject to registration (especially in the case of short-term jobs), we have to rely on estimates due to the lack of reliable statistics. On one hand, labour outflow appeared to be smaller than expected in some especially "black" scenarios. For example, Finnish trade unions stated in the press that they expected every third Estonian to strive to work in Finland (at that time trade unions tried to justify the need for establishing restrictions on opening the labour market). On the other hand, labour outflow was still an essential factor in the employment structure, wage negotiations as well as in the flow of income earned. According to the labour survey of the International Labour Organisation (ILO), the number of employees in the third quarter of 2006 included almost 11,000 Estonian residents employed abroad (5,000 more than in 2005), which is likely to be underestimated owing to the nature of the survey.

Some EU states have established special regulations. For example, in Ireland a few benefits are related to registering permanent residency. In Finland, firms can only employ taxpayers, i.e. people registered in the Finnish Labour Market Board, for long-term work (over 6 months). Consequently, in relation to reorganising the Population Register the Estonian Ministry of Internal Affairs entered 8,506 persons of Estonian origin who have registered themselves as permanent residents of Finland into the Finnish Population Register.

At the same time, the majority of people who have gone to work in Finland have no intention of staying there for a very long time. In case wage differences decrease or they cannot find a suitable job, they do not rule out returning to Estonia.

**Employment**

Employment grew by 6.4% (38,900 people) in 2006 (see Figure 4). The growth was fast already in the first half of the year, slowing down a little in the third and fourth quarters. When in the first and second quarters the employment growth picked up to as much as 6.7–6.8%, in the third and fourth quarters it slowed down to 6.2% and 5.9%, respectively. Nevertheless, during the last three quarters the total number of employees remained almost unchanged at 650,000, escaping the usual seasonal fluctuations.

Some changes pointing to higher labour market flexibility occurred in the employment structure. The percentage of people working part-time (on their own accord) rose, whereas that of the underemployed fell. Employment outside usual working hours also increased – 63,700 more people than

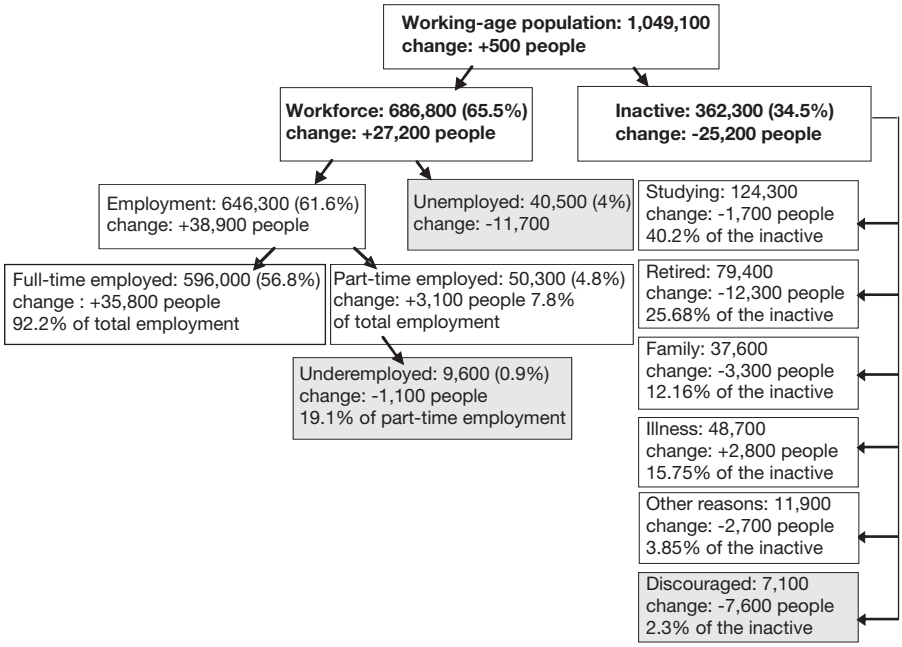


**Figure 4. Estonian labour market in 2006 and change compared to 2005 (% of the working population, i.e. 15 to 74 year-olds)**

in 2005 worked often or sometimes in the evening or at night (i.e. after 6 PM); 35,200 more people worked on Saturdays and Sundays, and 1,900 more people worked at home compared with the previous year. Since many people of pension age and students added to the labour market from among the inactive, this trend might continue with the spread of flexible forms of working.

**By sectors**, employment increased the most in the services sector, growing by 7.8% (28,600 people) year-on-year and accounting for 74% of total employment growth. Employment grew in almost all fields of activity in that sector. The highest increase occurred in wholesale and retail trade (by 8,100 people) and in transport, storage and communications (by 6,900 new employees). The slowest growth was witnessed in the field of hotels and restaurants where the number of employees even decreased in the second half-year. The public sector received almost 14,000 new employees last year and the share of that sector in total employment rose from 24.5% in 2005 to 25.2%. This resulted mainly from higher employment in health care and social welfare where 4,500 new employees were added year-on-year.

Employment in the secondary sector (involving manufacturing, construction, mining and quarrying, and electricity, gas and water supply) grew more modestly: by 5.0%, i.e. by 10,200 people.

Growth was boosted by the growing number of construction workers – 14,100 people (29%) were added there. The number of employees in construction increased steadily throughout the year, and the upward trend was even accelerating. Since employment statistics cover employees both in Estonia and abroad (partly), this development may have resulted from the continuous growth in the number of construction projects in Estonia and the increase in the number of construction workers abroad. In manufacturing, employment decreased by 2.2%. In other words, the 12.8% growth of the value added in manufacturing was achieved with a smaller number of employees, which means that productivity increased significantly.

Employment decreased slightly further in the primary sector. Year-on-year, the total change was close to zero (weakly negative), whereas in the last quarter the number of employees even increased (see Figure 5).

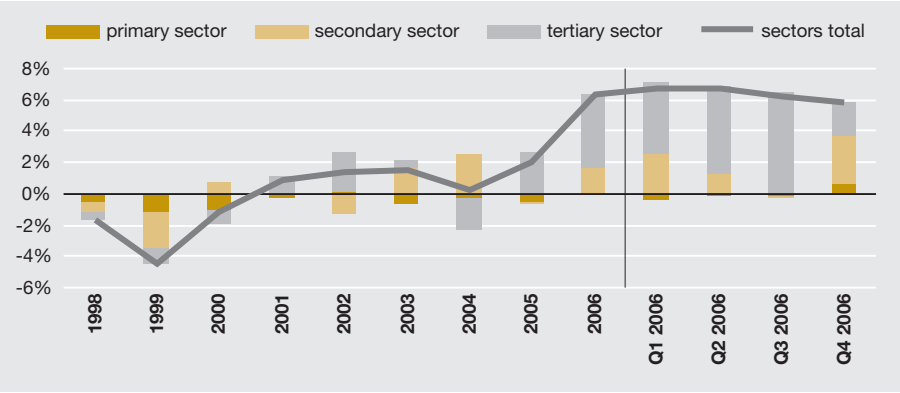


**Figure 5. Employment growth and contribution by sectors**

**By regions**, the employment growth was positive in 2006 in all five regions. Employment increased the most in Southern Estonia (on average by 13,900 people). Like the labour participation rate, the employment rate varies a lot across regions: it has been the highest of all times in Tallinn (67.5% in 2006) and the lowest in Western Estonia (56.3%) and the North-Eastern Estonia (56.7%).

