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# Report on projections by level of education (Future human capital: Estimates and projections of education transition probabilities)

*Report on changes in the educational composition of the population and the definition of education transition scenarios: The example of Italy and the Netherlands.*

Work Package 1
Multistate Methods

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**MicMac**

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# Work Package 1: Future human capital: Estimates and projections of education transition probabilities

*Report on changes in the educational composition of the population and the definition of education transition scenarios: The example of Italy and the Netherlands.*

**Anne Goujon**[1]

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# 1. Introduction

The importance of education as a major factor affecting many demographic variables, and in turn the effect of many demographic variables on the supply and demand of education, have been widely recognized for many decades and studied extensively in the demographic literature. Education is acquired in the younger years, and as an achieved status does not change over time like some other variables. Indeed, education is considered a crucial variable in explaining differences in fertility behaviours, and differential patterns of mortality and migration. As Muhsam (1975) writes, "both educational and demographic processes are involved in ensuring the very persistence of a society" as "the survival of a society depends on its capacity to evolve processes of both these types—educational and demographic—which comply with certain minimum conditions."

Education is a dimension that is both decisive at micro and macro level. In the report of the European council on the Lisbon goal to make Europe "the most competitive and dynamic knowledge based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion" the aims are clearly set at both levels, in terms of the advantage in reforming and improving education systems (Commission of the European Communities [CEC], 2006). The objectives at the individual level are to increase the chance of a person to realize his/her potentials. It is a determinant of personal well being as shown by many studies. The same is true at the society level where promoting educational development is seen as a way to increase political and democratic stability, eliminate inequities and disparities within the society, and promote the acceptance of cultural diversity (CEC 2006, also Lewin, 1993). The objectives in terms of education are also expected to have repercussions in the economic sphere where education will provide the necessary skills for human capital, as engine of economic growth. Moreover as education is mostly publicly financed and accounts for a large share of government budgets, it is a key variable for the future.

The research has shown the desirability and feasibility of using education as a parameter in population projections in theory and in practice because education has a significant role as a source of demographic heterogeneity influencing the fertility, mortality, and migration behaviours of the population as shown in the paragraphs below. The second reason is that the output of the projection—future population by age, sex, and education—is valuable. Not only is education an essential aspect of basic human development, it is also a prerequisite for the achievement of sustainable development. Moreover, measures of the educational attainment of populations have been important explanations of growth success. Knowledge of educational levels indicates the quality of human capital of any society and therefore its capacity for development (and participation in the global economy). The third reason is more technical and concerns the feasibility of the projection itself, which requires the availability of input and projection techniques. I will show that for the latter, censuses and Labour Force Surveys have provided sufficient information to carry out the projections. The multi-state technique as an elaboration of the cohort component method is well known and multi-state software are available.

Present and future education trends will not only impact on the population size of those world societies, but also shape their human capital component. Population projections by level of education are an important step in improving population forecasting and its relevance. As discussed in Lutz *et al*. (1998), adding education to age and sex as an explicitly considered demographic dimension in population forecasting also affects the demographic output parameters themselves due to the fact that a significant source of so far unobserved heterogeneity is being observed and explicitly endogenized. Indeed, no other socioeconomic variable shows a similar degree of association with fertility—and mortality—than does education. This is especially true in developing countries where the average difference between the fertility of women with tertiary education and that of women with no education can be as high as three children. For instance, women in Malawi in 2000, in Bolivia in 2003, and in Ethiopia in 2005 with a secondary education or more had 4.0 children less than women who had never attended school (DHS). The special relationship between education and fertility is related to "the effect on parental fertility of mass schooling, the expectations it creates about children's costs and benefits, and the impact it has on 'quality/quantity tradeoffs' in the course of parents' reproductive decisions," as summarized by Knodel and Jones (1996).

In the developed world, although the differentials are of lesser importance in absolute terms, in relative terms they can be quite important. **Table 1** shows that in a vast majority of European countries women with a secondary education or more have fewer children than those with a primary education or less (Skirbekk and K.C. forthcoming). The difference is rather substantial in a few countries like Estonia and Poland (1 child difference), Spain (0.8 children difference) France and Greece (0.5 child difference). In a few countries, the highest fertility rate is among women with a secondary education rather than a tertiary education like in Austria, the Netherlands, and Luxembourg (also in Russia). A V-shape can be found in some countries where secondary educated women have the lowest fertility compared with those with primary education or less and tertiary education (Belgium, Germany, Latvia, Malta, Portugal, and Macedonia). Becker and the New Home Economics in general, use two behavioural mechanisms to link educational attainment and family formation. These mechanisms are contradictory and have been named the "income effect" and the "price effect." The income effect implies a positive effect of educational attainment on the timing of family formation through higher earnings that will allow the highly educated to attain the costly good "family formation" earlier than the less educated, and will increase the respective attractiveness of the former. The price effect would lead to a negative effect of educational attainment on the timing of family formation through the opportunity costs of family formation that are higher for the more educated because of the higher earnings. The income effect is expected to dominate the relationship between educational attainment and family formation among men, whereas the price effect would dominate the above-mentioned relationship among women.

Educational attainment has also positive effects on health. The well-educated experience better health than do the poorly educated, as indicated by high levels of perceived health and physical functioning and low levels of morbidity, mortality, and disability (Ross and Mirowsky 1999). The sense of personal control may be an important link between education and health through health-enhancing behaviours. Because education increases effort and ability — the components of problem solving

(Wheaton 1980) — people with more education will know more about health and are more likely to initiate preventive behaviours such as exercising. Education also increases the likelihood of having an efficient network of social support (Ross and Van Willigen 1997).

**Table 1: Fertility differentials by women's education in 2000-2004 as estimated from selected Surveys for Europe**

| Country | Primary and less (ISCED 01) **A** | Secondary (ISCED 234) | Tertiary (ISCED 56) **B** | Difference A - B |
|---|---|---|---|---|
| European Union Member States | | | | |
| Austria | 1.7 | 1.8 | 1.6 | 0.1 |
| Belgium | 1.9 | 1.8 | 2.3 | -0.4 |
| Cyprus | 1.6 | 1.4 | 1.0 | 0.6 |
| Czech Republic | 2.2 | 2.0 | 1.9 | 0.3 |
| Denmark | 1.8 | 1.5 | 1.5 | 0.3 |
| Estonia | 2.8 | 2.0 | 1.8 | 1.0 |
| Finland | 2.0 | 1.9 | 1.6 | 0.4 |
| France | 2.4 | 2.0 | 1.9 | 0.5 |
| Germany | 1.6 | 1.5 | 1.7 | -0.1 |
| Greece | 2.3 | 1.8 | 1.8 | 0.5 |
| Hungary | 2.2 | 1.8 | 1.8 | 0.4 |
| Ireland | 1.9 | 1.7 | 1.7 | 0.2 |
| Italy | 2.1 | 1.7 | 1.7 | 0.4 |
| Latvia | 2.0 | 1.9 | 2.1 | -0.1 |
| Lithuania | 2.0 | 1.9 | 1.6 | 0.4 |
| Luxembourg | 1.7 | 2.1 | 1.7 | 0.0 |
| Malta | 1.5 | 1.1 | 1.3 | 0.2 |
| Netherlands | 1.7 | 2.1 | 1.7 | 0.0 |
| Poland | 2.6 | 2.0 | 1.6 | 1.0 |
| Portugal | 2.2 | 1.6 | 1.9 | 0.3 |
| Slovakia | 1.2 | 1.1 | 1.1 | 0.1 |
| Slovenia | 2.3 | 1.9 | 1.9 | 0.4 |
| Spain | 2.2 | 2.0 | 1.4 | 0.8 |
| Sweden | 2.1 | 2.0 | 2.0 | 0.1 |
| United Kingdom | 1.7 | 1.6 | 1.6 | 0.1 |
| Candidate countries | | | | |
| Bulgaria | 2.1 | 1.8 | 1.6 | 0.5 |
| Croatia | 1.3 | 1.1 | 1.1 | 0.2 |
| TFYR Macedonia | 1.5 | 1.1 | 1.3 | 0.2 |
| Romania | 1.6 | 1.2 | 0.9 | 0.7 |
| Turkey[2] | 2.4 | 1.8 | 1.4 | 1.0 |
| Other European countries | | | | |
| Norway | 2.5 | 2.2 | 2.2 | 0.3 |
| Russia | 1.2 | 1.3 | 1.2 | 0.0 |
| Switzerland | 2.1 | 1.5 | 1.2 | 0.9 |
| Ukraine | 1.6 | 1.5 | 1.1 | 0.5 |

Source: Skirbekk and K.C. (forthcoming)

A cross-regional and bivariate analysis of state-level infant mortality in the United States has shown that states with proportionately fewer high-school graduates had

[2] In Turkey, women with no education were estimated to have a TFR of 3.7 children as compared with women with completed or uncompleted primary education that have a TFR of 2.4 children.

higher neonatal mortality rates than states with proportionately more (Bird and Bauman 1998).
As well the social externalities associated with women's education can also be found in nutrition (McGuire and Popkin 1990), and children's heath and schooling (Boerma 1987, Sadik 1989, Browne and Barrett 1991, Herz *et al.* 1991, Bellew *et al.* 1992, King and Hill 1993; Raut 1993, Schultz 1994). Education of the mother is usually found to be one of the closest correlates of infant and child mortality. This is not only due to the close association between maternal education and other socioeconomic determinants of mortality, but that the education of the mother has an impact of its own.

Caldwell (1982) mentions three possible reasons for this correlation. First, educated mothers may be expected to break with damageable traditions (such as food habits and taboos) and to become less fatalistic about illnesses. Second, they are more capable of demanding the attention of doctors. And finally, maternal education may change the familial relationship in favour of the mother and the children.

Levels of education are usually good predictors of mortality in developing countries (Caldwell 1986 and 1990, Alachkar and Serow 1988) as well as in developed ones where the correlation is easier to establish because of the systematic registration of deaths. Many studies show high returns to longevity from education (Kitagawa and Hauser 1973, Feldman *et al.* 1989, Duleep 1989, Rogot *et al.* 1992; Pappas *et al.* 1993, Preston and Elo 1995) and lower morbidity level (e.g. Doblhammer 1997). The mortality differentials related to education are considerable and remain until the oldest age (90+) as shown by Huisman *et al.* (2002) in Europe.

Levels of educational attainment may have a role to play for explaining migration flows. The network theorists and new-migration economists[3] (Massey *et al.* 1993) view the household as the unit in which migration decisions are taken and through which migration processes are mediated and channelled. The migration decision-making process is steered by certain characteristics (e.g. the region of origin and the levels of education) of the migrant and tends to consist of the relatively better educated and better trained in the country of origin (Barnum and Sabot 1976, Reniers[4] 1997).

The debate about how much educational investment contribute to economic growth or to development has been long standing and—not surprisingly—not a single answer has been reached, as the relationship is complicated by many intervening variables which interact in different ways, in different national economies, at different points in time. Part of the problem in quantifying the impact of education on economic growth is due to the measure of the stock of human capital used in the different models. Most economists use the average years of schooling of the working age population or of the population above a certain age (15+ or 25+). The relationship has proved to be very sensitive to the choice of an indicator (for instance Cohen and Soto 2001) therefore prompting to find better measures that would not only provide an average measure but the age, sex and exact educational composition of the working age population (Lutz *et*

[3] In opposition to the world systems theorists who put the emphasis on the structural differences between sending and receiving areas and where the individual is rational in his/her choices and tries to maximize benefits.
[4] Analysis based on migrants from Turkey and Morocco to Belgium.

*al.* 2007). However, far more studies demonstrate a positive link between education and economic growth than a non-existent relationship, and even fewer suggest a negative one[5]. Rates of return to education are higher in poorer countries rates. They tend to fall as economic development takes place and the greatest reductions occur at the lowest education levels as access becomes more universal (Haddad *et al.* 1990).

Aghion and Howitt (1998) distinguish between two basic frameworks that are used to model the relationship between education and growth, namely the "accumulation of human capital" and the "stock of human capital" models. The first model was inspired by Becker's theory of human capital (1964) and initiated by Lucas (1989). According to the Lucasian approach, the differences in growth rates at which those countries accumulate human capital over time determine the differences in growth rates across countries. In the second approach, based on work from Nelson and Phels (1966), the stock of human capital affects the ability of the country's individuals to innovate (i.e., to create new activities, products, and technologies) and to adapt to new technologies, thereby increasing the pace of technological diffusion throughout the economy. Therefore, differences in growth are due to differences in human capital stock. Several empirical studies of the education/growth relationship exist. The Barro and Sala-i-Martín (1994) growth-regression analysis is based on a large sample of countries during the 1965–1985 period. The two main findings are that education attainment measured by average years of schooling is correlated with subsequent growth, although the impact of primary education remains largely insignificant. There seems to be a significant impact of the level of secondary and tertiary education attainment on the rate of productivity growth (see also Benhabib and Spiegel 1994). The second result is "that public spending on education has a significant positive effect on growth: a 1.5% increase of the ratio of public education spending to GDP during the period 1965–1975 would have raised the average growth rate during the same period by 0.3% per year" (Aghion and Howitt 1998). However evidence is far from being conclusive for developed countries.

The literature has suggested that increasing the education of young females results in greater labour force participation of women and higher earnings (Bellew *et al.* 1992, Anderson 1988, Psacharapoulos and Woodhall 1985, Browne and Barrett 1991, Boserup 1986, Jazairy *et al.* 1992, Herz *et al.* 1991). Benavot (1989) found that the primary education of both males and females has a strong positive effect on economic growth (measured by per capita GNP), and that the effect of female education on economic growth was higher than that of male education. At secondary level, the effect of education of females and males was also positive but only significant for male education (Benavot 1989).

The empirical evidence of the importance of education, together with the feasibility of true multi-state cohort component population projections for groups defined by different educational attainment, shows that this research is valuable. With the increasing importance of education in a knowledge-based economy, this approach is a potentially significant contribution not only to the field of demography itself, but also

[5] For literature on low returns of education and human capital, see references: Coale and Hoover 1958, Thurow 1970. Contrary evidence is shown in Denison (1962, 1967, 1979), Psacharopoulos and Woodhall (1985), Bowman (1980), Harbison and Myers (1964), Psacharopoulos (1981, 1985), Hicks (1980), Wheeler (1984), Marris (1982), Mingat and Tan (1988), Gemmel (1996), Aghion and Howitt (1998), Birdsall (1994), Schultz (1987).

to longer-term economic planning and forward-looking analysis. The projections could also be a useful tool for development planners as they offer a clear picture of the available human capital by age, by sex, and by education. The multi-state projections by education categories will yield future population by levels of educational attainment, which can be interpreted in terms of share of the population between educational groups as well as in share of the population with a particular educational level. From there, if one focuses on the 20–64 age group, it becomes possible to assess the stock of human capital and its potential in respect of education levels. These differentials associated with dynamic educational composition will affect future population growth and structure. The educational composition of most European countries has been changing rapidly. Many countries have taken great strides to increase the enrolment of pupils in the education systems. This increase in enrolment levels will have a significant compositional effect, increasing the relative weight in the total population of the better educated.

This report is divided in three parts. In the first part (section 2), I will look at the methodology for deriving education transition probabilities from empirical series of attainment data by age. In section 3, I will discuss data availability and present the main changes that have occurred within Europe in terms of educational attainment over the past decades. In the last section (section 4), I will apply the methodology to calculate the transition probabilities to the two case study countries, Italy and the Netherlands. I will also assess mean age at leaving school. This section concludes with suggesting alternative education scenarios for the transition probabilities as well as for mean age at leaving school.

There are several caveats concerning the research presented over the next pages that should be kept in mind. First, I do not address adult education although it is an important component of the Lisbon Strategy. The society is orienting itself towards more flexible work patterns with adaptability of the agent being a key parameter for personal success. In this framework, adult education will be very important. However this specific kind of education (which typically does not result in a formal degree) cannot be covered in a projection, which is based on rather broad categories of formal educational attainment. Hence, even if a person learns new skills, he/she will rarely upgrade to a higher level of education. The second important deficiency of this kind of analysis is that our categories of levels of educational attainment do not reflect the quality of the education received in school. Standard measures of skills acquired in school such as the PISA or PIRLS performance databases[6] show strong variation among countries that could explain other differentials associated with education. However, these measures of quality of education are difficult to integrate into the MicMac modelling exercise where a small number of distinct educational categories is needed.

