CHANGES IN ECONOMIC STATUS OF OLDER POPULATION: THE CASE OF ESTONIA IN THE 1990s

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The paper outlines the developments in the economic status of older persons in Estonia during economic transition, in the context of long-term trends. The paper belongs to a series of studies at Estonian Interuniversity Population Research Centre, focusing on transition experience of various population groups. The data for the paper are drawn from three complementary sources. The microdata of the 1989 census are used to provide a picture of the patterns of economic activity at the eve of economic transition, addressing the general level as well the variations between the subgroups. To account for the labour market experience since 1989, the paper relies on the data from Estonian Labour Survey. Data on the income position of the elderly for pre-transitional situation are derived from the 1989 Household Income Survey, for subsequent period the data from the 1995 LFS are utilised. The study has been carried out in the framework of the research theme 0501463s00 and supported by the ETF grant No 2901.

1. INTRODUCTION

Research in ageing has identified multitudinous ways by which the extension of individual life span and the principal transformation in population age structure have affected labour supply, the patterns of income, consumption and saving, demand for various social services, solvency of public finance etc [Martin and Preston 1994; Richter 1992; Clark and Spengler 1980] On the basic level, most of these interactions reflect the labour life cycle that starts in dependent phase, the proceeds to active phase, and finally, tends to return to dependent phase again. Although the referred life cycle trichotomy can be regarded almost universal, the duration of the stages and the timing of transitions between them has undergone major change over time. On the other hand, considerable diversity in the patterns of labour market attachment can be found also across and within our ageing societies.

The current paper addresses the development of economic activity of older population in Estonia[1]. Above all, it represents the experience of a country in transition which during the recent decade has undergone extensive change of political, economic and social realities. It has been generally acknowledged that in these countries, population ageing and the conditions of older persons are in various ways affected by societal transformation, requiring careful monitoring, and when necessary, intervention by relevant actors [UNFPA 1998]. Among others, particular attention is called for the patterns of labour market participation in pre- and post-retirement ages that translates the impact of economic adjustment to differential population outcomes, ranging from the access to different income sources and standard of living to the sustainability and adequacy of social security programmes. In turn, these issues relate closely to the objectives of independence, self-reliance, social participation and quality of life of older persons [UN 1999; ICPD 1994].

On the background of the changes, however, studies on economic activity of older workers and retirement patterns focusing on transition are relatively rare[2], frequently based on delimited populations [Prokofieva and Terskikh 1997], refer to conditions that prevailed a decade ago or even earlier [Arnaudova 1989], or have broader topical scope and/or geographic coverage [Kinsella and Velkoff 1993; Kinsella and Gist 1995]. Such judgment could, of course, be influenced by the criteria according to which bibliographic information is being assembled, but evidently, there are also other reasons, including the availability of appropriate databases. To this end it should be reminded that a decade, in many countries of the region research community was to a large extent denied from the access to population data, particularly the microdata from censuses and nationally representative surveys. Related to the theme of the present paper, in most CEE countries, regular labour force surveys have been instituted only 5-6 years ago, frequently requiring further improvement in concepts and procedures. Specialised surveys, based on nationally representative samples of older population and advanced methodology are not available for most countries. Not seldom, circumstances related to data availability may have resulted in the entire region dropping out from relevant comparisons (for a recent example, [Cesano 1999]).

In the framework of transition countries, for several reasons the Estonian setting could be particularly appealing for the study of ageing. According to the recent statistics by

the Council of Europe, the country holds one of the highest proportions of older population, exceeded only by Bulgaria and the former GDR [CoE 1998]. Considering the native population, Estonia features the most advanced degree of population ageing in the referred group. At the same time, after being withheld for almost half a century by the massive immigration from the former Soviet Union, the ageing process has been steeply accelerated as large immigrant cohorts from the late 1940s and particularly 1950s are reaching the old age [Katus 1995a]. Combination of this feature with recent fertility decline has resulted in very high tempo of ageing, exceeding most of the countries in Europe. From the viewpoint economic development, the country's relatively disadvantaged starting position and opted radical free market policies, resulting in the large-scale displacements and rapid sectoral shift [Puur 1997a]. Unlike several other countries, no attempt was made to preserve redundant jobs and spread the adjustment over longer period. Due to scarcity of resources but also the exercised economic policies, in Estonia the social safety net has turned to be less generous than in several countries of Central and Eastern Europe [UNICEF 1995].

The paper has been structured into five sections. The paper starts with a short outline of long-term trend in economic activity of older population, based on data from earlier population censuses[3]. Particularly, the inclusion of this section has been motivated by reversal of the decline in the workforce attachment of older population and the inavailability of information on it until recently. Drawing on the microdata of the 1989 population census, the second section focuses on the labour market attachment at the eve of transition, addressing the general pattern as well as the variation between subgroups of the aged. The third section summarises the experience of older workers during the period of economic transition, the data for this section are derived from the national labour force survey. The fourth section of paper draws attention to the implications the change in labour force participation and retirement on economic well-being of the elderly. The concluding section presents a summary of findings and discussion.

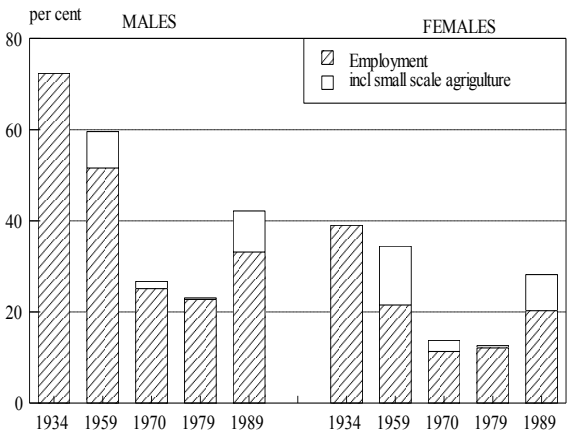
2. DISCONTINUITY OF LONG-TERM ACTIVITY DECLINE

The modernisation process has been worldwide accompanied by a long-term decline of labour force participation at both ends of productive age-span, particularly visible among men. In case of youth, the decrease in workforce attachment can be almost solely attributed to the extension of schooling, in older ages the shift towards lower economic activity has been associated with a set of contributing processes [Clark and Anker 1989; Durand 1975]. From the economic point of view, the introduction of pension schemes with gradual expansion of coverage, increasing flexibility of provisions and replacement capacity, together with general rise of affluence have removed much of the need to stay in labour force because of necessity. On the opportunity side, the technological development has rendered many skills and jobs obsolete, affecting particularly the older segments of labour force. Structural change has also meant a decrease in self-employment which is typically related to prolonged economic activity.

In case of Estonia, available census data allow to trace the trend in labour force participation of older workers back at least to the 1930s[4] (Figure 1). The 1934 census witnessed remarkably high levels of economic activity in older ages. Including the category of unpaid family workers, more than a half of men even aged 70 and over continued to be economically active and the median age at the separation from labour force was beyond 70. Reported levels for women were lower, however, admittedly, part of household-based female employment often goes unmeasured in agricultural settings. Put in another way, under these circumstances retirement still remained an unknown experience for the vast majority of older population, and for those who quitted labour force, leaving employment was often related to declining health and/or inability to retain a job. Consistent with the early stage of public pension scheme, non-employed elderly were largely dependent on their families/kin [Tuisk 1931; 1933]. In 1934, independent non-labour incomes accounted only for 12 per cent of men and 16 per of women aged 60 or over, of which about two thirds were pensions and welfare payments and one third property incomes.

By the first postwar census in 1959, the activity rates for men had dropped for all age groups beyond 50, for women the decline can be observed starting from age 55. Additionally, the decline in labour market attachment had a clearly positive age-gradient: for both sexes the biggest reduction were found in the oldest group. In relative terms, among men over age 60 the decrease in activity rate accounted for 20 per cent, among women the respective decline was lesser, being limited to 12 per cent[5]. Regarding the causal mechanism, the decline could be related to the violent societal transformation of the 1940s and 1950s which over a few years abolished most of the family-based forms of production. Another contributing factor was evidently the new pension legislation enforced by the Soviet authorities in 1956 which initially applied a strict earnings-test, practically excluding simultaneous employment and receipt of pension [Porket 1979]. Dependence on family/kin had dropped to one tenth of elderly males, among females more than one in every three had no independent income [Katus *et al* 1999].