The employment rate among people aged 15 to 74 rose on average from 57.9% to 61.6%. Interestingly enough, growth was more extensive in regions which usually experience low employment rates: in Ida-Viru County (over 5 percentage points) and in Southern Estonia (4.5 percentage points). In Southern Estonia employment increased in different age groups, whereas in Ida-Viru County it rose considerably only among the elderly (10.3 percentage points) and the young (8.9 percentage points). In Western Estonia the youth employment rate decreased but the employment rate increased quite fast among people in their prime working age.

One of the objectives of the EU Lisbon Strategy was to raise the employment rate of people aged 15 to 64 to 67% by the year 2005 and to 70% by the year 2010. Estonia met the target for 2005 in 2006 when the respective figure stood at 67.7%.

Contrary to 2005 when employment was boosted by the rise in the number of white-collar workers[1], whereas the number of blue-collar workers[2] decreased, employment rose more steadily in 2006 and the number of blue-collar workers increased even more. This is in line with the rise in the number of sales staff and skilled construction workers. In Northern Estonia the number of white-collar and blue-collar workers increased almost equally (by 7,400 and 6,300, respectively). In Southern Estonia the number of white-collar workers surged by as much as 8,600 people, whereas the number of blue-collar workers grew by only 4,100). In Central and North-Eastern Estonia the situation was different: while the number of blue-collar workers increased by 10,000 people in total, that of white-collar workers decreased a little.

**Vacancies**

Although the statistics on vacancies of the Labour Market Board are not representative and thus do not extend to the entire Estonian economy (according to Statistics Estonia only 1% of employees who have found a job during the period under analysis have found it through the Estonian Labour Market Board), the present analysis makes use of such statistics as one possible indicator of labour demand (see Figure 6).

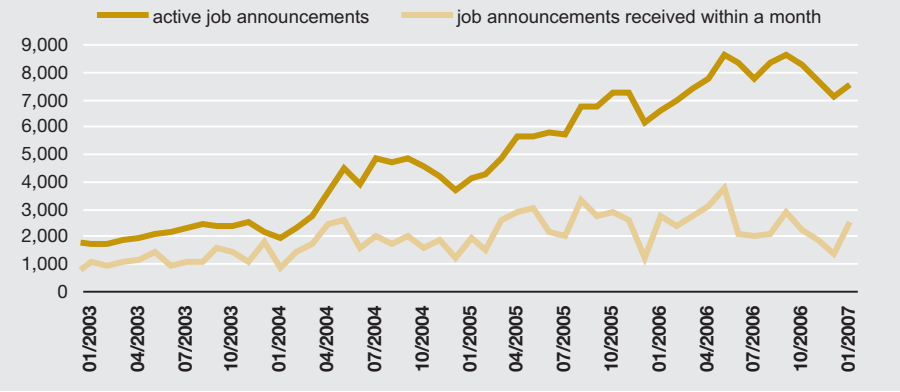


**Figure 6. Job announcements submitted to the Labour Market Board**

[1] White-collar workers: lawmakers, senior officials and executives; specialists and technicians; officials.

[2] Blue-collar workers: service and sales staff; skilled workers in agriculture and fishing; skilled workers and craftsmen; operators of equipment and machinery; unskilled workers; military personnel.

The number of announcements on vacant jobs submitted during one month has been rather volatile across months and in the last couple of years it has fluctuated around the level of 2,000 positions. The number of valid vacancy announcements submitted to the Labour Market Board during the period was considerably larger in 2006, exceeding the figure for 2005 by 33.2%. The growth in the number of valid announcements might mean that employers do not find suitable workforce and demand-side pressures have strengthened. This might arise either from supply constraints (insufficient qualification of present job-seekers, outflow of labour to other countries etc.) or too fast growth in demand.

**Unemployment**

Unemployment has been declining steadily in Estonia since 2001 but in the last two years the process has been especially rapid. In 2006, unemployment decreased by 2 percentage points to 5.9%, falling even to 5.5% in the second half of the year. The number of the unemployed declined on average by 22.4%, i.e. by 12,000 people during the year.

Year-on-year, the number of the **long-term unemployed** fell even faster than that of the short-term unemployed, and as a result their share in the unemployed decreased from 53.4% in 2005 to 48.1% (see Figure 7). This was partly caused by the fact that some of the inactive who returned to the labour market moved into the group of the short-time unemployed. In the fourth quarter, the decline in the number of the long-term unemployed slowed down and the number even increased quarter-on-quarter. Whether it was the first sign of the slightly declining demand-side pressures or an incidental fluctuation, should become clear from the figures for the following periods.

In 2006, unemployment declined in all **age groups**. The downward trend was especially rapid among the young: from 15.9% in 2005 to 12%. The unemployment rate of people in their prime working age stood at 5.6% and that of the elderly at 4.2%.

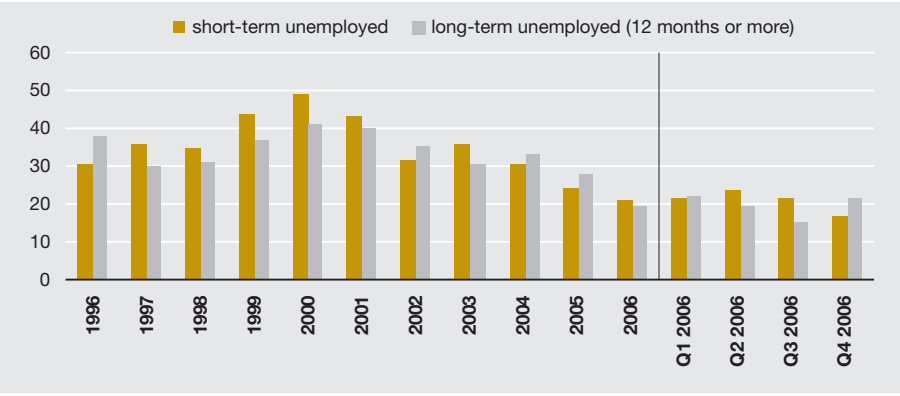


**Figure 7. Number of short-term and long-term unemployed (thousand people)**

The unemployment rate of **non-Estonians** decreased faster than that of Estonians. The number of the unemployed among Estonians declined by 4,300, whereas among non-Estonians it fell by 7,400.

The analysis of unemployment across **regions** shows that changes are especially positive on the labour market of Ida-Viru County where the unemployment rate declined by over 4 percentage points (from 16.2% to 12.1%). This is facilitated by the development of the Port of Sillamäe and more dynamic utilisation of the resources of Ida-Viru County. Transit and tourism are still the most promising sectors of the region but the services sector is also expected to pick up soon. Despite the decline in unemployment, Ida-Viru County still remains the region with the highest unemployment rate where insufficient language skills and the discrepancy between the quality of and requirements to labour constitute the greatest structural problems. The lowest unemployment rates were recorded in Western and Northern Estonia (4.0% and 4.3%, respectively).