## 2. Methodology for deriving education transition probabilities

The macro-level multi-state model as well as the micro-level simulation models do require vital rates and all other transitions considered in the model, such as transitions

[6] PISA (OECD Programme for International Student Assessment) measured the performance levels of pupils aged 15 in reading, mathematical and scientific literacy in 2000, 2003, and 2006 (next round in 2009). PIRLS (Progress in International Reading Literacy Study) was conducted in 2001 and 2006 to measure the reading and comprehension skills of pupils in the fourth year of primary education.

from a disability free to a disabled state, are to be specific for different educational attainment categories. These educational differentials of the transition rates will be dealt with by the components of the project that analyze the specific vital rates and transitions. In the context of this specific Work Package the focus lies on deriving estimates for the transition probabilities from one educational attainment category to the next by age and sex and to define scenarios for the future of these figures.

There are many ways to define educational categories, the choice of which will generally depend on the data available and the research objectives: one can distinguish between illiterate and literate, to above or below completed secondary education. Generally, somewhat more detailed breakdowns into three or four categories seem to be most useful; these can be defined either in terms of the number of years of schooling completed or the more or less internationally comparable categories of primary, secondary, and tertiary education. In fact, since the world's education systems differ considerably, not only in respect of structure but also as regards educational content, it is often difficult to compare between education systems. UNESCO has designed an international standard classification system for education (ISCED) that can facilitate comparisons of education statistics and indicators of different countries on the basis of uniform and internationally agreed definitions[7].

In this report and for the categorization of education through the whole MicMac project, I have chosen four categories:

- Primary education and below (ISCED 0-1)
- Lower secondary education (ISCED 2) = compulsory education
- Lower secondary education (ISCED 3-4) = secondary education and post-secondary non-tertiary education
- Tertiary education (ISCED 5-6) including[8]:
    - Tertiary vocational (ISCED 5B) = First stage of tertiary education including "programs which are practical/technical/occupationally specific" and,
    - Tertiary general (ISCED 5A-6): first stage and second stage of tertiary education, including programs that are largely theoretically based/research preparatory or that provide access to professions with high-skills requirements.

However, historical and present data does not always allow such a breakdown and in some cases the categories may be aggregated. This does not impair the MicMac modelling exercise that is flexible to the definition of categories.

[7] UNESCO developed the first ISCED during the 1970s; the present "revised" version, known as ISCED-1997, is a framework for the compilation and presentation of national and international education statistics and indicators. UNESCO's data collection program is adjusted to these standards and member states are invited to apply them in the reporting of education statistics so as to increase their international comparability (UNESCO 1999).

[8] Disaggregating between vocational and general tertiary education as it was originally planned proved difficult as most education systems do not disaggregate, or only recently, and not consistently. As well in Italy and the Netherlands, vocational tertiary education represents about 4% of the tertiary educated population aged less than 40 years old. I suggest providing the possibility to disaggregate further from ISCED 56 to ISCED 5A6 and ISCED 5B so that future plans to increase participation in vocational tertiary education can be implemented within MicMac.

Fertility, mortality, (and migration) differentials and scenarios for future developments will be developed under other packages under the MicMac project. I will concentrate on two components necessary for the projections of levels of educational attainment. The first is the base-year population by education and the second are the transition probabilities between levels of educational attainment at base-year and scenario for the future.

### 2.1. Population by level of educational attainment

In general, the data is available from three main sources all over the world. Census data in a majority of cases contains data on educational attainment of the population, although not always classified by categories that are compatible with the full range of ISCED[9]. After censuses, other information on levels of educational attainment are collected through sample surveys. The main sources of data on education collected through surveys in countries where censuses are rarely and/or irregularly implemented, mostly in developing countries, are Demographic and Health Surveys. European and other developed countries, mainly OECD, have also been collected data on the highest level of education through Labour Force Surveys (LFS). For some countries, it is the only source of data on levels of educational attainment for the adult population (e.g. the Netherlands) or the only reliable one (e.g. France). The main advantage of LFS is that they are conducted at regular intervals (4 times a year) and the sampling methodology is universal through the countries studied. However a main drawback from LFS is that the sample is sometimes too small to get a meaningful disaggregation by age (single years), sex and levels of educational attainment (5 or more categories). Checking for other sources and enrolment rates can help to adjust the available data, if figures appear questionable.

Since levels of educational attainment are usually only provided for men and women above the age of 15 or 25, the level of educational attainment in younger categories needs to be estimated from the information available on levels of school enrolment at each level and for each age group. Again, enrolment figures can be found in the censuses, in national education reports, as well as in UNESCO Statistical Yearbooks. If no direct data exist, there are several ways of arriving at indirect estimations.

### 2.2. Education Transition Probabilities

The key parameters of the model are the age- and sex-specific educational transition probabilities, i.e., the age-specific probabilities for young men and women to move, e.g. from the category of lower-secondary educational attainment to that of upper-secondary attainment. Data on these probabilities are never directly available, and have to be derived indirectly. Some basic features of educational attainment progression can be taken into account. Educational levels are hierarchical, that is, an individual must go through and complete the lower level of school (such as primary school) before being allowed to move to the next, higher level. Also not all people complete a given level of education at the same age because of differences in age at entrance and repetition of grades; hence transition probabilities are not concentrated at one specific age but tend to be spread across several ages. On the other hand

[9] UNESCO has compiled most information on the highest educational level attained from censuses in its yearly Statistical Yearbooks.

transitions are only spread over a relatively short age span corresponding to the typical school and university ages (usually from 5 to around 30 years of age), as educational transitions at older ages are rather rare.

Our method for estimating the transition probabilities from empirical data for the past years is based on a set of data that provides cross-sectional population distributions by education categories for at least two points in time, by age (single year) and sex.

It is worth noting that school enrolment rates are in principle another independent source of data, which is, however, less appropriate for the purpose of calculating transition probabilities as we are looking at the completion of ISCED levels and this information about completion is not included in the enrolment data.

The methodology used here looks at educational transitions along cohort lines. This requires at least two observation points in time. If one has only one point in time it is impossible to distinguish between the age pattern of increasing educational attainment and possible inter-cohort differences. Since educational attainment has generally been improving over time and therefore older cohorts tend to be less educated than younger ones, a cross-section at one point in time usually shows educational attainment first increasing with age and then decreasing again for older ages. These inter-cohort changes can be factored out if one only looks at educational attainment along cohort lines.

Let:

$x_i$, for $i = 1, 2, \ldots 101$ represent the age of the population in single year age-group from 0 to 100 years of age (the last age-group corresponds to 100+)

$E_j$, for $j = 1, 2, 3, 4$ represent educational attainment levels namely primary education and below (1), lower secondary education (2), upper secondary education (3), and tertiary education (4).

$y_{i,j,n}$, represent proportions of people in age group $i$ with education level $j$ at year $n$.

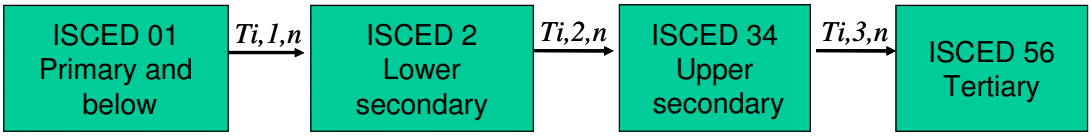
$sum\ over\ j\ (y_{i,j,n}) = 1$

$Y_{i,k,n}$ represents the proportion of people with at least education level $k$ in year $n$. This can be viewed as the cumulative probability distribution over age.

$T_{i,j,n}$ provides the pattern of age-specific transition probabilities for cohorts and can be interpreted as a probability density function along age calculated as the difference between $Y_{i,k,n}$ and $Y_{i+1,k,n+1}$, or the transition probability of population aged $i$ in year $n$ to move from category $E_j$ *to* $E_{j+1}$ by year $n+1$ (as shown in Figure 1), hence:

$$T_{i,j,n} = Y_{i+1,k,n+1} - Y_{i,k,n}$$

**Figure 1: Education transitions**




Levels of educational attainment are usually available for ages 15 and above and since the first education category considered is completed primary education and below, this should not create any problem as the duration of education to the next level (lower secondary education: ISCED 2) usually takes until the age of 15 or 16 years in most EU-25 countries (see Table 2). Only in Austria, the Czech republic, Italy, Hungary, the Slovak Republic and the United Kingdom does the legal age at completion of lower secondary is 14 year. Therefore, I will not likely need the data on education transitions that happen before age 15. The chances that an individual enrol in lower secondary education after 15 is very low as well as the chanced enter and/or complete primary education.

**Table 2: Entrance and duration of first, second and third level of education (in years)**

| EU-25 | Entrance age * | ISCED 02* | ISCED 34* | ISCED 5A# | ISCED 5B# | ISCED 6# |
|---|---|---|---|---|---|---|
| Austria | 6 | 8 | 4 | 3-6 | 3 | 4+ |
| Belgium | 6 | 9 | 3 | 3-7 | 3-4 | 1-4 |
| Cyprus | 6 | 9 | 3 | 4-6 | 1-4 | 3-8 |
| Czech Republic | 6 | 8 | 4 | 4-6 | 3 | 3+ |
| Denmark | 7 | 9 | 3 | 3-6 | 2-4 | 5-8 |
| Estonia | 7 | 9 | 3 | 3-6 | 3-4 | 3-4 |
| Finland | 7 | 9 | 3 | 3-6 | | 4+ |
| France | 6 | 9 | 3 | 2-6 | 2-4 | 3+ |
| Germany | 6 | 10 | 3 | 3-6 | 3-4 | 3-5 |
| Greece | 6 | 9 | 3 | 4-8 | | 3+ |
| Hungary | 6 | 8 | 4 | 3-7 | 2 | 3+ |
| Ireland | 6 | 9 | 2 | 3-8 | 2-3 | 3+ |
| Italy | 6 | 8 | 5 | 3-7 | 3 | 3+ |
| Latvia | 7 | 9 | 3 | 4-6 | 2-3 | 3-4 |
| Lithuania | 7 | 9 | 3 | 4-7 | 3-4 | 3-4 |
| Luxembourg | 6 | 9 | 4 | 1-2[10] | 2-4 | 0[2] |
| Malta | 5 | 11 | 2 | 3-7 | | 3-6 |
| Netherlands | 6 | 9 | 3 | 3-6 | 1-3 | 4+ |
| Poland | 7 | 8 | 4 | 3-6 | 3 | 3+ |
| Portugal | 6 | 9 | 3 | 3-6 | 3 | 2-4+ |
| Slovak Republic | 6 | 8 | 4 | 3-6 | 4 | 3-4 |
| Slovenia | 7 | 8 | 4 | 4-7 | 2-5 | 4+ |
| Spain | 6 | 8 | 4 | 3-6 | 1-2 | 2-4 |
| Sweden | 7 | 9 | 3 | 2-6 | 2-3 | 4+ |
| United Kingdom | 5 | 9 | 4 | 3-7 | 1-2 | 3-4 |

Source: Eurydice 2004-2005 (#); UNESCO 1995 (*)

Transitions from completed lower secondary to completed upper secondary will typically occur in 12 countries of the EU at age 18 and in another 12 at age 19. Only in Ireland do pupils complete upper-secondary education at the age of 17 years. The

[10] ISCED 5A-6 is available only for 2 years maximum in Luxembourg. After that, students have to study abroad.

range of the age at completion at ISCED level below 5 is rather limited since grade repetition is only allowed for a limited number of times. Most transitions occur within three years of age. Ideally, most of the transitions to tertiary education attainment category by the way of completing first level of tertiary (generally called Bachelor degree) happen around age 22. However, due to repetition, interruption of studies and late or delayed entry in education many people complete the first level of tertiary in later ages. Hence, empirical studies show that the transitions to tertiary from secondary are spread over the age range 20-30. As mentioned before few people take courses to increase their formal educational attainment level later in life.

### 2.3. Scenarios

Based on the analysis of the educational composition in the countries of Europe in the last 20 years, and on the on-going plans for school reforms at national and EU-level, some scenarios on the transitions between levels of educational attainment will provide an outlook for the future on the changes to be expected. An example of these scenarios will be provided in the applied section for Italy and the Netherlands. I envisage two main scenarios:

A. Constant transition probabilities at starting level: It will show the momentum of educational development, which is the progress or the lack of progress that are already embedded in the population. It provides also a benchmark for the other scenarios. Since the educational attainment of the younger generations (where transitions occur) is in general much higher than that of older cohorts in European countries, this scenario implies an increase in educational levels in the next decades.
B. Trend scenario should be based on building a trend across the last 10 to 15 years, again looking across cross-sectional population distribution data (this will be facilitated by having data in single years), with an eye on achieving the benchmark set by the EU in terms of upper-secondary achievement (85% of the 22-year old with at least completion of upper-secondary education by 2010) as well as an increase of the transitions to tertiary education (5A-6 and 5B) to reach that of the United States (36% completion in 2000 instead of 22% for the EU) within the next 25-30 years.
C.

I provide in section 4 examples of projections for Italy and the Netherlands.

### 2.4. Existing projections of educational attainment

The preparation of the necessary input data for population projections by education is no trivial task, but it is feasible. Many of the estimation procedures to fill missing data follow a demographic logic and the two most important pieces of information, the educational composition of the starting population and the extent of educational fertility differentials, are now available for almost every country.

Considering the importance of education in the context of social and economic development, its impact on demographic processes, and the feasibility of prospective analysis, it is indeed surprising that educational population projections have not been produced more frequently. Most educational statistics, produced by national statistical institutes or international organizations such as UNESCO, stop at enrolment levels

and school-age population to determine the future demand for educational services in terms of schools and teachers by level of education. Enrolment ratios and school-age population can hardly be seen as an end in themselves.

What is needed is a complete matrix of the composition of the population by age, sex, and different levels of educational attainment for different points in time. Many attempts to measure human capital stock have failed to meet this aspiration due to problems with individual country data and due to the lack of appropriate demographic methodologies (Ahuja and Filmer 1995, Barro and Lee 1993 and 2000, Dubey and King 1994, Kyriacou 1991, Nehru *et al.* 1993, Psacharopoulos and Arrigada 1986). Barro and Lee (2000) have produced some interesting data on educational attainment and average number of years of schooling at various levels for a broad number of countries. However, the data set provides estimates for only two broad age groups, 15+ and 25+, and only for the period 1960–2000. Ahuja and Filmer (1995) made the most progress by taking existing United Nations population projections and superimposing onto them an educational distribution estimated for two broad age groups (ages 6–24 and 25+) from given sets of enrolment ratios and UNESCO projections. Using this approach, they project the educational composition (for four educational groups) for a significant number of developing countries. Apart from the lack of more specific information by age, this approach is also unsatisfactory through its static nature, i.e., not allowing the educational composition of the population to influence fertility despite the obvious strong educational fertility differentials in most developing countries. Lutz and his team at IIASA have applied the methodology of population projections by levels of education in many settings and have demonstrated the feasibility as well as the desirability of such a methodology.[11]

The European Commission has projected the levels of educational attainment based on projections of the average years of schooling by age groups following a cohort approach (European Commission, 2003 and European Commission 2004) and the translation of enrolment rates into levels of educational attainment. The projections are carried out for the EU-15 countries and for both sexes. They show that for some countries, the scope for improvements are rather small as younger cohorts are almost as educated as older one (like Germany) whereas in others (Spain) the scope for improvements is broader.