Figure 1 ECONOMIC ACTIVITY RATE OF OLDER POPULATION
Estonia, census years 1934-1989



In any setting, the construction of longer time series on the economic activity of older population requires careful attention to the issues of data comparability. In case of Estonia, a major discontinuity lies between pre- and post-war censuses, planned and implemented by different statistical institutions [Goyer and Draaijer 1992]. Regarding economic activity, fortunately, the definitions in both sets of censuses were built around the usual activity concept and the examination of technical documentation reveals that the statistical measurement does not pose a principal obstacle for comparison[6], of course, as far as the transformation of societal context allows. The problem of comparability, however, also exists within the two sets of censuses. Concerning the post-war censuses, particular attention should be paid to

the population engaged in so-called individual auxiliary farms — privately run sector of small-scale agriculture which, in fact, was the element of farm- and/or family-based agricultural system surviving the socialist nationalisation [Jörgensen 1999].
Proceeding from ideological considerations, the individuals who received their income from such economic activity were not classified into economically active or employed [Yvert-Jalu 1985]. From the economic point of view, however, the role of such "non-employment" proved rather essential[7], and from the viewpoint of internationally recommended definition of economic, those receiving their principal income in small-scale agricultural activities should be included in the labour force [Hussmanns, Mehran and Verma 1990]. Correspondingly, in the course of data harmonisation co-ordinated by PAU, population in small scale farm sector was re-classified into economically active [Puur 1994]. Notably, the generally modest impact of this redefinition concentrates into post-retirement age, and as shown below, affects the majority of economic characteristics of older population to a considerable extent. For that reason, in the following, the employment in small-scale agriculture is shown separately whenever necessary.

Table 1 ECONOMIC ACTIVITY RATE OF OLDER POPULATION
Estonia, census years 1934-1989

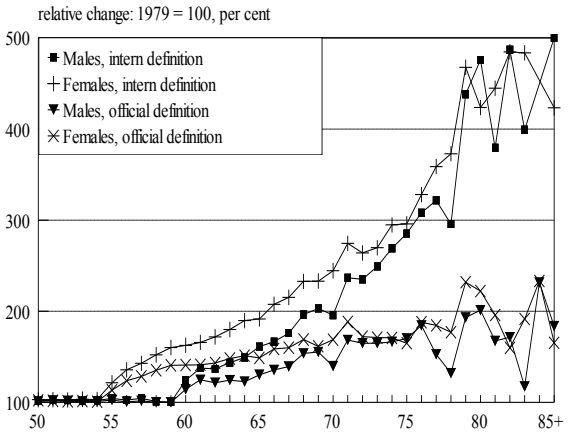
Year	Males	Females
1934	72,3	39,0
1959	59,6	34,4
1970	26,7	13,8
1979	23,1	12,6
1989	42,2	28,6

Returning to the trend of labour force participation among older population, the decline accelerated steeply in the 1960s. According to the 1970 census, for both sexes activity rates beyond age 60 accounted to just a half or even less of the 1959 level. Corresponding to the decrease in activity levels, withdrawal from economically active population continued to shift towards younger ages. Thus in 1970, the median age at separation from the workforce had dropped to 62.6 years for males and 57.8 years for females. The main driving force behind the decline was presumably the further improvement of pension coverage: the proportion of those matching the eligibility criteria increased with each new cohort entering the retirement age, and in 1965, the scheme was extended to collective farmers. The impact of pension system is revealed by closing the gap between urban and rural elderly: the almost threefold rural excess in participation rates observed in 1959 disappeared and was replaced by a weakly inverse relationship by the 1970 census. At that point, pension had become the single most important of livelihood for the elderly, accounting for slightly over 70 per cent of population beyond age 60.

Unlike in established market economies where the trend towards lower participation rates continued or even accelerated, the decline in older workers economic activity slowed down during the 1970s in Estonia. Between 1970-1979, participation rates for men aged 60 and over decreased by 13 per cent, for females the reduction was limited to just 9 per cent. Notably, among urban population even the opposite trend emerged with activity rates in 1979 higher than in 1970. During the next decade the growth of labour force participation in older ages spread to the entire population. Considering the population beyond age 60, the rise in activity rates accounted over 80 per cent among males, among females the rate more than doubled. Put in another way, the end of the 1980s revealed workforce participation levels similar to those observed more than two decades earlier.

Such an extensive reversal, significantly deviating from the "mainstream" development in industrialised countries, must be attributed to a combination of circumstances. Firstly, the reversal of the trend is evidently related to the revision of census methodology: the programme of the 1989 census foresaw registration of two sources of income instead of one in all preceding post-war censuses [Goyer and Draaijer 1992]. This apparently minor addition enhanced significantly the chance of small-scale agricultural employment being recorded. Receiving under virtually universal coverage of the scheme regular pension benefits, engagement in of older persons in such agricultural production was enough to redefine their status from economically passive to active (employed). Taking the advantage of microdata from the 1979 and 1989 censuses, Figure 2 reveals the contribution of statistical methodology by comparing the change in activity rates with two alternative definitions. Much higher increase of activity rates in the version including the small scale agricultural employment, clearly confirm the contribution of methodological revision. On the other hand, however, the revision of the census methodology appears not the sole or main reason behind the increase, as the latter persists after excluding the referred sector.

Figure 2 ECONOMIC ACTIVITY RATE OF OLDER POPULATION
Estonia, 1979 and 1989



In our view, the increase in labour force participation in older ages was to an important stimulated the Soviet-type pension system which was built on the assumption of zero inflation and therefore foresaw no indexation of benefits: once settled at retirement, the amounts were hardly increased during the remaining life. As the inflation still existed in reality, accelerating towards the 1970s and 1980s, early retirement became economically more and more disadvantageous[8]. On the demand side also, the expansion of post-retirement employment was fostered further by chronic labour shortage characteristic to a centrally planned system. Referred factors were supported by the regime's attempts to encourage gainful employment beyond relatively low age of legal retirement. For example, initially restrictive earnings-test of the 1956 Pension Act was repeatedly loosened, and in 1980, additional incentives were introduced to motivate persons entering retirement age to continue employment without claiming the payment of pension benefits. Structurally, the increase in economic activity was also by improving educational composition of cohorts, entering the old age[9].

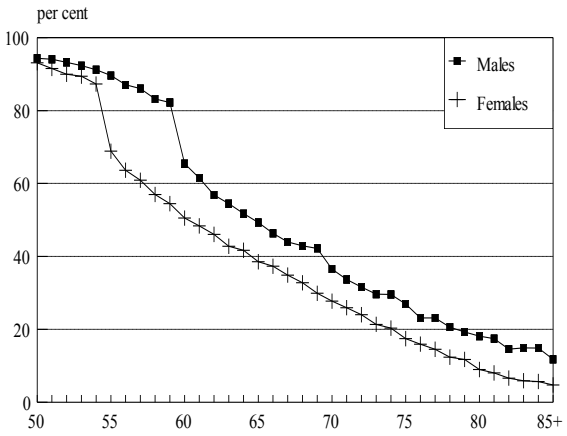
To sum up, the increase in economic activity among older population cannot be regarded as a statistical artifact, although its extent has been significantly inflated by the revision of census methodology. Therefore, for a more comparable estimate of development in the 1980s, one should rely on labour force participation rates excluding the inconsistently measured employment. This, adjustment, however, does not remove the discontinuity from the trend of older population's economic activity in Estonia.

3. HIGH LEVELS OF ECONOMIC ACTIVITY AT THE EVE OF TRANSITION

3.1. General pattern of retirement transition

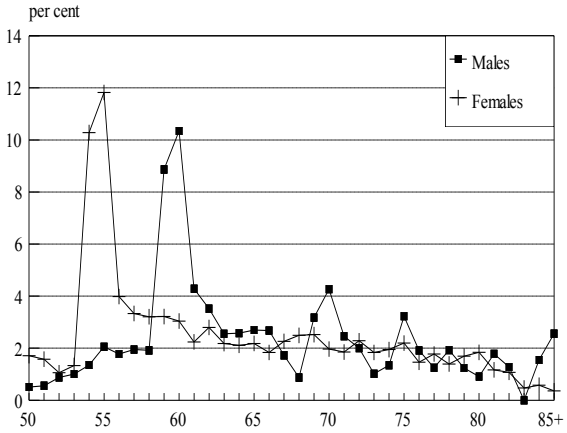
In case of Estonia, the 1989 census gives a comprehensive account of the economic activity of older population just before the major transformation of economic conditions started[10]. Figure 3 presents the age-specific labour force participation rates beyond age 50, the use of single-year age groups is essential to outline the process of disengagement from economic activity. The data reveal that after peaking at levels around 97-98 per cent for both sexes, activity rates started a slight decline from age 45. By the age of statutory retirement (60 for males, 55 for females) labour force participation rates had dropped to 80 per cent. The eligibility to withdraw from workforce prior to statutory age concerned workers who worked underground or under otherwise unhealthy conditions, specific occupations, extreme geographic locations, women who had raised five or more children etc. Presumably at least part of the referred early separations were related to poor individual health but the census data do not allow for direct specification of health status.