According to the consumer barometer of the Estonian Institute of Economic Research, households estimated the **likelihood of becoming unemployed** to be lower compared to 2005 (see Figure 8). It means that people are increasingly more optimistic about the future, which in the long run might influence their consumption preferences.

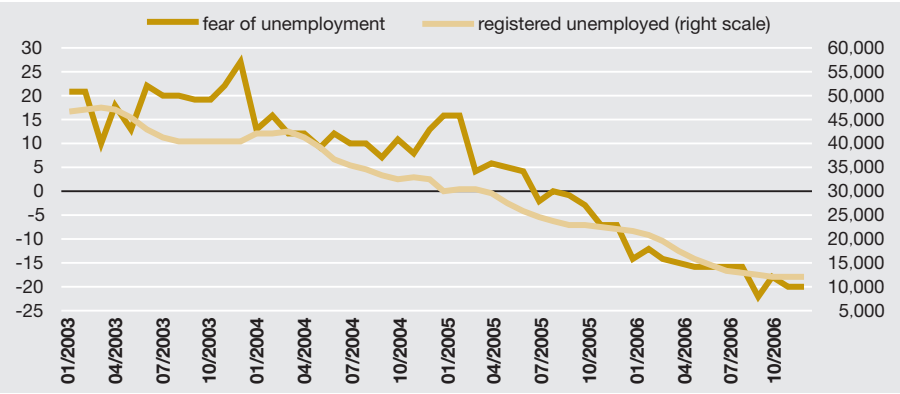


**Figure 8. Fear of unemployment according to the consumer barometer of the Estonian Institute of Economic Research and registered unemployment (thousand people)**

According to the special survey published by the Eurobarometer, the population of Estonia differs from other Europeans for the fact that they are less concerned about unemployment than other citizens of Europe (in Estonia 12% are afraid of unemployment, whereas the EU average is 36%). The risks of immigration are also considered lower (in Estonia 1%; in the EU 14%). While many Europeans believe that the life of today's children is rather more difficult in the future than it is now (the most pessimistic are people in Germany, Sweden and France), then Estonian citizens (together with Finland, Ireland, Portugal, Lithuania and Latvia) are more positive and see the future of today's youth rather easier.

## LABOUR COSTS AND PRICE PRESSURES

### Average wages

Gross monthly wages increased by an average of 16.2% in 2006. The average wage growth accelerated further in the third and fourth quarters of 2006. The average gross monthly wages increased by 16.5% in the third and by 17.5% in the fourth quarter, year-on-year. The real growth of gross wages was above 12% (that of net wages exceeded even 13%), which means that the purchasing power of salaried employees increased robustly. The difference in the growth of net and gross wages still arises from reducing the personal income tax rate and raising the non-taxable income threshold (see Figure 9).

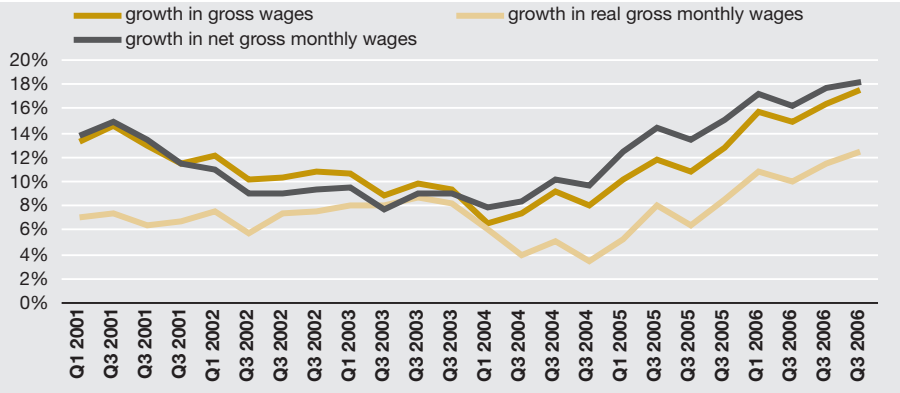


**Figure 9. Developments in average wages**

In 2007, the income tax rate was reduced further (by one percentage point to 22%); the non-taxable income threshold remained unchanged. In case gross wages increase further (by 17% or more) as expected in forecasts, the effective income tax rate will also rise as much under other equal conditions (by an average of 0.8 percentage points with a 17.5% rise in gross wages in the fourth quarter of 2006). This means that the reduction of the income tax rate this year might not bring along a relatively faster growth in net wages compared to the growth in gross wages, and the growth rates of gross and net wages might be considerably more in line.

**By regions**, wage growth was higher elsewhere in Estonia than in Tallinn and Harju County. When in Tallinn and Harju County the average wage growth totalled 15.8%, it stood at 19.7% in Tartu and Tartu County, at 18% in Viljandi and at 17% in Põlva. Taking into account that the wage differences between Harju County and other regions have been rather large in earlier periods, the faster wage growth in other regions might also refer to a decrease in wage differences. In this context, the situation did not improve in Ida-Viry County where the wage level is the lowest and the wage growth remained below Estonia's average, amounting to 12.8%.

The average wage growth in the second half-year was the fastest in wholesale and retail trade (21.2%) and agriculture (20.8%), especially in fishery (see Table 2). The rapid wage increase in agriculture can be explained by the low wage level and the greater impact of the EU agricultural subsidies. The robust wage growth in the field of fishery arose from getting over the recession of previous years, i.e. the very low base effect since the present wage levels are still low. In trade, both wages and employment increased very vigorously. According to the estimates of the Estonian entrepreneurs, the problem of labour shortage has become even more acute, which means that rapid wage growth is likely to continue.

In manufacturing, wage growth was above the average of all sectors (16.2%), namely 17.6%. Rapid wage growth continued in the construction and real estate sectors, slightly accelerating in the former and slowing down in the latter. It quite expectedly slowed down in health care from 21.3% last year to 14.3%, as the impact of the wage agreement concluded at the end of 2004 subsided.