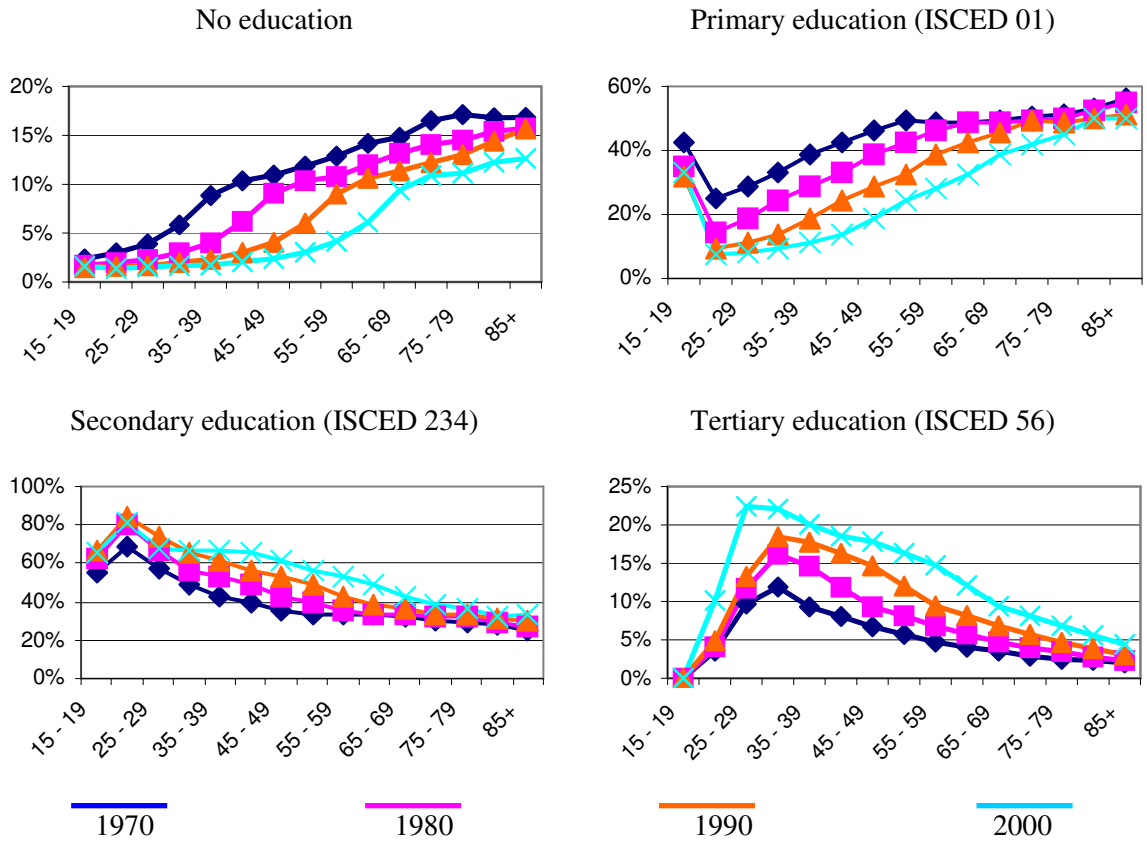
Below I present applications of the multi-state model for reconstructing the educational attainment composition of EU member countries. Unlike earlier efforts these models of the education dynamics also consider the fact that men and women with different educational status tend to have different levels of mortality.

[11] Multi-educational state population projections have been carried out mainly at IIASA in the framework of projects on Mauritius (Lutz 1994), Cape Verde (Wils 1996), North African countries (Yousif et *al.* 1996), Jordan, Syria, West Bank and Gaza Strip (Goujon 1997), Yucatan (Goujon *et al.* 2000), world regions (Lutz and Goujon 2001), Indian administrative States (Goujon and McNay 2003), and Egyptian Governorates (Goujon *et al.* 2007).

## 3. Changes in the educational attainment composition in Europe 1970-2000

There are three main trends that can be observed from the reconstruction of the levels of educational attainment as implemented from the work done at VID/IIASA (Lutz *et al.* 2007). This work through the methodology of back-projections reconstructs the past education of the adult population for a large number of countries (120). It remedies the paucity of consistent, regular data for the past. I only use here data for a sub-set of countries.

**Figure 2: Completed levels of education by age, EU-25, 1970 to 2000**




Source: Lutz *et al.* 2007

Qualifications have increased strongly in the three recent decades. This can be -shown from the EU-25 as for all individual countries. All cohorts are significantly higher educated than the one before as can be seen from Figure 2 for all 25 EU-countries aggregated in 1970, 1980, 1990, and 2000. There are still some people with no education although compulsory education is in place in all countries since many decades pointing to pockets of illiteracy/low education in the population. However, in age groups 15-19 to 35-39, the proportion in 2000 is below 2% of the population whereas it was more than 12% for 85+ in 2000, and 17% in 1970. As well the proportion with only a completed primary education has declined very abruptly, especially between 1970 and 1990, as more countries have adopted compulsory

education that lasts at least until completion of lower education studies[12]. Whereas in 1970, 25% of the 20-24 age group had a primary education, there were less than 10% in 2000.

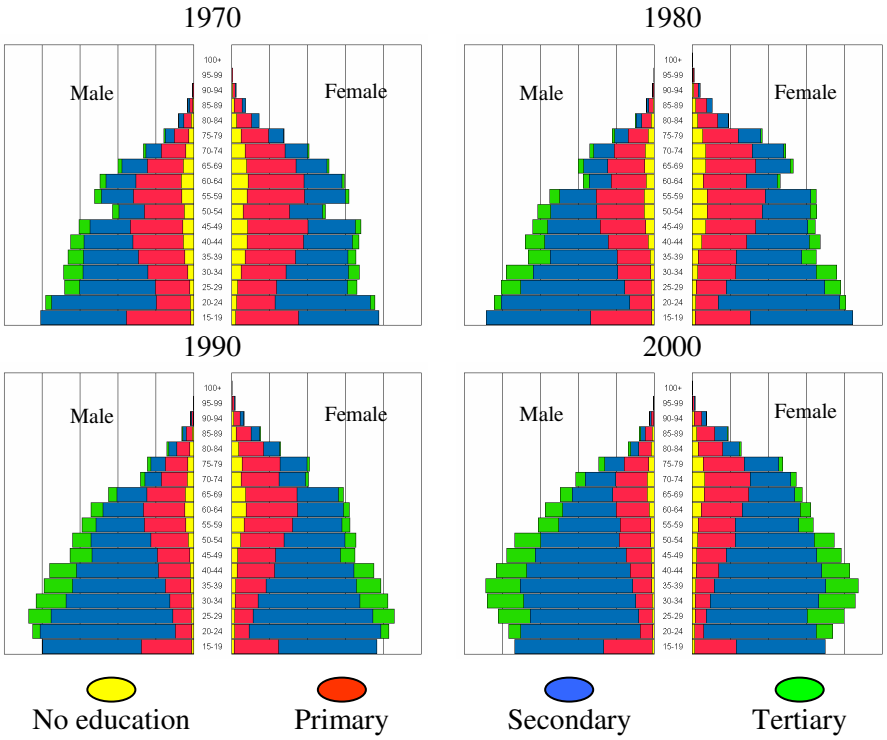
In 2000, more than 50 percent of the working age population had a secondary education (lower- or upper-secondary). Among the cohort 20-24, the proportion is as high as 85% in 2000, compared to 68% in 1970. The share with completed tertiary education has increased importantly in the EU countries. The proportion of 55+ with a tertiary education was below 5% in 1970 and less than 10% for people 30-54 years of age. In 2000, 23% of 30-34 years have a tertiary education and the proportion of the working age population with a tertiary education lied between 15 and 20%.

There are two further main points to be added. One is that the candidate and accessing countries[13] will have levels of educational attainment that are below that of the general level as can be seen from a comparison of the pyramids in Figure 3 and Figure 4. The proportion of women with no education is particularly high while the proportion in the total population with ISCED 56 levels is very low, although the improvements have been substantial during the 30-year period of observation. The second point is that in a comparison between the EU-25 and a group of developed countries in Northern American and Pacific OECD (NAM-PAO) including Australia, Canada, Japan, New Zealand, and the United States show that the EU-25 is still behind this group of countries, whose shape is dominated by the United States (that has the larger population) and Japan (see Figure 3 and Figure 5). It is especially at the level of completed tertiary education that the EU lags behind. Whereas in 2000, 36% of the aged 25-29 in the NAM-PAO region had completed tertiary education, they were only 22% in the EU-25 and 12% in the candidate and accessing countries. In fact the levels of educational attainment presently observed in the EU-25 region are closer to that of NAM-PAO region in the mid-seventies pointing to a need for enlarging access to tertiary education at the European level.

[12] Only in Austria, Belgium, France, Hungary, Ireland, Italy, Slovakia and the United Kingdom (and Bulgaria) does the final year of compulsory education not correspond to the final year of lower secondary education but to the first year of upper secondary.

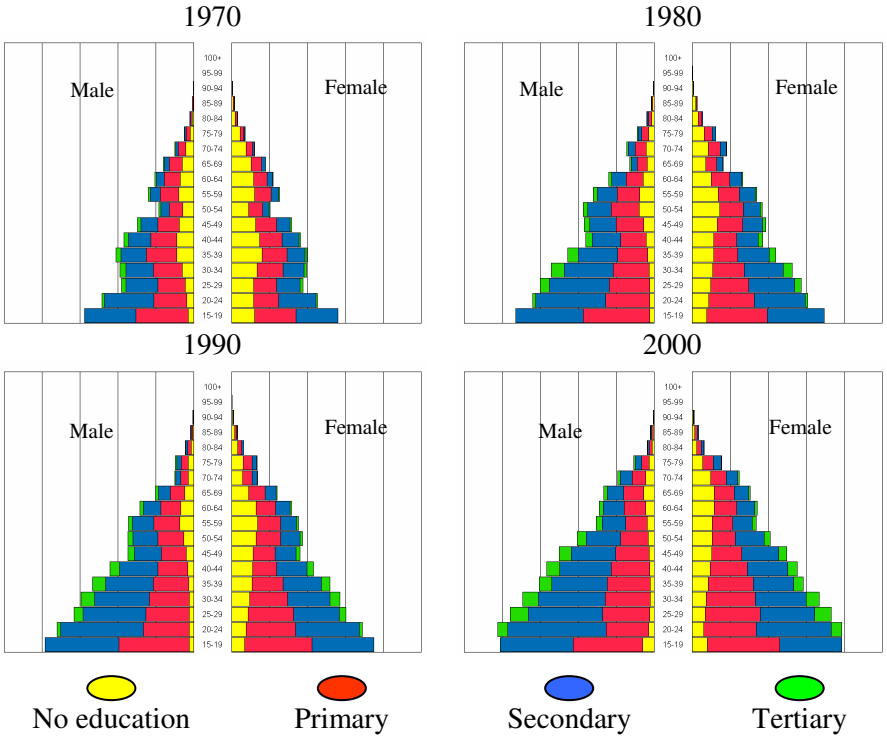
[13] Candidate and accessing countries are at the moment: Bulgaria, Croatia, Macedonia, Romania, and Turkey.

**Figure 3: Age pyramids of EU-25 in 1970, 1980, 1990, and 2000**



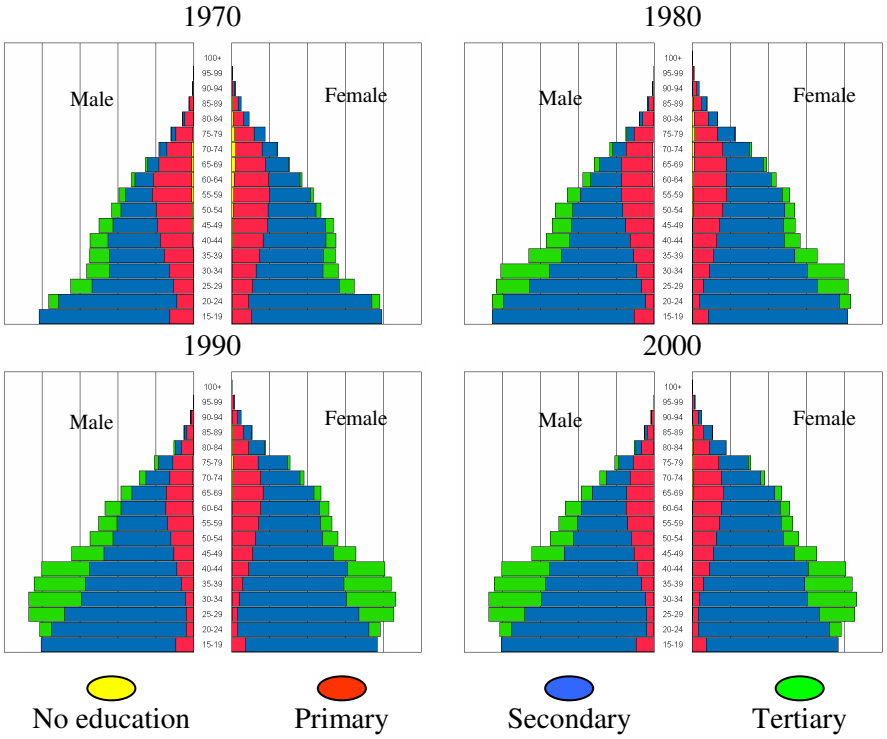

Source: Lutz *et al.* (2007)

**Figure 4: Age pyramids of accessing/candidate countries (Bulgaria, Croatia, Macedonia, Romania, Turkey) in 1970, 1980, 1990, and 2000**




Source: Lutz *et al.* (2007)

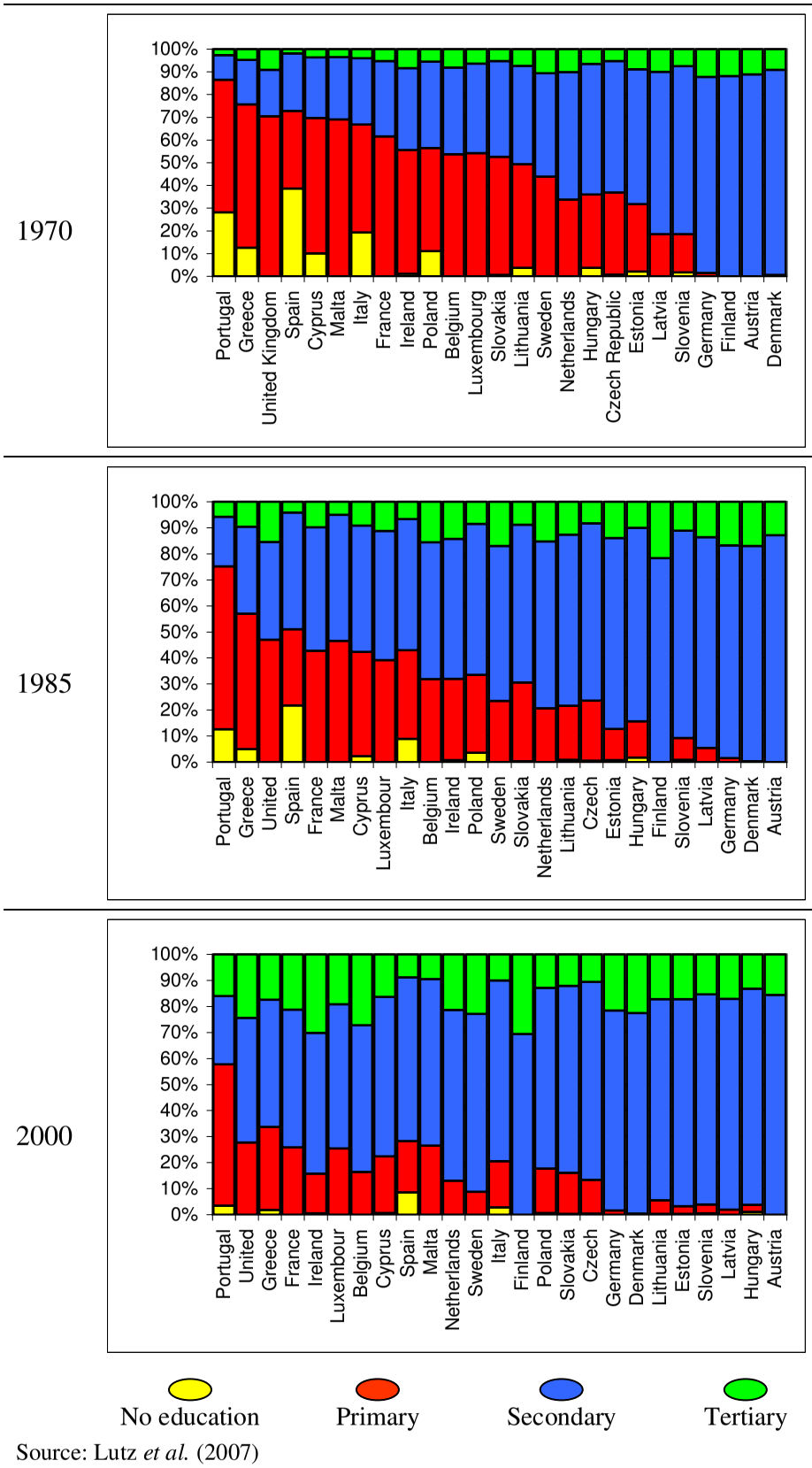
**Figure 5: Age pyramids of North America, Japan, Australia, and New Zealand in 1970, 1980, 1990, and 2000**




Source: Lutz *et al.* (2007)

The overall increase hides many disparities in the levels of educational attainment as can be seen from Figure 6. However, convergence of educational levels seems to be happening at least in considering the proportion of the working age population (age group 20-64) with a primary or secondary education. In 22 out of 25 countries in 2000, to the exception of Greece and Portugal, between 72 and 100% of the population had at least a lower secondary education where the range was between 10 and 100% in 1970. Improvements in terms of percentage of the population with at least a secondary education were particularly important in Belgium, Cyprus, Finland, France, Ireland, Italy, Luxembourg, Malta, Netherlands, Spain Sweden, and the United Kingdom (above 40% percentage point difference between 1970 and 2000). Looking at tertiary education, Belgium, Finland, Ireland, and the United Kingdom seem to have increased substantially their share of their working age population with completed tertiary level studies. Since the proportion with secondary is close to being universal in most European countries, it is expected that tertiary will be the level where most changes will occur in the near and mid-term future, and where divergence may again appear in the speed at which the transition to higher-level studies increases.