Figure 3 AGE-SPECIFIC ECONOMIC ACTIVITY RATE
Estonia 1989



The steepest decline in activity rates occurred expectedly at the age of statutory retirement, however, crossing that limit involved a mere 20 per cent of additional reduction. Later, for both men and women, the decline in economic activity slowed down, and approaching almost a linear pattern, stretched towards advanced ages. Thus, even around age 75 close to one man in three and one women in five had reported some economic activity. As shown later, these high levels of workforce participation among older population for the period immediately preceding to the economic transition were confirmed by a labour force survey, applying a internationally comparable framework of activity measurement. To account for the process of withdrawal from workforce more specifically, Figure 4 presents the profile of net separations from the labour, constructed from single-year activity rates and reflecting the balance between the flows in and out of labour

Figure 4 AGE-SPECIFIC RATE OF SEPARATION FROM ECONOMIC ACTIVITY
Estonia 1989



force. Except the concentration around statutory retirement and minor heaping at rounded ages, the profile features remarkably equal distribution of separations over the entire scale, consistent

From the life-course perspective, the median age of separation from the labour force[11] is perhaps the most essential characteristic of older population's economic activity. It determines how long an average person continues to contribute to nation's economy and, considering the prospects of longevity, how many years of retired life one could count on. Data reveal that prior to transition, older workers in Estonia prolonged their stay in labour force significantly beyond the statutory age of retirement. Calculated from the cross-sectional census data, the median age at disengagement from economic activity accounted for 66.2 years among men and 62.1 years among women in Estonia in 1989. This appears markedly from the pattern developed in established market economies where the age of actual retirement was increasingly preceding statutory age during the 1970s and 1980s [Kinsella and Gist 1995]. The reasons for such divergent trend, involving both demand and supply factors, were discussed in the previous section. Compared to the previous 1979 census, withdrawal from workforce had been postponed by more than 1.5 years on the average.

Median age refers to a typical point in life cycle at which transitions occur. As for an individual, the transition could be regarded as more or less instant event, for a cohort it implies rather a period during which persons gradually move from one status to another. To account for that perspective median should be supplemented with the observation of transition spread. In practical terms, the spread could be defined as a period during which some central part of the cohort (either real or hypothetical) experiences an event. Applying the concept to the data reveals reveals remarkably extensive spread of retirement transition in Estonia, consistent with relatively even age distribution of separations from the labour force. Measured as an interval between the first and third quartile, the spread accounted accounted for 17.3 years among males and 16.8 years among females. Parallel to the postponement of retirement transition, the exit from labour force had become spread over a longer age interval during the 1980s.

In comparative perspective, the reversal of the trend in older population's labour market attachment which occurred in the 1980s placed Estonia in rather high international rankings [ILO 1989-1991]. For example, among nearly thirty developed nations for which relevant data were provided, activity rates of the Estonian males aged 65-69 and 70-74 ranked second, respectively after Japan and Poland. In younger age groups, the ranking was slightly lower. Regarding females, Estonia's position varied between the first (age group 50-54) and the fourth (55-59) ranking. In other words, the economic activity of older population in Estonia had become higher than in countries with considerably later statutory retirement age. It should also be noted that while in established market economies the proliferation of early retirement schemes had lowered the actual age of retirement under the standard statutory age, in Estonia the situation was the opposite with separation from work force exceeding legal pensionable age by 6.2 for males and 7.1 years for females respectively.

Considering these high levels of economic activity among older population in Estonia, it is important to note that prolonged mortality stagnation resulted in comparatively low life expectancy, both at birth and in later ages [Katus 1999, Katus and Puur 1991].

Although belonging to the countries with early mortality transition, the intensive decrease of mortality in advanced ages signalling the fourth stage of epidemiological transition [Olshanski and Ault 1986] still cannot be observed in Estonia. According to the 1989 life table, at age 60 life expectancy accounted for 15.2 for males and 19.7 years for females. In Europe around 1990, lower level of life expectancy was found only in a very few countries. Compared to the forerunners of modern mortality development, in Estonia life expectancy at age 60 appeared 35 per cent lower for males and 25 per cent lower for females [Council of Europe 1998].

An further insight into the combined effects of economic activity and mortality can be derived from the construction of working life tables which generalise the existing patterns, assuming their continuity over the life-time of hypothetical cohorts. According to calculations based on conventional technique [Durand and Miller 1968], men aged 60 featured the economically active life expectancy about 6.1 years in Estonia. Given the large excess male mortality, the corresponding figure for females, despite considerably lower participation rates, was even higher, accounting for 7.0 years. The combination of high levels of labour force participation and high mortality evidently left Estonia with one of the lowest expectation of retired life in Europe but working life tables are not regularly calculated for national populations, this cannot be supported directly with figures.

3.2. Diversity within older population

Being a distinct part of the total population, the aged themselves do not form a homogeneous group. The diversity among older population cautions against straightforward generalisations also in respect to the labour force participation and calls for the dissagregation of activity measures across a range of demographic and socio-economic characteristics which are known to influence the labour market behaviour through preferences and the opportunity structure of individual decisions [Stolnitz 1992]. Knowing these differentials appears particularly important in terms of ageing policies. A sustained participation in the labour force, could, for example, enhance the ability to accumulate resources, thus allowing the individuals to prepare better for their old age. This, theoretically at least, should reduce the potential levels of economic dependence and increase self-reliance of older persons.

For the purposes of the present paper, a series of indices, consisting of age- and gender-specific activity rates, median age of retirement and transition spread, were calculated for the subgroups of older population by educational attainment, marital status, native/foreign origin, urban/rural residence and region.

Figure 5 ECONOMIC ACTIVITY RATE OF OLDER POPULATION
Estonia 1989

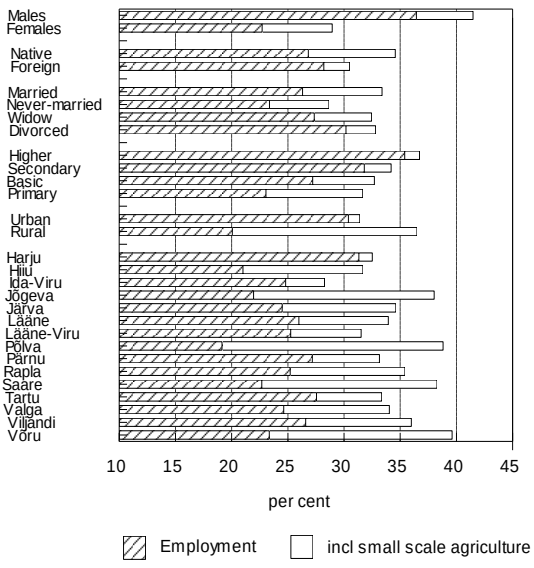


Figure 5 summarises the differentials in participation rates, to secure greater comparability between subgroups, the data have been age-standardised[12]. Table 3 presents the data on median age at retirement. Consistent with findings from many other settings, data revealed a strongly positive correlation between educational level and elderly labour force participation. Highly educated individuals, both men and women, were likely to stay longer in workforce, and each step down the educational ladder decreased the proportion of economically active elderly. The examination of the age pattern showed that educational differentiation is a phenomenon particularly characteristic to the older population, in working ages participation rates displayed only limited variation by education. for both sexes The excess economic activity related to higher and secondary education peaked during the first 10-15 years following statutory retirement age, in the oldest age groups activity rates gradually converged. Among men, the median age at retirement ranged between 69.8 years (higher education) and 65.5 years (primary education). Among women, the range proved considerably smaller, between 63.7 and 62.3 years respectively.