**Table 2. Growth in average gross monthly wages by fields of activity (%)**

| | 2002 | 2003 | 2004 | 2005 | 2006 | Q1 2006 | Q2 2006 | Q3 2006 | Q4 2006 |
|---|---|---|---|---|---|---|---|---|---|
| **Average** | **11.5** | **9.4** | **8.4** | **11.4** | **16.177** | **15.7** | **15.0** | **16.5** | **17.5** |
| | | | | | | | | | |
| **Tradable sector** | | | | | | | | | |
| Agriculture | 18.3 | 8.9 | 13.1 | 18.0 | 20.8 | 23.5 | 22.5 | 17.4 | 20.4 |
| Forestry | 3.4 | 13.3 | 22.9 | 16.6 | 9.3 | 4.7 | 9.5 | 10.2 | 12.0 |
| Fishery | 19.4 | -4.4 | -1.4 | 4.5 | 54.2 | 62.2 | 43.4 | 32.7 | 77.4 |
| Mining and quarrying | 9.0 | 9.3 | 6.6 | 0.6 | 15.4 | 13.8 | 16.0 | 16.3 | 15.3 |
| Manufacturing | 10.0 | 9.0 | 8.4 | 12.8 | 17.6 | 15.8 | 15.6 | 18.0 | 20.6 |
| | | | | | | | | | |
| **Non-tradable sector** | | | | | | | | | |
| Electricity. gas and water supply | 8.8 | 9.3 | 6.0 | 13.6 | 7.8 | 4.4 | 7.0 | 8.7 | 10.8 |
| Construction | 12.6 | 13.5 | 11.7 | 14.6 | 19.1 | 23.4 | 13.7 | 19.0 | 20.8 |
| Wholesale and retail trade | 9.8 | 14.5 | 2.6 | 7.1 | 21.6 | 21.2 | 21.7 | 22.2 | 21.1 |
| Hotels and restaurants | -5.8 | 17.7 | 8.5 | 22.1 | 12.7 | 5.6 | 15.8 | 14.1 | 15.0 |
| Transport. storage and communications | 9.4 | 4.1 | 9.3 | 10.7 | 13.7 | 11.7 | 13.4 | 13.4 | 15.9 |
| Financial intermediation | 8.2 | 9.8 | 3.0 | 9.8 | 2.4 | 5.0 | 2.9 | -0.4 | 1.5 |
| Real estate. renting and business activities | 28.9 | -0.4 | 15.4 | 6.1 | 16.1 | 18.4 | 16.6 | 16.1 | 13.9 |
| Public administration and defence | 12.7 | 8.7 | 8.2 | 9.6 | 13.7 | 11.2 | 13.9 | 12.6 | 16.6 |
| Education | 12.5 | 9.4 | 10.3 | 11.4 | 10.3 | 10.6 | 9.5 | 11.1 | 10.3 |
| Health care and social welfare | 4.5 | 15.0 | 13.9 | 21.0 | 14.3 | 10.9 | 14.5 | 14.6 | 16.9 |
| Other | 7.4 | 8.3 | 14.3 | 12.2 | 12.3 | 10.7 | 11.0 | 11.0 | 16.2 |

The extremely rapid wage growth last year shows that the labour market has changed and the cost of human capital has risen for entrepreneurs. The openness of the labour market has increased considerably and employees have more choices, including the opportunity to go to work abroad, which might give rise to additional wage pressures. However, the year-on-year growth of the total wage fund did not exceed that of the total value added produced and a positive gap of 0.2–0.3 percentage points between wage costs and GDP growth could be observed only in the second half of the year.

Like in the previous year, in 2006 wages grew more robustly in the private sector, increasing by 15.3%. In foreign-owned companies wage growth accelerated to 14.8% from the modest 6% level in 2005 (see Figure 10).

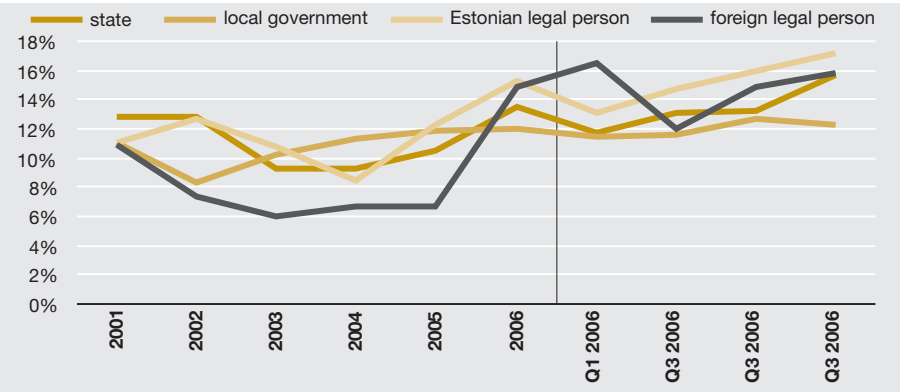


**Figure 10. Average wage growth by employer's owner**

According to the statistics of companies, the rapid wage growth in the private sector was possible because the value added increased even faster. In part, the dynamics of average wages gives a slightly overestimated picture of the labour cost growth in the corporate sector, as the decrease of working hours achieved per one employee on average (in the second, third and fourth quarters) might indicate some distortion because of the specifics of average wage statistics. Wage growth in the public sector has so far been in line with the increasing tax revenues and the strengthening of wage pressures is quite expected (especially as wage growth is accelerating also in the private sector) and viable provided that tax revenues are growing.

### Unit labour costs

The real unit labour cost indicator compares the amount of expenditure per employee (mostly wages and taxes on labour) and labour productivity at current prices. Practically, the share of the value added spent on wages is calculated. Following the definition, the growth rate of unit labour costs is positive when labour costs per salaried employee grow faster than labour productivity in

nominal terms. When real unit labour costs increase, it normally indicates a decrease in the share of employer's profit in the value added (GDP).

Nominal unit labour costs compare labour costs per employee with real productivity, not with productivity calculated at current prices. The aim is to analyse inflationary pressures arising from wage growth, as enterprises have to increase prices of their products in order to retain profitability when wage growth exceeds productivity.

The decrease in **real unit labour costs** continued throughout 2006, though at a slower rate (see Figure 11). The situation varied during the year: when in the first half unit labour cost growth remained negative, then in the third and fourth quarters they grew by 0.8% and 0.2%, respectively. **Nominal unit labour costs** increased by 4–6% in the first three quarters of 2006, accelerating to 8.1% in the fourth quarter. Even though the growth rate of both indicators has accelerated since 2005 (the decline in real unit labour costs decreased), it is still not substantial against the background of longer time series. The acceleration of nominal unit labour cost growth might have triggered the increase in core inflation in Estonia, but without additional analysis it is not possible to present more precise standpoints.


**Figure 11. Real and nominal unit labour cost growth**

By **sectors**, nominal unit labour costs grew faster than average in 2006 in the fields of activity targeting the domestic market. The indicators of manufacturing, which are important from the aspect of export competitiveness, have grown more modestly.

In 2006, **real unit labour cost growth** increased in financial intermediation and agriculture. In either field, however, it does not appear as if the decrease in profitability has caused problems. The specifics of financial intermediation is that the statistical treatment of the value added is different from that in other fields (it is partly divided between other fields of activity). In agriculture, the rise in

subsidies (from the EU Structural Funds and also from the Estonian funds owing to the co-financing obligation) enabled to increase the wage fund as well as the operating surplus. In other words, earnings in this field were larger than the value added produced. According to the GDP statistics calculated using the income method, the subsidies increased by 28.8% in 2006, and although more exact data on the allocation of resources to agriculture and other fields is lacking, both the wage fund and profits are likely to increase under such growth.

In other fields of activity, real unit labour cost growth was either extremely modest (in transport, storage and communications and related fields) or decreased further (in the fields of manufacturing, energy, construction, hotels and even in the public sector).