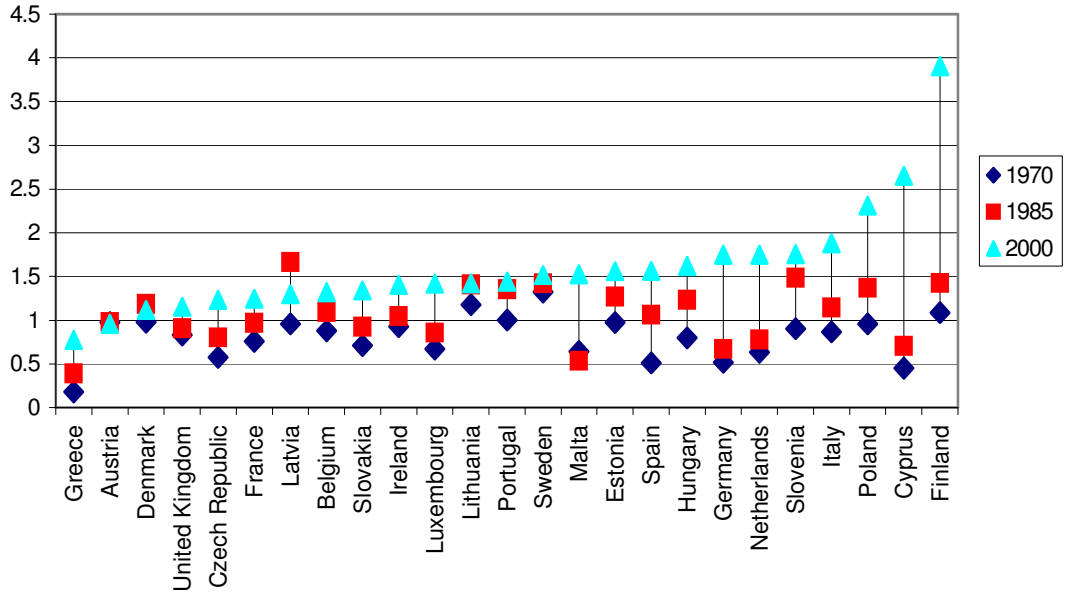
**Figure 6: Share of the population of the EU-25 by levels of education, 1970, 1985 and 2000 (sorted by ascending order share in secondary)**




Source: Lutz *et al.* (2007)

The general level of educational attainment of women is in general improving to the point that more young women are actually qualifying from general upper secondary and tertiary education than men in Europe (Eurostat 2005). Whereas in 1970, in all countries except Sweden, did the male working age-population with a completed tertiary education largely exceed that of the female population, in 2000 in a majority of countries (14 out of 25) are the female more educated than the male population. Eurostat looked at the younger age groups and showed that more women than men are qualifying from upper secondary education (ISCED 3). This is also true for the tertiary level (ISCED 56). In 2004, if we look at the age group 20-24, only in Austria and Greece are men more numerous than women with an ISCED 56 level (see Figure 7).

**Figure 7: Ratio of female to male with tertiary education in EU-25 countries**




Source: Lutz *et al.* (2007)

### Considering Enrolment

As observed in the preceding section, on average the time spent in education for all pupils is longer than the length of compulsory education: compulsory education lasts on average for 9-10 years whereas the school expectancy is about 17 years. This is the result of more and more young children enrolled in pre-primary education as well as increased participation in post secondary studies. It is clear from Table 3 that most of the improvements will happen at tertiary level where access will be increased as wished by the Lisbon European Council for education and training systems. One important determinant of the future of levels of educational attainment will be the students that go on to tertiary studies. At the moment, one of the key elements is that many young people have a highest qualification that would not allow them to move onto tertiary studies, because they have graduated at primary, lower secondary or upper-secondary 3C level that leads directly to the labour market without easy bridges to tertiary education.

The European Union is in need of scientists and one important objective of the Lisbon strategy is to increase the number of students in mathematics, science and technology

by 15% by 2010 and to close the gap between male and female in the scientific disciplines.

As well the enrolment gap between the EU and the United States points at the need for further increases. The documents of the EU commission notice the difference existing between the USA and the EU in terms of increase in graduates in scientific disciplines, or the investments in higher education.

**Table 3: Indicators of participation in upper-secondary and tertiary education**

| Country | Upper-Secondary (2002) % 20-24 years old qualified or in further training | Tertiary (2001) Enrolment as % of 20-29 population [a] | Tertiary educated population (2004) in age-group 25-34 [b] | | |
|---|---|---|---|---|---|
| | | | ISCED 5B | ISCED 5A/6 | Total |
| Austria | 85.0 | 26.2 | 9 | 11 | 20 |
| Belgium | 81.1 | 27.4 | 22 | 19 | 41 |
| Cyprus | 85.3 | | | | |
| Czech Republic | 91.7 | | | | 13 |
| Denmark | 79.6 | 27.2 | 9 | 27 | 35 |
| Estonia | 80.4 | | | | |
| Finland | 86.2 | 44.0 | 14 | 24 | 38 |
| France | 81.7 | 26.0 | 16 | 22 | 38 |
| Germany | 73.3 | 21.8 | 8 | 15 | 23 |
| Greece | 81.3 | 30.1 | 7 | 17 | 25 |
| Hungary | 85.7 | | | | 19 |
| Ireland | 83.9 | 26.0 | 15 | 26 | 40 |
| Italy | 69.1 | 22.5 | 15 | | |
| Latvia | 73.2 | | | | |
| Lithuania | 79.3 | | | | |
| Luxemburg | 69.8 | 4.4 | 13 | 17 | 31 |
| Malta | 39.0 | | | | |
| Netherlands | 73.3 | 24.4 | 2 | 32 | 34 |
| Poland | 88.1 | | | | 23 |
| Portugal | 43.7 | 24.2 | | | 19 |
| Slovakia | 94.0 | | 1 | 14 | 14 |
| Slovenia | 90.0 | | | | |
| Spain | 64.9 | 28.0 | 12 | 27 | 38 |
| Sweden | 86.7 | 32.5 | 16 | 26 | 42 |
| United Kingdom | 77.2 | 26.7 | 8 | 23 | 31 |
| Bulgaria | 77.5 | | | | |
| Croatia | 75.3 | | | | |
| United States of America | | 36.6 | 9 | 30 | 39 |

Note: Tertiary education is low in Luxembourg because most of students study abroad.
Source: Eurostat – European Union Labour Force Survey, OECD
[a] Source: European Commission, 2004 (table 2, p. 10)
[b] Source OECD, 2006 (table A1.3a)

Although most changes will occur at the tertiary level, some improvements are also foreseen at the secondary and possibly in two directions: address the early-school-leavers problem and increase the overall participation. They are a number of students who leave school prematurely before obtaining a diploma or completing training that would facilitate their entry into the working life. The EU estimates that in 2005, about

6 million people aged 18-24 year old are early school leavers, that is 15% of that age group. The Council has targeted the reduction of this rate to no more than 10% by 2010.

Another one of the thirteen concrete objectives set by the EU-education council is to increase participation in upper secondary education. Equipping individual with a solid basic education at upper secondary level would accelerate the participation in the knowledge society. The benchmark is that 85% of 22 year old should have completed this stage in 2010. This would mean for both Italy and the Netherlands a substantial increase (see Table 3).

# 4. Application: Italy and the Netherlands

## 4.1. Specificities of the education systems and ongoing reform (Source: European Commission, 2005 and 2006)

*Italy*

Pre-primary education is available for children aged three years and above in the Scuolle dell'Infanzia. All children that reach three years of age within the 30th April of the current school year can enrol in pre-primary education but it is not compulsory. Compulsory education has been extended from 8 to 10 years of education since 2003. This is a transition period as compulsory education has been further extended to age 18, starting from school year 2005/2006 so that all children leave school with at least an upper-secondary qualification either at general or vocational level. Primary education starts at age 6 and lasts for 5 years. After completion of primary, pupils are directed to lower secondary education where they stay until age 14 (3 years). Since 2004/5, primary and lower secondary levels are now part of the same school cycle and the transition between the two levels is done through simple appraisal. There are three main types of upper secondary education: classical education that lasts for 5 years up to age 19 years and is generally leading to a transition to a university education. Technical education has the same length but is taught in technical institute and is more oriented towards practical subjects such as aeronautics, business administration, and computer science. Vocational and artistic education lasts from 3 to 5 years and is taught in special schools and enables the students to enter professional life after completion of the studies. At the end of the upper secondary, students have to pass the upper secondary school leaving examination. Education is mainly organized along two lines: university and no-university education. University education has been reformed after the Bologna declaration in 1999 and consists of two main cycles lasting 3 (bachelor degree) and 2 years (master degree).

The schooling population in 2005/06 was composed of 7.7 million students at all school levels below tertiary education of which, 1 million were enrolled at pre-primary level, 2.5 at primary level, 1.7 at lower secondary level and 2.5 at upper secondary level. In 2004-05, students enrolled in universities were 1.8 millions.

*The Netherlands*

Pre-primary education is not compulsory but is attended by more than 99 percent of all children from age 4 to age 5. Compulsory education includes 12 years of schooling

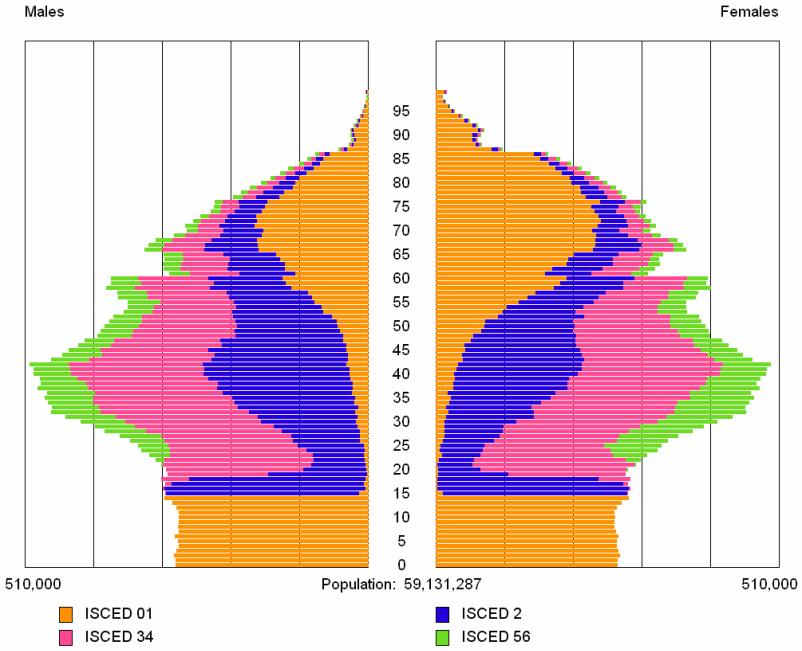
or at least until the end of the school year when they turn 16 years of age. From the age of sixteen to eighteen, a pupil is required to attend some form of education at least two days a week. Primary education starts at age 5 and lasts for 7 years until the child reaches 12 when he/she will be directed to secondary education with three main directions depending on results at CITO tests and teachers recommendation: pre-university education lasts for 6 years from age 12 to age 18 (VWO), senior general secondary education from age 12 to 17 (HAVO) and pre-vocational secondary education from age 12 to age 16 (VMBO). Most of the pupils enrol in VMBO (about 60%). The secondary education is divided into two main cycles: in VMBO, the first four years belong to lower secondary education whereas in HAVO and VWO, only the first three years are part of lower secondary education and the rest belongs to upper secondary education. The system of higher education like in Italy is binary and is shared between university education and higher professional education. All universities will deliver bachelors and masters degrees. Most pupils with a VMBO diploma attend MBO (middle level vocational education). It lasts for three to four year and is oriented towards vocational training. All upper-secondary diplomas give access to HBO (higher professional education) that is oriented towards higher learning and professional training and takes four years (bachelor degree) to six years (master). Another path to higher education leads to WO (scientific education), which is taught at university and can be entered with a VWO diploma. Students will also receive a bachelor degree after 3 years or a master degree after 2 further years.

### 4.2. Present situation in terms of educational attainment

The two countries show much progress in terms of educational attainment of the adult population.

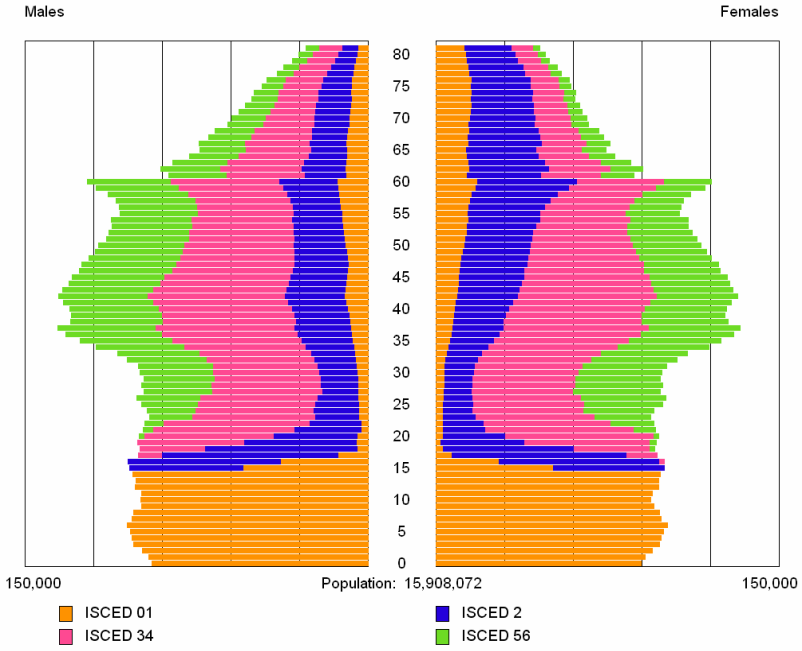
Figure 8 and Figure 9 show the population pyramids of Italy and the Netherlands by levels of education (Tables are provided in Annex Table A. 1 and Table A. 1). Where as in 2006, more than 85 percent of the 65+ age group in Italy had received a lower secondary education or less, they were 25 percent in the 20-24 age group in the same year. In the Netherlands, already the 65+ age group seems more educated than in Italy as a majority of the 65+ had completed an upper secondary education or more and almost 80 percent of the 25-29 age groups had at least an upper secondary education. This points at a different pace of educational development in the two countries. In Italy, until the end of the seventies, most of the increase in educational enrolment happened at the level of lower secondary education. It was only at the beginning of the 1990s that the transition to an upper-secondary education became the norm for pupils. The next step will be an increase in tertiary enrolment where in terms of educational attainment Italy seems to lag far behind the Netherlands with only 18% of the 30-34 age group being tertiary educated in 2006. In the Netherlands, the progress realized in the last 30 years seems to have happened more in the upper secondary and tertiary education. In the Netherlands, about 28 percent of the working age population (20-64) have completed a tertiary education in 2006. Another important feature in both countries is that whereas women were less educated among the older cohorts, starting with cohort 30-34 in the Netherlands and with cohort 35-44 in Italy, the women tend to get a higher education than the men comparing at both levels of upper secondary education and tertiary education.