Along urban-rural divide, the data revealed higher levels of work force participation among rural population. Across the age scale, the difference started to develop around legal retirement, and in relative terms, increased with each successive age group. Though the proportion of the economically active decreased among both rural and urban population, decline in the latter appeared steeper. In rural areas men separated from workforce at the age of 67.4 years and women at 64.6 years, respectively 1.5 and 3.3 years later than their urban counterparts. Decomposition of economic activity into employment in small scale agriculture and other sectors implies the excess activity of rural elderly being directly attributable to engagement in the latter. The referred differential should be explained with greater prevalence of self-employment and family-based economic activities in rural areas, responsible for maintaining higher activity rates among rural elderly [Clark and Anker 1989; Durand 1975]. From the methodological point of view, the urban-rural differentiation stresses the importance of appropriate definition of economic activity: change in one seemingly minor component, the inclusion or exclusion of small scale agricultural sector proves sufficient to reverse the entire pattern. The exclusion of small scale agricultural sector would have reduced labour force participation rates for rural elderly below the urban level, resulting in a non-standard pattern difficult to explain.

Discussed structural factors were also responsible for the observed regional differentiation of labour force participation among older population. Across counties, the highest levels of economic activity were found in Jõgevamaa, Põlvamaa and Võrumaa which featured the largest proportion of agriculture in total employment [EKDK 1996-1998]. In these counties, the median age at separation from labour force ranged between 69.4 and 68.6 years for males, and for females between 66.0 and 64.9 years respectively. Counties with the lowest proportion of agricultural employment like Harjumaa and Ida-Virumaa were also characterised by lower labour force participation rates among older population and earlier retirement transition. Similarly to urban-rural differentiation, leaving aside auxiliary farm sector puts forward an inverse order of counties with capital region Harjumaa holding the highest rates.

Similarly to the experience commonly observed in general populations of many immigration countries [Coleman 1999; Brinkmann 1987], for both men and women,

older population of native origin features slightly higher levels of workforce participation. The difference is more strongly expressed among women, accounting for more than 20 per cent in activity rate or 2.8 years in the median age of retirement. Dissagregation of activity rates reveals into regular component and employment in small scale agricultural production reveals even greater distinction in the structure of employment. For example, the engagement in the referred agricultural sector contributes to more than one third of total employment among native-born women while being less than one tenth in foreign-born population. Across age scale, the largest excess activity of native population can be found beyond age 70 where it reaches close to 50 per cent in relative terms. Indeed, under conditions of chronic shortage of labour, the referred difference in labour force participation rates should be explained to spatial concentration of immigrant population in urban areas rather than to inferior employment opportunities [Puur and Sakkeus 1999]. Similarly to the differentiation across regions and urban-rural residence, the application of former official definition of economic activity instead of the internationally recommended would have resulted in a reverse pattern.

Unlike the previously discussed characteristics, the effect of marital status exhibited significant interaction with gender. Consistent with the patterns commonly observed among men, the highest involvement in labour force has been characteristic to married men, followed closely by divorcees and widowers. Except in the oldest age groups, the weakest labour market attachment was revealed by the never-married. The scope of differences appeared rather extensive with median age at retirement ranging, for example, from 66.9 for married to 62.2 years among never-married men. Among women, on the other hand, highest levels of economic activity were displayed by divorced, separated and widowed. Regarding married women, until age 75 their workforce participation did not differ markedly from singles who were the least apt to remain economically active. Towards the oldest age groups, also the differentials by marital status converged.

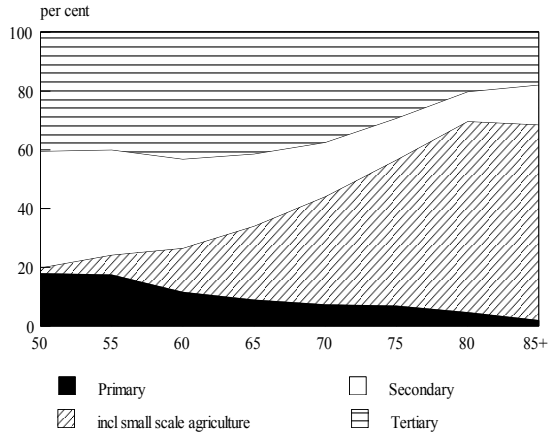
Observed patterns seem consistent with the hypothesis about interdependence of older persons. Having no spouse to rely on, divorced and widowed women are likely to experience greater necessity to work in order to support themselves. Regarding married men, particularly those with retired wives, the traditional role model of principal income earner and willingness to maintain the living standard of the household likely encourages them to postpone retirement and stay in the labour force. On the other hand, low levels of workforce attachment among never-married men and women may be linked to their poorer health status which perhaps had prevented individuals from getting married as well as involved in work.

3.3. Sectoral and occupational composition of older workforce

For those employed, the 1989 census recorded industry and occupation[13]. Across age groups, differences in the industrial and occupational composition of labour force typically relate to structural changes which take place during the course of economic development [Kaufman and Spilerman 1982; Singlemann 1978]. Emerging sectors and jobs tend to attract labour market entrants and more mobile workers from other sectors, providing new industries and occupations with selectively younger age composition.

Older workers could also move to new positions, however, the age-specific decline in labour mobility and often limited retraining opportunities imply systematic differences in the structure of young, prime age and older segments of labour force. The extent of these differences tends is dependent on the pace of economic development. Other mechanisms, shaping the composition of older workforce include the selectivity of selectivity of retirement process which is likely to override the effect of differential entry conditions in advanced ages.

Figure 6 SECTORAL COMPOSITION OF OLDER LABOUR FORCE
Estonia 1989



Data on broad sectoral distribution reveals remarkable stability of employment composition across age groups, indicating a stagnation of economic development prior to transition. Compared to industrialised market economies, Estonia featured a persistently extensive primary sector, accounting to nearly 20 per cent of total employment. Regarding older population, a major shift sectoral composition started from age group 55-59 (Figure 6). From that age onwards, the proportion of agriculture started to increase rapidly, reaching two thirds of total employment in the oldest age group. In comparative perspective, this increase is consistent with the experience of most European countries [Wijst 1992]. The figure also reveals relative growth in primary sector being exclusively attributable to employment in small scale production. Notably, the exclusion of the latter would have created a principally different impression of older labour force with the dominance of service sector and age-related decline in agricultural employment. Regarding other branches, the decline in the proportion of secondary sector employment started somewhat earlier and proceeded more rapidly than that of tertiary branches.

Despite the different perspective, occupational composition of older workforce revealed basically similar pattern with increasing proportion of agricultural employment, compared to the composition by industry the growth appears even steeper. The proportion of service occupations also increased with age, reaching a maximum in the age group 65-74. All other occupational groups displayed continuous decline beyond age 50. The referred patterns are directly reflected in the age composition of individual industries and occupations, for example, the median age in agricultural labour force is by far the highest. Also, differences in employment composition refer to uneven timing of retirement across the segments of labour force, however, cross-sectional nature of census data does not permit to address the issue in detail.

4. LABOUR MARKET EXPERIENCE OF OLDER POPULATION DURING ECONOMIC TRANSITION

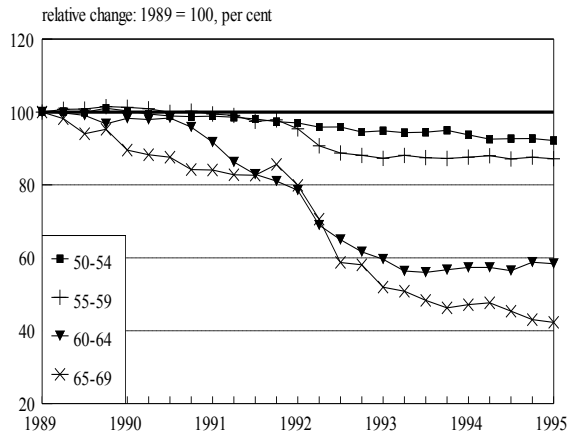
As elsewhere in Central and Eastern Europe, in Estonia the recent decade has witnessed considerable decline in activity levels, emergence of unemployment, re-allocation of workforce from declining old to expanding new sectors etc. Although the referred processes have influenced virtually the entire population, the effects have not been equal across subgroups. To account for the labour market experience of the older population, the present paper draws on the data from the first round of the national Labour Force Survey[14]. Apart from a conventional labour force survey, the programme of Estonian LFS included an extensive retrospective section building on event history design [Blossfeld and Rohwer 1995; Tuma and Hannan 1984]. In the survey, each respondent's, labour market experience was followed from January 1989 to the date of interview in Spring 1995. With monthly precision, the information was collected on three types of labour market spells: employment, unemployment and out-of-labour force. For each spell, the starting and ending dates as well as relevant spell-specific characteristics were recorded. To provide individual work histories with dynamic context, relevant information was collected also on geographic mobility, changes in marital status, childbirth and educational enrollment.