**Table 3. Unit labour cost growth based on GDP statistics (%)**

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | Q1 2006 | Q2 2006 | Q3 2006 | Q4 2006 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Real unit labour cost growth** | | | | | | | | | | |
| Total economy | -2.4 | -1.5 | 4.7 | 2.2 | -3.8 | -0.4 | -1.7 | -1.2 | 0.8 | 0.2 |
| Primary sector | 9.8 | 5.6 | 0.7 | -2.0 | -7.3 | 2.0 | 0.8 | -3.8 | -6.7 | 16.9 |
| Secondary sector | -4.0 | 0.5 | 7.0 | 2.4 | -3.2 | -0.5 | 0.3 | -0.8 | -4.6 | 3.5 |
| Private sector service providers | -1.4 | -3.7 | 6.2 | 3.7 | -2.0 | 1.7 | -1.6 | -1.3 | 7.3 | 0.5 |
| Public sector | -2.9 | -0.9 | 0.1 | 1.8 | -0.7 | -3.5 | -1.5 | 2.5 | -2.1 | -5.9 |
| **Nominal unit labour cost growth** | | | | | | | | | | |
| Total economy | 2.7 | 2.2 | 7.1 | 4.4 | 2.8 | 5.7 | 3.7 | 5.0 | 5.5 | 8.1 |
| Primary sector | 26.7 | -3.0 | -3.6 | 20.9 | 3.2 | 1.9 | 7.5 | 16.4 | -13.6 | 0.4 |
| Secondary sector | 2.1 | 4.0 | 10.4 | 2.0 | 1.0 | 6.5 | 4.5 | 5.8 | 2.1 | 13.6 |
| Private sector service providers | 1.7 | 0.2 | 3.4 | 2.9 | 0.5 | 13.5 | 4.8 | 6.0 | 12.1 | 8.1 |
| Public sector | 4.1 | 5.9 | 10.3 | 9.0 | 8.0 | -7.3 | 6.2 | 10.6 | 2.7 | 2.7 |

Source: Statistics Estonia, authors' calculations

In **manufacturing**, unit labour costs have grown quite modestly through years. Maintaining the competitiveness of manufacturing companies is important for the economy since a great part of its production is exported. Therefore, it is not eligible that the growth in labour costs would exceed the growth in productivity during a longer period. In the last two years, real unit labour costs have even decreased in manufacturing, which means that profitability has increased.

Although in the last quarter of 2006 unit labour costs rose relatively much in manufacturing (see Figure 12), it does not entail sharp changes in the overall situation. It is quite customary to pay larger bonuses for the performance of the entire year in the fourth quarter. In 2006, manufacturing companies also had greater possibilities for doing so. Should such a tendency continue throughout 2007, the profitability of the manufacturing sector might decrease again.

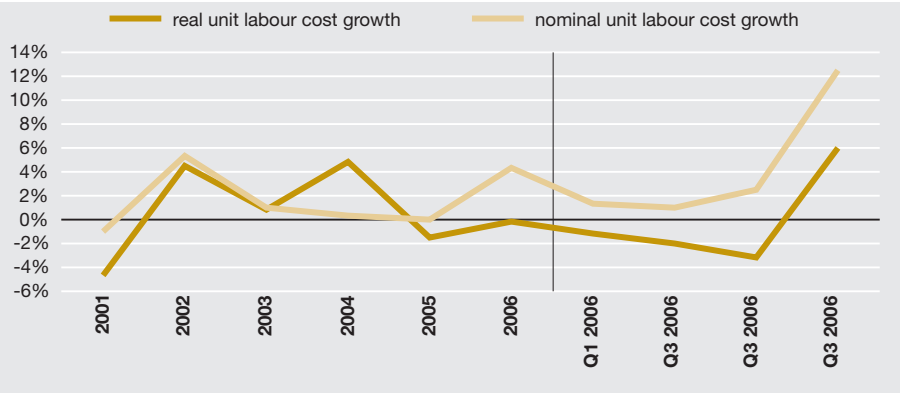


**Figure 12. Unit labour cost growth in manufacturing**

## INSTITUTIONAL DEVELOPMENTS IN THE LABOUR MARKET

### Minimum wage in Estonia

On 20 December 2006, the Board of the Confederation of Estonian Trade Unions (EAKL) and the Estonian Employers' Confederation (ETKL) approved of the terms and conditions of the minimum wage agreement. Thus the minimum monthly wage was set at 3,600 kroons (230 euros) from 1 January 2007. The minimum hourly wage was raised to 21.50 kroons. The minimum wage in Estonia accounted for 31.2% of average wages at the beginning of 2007 (34.6% in 2004).

Compared with other countries of the European Union, the minimum wage in Estonia (192 euros in 2006) ranked fourth among the Member States (Bulgaria and Romania excluded). The minimum wage was lower in Slovakia, Lithuania and Latvia (181, 174 and 129 euros, respectively). It was the highest in Luxembourg (1,503 euros) where the number of minimum wage earners is also relatively high (11%). The respective number is the lowest in Spain (0.8%) where the minimum wage amounts to 631 euros.

The larger the share of minimum wage earners, the higher the impact of this institutional instrument. According to Eurostat, 5.7% of the workforce earns minimum wages in Estonia. It is considerably less than in Luxembourg, France, Latvia or Lithuania, where this figure exceeds 11%, but more than in the United Kingdom, Spain, the Netherlands, Slovenia or Ireland where it remains below 3%.

High ratio of the minimum wage and average wages might indicate downward rigidity of wages, which slows down the creation of jobs for workers with very low level of skills in the private sector. In the entire EU, this ratio fluctuates from 30% to 50% across countries. In Estonia, it is rather low, which refers to the relative flexibility of the Estonian labour market.

According to the agreement the **minimum wage of civil servants** is also to rise. The minimum monthly wage now amounts to at least 7,475 kroons for an employee who has higher education, works full-time in the position which requires higher education, receives wages from the state budget and is a member of the Estonian Employees' Unions Confederation (TALO).

### Unemployment insurance

Since 2007 the **terms and conditions** of unemployment insurance have become more favourable to employees. The period of years worked to comply with the necessary insurance period was extended. Unemployment insurance is paid to insured persons if they have paid the insurance premiums for at least 12 months during the 36 months prior to registration as unemployed. Until now the 12-month insurance period had to fit within 24 months prior to registration as unemployed. The change means that now also people who have held short-time jobs for several times can apply for unemployment insurance benefits.

The unemployed have to present **less data** than before to apply for benefits since the length of the unemployment insurance period and the amount of benefit is calculated on the basis of the information in the unemployment insurance database. If the unemployment insurance benefit calculated based on the wages of the unemployed is smaller than the unemployment allowance, the unemployment insurance benefit is paid in the amount of the unemployment allowance which is almost 1,000 kroons per month in 2007.

### Income tax rate

On 1 January 2007, the income tax rate was reduced from 23% to 22%. The amount of the non-taxable income did not change – it is still 2,000 kroons per month. Income tax is withheld from payments made during the calendar year based on the tax rate valid in the year and month of payment, irrespective of the period for which the payment is made.