**Figure 8: Population pyramid by levels of education, Italy, January 1st 2007**




Source: Author's calculations based on ISTAT (2008) and LFS Italy (2007)

**Figure 9: Population pyramid by levels of education, Netherlands, January 1st 2007**



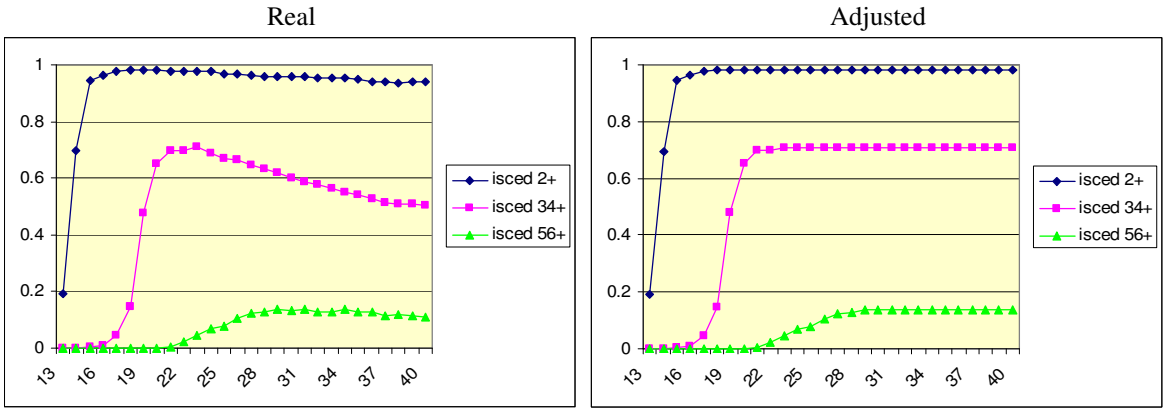

Source: Author's calculations based on Statistics Netherlands (2008) and LFS Netherlands (2006)

### 4.3. Estimates of education transition probabilities for Italy

The following figures (Figure 11 to Figure 12) show the cumulative proportions and the transition probabilities for Italy based on the LFS from 1995 to 2007 (except for the year 1998) between the education categories ISCED 01 and less, ISCED 2, ISCED 34 and ISCED 56. I have split the sample into three periods (1995-1999, 2000-2003, and 2004-2007) to show some variance and to provide a base for the analysis of recent trends. Tables of cumulative proportions and transition probabilities are available in Annex B in Table B. 1 and Table B. 2.

Beside the calculations mentioned in the methodology section, a few adjustments were necessary (See also Box 1 for a summary of the methodology). Firstly, when calculating the average cumulative proportions following cohorts across the 10 years of the observation period, it happened that the proportion in some categories would go down, which would not happen if they were real cohorts since an individual cannot lose levels of education. There might be two main reasons to explain this; the first one would be the difference in sample composition between surveys, which the EU also cautions LFS users about. The other reasons would be the migration of groups less educated into the population lowering the proportions in certain categories. Although both are plausible, the observation of the data seems to deny the second reason as the irregularities noticed in the sample are rather random and do not hold when comparing for instance the age group 28 in 2000 and the age group 28 in 2001 pointing at noises in the sample. Misreporting of educational attainment is of course another source of error in the data. Hence the first adjustment was to average cumulative proportions across three periods, 1995-1999, 2000-2003 and 2004-2007 before calculating the transitions. The second adjustment was to interpolate between values when the cumulative proportions were going down and the proportions were kept constant after a maximum had been reached. An example of the real cumulative proportions and adjusted cumulative proportions are shown in Figure 10.

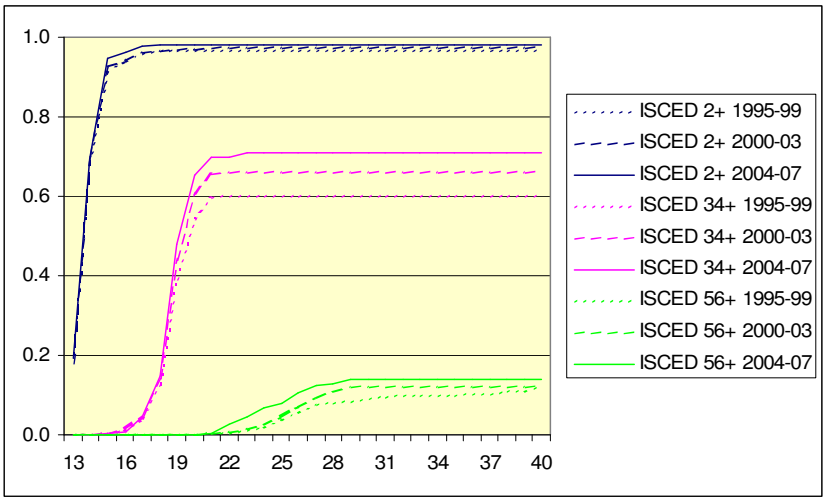
**Figure 10: Real cumulative proportions and adjusted cumulative proportions, Italy, average 2004-2007, female**



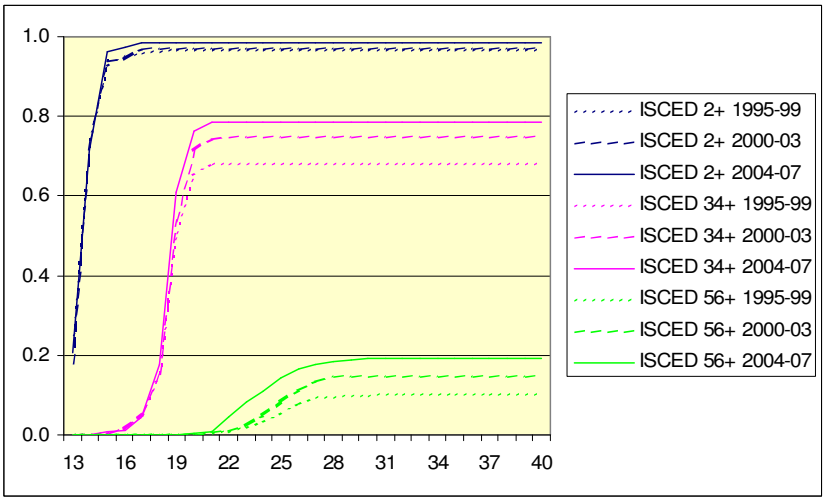

Source: Author's calculations based on LFS [Italy]

**Figure 11: Cumulative proportions in periods 1995-1999, 2000-2003, and 2004-2007, Italy, males and females**

Males

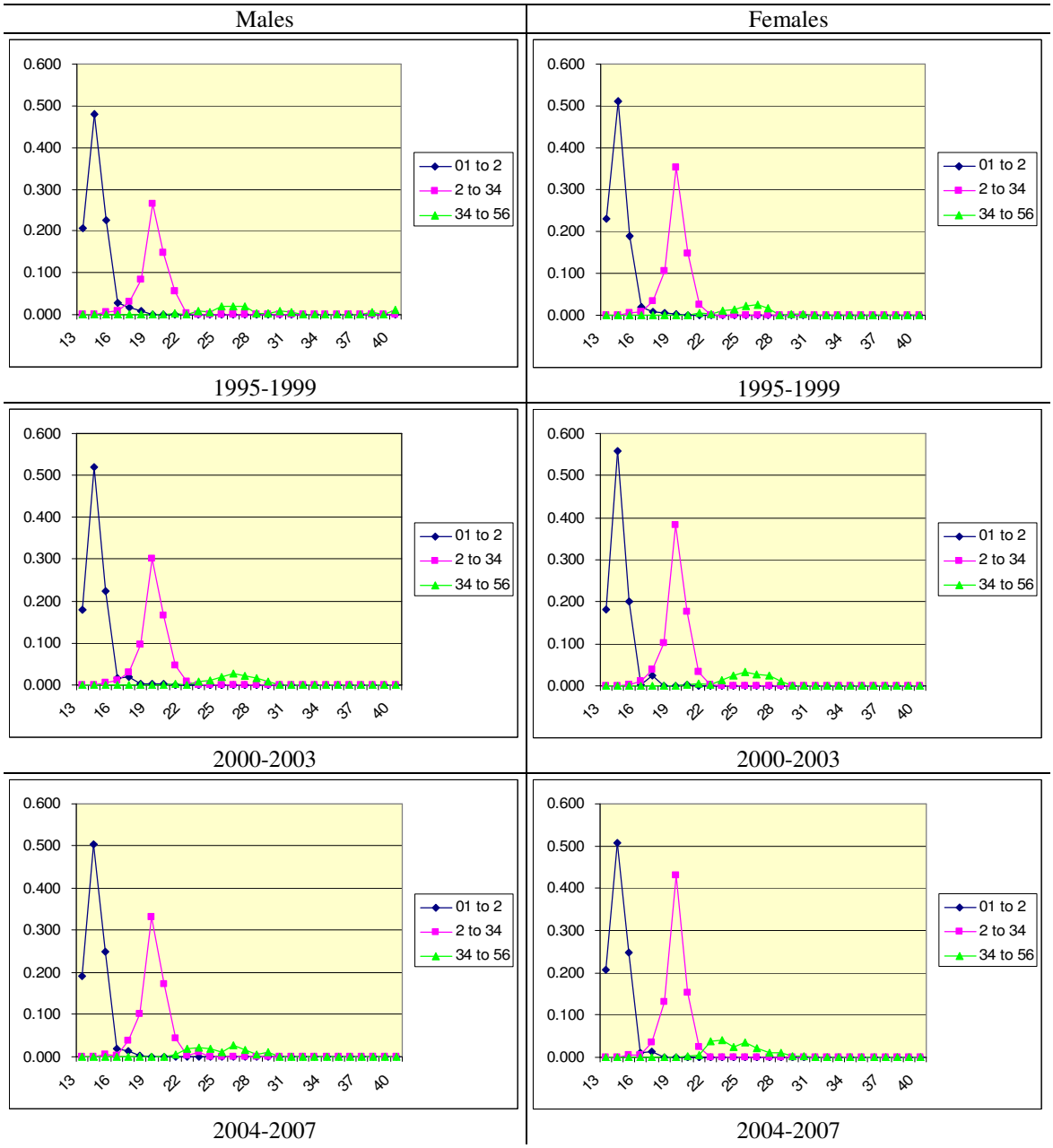



Females




Source: Author's calculations based on LFS [Italy]

**Figure 12: Transition probabilities, 1995-1999, 2000-2003, and 2004-2007, Italy, males and females**




Source: Author's calculations based on LFS [Italy]

The transitions between ISCED 01 and below and ISCED 2, as well as the transitions between ISCED 2 and 34 occur in few age groups, for the latter between ages 12-13 (most likely children who entered primary one year in advance or who skipped one grade because of their faster intellectual capacities) and 14-15 and for the former, from ages 17-18 to 19-20. In both transition patterns, the peak occurs at the regular age for completing the grade: 13-14 for ISCED 2 and 18-19 for ISCED 34. There is almost no difference between males and females transitions from primary to lower secondary and from lower to upper secondary. Both sexes benefited from improvements in the transition to completed higher secondary education between 1995 and 1999 and especially between 2000 and 2003, and 2004 and 2005. The transition pattern is different for the transition to completed tertiary education that

occurs across many ages. Transitions occur mostly between ages 24-25 and 30-31 with a peak at ages 25-26[14]. The increase has been very rapid between 1995 and 2007, particularly for women by whom the probability to move from completed higher secondary to completed tertiary education has almost doubled between 1995-1999 and 2004-2007. The gender gap in favour of women has increased. Whereas in 1995-1999, probabilities were about the same for men and women (total probabilities of 12% for men and 10% for women), in 2004-2007, the transition probabilities are much higher for women (total probabilities of 14% for men and 19% for women)

**Box 1: Main Steps for the calculation of the transition probabilities, Italy and the Netherlands**

Step 1: Calculate cumulative proportions based on sample surveys (LFS) conducted yearly between 1995 and 2007 in Italy and 1996 and 2006 in the Netherlands.

Step 2: Arrange data according to cohorts for ages 13-40 in Italy and 15-40 in the Netherlands for three periods in Italy (1995-1999, 2000-2003, and 2004-2007) and two periods in the Netherlands (1996-2000 and 2001-2006)

Step 3: Average data on cumulative proportions across the periods above mentioned

Step 4: Find age at maximum cumulative proportions and keep constant after reaching that level

Step 5: Correct if necessary by linear interpolation cumulative proportions so that they always increase

Step 6: Calculate transition probabilities according to formula indicated in section 2.2.

### 4.4. Estimates of education transition probabilities for the Netherlands

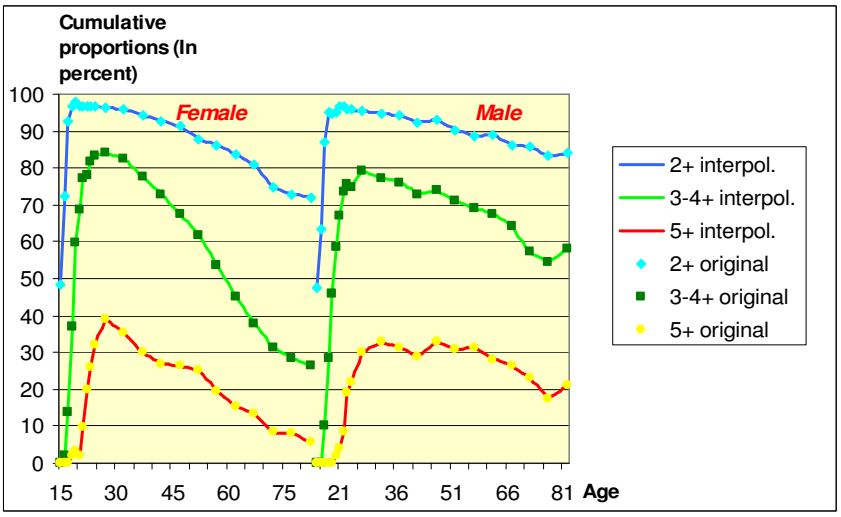
For the Netherlands calculations can be carried out in a similar manner as for Italy except for the fact that the dataset is available in single years of age for ages from 15 to 24 and in 5-year age groups above 25. Hence, the first step was to estimate cumulative proportions of levels of education attainment by single years of age for the four levels of education. This was simply done by interpolating linearly between 5-year age group cumulative proportions, whose values were taken for the cumulative proportions for the mean age of that age group, for each year between 1996 and 2006. Single interpolated values as well as 5-year age group original value are shown in Figure 13 for the year 2006.

From the estimation of the single years of age cumulative proportions, the methodology is actually the same as the one applied to Italy and summarized in Box 1. I averaged the data across two periods: 1996-2000 and 2001-2006[15]. Adjusted cumulative proportions are shown in Figure 14 and transition probabilities in Figure 15. Tables with cumulative proportions and transition probabilities are shown in Annex B (Table B. 3 for males and Table B. 4 for females).

[14] One notices the appearance in the latest period of two peaks, respectively at ages 22-23 and 25 years of age that could point out to a split of tertiary educated students between two curricula with different length (probably bachelor and master degree).