The applied survey design, and the period of more than six years, covered by the observation allows to monitor the changes in the economic activity of the population over different stages of transition. The starting point of observation in 1989 refers to the situation where societal changes had already commenced but had not reached the stage of radical economic reform. In Estonia, the latter was launched shortly after the restoration of national independence in 1991 and the couple of following years were marked by the most turbulent transformation [Taaler 1995]. The ending point of the observation in May 1995 reflects the situation which had emerged after the principal labour market adjustment. Age limits of the survey sample permits the examination of the experience older population until age 70.

4.1. Shift of retirement transition towards younger age

Transition to market economy brought an end to the mechanisms which under former regime had maintained the remarkably high labour force attachment. The time series of labour market indicators reconstructed[15] from the Estonian LFS reveal the shrinking of employment opportunities being disproportionately concentrated among older workers (Figure 7).

Figure 7 AGE-SPECIFIC ACTIVITY RATE
Estonia 1989-1995

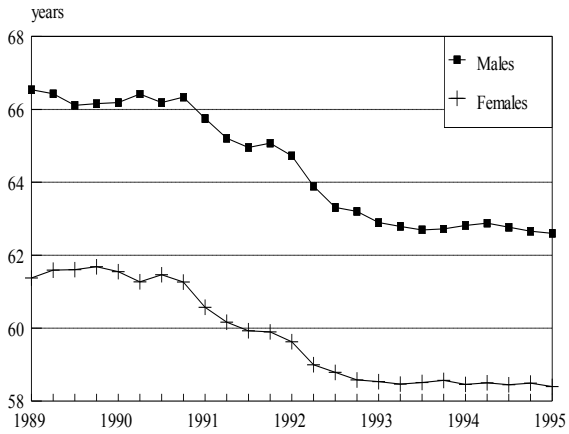


While in the prime working age decline in employment level has been limited to 5-8 per cent relative to the 1989 level, the proportion of currently employed has dropped by nearly fifth in age group 55-59 and by two fifths at age 60-64. In age group 65-69, the decline accounts even to two thirds, or in other words, only 40 per cent of pre-transition employment level has been left. The timing of decline reveals the peak of job losses in 1992, particularly visible for the age groups with steeper reduction. In Estonia, the referred year marked a principal turn towards macro-economic stabilisation. Notably, during 1993-1994 the downward trend slowed down, except for the oldest age group. Consistent with the resumption of moderate economic growth, new rounds of labour force survey have indicated no major changes in subsequent years until 1999 [ESA 1999]. The dynamics of activity rates has been basically similar, however, due to the emergence of unemployment these measures do not capture fully the reduction of work opportunities.

In the context of transition, excessive employment reduction among older population was, in fact, not surprising. Being entitled to old-age pensions, older person can usually rely on an alternative, though smaller regular income. The position of working-age population appears much more complicated in this respect, as compared to pensions, the replacement capacity of unemployment benefits tends to lower and less sustainable. In case of Estonia, the unemployment benefits have been scanty even by the Eastern Europe standard, not supported by other income maintenance schemes to any notable extent [Puur 1997b]. Under these circumstances, displacement of workers beyond retirement age turned to be socially less costly. In addition to the referred reason, the emergence of new economic sectors and occupations, but more importantly the change in basic mechanisms of economic environment, temporarily depreciated the value of previous work experience, making labour market conditions less favourable to older persons.

In terms of timing, the selectively age-related employment reductions have shifted the retirement transition to considerably younger age (Figure 8). The data reveal that between 1989-1995, the median age at separation from workforce has dropped by approximately four years. In 1995, it accounted for 62.3 years for males and 58.0 years for females. Additionally, over the same period, the spread of retirement transition has been more than halved, dropping to 17.3 years to 8.6 years among males and from 16.8 to 7.5 years among females. In other words, the process of retirement has become concentrated into much shorter age-span than previously. The comparison of the first and third quartiles reveals that the latter development has occurred primarily due to sharp decline in the number of persons who could extend their retirement beyond the statutory age.

Figure 8 MEDIAN AGE AT SEPARATION FROM LABOUR FORCE
Estonia 1989-1995



This has resulted in a visible decline of country's position in relevant international rankings, based on older population's economic activity, particularly for females. More importantly, however, has been the fact that in the time when actual retirement age has undergone sharp decline, from 1994 the statutory retirement age has started movement in opposite direction. To alleviate the amounting fiscal pressures, the ongoing pension reform foresees that by year 2013, statutory retirement age should reach 63 years for both sexes. Currently, the eligibility starts at age of 62 for males and at age 57 for females. Although the statutory retirement age is still slightly lower than the age at which working is stopped, convergence between the two has evidently increased the subgroup of older populations with reverse order of events. To address this urgent social issue, recent amendments added the pension scheme the provisions for early retirement.

Regarding the differentiation of employment decline within elderly population, understandably, the survey data cannot match the corresponding detailness of the census. Still, pooling the experience of respondents in age range 50-69, some additional conclusions can be drawn. Examination of labour market outcomes of older population's by gender reveals greater decline of employment opportunities among women. This finding, however, should not be exaggerated as it stems directly from younger retirement age of women. In age group 50-54, for example, greater decline can be observed among males. Among others, in case of Estonia, women have been favoured by their higher educational attainment vis-à-vis men dating back to cohorts born in the 1920s-1930s. Consistent with findings in general population, also among elderly the magnitude of job losses appears dependent on the duration of schooling. Older workers with higher education in age group 50-69, for example, have retained close to 90 per cent of their previous employment level while for those with primary education the level has been halved. More importantly, however, for those with no secondary education, the actual retirement has dropped below the statutory.

Selectively disadvantaged position is characteristic also older population of immigrant origin. For that group, the primary reason for excessive employment decline is explained by the specific employment composition prior to transition [Puur and Sakkeus 1999]. In case of Estonia, the immigrant population had been concentrated in large industrial enterprises, particularly heavy industries, which have faced biggest difficulties in adapting to new conditions. On the other hand, unlike in working-age population, among older workers the reduction of employment has been slightly more extensive in urban areas. This finding may seem inconsistent with the biggest job losses in primary sector, but evidently the decline has concerned the small scale agricultural production, in which older persons tend to engage, to a lesser extent. Still, in the Estonian setting, particular attention is required to rural males whose actual retirement age has dropped from 67.3 years to 60.9 years, reversing the traditional urban-rural gradient.

4.2. Moderate levels of unemployment but growing severity and discouragement

Transition to market economy has witnessed the emergence and expansion of unemployment, as a new labour market reality unknown under central planning. Estonia has shared this experience with unemployment rates among working-age population approaching two-digit level in 1993. In 1994-1995, the growth gradually decelerated and unemployment rate has fluctuated around 10-11 per cent until early 1999 [Puur 1997b; ESA 1999]. Recent year, however, has brought a new increase of unemployment reaching 13-14 per cent of labour force.