### Changes in the Social Tax Act

Since 1 January 2007, the monthly rate that serves as the basis for minimum social tax liability is 2,000 kroons. Last year it was 1,400 kroons. Moreover, the list of people in case of whom the employer is not obliged to pay social tax by the monthly rate was extended by employees raising a child under three years of age, or three or more children under 19 years of age, and employees until 21 years of age who are obtaining basic education at Estonian schools or at equal foreign educational institutions, students acquiring general secondary education until 24 years of age, persons without basic education and pass the minimum school-leaving age while receiving vocational training, pupils obtaining vocational education on the basis of basic or secondary education, and students who are permanent residents of Estonia.

The 42.9% increase of the minimum social tax liability concerns more sole proprietors to whom business income is the only source of income, and a certain category of people (e.g. conscripts, unemployment allowance or child care allowance beneficiaries) for whom the social tax is paid by the state.

## Table 4. Estonian labour market

| | | 2003 | 2004 | 2005 | 2006 | Q1 2006 | Q2 2006 | Q3 2006 | Q4 2006 |
|---|---|---|---|---|---|---|---|---|---|
| Population (as at 1 January) | thousand | | 1351.1 | 1347.0 | 1344.7 | | | | |
| **Employment status (15 to 74 year-olds)** | | | | | | | | | |
| Workforce | thousand | 660.5 | 659.1 | 659.6 | 686.8 | 678.4 | 692.8 | 686.5 | 689.4 |
| employed | thousand | 594.3 | 595.5 | 607.4 | 646.3 | 634.7 | 650 | 649.6 | 650.7 |
| unemployed | thousand | 66.2 | 63.6 | 52.2 | 40.5 | 43.7 | 42.8 | 37.0 | 38.6 |
| Inactive | thousand | 387.4 | 388.7 | 389.0 | 362.3 | 370.6 | 356.3 | 362.5 | 359.7 |
| Total | thousand | 1,047.8 | 1,047.8 | 1,048.6 | 1,049.1 | 1,049.1 | 1,049.1 | 1,049.1 | 1,049.1 |
| Labour participation rate | % | 63.0 | 62.9 | 62.9 | 65.5 | 64.7 | 66.0 | 65.4 | 65.7 |
| Employment rate | % | 56.7 | 56.8 | 57.9 | 61.6 | 60.5 | 62.0 | 61.9 | 62.0 |
| Unemployment rate | % | 10.0 | 9.7 | 7.9 | 5.9 | 6.4 | 6.2 | 5.4 | 5.6 |
| **Employed by fields of activity** | | | | | | | | | |
| Agriculture, forestry and fishery | thousand | 36.7 | 35.0 | 32.2 | 31.1 | 32.3 | 34.4 | 30.5 | 31.1 |
| Mining and quarrying | thousand | 5.7 | 8.0 | 5.9 | 5.2 | 5.7 | 4.2 | 4.8 | 6.3 |
| Manufacturing | thousand | 134.1 | 140.9 | 139.5 | 136.4 | 138.0 | 138.2 | 133.3 | 136.0 |
| Electricity, gas and water supply | thousand | 10.2 | 12.0 | 12.5 | 12.4 | 14.1 | 12.1 | 12.5 | 10.7 |
| Construction | thousand | 42.9 | 46.8 | 48.7 | 62.8 | 52.3 | 61.4 | 64.3 | 71.7 |
| Wholesale and retail trade | thousand | 80.8 | 80.0 | 80.6 | 88.7 | 88.3 | 92.7 | 88.5 | 83.6 |
| Hotels and restaurants | thousand | 17.4 | 16.2 | 22.1 | 22.3 | 25.9 | 25.5 | 18.7 | 19.2 |
| Transport, storage and communications | thousand | 56.2 | 51.5 | 54.6 | 61.5 | 61.0 | 66.2 | 60.3 | 58.3 |
| Financial intermediation | thousand | 7.6 | 7.9 | 6.9 | 7.3 | 8.6 | 7.6 | 6.1 | 7.1 |
| Real estate, renting and business activities | thousand | 44.4 | 39.4 | 46.4 | 48.1 | 46.7 | 43.6 | 51.8 | 50.0 |
| Public administration and defence | thousand | 34.5 | 36.9 | 37.2 | 39.0 | 39.8 | 39.0 | 38.4 | 38.3 |
| Education | thousand | 56.9 | 54.5 | 54.9 | 58.5 | 58.9 | 59.2 | 56.9 | 56.0 |
| Health care | thousand | 36.4 | 37.5 | 35 | 37.5 | 33.8 | 32.1 | 43.1 | 40.5 |
| Other | thousand | 30.4 | 28.8 | 31.1 | 34.3 | 29.2 | 33.9 | 37.1 | 35.8 |
| **Unemployed by duration of unemployment** | | | | | | | | | |
| Less than 6 months | thousand | 25.6 | 21.2 | 18.6 | 15.7 | 15.9 | 16.9 | 16.1 | 14.0 |
| 6 to 11 months | thousand | 10.2 | 9.2 | 5.7 | 5.3 | 5.8 | 6.6 | 5.6 | 3.0 |
| 12 months or more | thousand | 30.4 | 33.2 | 27.9 | 19.5 | 22.0 | 19.3 | 15.3 | 21.7 |
| 24 months or more | thousand | 20.1 | 21.5 | 18.2 | 11.4 | 14.1 | 11.6 | 7.5 | 12.3 |
| **Inactive by reason of inactivity** | | | | | | | | | |
| Studies | thousand | 119.5 | 123.1 | 126.1 | 124.4 | 126.7 | 123.4 | 125.1 | 122.4 |
| Illness or disability | thousand | 44.9 | 43.3 | 47.0 | 51.3 | 47.5 | 47.1 | 55.9 | 54.6 |
| Pregnancy, maternity or parental leave | thousand | 22.7 | 27.2 | 27.1 | 23.8 | 23.2 | 24.1 | 24.5 | 23.5 |
| Need to take care of children or other family members | thousand | 14.8 | 13.7 | 14.0 | 13.9 | 15.7 | 14.4 | 13.8 | 11.8 |
| Retirement age | thousand | 152.8 | 149.4 | 145.4 | 129.5 | 134.6 | 128.7 | 126.7 | 128.0 |
| Discouraged people (lost hope to find work) | thousand | 18.1 | 17.7 | 14.7 | 7.2 | 8.4 | 5.6 | 7.4 | 7.4 |
| Other | thousand | 14.5 | 14.4 | 14.6 | 12.2 | 14.6 | 13.0 | 9.1 | 12.0 |
| **Workforce by level of education** | | | | | | | | | |
| First level and less | thousand | 71.6 | 73.2 | 65.1 | 75.3 | 71.3 | 81.6 | 77.3 | 71.3 |
| Second level | thousand | 383.7 | 375.6 | 367.4 | 376.4 | 377.7 | 377.4 | 366.1 | 384.5 |
| Third level | thousand | 205.1 | 210.3 | 227.0 | 235.0 | 229.5 | 233.8 | 243.2 | 233.6 |
| vocational secondary education | thousand | 71.0 | 70.0 | 67.6 | 70.5 | 65.7 | 75.0 | 73.1 | 68.1 |
| higher education | thousand | 134.1 | 140.4 | 159.5 | 164.6 | 163.8 | 158.9 | 170.1 | 165.5 |

## CAN CAPITAL PRODUCTIVITY GROWTH OFFSET THE HIGHER COST OF WORK?

One of the key indicators in analysing labour market development is real unit labour costs. Their decline indicates higher profitability, decreasing price pressures and improving competitiveness.