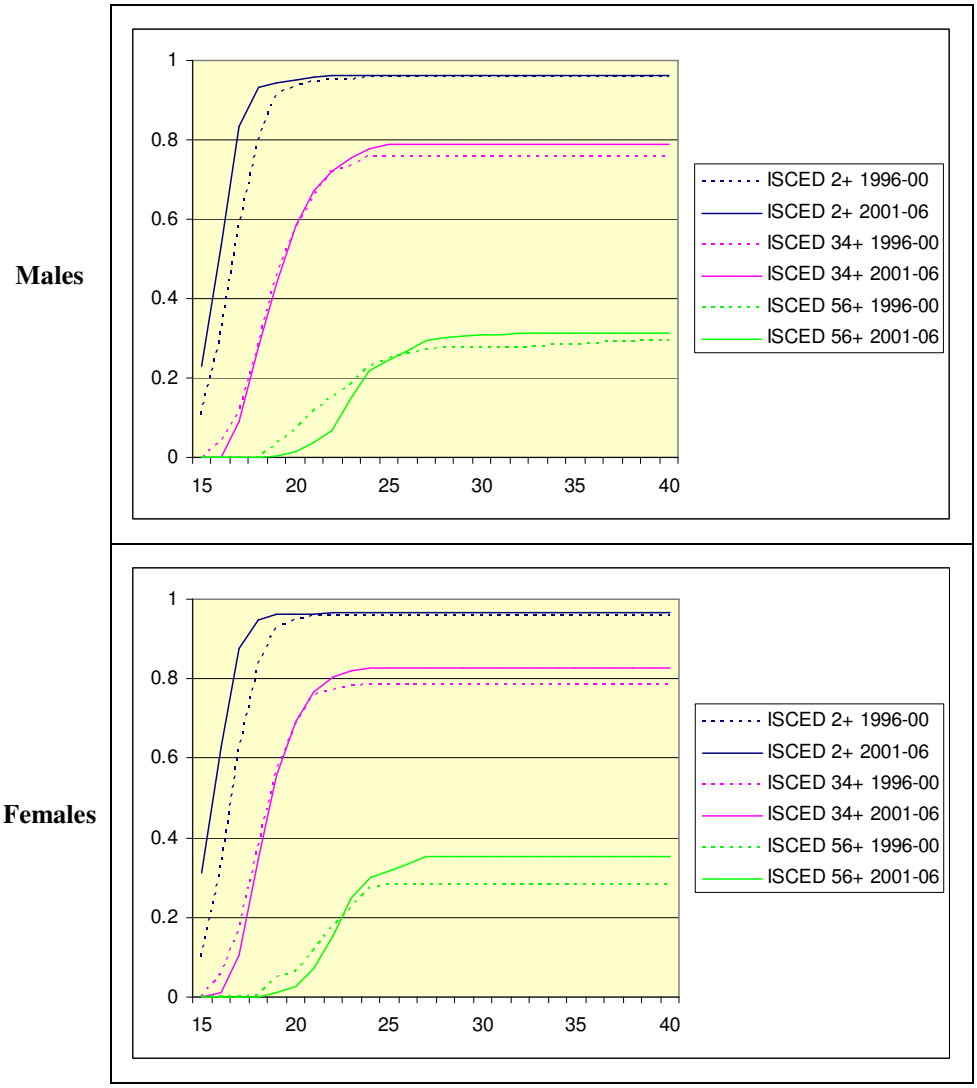
[15] Only two periods were thought necessary (compared to 3 in the case of Italy) because the data shows less variance than in the Italian case. As well, sample variations across years suggest the need for more observations to be grouped together.

**Figure 13: Single year cumulative proportions based on 5-year cumulative proportions, Netherlands, 2006**



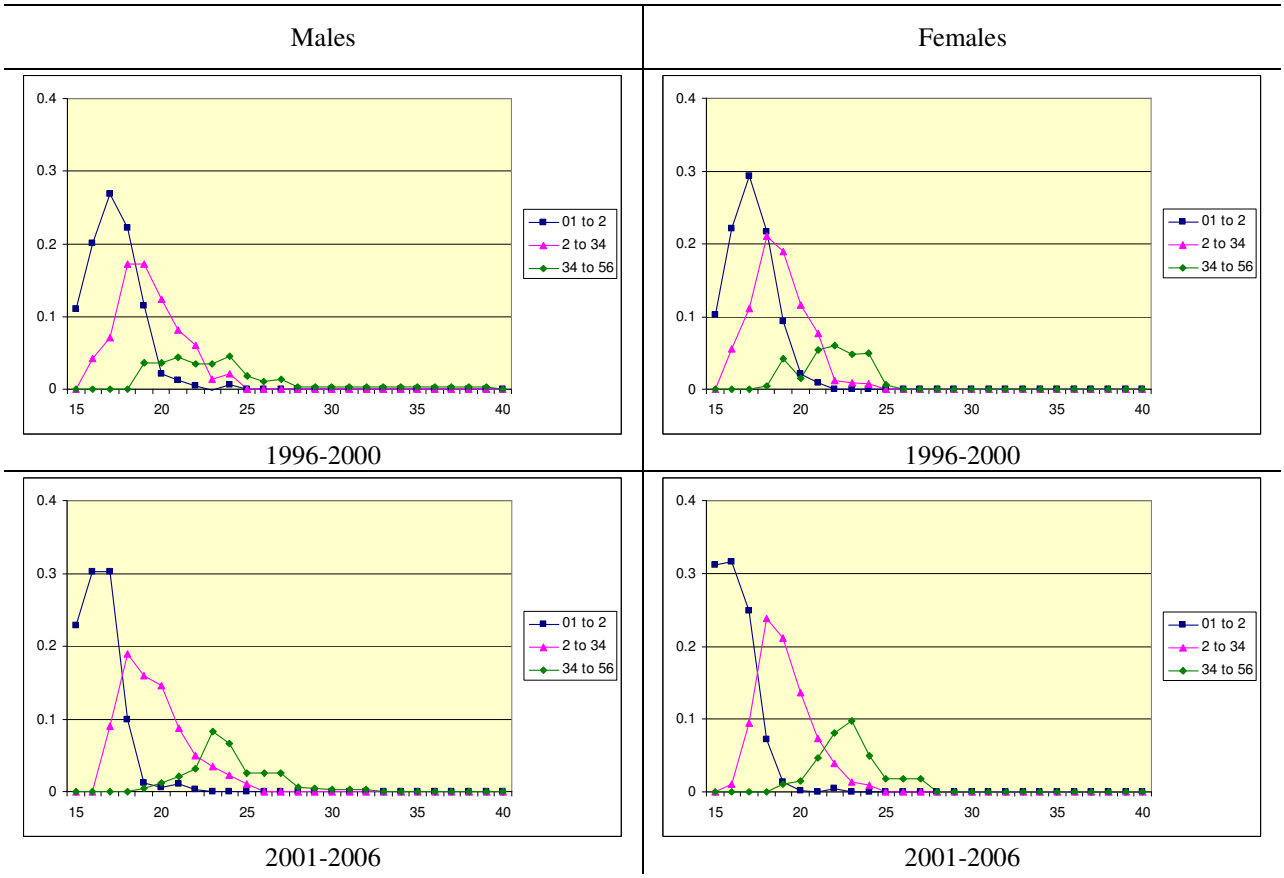

Source: Author's calculations based on LFS [Netherlands] 2006

**Figure 14: Cumulative proportions in periods 1996-2000 and 2001-2006, Netherlands, males and females**




Source: Author's calculations based on LFS [Netherlands]

**Figure 15: Transition probabilities, 1996-2000 and 2001-2006, Netherlands, males and females**




Source: Author's calculations based on LFS [Netherlands]

The difference is quite noticeable in the transition process between Italy and the Netherlands. The data is not homogenous through the several years of the Labour Force Survey at all education levels. One instance of heterogeneity is the first age at which students complete tertiary education, which was around 18-19 in the LFS between 1996 and 1999, around 20-21 in the LFS conducted in 2000-2003 and spread from 18 to 20 years of age in the LFS from 2004 to 2006, without visible explaining factors in the organization of the tertiary curriculum. Since this heterogeneity is also valid for primary and secondary education, the Dutch data should be taken with utmost care. However, one can still draw some of the main traits of the transition characteristics. Overall, transitions in the Netherlands seem to occur across more ages than in Italy. Transitions have increased strongly between the two periods of study especially in the tertiary education. The tendency towards a decline of the age span at which tertiary education is completed is both visible in Italy and in the Netherlands. In the Netherlands, most students seem to complete their tertiary education studies at the age of 23 years. I also find in the Netherlands the same gender differentials in favour of women pertaining to the achievement of secondary and tertiary education as in Italy.

### 4.5. Scenarios

The transitions calculated above mentioned can be easily used in the scenario definition of assumptions for levels of educational attainment.

Constant Scenario

For the constant scenario, those cumulative proportions and transition probabilities will be kept constant at the level last observed during the 2004-2007 period in Italy, and 2001-2006 period in the Netherlands (see Annex B).

Trend

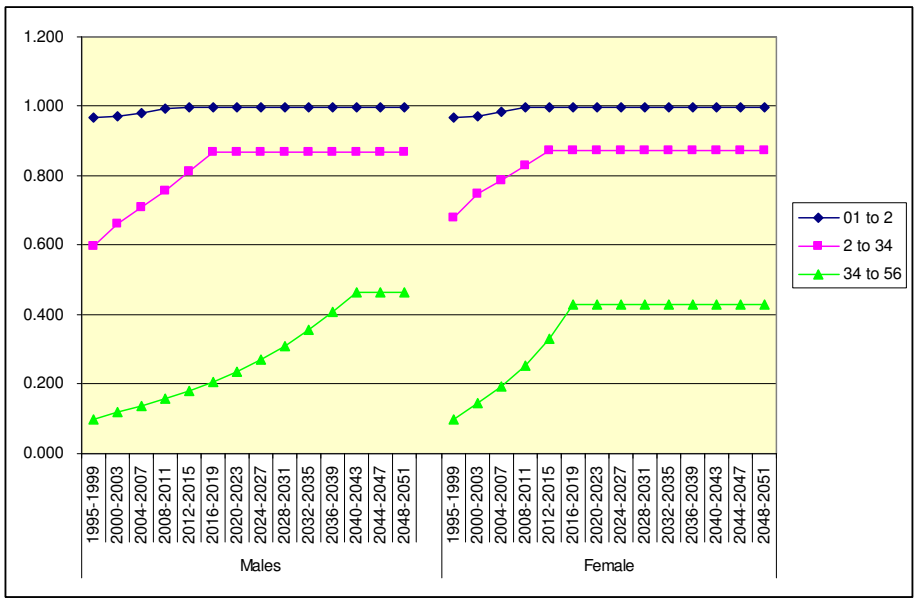
The trend is set by looking at the sum of transitions across three periods in Italy (1995-1999, 2000-2003, and 2004-2007) and two periods in the Netherlands (1996-2000 and 2001-2006) and prolonging it until the 2050s. Some targets are set along the line, where a maximum transition will be reached:

- Maximum value for transitions from ISCED 01 to 2 is 1.0
- Maximum value for transitions from ISCED 2 to 34 is 0.85 (as targeted by the EU)
- Maximum value for transitions from ISCED 34 to 56 is 0.45 (to arrive at levels comparable to that of the United States).

The advantage is that it is simple as it is based only on one figure: the total transition probabilities. Those can be further disaggregated by age for instance according to the same shape observed in the latest period. However, if this approximation in terms of keeping the age schedule constant would clearly be a handicap in most developing countries where a lot of efforts in the field of education have to do with reducing the span of education by cutting down repetition and dropout rates, the age structure of transitions is pretty stable in developed countries.

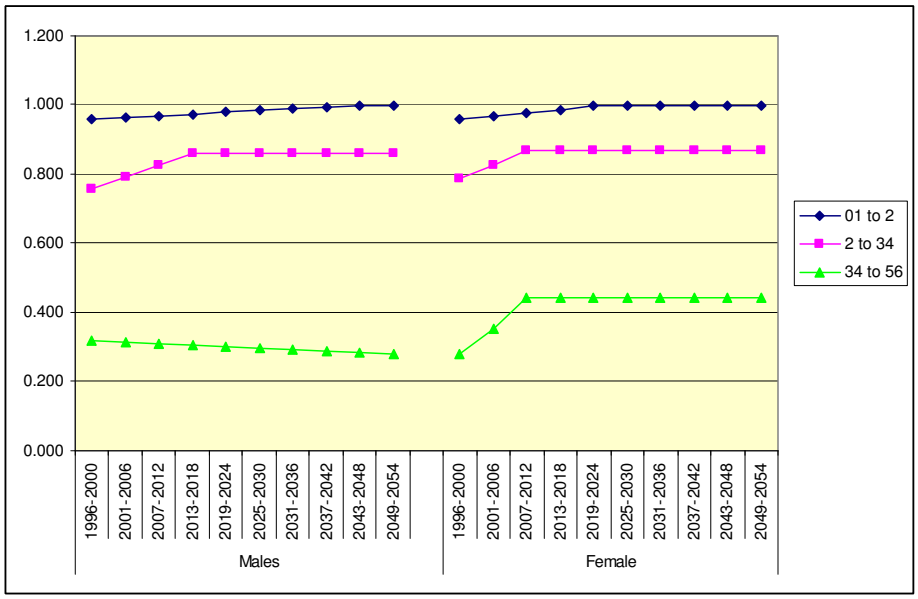
The extension of the trend observed during the last 10-15 years until the 2050s in shown in Figure 16 for Italy and in Figure 17 for the Netherlands.

**Figure 16: Total transition probability, Italy, males and females, 1995-1999 to 2048-51**




Source: Author's calculations based on LFS [Italy]

**Figure 17: Total transition probability, Netherlands, males and females, 1995-1999 to 2048-51**




Source: Author's calculations based on LFS [Netherlands]

### 4.6. Age at leaving school

The age at leaving school is an important variable because it is linked to many demographic events such as the age at first birth. It is likely to affect both the timing of demographic events as well as the age of labor market entry. Studies on the timing of events in adulthood tend to show that individuals sequence events rigidly and a change in the timing of one life event affects subsequent events. Leaving school tends to precede parenthood and entry to the labor market, and increases in the graduation age have been associated with increases in the age of labor-market entry, age of childbearing, and the timing of other events in adulthood (Blossfeld and De Rose 1992, Gustafsson 2001).

International comparisons suggest that the length of the period from finishing education to entering the labor force is not affected by the age at which a person leaves school (OECD 2003, UNESCO 2004). School systems with younger school-leaving ages do not have a longer transition from school to work than school systems with a higher school-leaving age. This suggests that a variation in the school-leaving age (whether after completion of the highest educational qualification or simply compulsory schooling) does not affect the speed of transition to the labor market; it also suggests that a shift in the school-leaving age would lead to a similar shift in the age of entry to the labor market. Another important issue with the age at leaving school is the age of students that are enrolled in tertiary education. In some countries, the proportion of students 30 years or older is considerably above average (16% for the whole EU) in Sweden (34%), United Kingdom (33%), Finland (28%), Austria (26%) and Latvia (25%) (Eurostat 2005)

Age at leaving school is not currently available but can be inferred from attainment data by age at the different levels for which the typical entrance and duration are shown in Table 2. However, one could attribute a length of studies based on each

level of education. Below secondary education, the length of the studies is more or less standard and most pupils complete the level within the regular length of studies, with a variance of 1 to 2 years. However, the length of tertiary education varies greatly since many students do not follow the regular path due to interruption in the studies, change in the field of studies, necessity to share time between studies and income generating activities. In Italy, tertiary students do get their grades rather late. Before implementation of the Bologna reform, the median age at completion was 27.6 years, at least 3 years more than the theoretical age (Ministry of Education Italy 2001).

I use the transition probabilities by age calculated in the previous section based on cohort information to derive the schedule of age at completion. The education categories are being defined in terms of completed level of studies so that the transition $T_{a,j}$ reflects the probability of an individual of age *a* to move from the completion of level attained with education category $E_j$ to that of level attained with education category $E_{j+1}$. Hence the age *a* at which any transition occurs represents the age at which the level $E_{j+1}$ will be completed.

Formally, if $T_{a,j}$ is the transition at age *a* from category $E_j$ to $E_{j+1}$ for year *n*, then $P_{a,j}$ will give the distribution of the transition by age:

$$P_{a,j} = \frac{T_{a,j}}{\sum_a T_{a,j}}$$

$$\sum_{j=0}^{n} P_{a,j} = 1$$

$P_{a,j}$ represents the distribution of the probabilities of completing level $E_{j+1}$ by age a and can be calculated for both the male and female population. It can be applied to the total population cross classified by education, age and sex to derive the approximate age at leaving school.

The approximation implied by this formula is that all pupils will have the same distribution whether they have moved to the next level or not, for which I do not have information. Hence, the Mean Age at Leaving School ($MALS_j$) for people having $E_j$ as highest level of educational attainment is calculated as the weighted average of ages at transitions, as follows:

$a_j \bullet \sum_a P_{a,j} = MALS_j$ for $a_j$ taking the values at which the transitions occurred for level $E_j$.

$MALS_{,j}$ can then be applied to the population in each age group

$$MALS_i = \frac{\sum_j Y_{i,j} \bullet MALS_j}{Y_{i,j}}$$ where $MALS_i$ represents the mean age at leaving school for age $x_i$. The results can also be summed up for the whole population.