Figure 9 AGE-SPECIFIC UNEMPLOYMENT RATE Estonia 1995

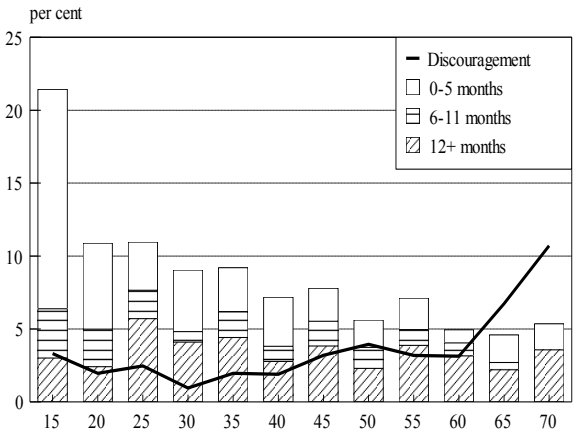
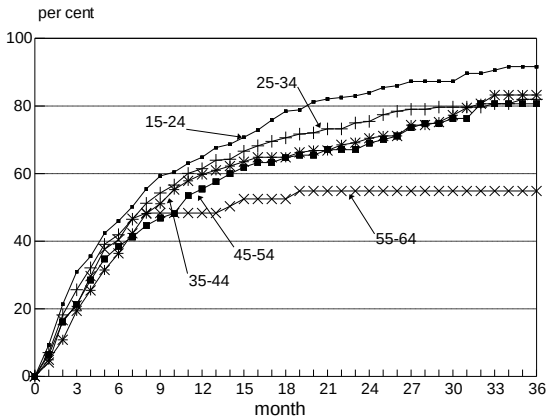


Figure 9 presents the age profile of unemployment, with separate indication of long-term and short-term unemployment. Apart from employment reductions, the data reveal unemployment rate being inversely related to age. The pattern displays a classical peak in the youngest age group with gradual decline thereafter. When moving towards the end of age scale, the level of joblessness declines without displaying a second peak around the age of retirement. Evidently, this pattern should be explained by varying direction of employment exits. In older ages the outflow from employment has been directed towards economic inactivity whereas in younger ages displaced workers could not afford dropping out of the labour force and becoming idle. Differential behaviour with respect to employment exits is likely related to the availability of alternative income and perceived chances of finding a new job.

On the other hand, however, the absence of second does not imply lesser severity of unemployment problem for older population. Even opposite conclusions could be drawn by looking more closely at characteristics of unemployment, particularly its duration. As shown also on Figure 9, while the total unemployment rate declines, the share of long-term joblessness increases towards older ages. Beyond age 50, more than one in two persons out of work belong to the category of long-term unemployment. And as its is well known, the latter refers to structural barriers in finding work and involves much greater social and economic strain. [Walsh 1987]. The severity of unemployment among older workers is also revealed by their higher propensity to register at employment offices, although the chances of getting re-training and/or job appear rather poor in that system [Venesaar 1995].

Figure 10 OUTFLOW FROM UNEMPLOYMENT TO EMPLOYMENT
Estonia, 1989-1995



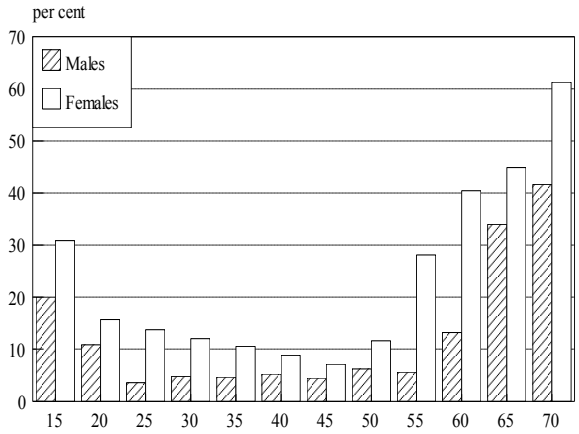
From the analytical perspective, the level of unemployment at a given moment reflects the outcome of two processes. First, it depends by the intensity by which the population enters the state of unemployment, and second, on the speed persons exit from joblessness, either by getting a job, or alternatively, by giving up job-search. For the individuals concerned, the latter deserves particular attention as it determines the time-span under which the person is out of employment and looking for a job. Short-term breaks between jobs are generally more easily tolerable whereas long-term unemployed are likely to remain out of employment unless obtaining relevant training. Longitudinal design of the Estonian LFS allowed to monitor this return flow from unemployment to employment[16] (Figure 10) The data reveal rather strong relationship between age and resolution of unemployment spells. Concerning persons aged 55-64, only slightly more than half of succeeded to get a job during three years of observation, from the remainder nearly 50 per cent stopped looking for employment. Noticeably, among older persons the chances of success were practically exhausted by 6-8 months of job-search, beyond that duration returns to employment became rather marginal which in significant contrast with younger age groups.

Considering the presented findings, it should be noted that unemployment estimates account only for potential workers who were actively seeking and available for work. Persons who would like to have a job but have ceased actively seeking employment because they believe no work is available, are not reflected in respective figures. To account for such form of labour underutilisation, Figure 9 presents also the information on discouragement rate. Not surprisingly, the concentration of discouraged workers is the highest in older ages and their addition to the ranks of the jobless would convert the unemployment curve from the L-shape to U-shape pattern. In case of Estonia, the increasing severity of unemployment among older ages has been particularly stressed by opposite trends of statutory and actual age of retirement.

4. 3. Frequent part-time and self-employment

Aside the measures of employment and unemployment, labour force survey provides information on various other characteristics of employment in which older persons are engaged. Similarly to the experience of many other countries, in Estonia considerable proportion of older workers are not working full hours (Figure 11). Taking usual working time less than 35 hours per week as a cut-off level, a steep increase of part-time employment seems to coincide with statutory retirement age: for males it starts from age 60, among females the upward trend starts five years earlier. Though the decline in average weekly working hours is not very dramatic, the prevalence of part-time work accounts up to two fifths of total employment among men and three fifths among women. Referred levels are significantly higher than those observed in any other age group, and as discussed below, the upsurge in part-time work in older ages stems from different employment composition rather than from some special provisions to allow gradual retirement. As a result, recalculation of activity rates to full-time equivalents would decrease the older workers labour market attachment by about one fourth.

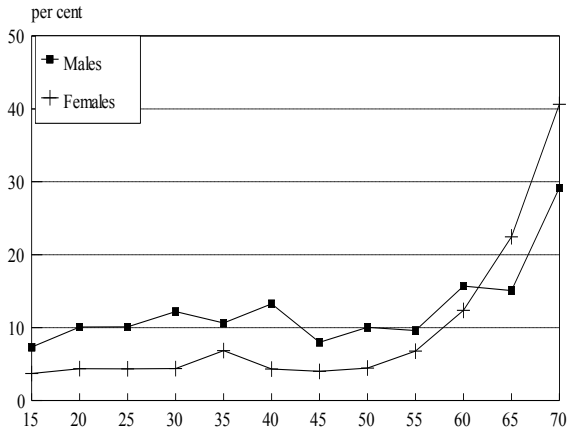
Figure 11 PROPORTION OF PART-TIME EMPLOYMENT BY AGE
Estonia 1995



The direction of shifts in sectoral composition of older labour force has been basically similar to the experience among the total economically active population, however, there are notable differences in the dynamics of particular sectors. Considering the age groups 50-69, between 1989 and 1995 the share of primary sector employment decreased from 21.2 to 17.8 per cent, and that of secondary sector from 37.8 to 32.5 per cent. Over the same period, tertiary branches had increased their share from 41.0 per cent to 49.8 per cent. In absolute terms, reduction of jobs has occurred in all three sectors. Relative to working-age population, the decline in primary sector was more than twice lower and growth in tertiary branches respectively smaller. On one hand, the observed distinction reflects a specific structure of agricultural employment with increasing component of small scale production in older age groups. Compared to former collective farms, various family-based production seems to have been more independent of economic transformation. On the other hand, lesser growth in tertiary sector can be explained by the youth preference in new and expanding branches.

Closely related to re-emergence of private sector, transition to market economy has been accompanied by the diversification of economically active population according to social status. Reconstructed time series reveal that over the years 1989-1995 the share of self-employment has risen from 1.6 to 8.1 per cent of total employment in Estonia. Consistent with the emergence of new businesses, the relative increase of self-employment has been at highest in 1991-1993. Perhaps surprisingly, across the age scale the biggest concentration of self-employment is found not among active young or prime-age workers but in older segments of the labour force (Figure 12). The proportion of self-employed starts to increase in pre-retirement age and in age group 70-74 reaches 40 per cent for males and 30 per cent for females. On a more detailed level, the majority of self-employed elderly belonged to own-account workers, mostly engaged in small-scale agricultural production.