Even though the decrease or increase in unit costs signals a rise or fall in labour productivity, it does not say anything about the change in capital productivity. Unfortunately, it is impossible to utilise the indicators of capital because of the long time lag. Therefore, the following overview deals with changes in unit labour costs during 2001–2005 against the background of changes in capital stock and productivity.[1]

As pointed out in earlier surveys, real unit labour costs declined during 2001–2005 by almost 1%, although in 2003 and 2004 labour costs increased considerably. All in all, in this period unit labour costs increased in half of the ten key industries and decreased in the rest of them (see Table 3 in the main text). Meanwhile, capital productivity increased by 9 percentage points from 12% to about 21% (see Figure a).

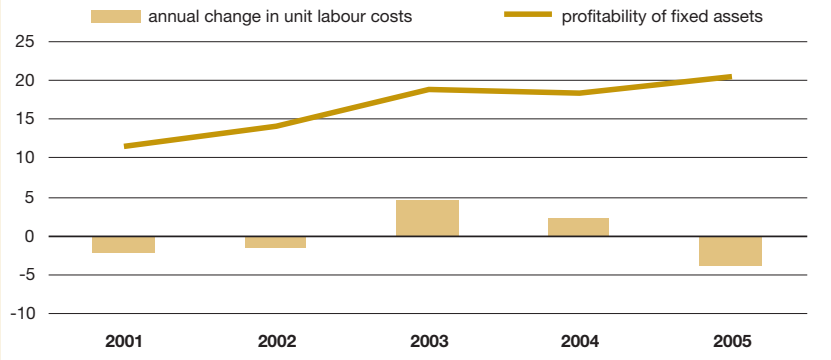


**Figure a. Capital profitability and changes in real unit labour costs in 2001–2005 (%)**

[1] In the present overview, unit labour costs or simply labour costs stand for real unit labour cost, i.e. unit labour cost measured in constant prices. Capital is defined as net tangible fixed assets measured in current prices. The source of information is the database of Statistics Estonia based on the sample of larger companies (the so-called EKOMAR database).

Assuming that capital productivity remaining at the level of 9% (i.e. the level at the beginning of the present decade) also indicates maintaining competitiveness and meeting investors' interest in profit, the above-mentioned unit labour costs could have grown during the entire period by approximately 5% instead (see the data series "bearable" in Figure b).

**The previous statement does not mean that such acceleration in wage growth, which would not impair competitiveness, would have been possible in all sectors and fields of activity. Capital productivity growth was very diverse across fields of activity, being faster in cases of weaker competition and possible transfer of the rise in production costs to sales prices.**

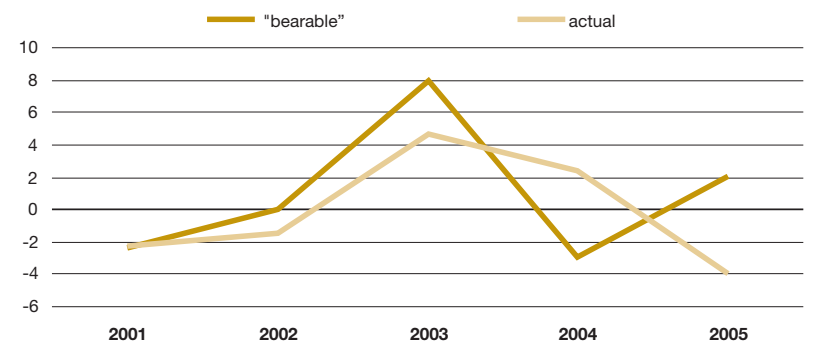


**Figure b. Actual and "bearable" changes (i.e. not impairing capital profitability) in real unit labour costs in 2001–2005 (%)**

Excluding from the aggregate indicators of the Estonian economy mining and quarrying as well as energy, which enjoy the status of monopolies, the capital productivity indicator for the total economy would have improved by at least 2 percentage points less. The indicators of construction and real estate sectors do not easily conform to the logic of measuring production efficiency through fixed assets as one of the main inputs. For example, in both sectors it is possible to use rented assets; part of the fixed assets should be classified as output etc.[2] Therefore, it is reasonable to exclude besides natural monopolies also the construction and real estate indicators from changes in the profitability of fixed assets. As a result, it appears

[2] In the real estate sector, tangible fixed assets should mainly include housing, which in Estonia is owned by resident households, as a rule.

that the productivity of fixed assets improved more modestly: at the end of 2005 it stood at 21%, exceeding the 2000 figure by only 2 percentage points.

In manufacturing, which holds the largest share in the export sector, capital productivity remained at the same level as in 2000 – nearly 18%, while labour costs increased in almost all years under survey, rising by about 4% in total (see Figure c). Since the exporting manufacturing companies are in the price-taker status, for them offsetting expensive wage pressures is the more complicated.[3]

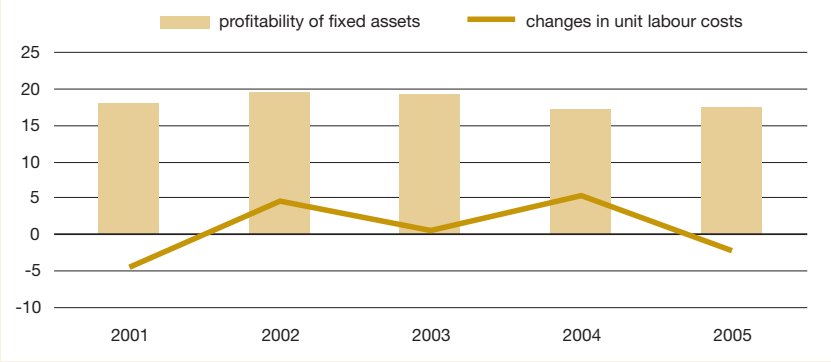


**Figure c. Capital profitability and changes in real unit labour costs in manufacturing in 2001–2005 (%)**

From the standpoint of competitiveness, unit labour costs and capital productivity improved mostly in line across fields of activity during 2001–2006. Table a shows eight main fields of activity where it makes sense to compare changes in unit labour costs and capital productivity. All in all, capital productivity growth and labour costs declined in half of them in the given period. The opposite situation was seen only in the fields of construction, hotels and restaurants, real estate and in some years also in trade.

[3] However, based on the turnover, the growth rate of industrial exports remained stable and the production oriented to the domestic market grew at the same rate.