This calculation method makes two further important approximations. The first one is that people do not always complete the level they have entered. This point could lead to an underestimation of the age at leaving school since some students especially at tertiary level may enter a grade without completing and be classified in the secondary educated population whereas they have been studying at tertiary level. The second approximation is that since I apply the mean age at leaving school as calculated based on the starting conditions observed within the last 10 years to the whole population, I in fact imply that the age schedule of transitions has always been the same, which does not have to be. However, in the case of European countries where repetition rates are pretty stable over time, this approximation may not lead to strong distortions to the real mean age at leaving school.

Table 4 details the mean age at leaving school by education categories and period of study for Italy and the Netherlands. Figure 18 and Figure 19 show the mean age at leaving school calculated for Italy and for the Netherlands for the total population as well as for the population divided into separate age groups. Detailed tables are available in Annex C.

**Table 4: Mean age at leaving school (in years) population 15+, by education categories, Italy and Netherlands, 1995-2007**

| Country | Sex | Period | ISCED 01 | ISCED 2 | ISCED 34 | ISCED 56 |
|---|---|---|---|---|---|---|
| Italy | Male | 1995-99 | 11.0 | 14.1 | 19.0 | 25.2 |
| | | 2000-03 | 11.0 | 14.1 | 19.0 | 25.1 |
| | | 2004-07 | 11.0 | 14.1 | 19.0 | 24.3 |
| | | Average 1995-07 | 11.0 | 14.1 | 19.0 | 25.1 |
| | Female | 1995-99 | 11.0 | 14.2 | 19.1 | 26.4 |
| | | 2000-03 | 11.0 | 14.2 | 19.1 | 25.9 |
| | | 2004-07 | 11.0 | 14.2 | 19.1 | 24.8 |
| | | Average 1995-07 | 11.0 | 14.1 | 19.1 | 25.4 |
| Netherlands | Males | 1996-2000 | 12.0 | 17.2 | 19.3 | 23.8 |
| | | 2001-2006 | 12.0 | 16.4 | 19.5 | 23.9 |
| | | Average 1996-06 | 12.0 | 16.6 | 18.9 | 22.3 |
| | Females | 1996-2000 | 12.0 | 17.1 | 18.7 | 21.8 |
| | | 2001-2006 | 12.0 | 16.2 | 19.0 | 22.9 |
| | | Average 1996-06 | 12.0 | 16.8 | 19.4 | 23.9 |

Source: Author's calculations based on LFS [Italy] and LFS [Netherlands]

**Figure 18: Mean age at leaving school (in years), Italy, total population aged 15+, working age population and several age groups, male and female**

Source: Author's calculations based on LFS [Italy]

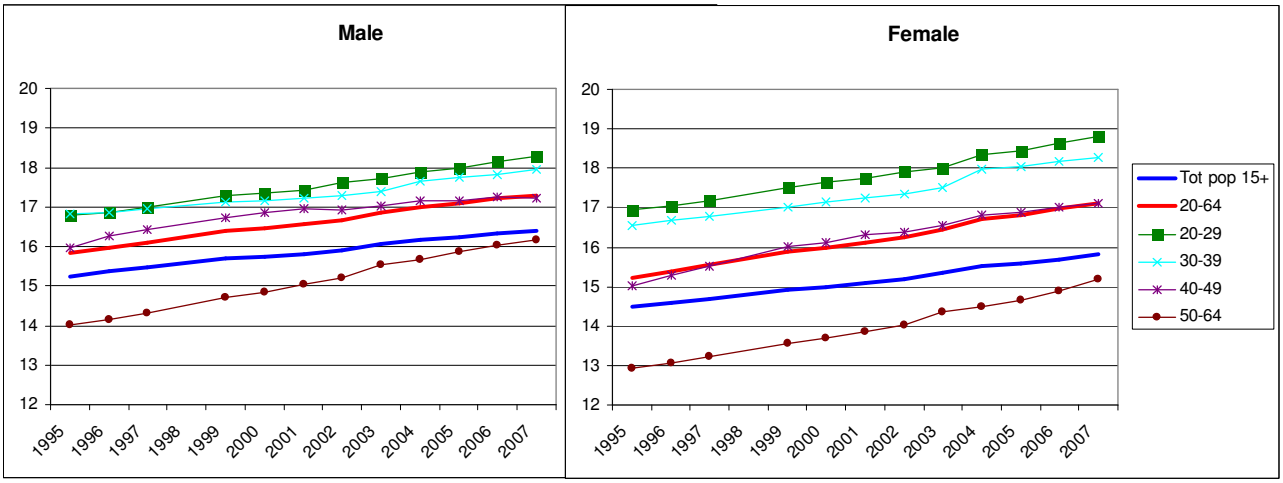
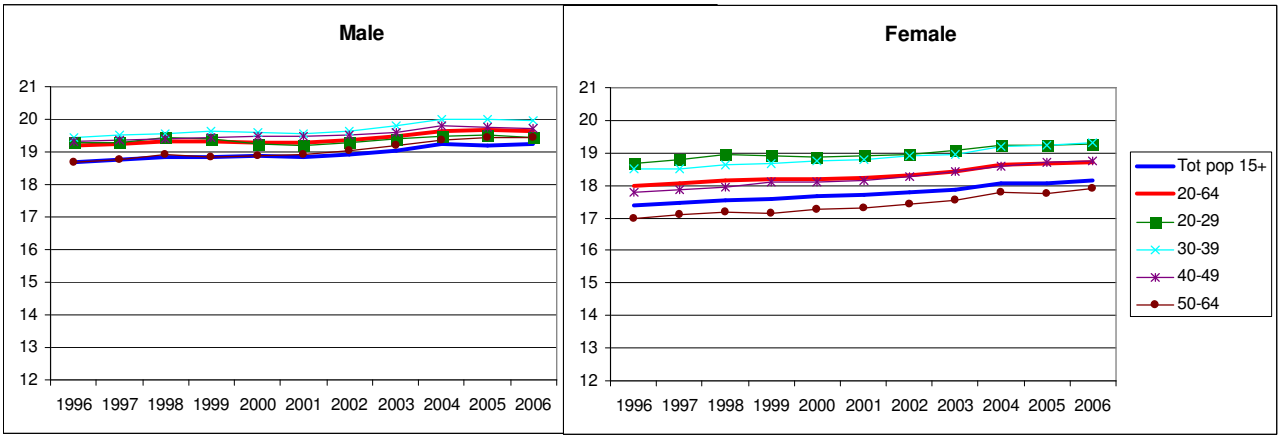


**Figure 19: Mean age at leaving school, Netherlands, total population, working age population and several age groups, male and female**

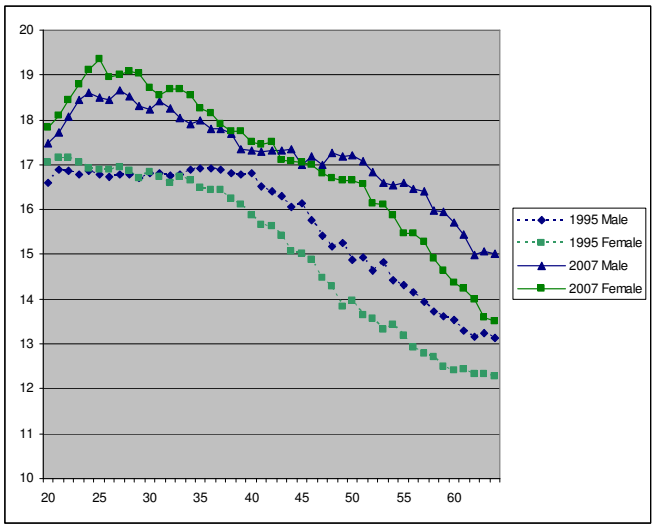



Source: Author's calculations based on LFS [Netherlands]

The graph shows very clearly an increase in the age at leaving school within the last 10 years. The increase is steeper for females than for males pointing to a process of catching up. This is even clearer on Figure 20 and Figure 21, which reflects the changes across cohorts. In Italy, younger cohorts, between age 25 and 30 at the time of interview, show an increase in the age of leaving school by 2 years between 1995 and 2007, translating the former results of increases in the proportions of people with higher secondary and tertiary level into an increase in age at leaving school and delayed entry into the labor force.

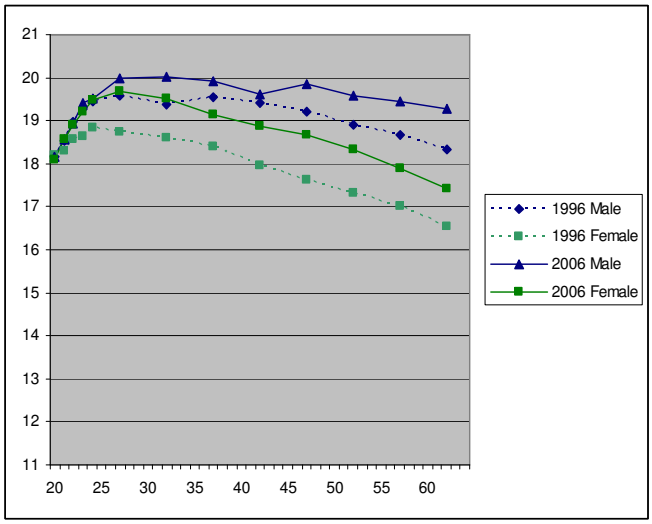
The future mean ages at leaving school can be derived from the above-described projections of educational transition probabilities and will differ according to the scenario chosen.

**Figure 20: Single age at leaving school in 1995 and 2007, working age population 20-64, Italy, males and females**




Source: Author's calculations based on LFS [Italy ]

**Figure 21: Single age at leaving school in 1996 and 2006, working age population 20-64, Netherlands, males and females**




Source: Author's calculations based on LFS [Netherlands]

## 5. Conclusions

As pointed out in the introduction the definition of educational transition probabilities is only one, although very important aspect, in MicMac. MicMac will provide the tools to study how these trends and efforts in education are likely to affect and interact with family formation, work, health and other key dimensions of personal life that also matter for society. All other dimensions of the model will also have to make assumptions with respect to the differentials that those dimensions will show with respect to educational attainment.

But improvement in the educational composition of the population is also an important goal in its own right. It is considered a key element of further economic and social development in Europe by the European Commission and national governments alike.

Although progress in further improvements in educational attainment in Europe can be expected to be slower than in many developing counties which are experiencing a catching-up effect, the analysis has shown that generally younger cohorts have higher levels of education than the older cohorts and this will entail further increases in the levels of educational attainment of the overall labour force in the EU. This also holds for the case study countries Italy and the Netherlands. Most of the changes will occur at the tertiary level where the increase is likely to be most significant. The proportions of younger cohorts with a university degree vary greatly among European countries and most have levels lower than some highly advanced countries outside Europe such as Japan, the USA or Singapore. This clearly leaves room for further improvements. Efforts at the political level are going into two directions: One is to keep all students in the school system until they have completed a secondary education degree. The other main direction is to increase participation in tertiary studies especially in the field of technology and science. Finally, there is an attempt to compress the time that

students spend in the educational system without compromising on quality and the level of educational attainment, hence making the system more efficient.

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# Annexes[16]

## ANNEX A: POPULATION BY AGE, SEX, AND EDUCATION

**Table A. 1: Estimates of total population, by age, sex and level of education, Italy, January 1st, 2007**

| | Male | | | | | Female | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Education categories | | | | | Education categories | | | |
| Age | Total | ISCED 01 | ISCED 2 | ISCED 34 | ISCED 56 | Total | ISCED 01 | ISCED 2 | ISCED 34 | ISCED 56 |
| 0 | 285688 | 285688 | 0 | 0 | 0 | 269278 | 269278 | 0 | 0 | 0 |
| 1 | 286085 | 286085 | 0 | 0 | 0 | 268799 | 268799 | 0 | 0 | 0 |
| 2 | 288438 | 288438 | 0 | 0 | 0 | 273297 | 273297 | 0 | 0 | 0 |
| 3 | 284817 | 284817 | 0 | 0 | 0 | 269995 | 269995 | 0 | 0 | 0 |
| 4 | 281577 | 281577 | 0 | 0 | 0 | 267837 | 267837 | 0 | 0 | 0 |
| 5 | 282490 | 282490 | 0 | 0 | 0 | 267567 | 267567 | 0 | 0 | 0 |
| 6 | 286717 | 286717 | 0 | 0 | 0 | 270593 | 270593 | 0 | 0 | 0 |
| 7 | 281576 | 281576 | 0 | 0 | 0 | 266689 | 266689 | 0 | 0 | 0 |
| 8 | 281771 | 281771 | 0 | 0 | 0 | 264769 | 264769 | 0 | 0 | 0 |
| 9 | 280566 | 280566 | 0 | 0 | 0 | 264390 | 264390 | 0 | 0 | 0 |
| 10 | 281378 | 281378 | 0 | 0 | 0 | 265580 | 265580 | 0 | 0 | 0 |
| 11 | 281105 | 281105 | 0 | 0 | 0 | 264499 | 264499 | 0 | 0 | 0 |
| 12 | 284170 | 284170 | 0 | 0 | 0 | 268518 | 268518 | 0 | 0 | 0 |
| 13 | 290336 | 290336 | 0 | 0 | 0 | 275438 | 275438 | 0 | 0 | 0 |
| 14 | 301900 | 301900 | 0 | 0 | 0 | 286037 | 286037 | 0 | 0 | 0 |
| 15 | 301810 | 14538 | 287185 | 88 | 0 | 285094 | 10355 | 274463 | 275 | 0 |
| 16 | 304502 | 4864 | 298194 | 1444 | 0 | 288258 | 2637 | 284783 | 838 | 0 |
| 17 | 301597 | 6856 | 285923 | 8818 | 0 | 284980 | 1922 | 277391 | 5667 | 0 |
| 18 | 306904 | 4718 | 262606 | 39579 | 0 | 288647 | 2038 | 239879 | 46730 | 0 |
| 19 | 298199 | 2828 | 146969 | 148402 | 0 | 281242 | 2999 | 105260 | 172984 | 0 |
| 20 | 299578 | 3309 | 94248 | 202022 | 0 | 284245 | 3959 | 62275 | 217350 | 660 |
| 21 | 307732 | 5156 | 80449 | 220806 | 1320 | 297044 | 2361 | 52773 | 239922 | 1989 |
| 22 | 315201 | 6383 | 74965 | 221973 | 11880 | 303767 | 4265 | 52943 | 224638 | 21921 |
| 23 | 324521 | 6764 | 76170 | 212977 | 28610 | 312852 | 9338 | 57066 | 197293 | 49155 |
| 24 | 336571 | 6316 | 86498 | 202696 | 41061 | 328242 | 6272 | 63466 | 190496 | 68008 |
| 25 | 342119 | 7528 | 98077 | 191512 | 45002 | 334282 | 7173 | 65347 | 178080 | 83682 |
| 26 | 352852 | 12571 | 100475 | 190240 | 49566 | 344232 | 10850 | 75869 | 182946 | 74567 |
| 27 | 368358 | 12544 | 102112 | 194034 | 59669 | 359387 | 13302 | 81308 | 177956 | 86821 |
| 28 | 391769 | 13493 | 115307 | 202056 | 60914 | 381017 | 13029 | 86022 | 187728 | 94238 |
| 29 | 405493 | 16371 | 125288 | 206357 | 57478 | 396784 | 13304 | 87777 | 202800 | 92903 |
| 30 | 426978 | 19108 | 141414 | 201136 | 65320 | 416991 | 13447 | 105882 | 210796 | 86867 |
| 31 | 449466 | 16061 | 148228 | 211193 | 73985 | 440046 | 15602 | 130590 | 196869 | 96986 |
| 32 | 470463 | 19766 | 157584 | 220871 | 72243 | 460587 | 18388 | 127043 | 209207 | 105949 |
| 33 | 469208 | 15742 | 178215 | 207439 | 67812 | 459586 | 15908 | 126952 | 213087 | 103639 |
| 34 | 475101 | 21823 | 177816 | 209529 | 65934 | 464832 | 20091 | 136575 | 203192 | 104974 |
| 35 | 480684 | 20511 | 182223 | 206639 | 71311 | 472141 | 22912 | 147442 | 207568 | 94219 |
| 36 | 477367 | 24353 | 193089 | 189295 | 70629 | 467576 | 18125 | 159484 | 199068 | 90900 |
| 37 | 490837 | 23978 | 201688 | 190884 | 74287 | 480762 | 26067 | 170069 | 197032 | 87593 |
| 38 | 486373 | 23144 | 200452 | 196675 | 66102 | 475819 | 26320 | 169778 | 204215 | 75507 |
| 39 | 487788 | 26873 | 211695 | 194289 | 54931 | 481216 | 28514 | 169467 | 205556 | 77679 |