Figure 12 PROPORTION OF SELF-EMPLOYED BY AGE
Estonia 1995



5. Implications of activity decline on economic well-being

Evidence from established market economies reveals that the development and maturation of social security systems have to a significant extent removed the elderly from the ranks of economically disadvantaged population groups, providing them with living standard close or even above the national average. Also, it has been noted that over the past decades, the economic well-being of elderly has tended to increase faster than that of non-elderly [Sgritta 1995; Preston 1984]. In a broader sense, these developments have relate to the core of the social construction of old age, including living arrangements, lifestyle and intergenerational relations: together with their demographic and social underpinnings, improvements in economic status of the elderly have been in putting forward the modern image of the Third Age.

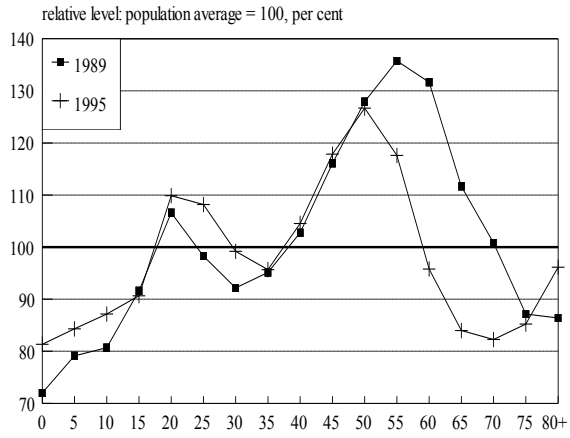
Against that background, in transition countries economic well-being and income security of older population poses a major concern, and not seldom, the situation has been described as an erosion in the status of elderly [Botev 1998; Prokofieva and Terskikh 1997]. Aside general problems and the need for fiscal austerity, deterioration in the economic status of older population has to an important extent been brought about by the changes in labour market activity. The concluding section of this paper addresses this connection by comparing the income level of older population in Estonia prior the transition and after the most turbulent stages of adjustment. To outline the impact of economic transition on the incomes of the elderly, the data from the 1989 Family Income Survey[17] and Labour Force Survey, supporting comparable data from 1995, have been applied. The Household Income and Expenditure Survey, which would have otherwise been preferable source of information, could not be used for repeated changes in methodology [Kutsar *et al* 1998].

Extremely rapid inflation accompanying the collapse of centrally planned economy, the currency reform in 1992, the following adjustment prices and profound transformation consumption patterns etc make it difficult to compare the real incomes over the years of transition. To account for the problem, the comparison builds on relative age-income profiles referring to average per capita household income at a given year (Figure 13). Typically, both profiles have a specific shape with peaks reflecting the stages with most favourable proportion of income-earners and dependent persons in family life cycle. The first peak refers to the stage where young persons have started to earn independent income but have not yet completed family formation, subsequent decline in household income reflects the birth of children. Departure of children from parental home, entry into employment but also the shape of individual age-earnings profiles are responsible for the emergence of second peak between the middle and old age.

Turning to income experience of older population during economic transition, the comparison of 1989 and 1995 situation reveals the biggest deterioration of income position among young olds. With sources and level of income mutually related, the observed decline has been generated directly by employment reductions around retirement age. This hypothesis is supported by the largest decrease being located precisely in the age group in which the drop in activity rates has been the most extensive. Due to the simultaneous receipt of wage/salary and pension, young olds enjoyed one of the highest income positions and corresponding living standard prior to transition. The data from the 1989 census reveal, that half of men aged 60-64 and half of women aged 55-59 had at least two incomes, exceeding the prevalence of multiple incomes in all other age groups [Katus *et al* 1999]. Decline in economic activity and juvenation of retirement transition brought this favourable situation to an end, causing household income beyond age 60 to drop below population average. As a result, the duration of the corresponding life cycle phase was shortened by *ca* 10 years and the second peak of high household income shifted clearly to pre-retirement age. To formulate it more explicitly, a whole stage of old age, with particularly favourable economic position, has disappeared in the course of transition.

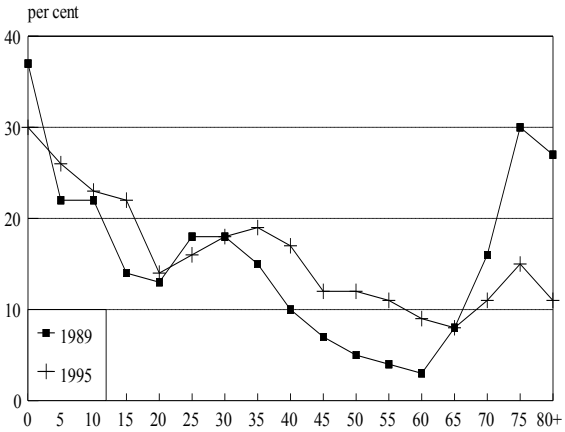
A contributing factor, worth mentioning though less important, has been the transformation of individual earnings profiles. A comparison of cross-sectional earnings profiles from 1989 and later years revealed significant decrease in returns to experience and a corresponding shift of earnings peak to younger ages. In 1989, among Estonian males the peak was achieved around age 40. In 1995, however, the earnings peak was found in age group 25-29 [Noorkõiv *et al* 1998]. From population perspective, the observed shift relates to a specific cohort effect. On one hand, the transition resulted in the loss of firm-, sector- and job-specific work experience accumulated under the previous system, and naturally, this loss was suffered by middle-aged and older workers. Young cohorts entering the labour market, on the other hand, were recruited to emerging and expanding new sectors, and therefore, experienced sharply incomes in their early careers. As the turbulence of initial restructuration passes, work experience is expected gradually restore its value, smoothen the current disadvantage of middle-aged and older population.

Figure 13 AGE PROFILE OF PER CAPITA HOUSEHOLD INCOME
Estonia 1989 and 1995



On the other hand, it is interesting to note that the decline in incomes has not been shared by the oldest olds. As revealed by Figure 13, relative income position has remained virtually unchanged for persons aged 75-79, and to a certain extent, has even improved for those over age 80. Somewhat inconsistent with the notion of excessive vulnerability of the oldest olds, this differential experience should be explained by at least two reasons. First, the proportion of economically active has been low in advanced ages, and therefore, the decline in labour force participation did not have any significant effect on the oldest olds. Secondly, the new pension scheme enforced in 1992 abolished the discrepancy between the level of benefits paid to young and old elderly, inherited from the Soviet pension system. Data from the National Social Insurance Institution shows that under the new system the amount of average old-age pension appears rather stable across age-scale, with no discrimination against oldest olds [RSKA 1998]. The increase of the income profile age 75 should be related to varying household composition of the elderly, particularly the increasing towards old age propensity to co-reside with children/kin.

Figure 14 AGE PROFILE OF LOW HOUSEHOLD INCOME
Estonia 1989 and 1995



Considering the entire age scale, the deterioration in relative position of young elderly was offset by moderate improvements among young adults (age group 20-34) and children. Presumably, the latter development has resulted from rapid fertility decline, reducing the number of dependent family members, and the above-discussed modification of earnings profile. From the perspective of intergenerational relations, it seems plausible that opposite trends in the economic status of young adults and young olds have possibly affected the pattern of informal economic support. Prior to transition, parents approaching retirement often provided their children with substantial material assistance at early stages of family life, essential in compensating the deficiencies of existing social policies [Puur and Vikat 1990]. Although there is no direct evidence, intergenerational support with such direction has likely reduced.

To evaluate the economic position of older population from a different perspective, the discussion of average incomes should be supplemented with the examination of income distribution. The primary concern in this context is the identification of groups whose standard of living falls below certain acceptable minimum, thus exposing them to the risk of poverty [World Bank 1993]. To outline the variation and change in poverty risks, Figure 14 presents the prevalence of households belonging to the lowest 15

percentiles of income distribution. Though the minimums of the pattern basically replicate the inverted peaks in average incomes, it provides an interesting insight into transition experience of older population. Comparison with the 1989 situation reveals that during the economic transition income poverty has increased among young and middle-aged population. Beyond age 65, particularly in ages 75 and above, however, relative poverty has declined about twice with no other age group achieving such progress. In particular, this finding deserves attention as it contradicts with simplified perception of older persons as unconditional losers during transition.

The data reveal that the referred modification of poverty profile has been put forward by two distinct processes. On one hand, the discussed changes in pension system put an end to the income discrimination against oldest olds. On the other hand, the emergence of unemployment has introduced a sudden expansion of poverty among working-age population. Under very limited schemes of unemployment insurance and income maintenance, the loss of employment is not substituted and leads inevitably to major reduction of household income. Although the households are in most cases capable to cushion the adverse effects of joblessness, their coverage is not universal. In case the support from household is not available or appears limited, living standard drops likely to very low levels [Puur 1999]. In comparative terms, after initial economic adjustment income poverty in Estonia appeared slightly more common among the elderly than in middle-aged population but clearly less prevalent than among young adults and children.