**Table a. Capital profitability in 2000 and 2005 (%)**

| | 2000 | 2005 |
|---|---|---|
| Total economy | 12.1 | 20.6 |
| Mining and quarrying | 0.3 | 16.0 |
| Manufacturing | 18.0 | 17.5 |
| Energy, gas and water supply | -1.0 | 6.8 |
| Construction | 27.0 | 61.0 |
| Wholesale and retail trade | 24.2 | 50.2 |
| Hotels and restaurants | 6.0 | 12.1 |
| Transport, storage and communications | 18.3 | 14.2 |
| Real estate, renting and business activities | 18.2 | 14.2 |
| Other | 12.9 | 16.2 |

Most commonly, the rise in capital productivity offset the increase in labour costs, which was seen only in the field of hotels and restaurants. Real unit labour costs grew by almost 16% in this sector and capital productivity rose by more than 5 percentage points during 2001–2005. Hence, in this sector it was possible to simultaneously invest and raise wages and also increase the profitability of investment.

**In conclusion**, the result is even too predictable. Capital productivity growth might indeed offset the increase in labour costs. Experience from last years has shown that this takes place primarily in fields targeting the domestic market. Hotels and restaurants, which service also tourists, make an exception here. Therefore, the exporting and non-tradable sectors should definitely be distinguished when interpreting the rise in real unit labour costs.

# APPENDIX

# MAIN QUARTELY INDICATORS OF THE ESTONIAN ECONOMY as at 31 April 2007

| | Unit | Period | Indicator | Change compared to the previous period (%) | Change compared to the same period last year (%) | Source |
|---|---|---|---|---|---|---|
| **Gross domestic product** | | | | | | |
| Current prices | EEK m | Q4 06 | 55,173.5 | | | ESA |
| Constant prices | EEK m | Q4 06 | 41,337.4 | 3.0 | 10.9 | ESA |
| **Production** | | | | | | |
| Volume index of industrial production (at constant prices, 2000 = 100) | % | Q1 07 | | -3.8 | 8.2 | ESA |
| **Investments in fixed assets** (at current prices) | EEK m | Q4 06 | 11864 | 20.5 | 33.3 | ESA |
| **Construction** | | | | | | |
| Construction activities of construction enterprises (at current prices) | EEK m | Q1 07 | 10531 | -25.1 | 41.3 | ESA |
| Usable floor area of completed dwellings | thousand $m^2$ | Q1 07 | 121.8 | -7.0 | 42.6 | ESA |
| Usable floor area of non-residential buildings | thousand $m^2$ | Q1 07 | 228.9 | -8.2 | 34.5 | ESA |
| **Consumption** | | | | | | |
| Retail sales volume index (at constant prices, 2000 = 100) | % | Q1 07 | | -7 | 23 | ESA |
| New registration of passenger cars | pieces | Q1 07 | 17,954.0 | -0.3 | 24.0 | ARK |
| **Prices** | | | | | | |
| Consumer price index | % | Q1 07 | | 1.8 | 5.2 | ESA |
| Producer price index | % | Q1 07 | | 2.7 | 6.9 | ESA |
| Export price index | % | Q1 07 | | 2.7 | 5.8 | ESA |
| Import price index | % | Q1 07 | | 0.4 | 3.1 | ESA |
| Construction price index | % | Q1 07 | | 3.6 | 15.6 | ESA |
| Real effective exchange rate (REER) of the Estonian kroon | % | Q1 07 | | 0.8 | 1.9 | EP |
| **Labour market and wages** | | | | | | |
| Employment rate (based on the Labour Force Survey)* | % | Q1 07 | 61.8 | 62.0 | 60.5 | ESA |
| Unemployment rate (based on the Labour Force Survey)* | % | Q1 07 | 5.3 | 5.6 | 6.4 | ESA |
| Registered unemployed | persons per month | Q1 07 | 13835 | 14.6 | -32.9 | TTA |
| % of population between 16 years old and pension age* | % | Q1 07 | 2.0 | 1.4 | 2.5 | TTA |
| Average monthly gross wages and salaries (health insurance benefits excluded) | EEK | Q1 07 | 10322 | 1.1 | 20.1 | ESA |

* Indicators of the period, not changes.

| | Unit | Period | Indicator | Change compared to the previous period (%) | Change compared to the same period last year (%) | Source |
|---|---|---|---|---|---|---|
| **General government budget** (net borrowing not included here) | | | | | | |
| Revenue | EEK m | Q1 07 | 19,336.5 | -8.7 | 24.6 | RM |
| Expenditure | EEK m | Q1 07 | 18,610.8 | -19.0 | 20.6 | RM |
| Balance (+/-)* | EEK m | Q1 07 | 725.7 | -1,804.7 | 87.0 | RM |
| Period's revenue to the planned annual revenue* | % | Q1 07 | 27.0 | 29.5 | 21.6 | RM |
| **Transport** | | | | | | |
| Carriage of passengers | thousand | Q4 06 | 55513.8 | 5.6 | 0 | ESA |
| Carriage of goods | thousand tons | Q4 06 | 24424 | 3.7 | -3.2 | ESA |
| **Tourism and accommodation** | | | | | | |
| Visitors from foreign countries received by Estonian travel agencies | thousand | Q4 06 | 355.8 | -43.9 | -6.4 | ESA |
| Visitors sent to foreign tours by Estonian travel agencies | thousand | Q4 06 | 111.7 | -16.9 | 5.4 | ESA |
| Accommodated visitors | thousand | Q1 07 | 395.3 | -16.7 | 7.9 | ESA |
| o/w foreign visitors | thousand | Q1 07 | 199.8 | -29.1 | 1.9 | ESA |
| **Foreign trade** (special trade system) | | | | | | |
| Exports | EEK m | Q1 07 | 29,370.1 | -4.5 | 3.6 | ESA |
| Imports | EEK m | Q1 07 | 41,060.5 | -4.8 | 8.9 | ESA |
| Balance* | EEK m | Q1 07 | -11,690.4 | -12,387.8 | -9,329.6 | ESA |
| Foreign trade balance/exports* | % | Q1 07 | -39.8 | -40.3 | -32.9 | ESA |
| **Balance of payments*** | | | | | | |
| Current account balance | EEK m | Q4 06 | -9,691.8 | -7,489.5 | -4,426.2 | EP |
| Current account balance to GDP | % | Q4 06 | -17.6 | -14.4 | -9.6 | EP |
| Foreign direct investment inflow | EEK m | Q4 06 | 3,902.5 | 5,431.2 | -216.9 | EP |
| Foreign direct investment outflow | EEK m | Q4 06 | -2,314.0 | -5,095.9 | -2,663.2 | EP |
| **International investment position** | | | | | | |
| Net international investment position | EEK m | 31/12/06 | -195,689.9 | 8.5 | 17.0 | EP |
| Direct investment in Estonia | EEK m | 31/12/06 | 193,860.2 | 4.4 | 15.3 | EP |
| Net external debt | EEK m | 31/12/06 | 195,993.3 | 7.9 | 31.8 | EP |
| o/w goverment | EEK m | 31/12/06 | 4,713.4 | 22.8 | 20.0 | EP |
| **EEK/USD average quarterly exchange rate** | EEK | Q1 07 | 11.9 | -1.7 | -8.2 | EP |

Statistical Office of Estonia (ESA)
Motor Vehicle Registration Centre (ARK)
Eesti Pank (EP)
Labour Market Board (TTA)
Ministry of Finance (RM)
Estonian Institute of Economic Research (EKI)