6. SUMMARY AND CONCLUSIONS

Based on newly available sources, the paper outlined the basic characteristics of economic activity among older population in Estonia. While many of the discussed features turned to be consistent with findings from other settings, others appear less documented and could be relevant also for other countries with common historical experience.

The analysis revealed that after several decades of decline in older population's economic activity, the trend reversed and participation rates of turned to increase in the 1970s and shifted the retirement transition to younger ages. The growth, induced by the deterioration in replacement capacity of old-age pensions and changing composition of retirement cohorts, continued until the end of 1980s, reaching one of the highest levels in Europe. Differently from most countries, the timing of actual retirement exceeded statutory age in Estonia for more than 6 years.

Societal transition in the early 1990s brought the situation into a rapid change. Disadvantaged starting position and need for extensive economic restructuration resulted in relatively extensive job losses, hitting particularly hard the older segments of labor force. Quite contrary to the modern concept of active ageing, these employment reductions shifted the retirement for about 4 years towards younger age. As the ongoing pension reform instituted a simultaneous increase of statutory retirement age, opposing trends of actual and legal retirement have increased the group of older population with separation from the labour force preceding the pension eligibility. Unemployment

experience of older population has been mixed. On one hand, the level of open unemployment is not very high, but on the other hand, once dismissed, older workers have remarkably poor chances of returning to work.

Decline in older population's economic activity has implied significant deterioration deterioration of the income position among young olds. Prior to societal transformation, this group of population had enjoyed one of the highest levels of household income whereas the transition has dropped their incomes below the population average. Somewhat inconsistently with the notion of their particular vulnerability, relative income position of oldest olds has not deteriorated but even improved slightly. Also, the examination of poverty profile did not confirm the simplified perception of older persons as unconditional losers during transition. From the population perspective, the transition has evidently introduced significant cohort effects which distinguish between the generations who have retired before and during the transition, and cohorts who do so later. In particular, these effects need to be considered when planning and implementing ageing policies in societies concerned.

Considering the prospects of population ageing, accelerated in the future by persistently low and possible improvements in old-age mortality, the issues of income maintenance and the solvency of pension system will become an even more serious issue than today. To avoid major difficulties, conscious efforts are required to diversify the income sources of elderly cohorts which are currently, reflecting the legacy of the former system, too strongly concentrated around pay-as-you-go pillar.

Notes

1. The paper belongs to the project *Population Ageing in Estonia* which is a national part of a comparative research programme *Dynamics of Population Ageing in the Countries of the ECE Region*, coordinated by UN ECE PAU. Besides the harmonised microdata sample of the 1989 census, a number of research papers have been prepared in the framework of the national project [EKDK 1995; Katus 1995a; 1995b; 1996, 1997, Katus *et al* 1999; Puur 1994; 1995a; 1995b; 1997; Sakkeus 1995; Põldma 1999].

2. In *Popline* bibliographic database only 31 titles were cross-referenced under the headings 'retirement' and 'Central and Eastern Europe', and only 3 titles under the headings 'older workers' and 'Central and Eastern Europe'. Several other attempted keyword combinations did not produce better result. Of selected studies, in fact, only a small fraction actually addressed specifically the process of retirement or labour market attachment of older workers.

3. The first census covering the territory of Estonia was a part of the census in three Baltic provinces in 1881 [Jordan 1886; Jung-Stilling, Anders 1883-1885]. It was followed by the Census of the Russian Empire of 1897 [Troinitski 1905a; 1905b]. The Statistical Bureau of the Republic of Estonia carried out three censuses: in 1922, 1934 and 1941 [RSKB 1923-1925; 1934-1937; 1942]. After the Second World War there have been four Soviet censuses: in 1959 [TsSU ESSR 1962-1964], 1970 [TsSU ESSR 1972-1974], 1979 [TsSU SSSR 1980-1983], and 1989 (the publication of the census data of 1989 by county volumes is in progress [EKDK 1996-1998]). For comparability purposes, the census data have been partially recalculated. Harmonised data are assembled in the Estonian Population Databank, developed and

maintained by the Estonian Interuniversity Population Research Centre [EKDK 1992a; 1992b]. In this report, the figures are based on the Databank, if not referred otherwise.

4. Data from the 1922 census which for the first time in Estonia applied the concepts of economic activity more or less comparable to modern ones, were tabulated by age only for agricultural population, however, the indirect comparison indicates no significant change in activity levels between 1922 and 1934. The extension of the trend to the 1881 and 1897 censuses has been hindered by the lack of tabulations by age as well as the discontinuity of definitions, however, the recent computerisation of the 1897 individual census lists for the city of Tartu could significantly expand the relevant research possibilities [Berendsen and Maiste 1999].

5. A detailed exploration of the 1959 activity pattern is detracted because of crude age classifications applied in the tabulations. A more specific analysis requires the computerisation of individual census lists, started in a small-scale pilot project in 1998 [EKDK 1998].

6. The comparability of economic activity data between pre- and post-war censuses is supported by more or less similar treatment of several borderline categories such as seasonal workers, temporary workers and absentees, holders of casual jobs etc [RSKB 1934-1937; NSVL SKV 1958].

7. Despite various administrative restrictions imposed on the sector, small-scale agricultural production accounted, for example to 49 per cent of potatoes, 22 per cent of milk, 18 per cent of meat etc produced in Estonia in the eve of transition (1990).

8. The referred process can be easily demonstrated by the maximum rate of old-age pension which remained fixed for more than 30 years (since 1956). While in the late 1950s, the established maximum rate exceeded the average salary by more than 50 per cent, by the mid-1980s its replacement capacity had dropped to just a half of average salary.

9. To address the issue, combined age- and education-specific activity rates were calculated from 1979 and 1989 censuses. Decomposition of the intercensal change into structural and behavioural components revealed that the impact of the latter proved more important in generating the increase in the economic activity of older population [Puur 1995a].

10. At the 1989 census, the economically active population was defined as receiving their income from enterprises, organisations, collective farms, auxiliary farms and newly introduced private sector; the rest were classified into economically passive. No provisions were made to identify the unemployed. [Puur 1994].

11. In the text, median age at separation of labour force and median age at retirement are used interchangeably to denote the age at which half of the hypothetical cohort has ceased to economically active.

12. Activity rates for elderly sub-population were age-standardised using the direct standardisation technique. For a standard, the structure of Estonian total population aged 60 and over was used.

13. The sectoral and occupational composition at the 1989 census has been mapped from the Soviet to international classifications, respectively the Standard Industrial Classification (ISIC) of Economic Activities and Standard Classification of Occupations (ISCO). The description of the mapping scheme is available from [Puur 1994].

14. The target population of the ELFS consisted of permanent residents of Estonia who were 15-74 years old in the beginning of 1995. A nationally representative sample was drawn from the 1989 census, altogether 10,955 cases were assigned to the interviewer network. Of those, ultimately 9,608 individuals (87.7 per cent) were interviewed. On the whole, the distribution of respondents approximates closely the target population [Noorkõiv and Puur 1996]. The methodological report and standard tabulations of the survey have been published in 1997 [ESA 1997a; ESA 1997b].

15. The reconstruction of time series builds on the capacity of event history data to reflect the labour force status of each surveyed individual continuously at any point of time during the observation period. When aggregated, these individual statuses provide for cross-sectional distributions of survey population, which in turn, can be used for the calculation of labour market indicators such as rates of economic activity, employment and unemployment etc. The present paper takes an advantage of the reconstructed quarterly time series, for computational considerations, each quarter has been represented by the central months.

16. Flow estimates are based on the experience of more than two thousand pooled unemployment spells, observed in the survey and started in 1989-1995.

17. The 1989 Family Income Survey belongs to the last round in the series of surveys which were carried out in Estonia from the end of 1950s by Goskomstat. The 1989 survey covered 3,230 households, collecting information on personal characteristics of family members, sources and amounts of income, housing conditions and major consumer durables [ESA 1990]. To make it available for the analysis, the microdata has been re-computerised by Estonian Interuniversity Population Research Centre.

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