[16] Tables can also be downloaded from Excel file Annex_D3.xls

| Age | Male | | | | | Female | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Education categories | | | | Total | Education categories | | | |
| | | ISCED 01 | ISCED 2 | ISCED 34 | ISCED 56 | | ISCED 01 | ISCED 2 | ISCED 34 | ISCED 56 |
| 40 | 497207 | 28627 | 217355 | 195986 | 55239 | 489635 | 27284 | 183810 | 211529 | 67012 |
| 41 | 496677 | 28620 | 215750 | 199497 | 52810 | 491026 | 30700 | 186284 | 206751 | 67292 |
| 42 | 502755 | 32799 | 213910 | 199796 | 56250 | 497448 | 32818 | 183840 | 210337 | 70453 |
| 43 | 470387 | 30990 | 202209 | 182373 | 54815 | 469383 | 40753 | 179848 | 193802 | 54980 |
| 44 | 454661 | 30888 | 198239 | 167260 | 58273 | 455354 | 39436 | 177031 | 187071 | 51815 |
| 45 | 445034 | 33296 | 205018 | 160078 | 46643 | 447159 | 43732 | 171031 | 179488 | 52908 |
| 46 | 430638 | 33636 | 185001 | 164001 | 48001 | 433950 | 43260 | 165868 | 175266 | 49557 |
| 47 | 420943 | 38438 | 182211 | 157381 | 42913 | 424148 | 51644 | 155588 | 174094 | 42822 |
| 48 | 401538 | 38078 | 160514 | 153683 | 49264 | 407267 | 56194 | 152248 | 154852 | 43973 |
| 49 | 397884 | 42934 | 156498 | 150296 | 48156 | 404467 | 67454 | 137127 | 154806 | 45081 |
| 50 | 390954 | 46015 | 149417 | 145811 | 49711 | 399264 | 72243 | 134018 | 142504 | 50499 |
| 51 | 384032 | 47547 | 150877 | 137852 | 47756 | 393742 | 73861 | 130343 | 143401 | 46137 |
| 52 | 377767 | 53987 | 147067 | 135354 | 41359 | 390244 | 92993 | 127359 | 127843 | 42049 |
| 53 | 362349 | 67957 | 134287 | 119462 | 40643 | 372556 | 99730 | 107385 | 122355 | 43086 |
| 54 | 357096 | 69621 | 127423 | 122456 | 37595 | 370679 | 105531 | 114244 | 109980 | 40924 |
| 55 | 356499 | 80058 | 119926 | 109857 | 46658 | 371756 | 122764 | 111773 | 99521 | 37698 |
| 56 | 370802 | 84154 | 123312 | 120838 | 42498 | 386024 | 136730 | 105267 | 102825 | 41202 |
| 57 | 372635 | 90625 | 120634 | 118150 | 43226 | 389350 | 148325 | 104823 | 93327 | 42875 |
| 58 | 389317 | 115596 | 120851 | 110643 | 42228 | 408406 | 175117 | 104049 | 89174 | 40066 |
| 59 | 381790 | 123143 | 107002 | 107660 | 43985 | 400463 | 185092 | 93960 | 88073 | 33338 |
| 60 | 381561 | 127781 | 111096 | 104322 | 38361 | 403250 | 194848 | 100078 | 78163 | 30161 |
| 61 | 294985 | 109666 | 82874 | 72653 | 29792 | 314229 | 162184 | 69137 | 58987 | 23922 |
| 62 | 303177 | 124043 | 85349 | 70336 | 23449 | 324717 | 173414 | 74431 | 55027 | 21846 |
| 63 | 304795 | 124149 | 84515 | 69638 | 26493 | 331989 | 194993 | 68857 | 51268 | 16871 |
| 64 | 302251 | 131185 | 75714 | 68026 | 27326 | 331295 | 196626 | 66497 | 54925 | 13247 |
| 65 | 303631 | 137935 | 78419 | 59728 | 27549 | 336552 | 205688 | 66099 | 51225 | 13540 |
| 66 | 332415 | 163382 | 80622 | 63260 | 25151 | 370683 | 233779 | 68164 | 51936 | 16804 |
| 67 | 326355 | 165123 | 78162 | 60135 | 22935 | 366087 | 237053 | 69246 | 47584 | 12204 |
| 68 | 315038 | 165605 | 68179 | 57882 | 23372 | 358040 | 237698 | 61955 | 46965 | 11422 |
| 69 | 288743 | 159476 | 61673 | 51093 | 16501 | 333344 | 238493 | 46821 | 36263 | 11768 |
| 70 | 268653 | 156929 | 58857 | 37660 | 15206 | 318182 | 231876 | 40344 | 34615 | 11346 |
| 71 | 272168 | 169944 | 51382 | 32943 | 17899 | 326317 | 240358 | 45525 | 31445 | 8989 |
| 72 | 260184 | 166187 | 47226 | 35472 | 11298 | 318659 | 245380 | 38019 | 25959 | 9301 |
| 73 | 248687 | 167272 | 42172 | 28191 | 11052 | 310686 | 241575 | 38919 | 22358 | 7834 |
| 74 | 234162 | 158978 | 40761 | 21295 | 13129 | 302574 | 235730 | 32397 | 28141 | 6306 |
| 75 | 229084 | 154058 | 38520 | 26846 | 9660 | 303140 | 231810 | 39824 | 21790 | 9715 |
| 76 | 227793 | 150350 | 42397 | 24127 | 10919 | 311787 | 244185 | 37167 | 23206 | 7229 |
| 77 | 200927 | 132330 | 35016 | 20617 | 12964 | 282373 | 223145 | 32254 | 21200 | 5774 |
| 78 | 188074 | 125145 | 31694 | 21824 | 9411 | 275713 | 215807 | 34636 | 20253 | 5016 |
| 79 | 175977 | 112476 | 30256 | 22752 | 10494 | 267050 | 214317 | 27247 | 18008 | 7478 |
| 80 | 158738 | 109576 | 22692 | 17859 | 8612 | 253987 | 202084 | 25337 | 21287 | 5280 |
| 81 | 144940 | 103230 | 19669 | 15919 | 6122 | 241889 | 199184 | 21211 | 15721 | 5773 |
| 82 | 130849 | 92588 | 16635 | 14443 | 7182 | 228340 | 187138 | 17824 | 17788 | 5590 |
| 83 | 118343 | 81693 | 14332 | 15907 | 6411 | 216167 | 177686 | 18261 | 15481 | 4739 |
| 84 | 102541 | 72516 | 11646 | 11802 | 6577 | 200200 | 167963 | 15750 | 12554 | 3932 |
| 85 | 90171 | 68024 | 10769 | 6868 | 4510 | 183556 | 155694 | 12042 | 11215 | 4604 |
| 86 | 77868 | 58308 | 6955 | 8249 | 4356 | 165748 | 145802 | 11004 | 7042 | 1900 |
| 87 | 44137 | 32445 | 4604 | 4110 | 2978 | 98275 | 83482 | 8517 | 4147 | 2129 |

| | Male | | | | | Female | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Education categories | | | | | Education categories | | | |
| Age | Total | ISCED 01 | ISCED 2 | ISCED 34 | ISCED 56 | Total | ISCED 01 | ISCED 2 | ISCED 34 | ISCED 56 |
| 88 | 28551 | 22286 | 2292 | 2216 | 1758 | 67088 | 59103 | 4610 | 2707 | 668 |
| 89 | 25385 | 18529 | 2851 | 876 | 3128 | 61667 | 54406 | 5403 | 1825 | 33 |
| 90 | 26140 | 20947 | 2772 | 783 | 1638 | 66175 | 55143 | 6302 | 3240 | 1490 |
| 91 | 26607 | 22198 | 2750 | 1291 | 369 | 70913 | 63396 | 3532 | 3214 | 771 |
| 92 | 21668 | 15478 | 1807 | 3408 | 974 | 61301 | 54239 | 4785 | 1863 | 414 |
| 93 | 16861 | 12918 | 2097 | 661 | 1185 | 49752 | 42959 | 3932 | 1962 | 899 |
| 94 | 12442 | 8220 | 1816 | 1871 | 534 | 38816 | 34050 | 1541 | 2156 | 1068 |
| 95 | 8273 | 7218 | 387 | 544 | 124 | 27604 | 24144 | 1455 | 1346 | 659 |
| 96 | 5822 | 5166 | 400 | 165 | 91 | 20663 | 19136 | 635 | 612 | 280 |
| 97 | 3796 | 3208 | 0 | 461 | 127 | 13859 | 12452 | 251 | 1094 | 62 |
| 98 | 2253 | 1530 | 96 | 35 | 591 | 9433 | 8277 | 571 | 469 | 116 |
| 99+ | 3346 | 2882 | 256 | 209 | 0 | 15510 | 13388 | 1364 | 758 | 0 |
| Total | 28718441 | 9392196 | 8614074 | 8285865 | 2426306 | 30412846 | 12156809 | 7357743 | 8145089 | 2753205 |

Source: Author's calculations based on ISTAT (2008) and LFS Italy (2007)

**Table A. 2: Estimates of total population, by age, sex and level of education, Netherlands, January 1st, 2007**

| | Male | | | | | Female | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Education categories | | | | | Education categories | | | |
| Age | Total | ISCED 01 | ISCED 2 | ISCED 34 | ISCED 56 | Total | ISCED 01 | ISCED 2 | ISCED 34 | ISCED 56 |
| 0 | 94628 | 94628 | 0 | 0 | 0 | 89797 | 89797 | 0 | 0 | 0 |
| 1 | 95879 | 95879 | 0 | 0 | 0 | 91358 | 91358 | 0 | 0 | 0 |
| 2 | 98795 | 98795 | 0 | 0 | 0 | 94691 | 94691 | 0 | 0 | 0 |
| 3 | 102502 | 102502 | 0 | 0 | 0 | 97790 | 97790 | 0 | 0 | 0 |
| 4 | 103110 | 103110 | 0 | 0 | 0 | 98331 | 98331 | 0 | 0 | 0 |
| 5 | 103786 | 103786 | 0 | 0 | 0 | 99284 | 99284 | 0 | 0 | 0 |
| 6 | 105293 | 105293 | 0 | 0 | 0 | 101149 | 101149 | 0 | 0 | 0 |
| 7 | 103411 | 103411 | 0 | 0 | 0 | 98317 | 98317 | 0 | 0 | 0 |
| 8 | 102511 | 102511 | 0 | 0 | 0 | 97821 | 97821 | 0 | 0 | 0 |
| 9 | 99057 | 99057 | 0 | 0 | 0 | 95368 | 95368 | 0 | 0 | 0 |
| 10 | 99300 | 99300 | 0 | 0 | 0 | 93753 | 93753 | 0 | 0 | 0 |
| 11 | 98962 | 98962 | 0 | 0 | 0 | 94595 | 94595 | 0 | 0 | 0 |
| 12 | 101862 | 101862 | 0 | 0 | 0 | 97300 | 97300 | 0 | 0 | 0 |
| 13 | 101592 | 101592 | 0 | 0 | 0 | 97251 | 97251 | 0 | 0 | 0 |
| 14 | 103032 | 103032 | 0 | 0 | 0 | 98090 | 98090 | 0 | 0 | 0 |
| 15 | 104244 | 54652 | 49592 | 0 | 0 | 99775 | 51399 | 48376 | 0 | 0 |
| 16 | 104964 | 38452 | 66512 | 0 | 0 | 99766 | 27487 | 70243 | 2036 | 0 |
| 17 | 100501 | 13197 | 77152 | 10152 | 0 | 96587 | 7117 | 76253 | 13217 | 0 |
| 18 | 99876 | 5044 | 66584 | 28248 | 0 | 95598 | 3019 | 57359 | 33208 | 2013 |
| 19 | 100848 | 5145 | 49395 | 46308 | 0 | 96329 | 1986 | 36744 | 54620 | 2979 |
| 20 | 100087 | 5055 | 36395 | 56615 | 2022 | 97310 | 3041 | 27368 | 64873 | 2027 |
| 21 | 98256 | 3039 | 29376 | 61790 | 4052 | 95834 | 3091 | 18549 | 64920 | 9274 |
| 22 | 97756 | 3087 | 22638 | 63799 | 8232 | 95224 | 3139 | 17789 | 55460 | 18836 |
| 23 | 95531 | 4065 | 19309 | 53863 | 18293 | 93994 | 3065 | 14303 | 52105 | 24520 |
| 24 | 96758 | 4032 | 20158 | 51403 | 21166 | 95285 | 2978 | 12903 | 48635 | 30769 |
| 25 | 99011 | 4238 | 19094 | 51298 | 24381 | 99005 | 3272 | 12971 | 48611 | 34151 |
| 26 | 101185 | 4446 | 17947 | 51094 | 27698 | 100358 | 3498 | 12706 | 47325 | 36829 |

| | Male | | | | | Female | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Education categories | | | | | Education categories | | | |
| Age | Total | ISCED 01 | ISCED 2 | ISCED 34 | ISCED 56 | Total | ISCED 01 | ISCED 2 | ISCED 34 | ISCED 56 |
| 27 | 98066 | 4421 | 15875 | 48229 | 29540 | 98056 | 3595 | 11982 | 44335 | 38144 |
| 28 | 98929 | 4594 | 16256 | 47753 | 30326 | 98973 | 3702 | 12327 | 45134 | 37810 |
| 29 | 97955 | 4681 | 16335 | 46392 | 30547 | 97939 | 3736 | 12428 | 45043 | 36732 |
| 30 | 99831 | 4906 | 16891 | 46371 | 31662 | 98851 | 3844 | 12776 | 45846 | 36385 |
| 31 | 100439 | 5072 | 17239 | 45740 | 32388 | 100640 | 3988 | 13244 | 47067 | 36341 |
| 32 | 105391 | 5465 | 18346 | 47036 | 34545 | 105415 | 4255 | 14120 | 49709 | 37330 |
| 33 | 109403 | 5789 | 19192 | 48868 | 35553 | 109817 | 4782 | 15440 | 51895 | 37700 |
| 34 | 118959 | 6422 | 21029 | 53183 | 38325 | 119402 | 5578 | 17581 | 56544 | 39698 |
| 35 | 126059 | 6940 | 22455 | 56405 | 40259 | 124572 | 6216 | 19170 | 59117 | 40069 |
| 36 | 132235 | 7421 | 23734 | 59220 | 41860 | 130215 | 6911 | 20905 | 61925 | 40474 |
| 37 | 135864 | 7770 | 24569 | 60897 | 42628 | 132940 | 7478 | 22226 | 63354 | 39882 |
| 38 | 130123 | 7943 | 23878 | 58159 | 40143 | 127520 | 7569 | 22149 | 60354 | 37448 |
| 39 | 129656 | 8414 | 24139 | 57787 | 39317 | 126292 | 7888 | 22756 | 59360 | 36288 |
| 40 | 130545 | 8974 | 24653 | 58018 | 38900 | 126904 | 8320 | 23691 | 59233 | 35660 |
| 41 | 133354 | 9681 | 25540 | 59097 | 39035 | 129150 | 8867 | 24950 | 59859 | 35473 |
| 42 | 135432 | 10354 | 26299 | 59847 | 38932 | 131866 | 9463 | 26332 | 60687 | 35384 |
| 43 | 133575 | 10021 | 25865 | 58198 | 39491 | 129926 | 9704 | 26928 | 58540 | 34754 |
| 44 | 130757 | 9623 | 25247 | 56159 | 39728 | 128315 | 9958 | 27566 | 56576 | 34215 |
| 45 | 129562 | 9350 | 24944 | 54843 | 40425 | 127404 | 10260 | 28335 | 54945 | 33864 |
| 46 | 126424 | 8943 | 24270 | 52730 | 40481 | 124049 | 10353 | 28528 | 52301 | 32868 |
| 47 | 125088 | 8669 | 23944 | 51398 | 41077 | 123536 | 10671 | 29345 | 50892 | 32628 |
| 48 | 121941 | 9113 | 23377 | 49882 | 39569 | 120267 | 11241 | 29109 | 48470 | 31447 |
| 49 | 119389 | 9570 | 22922 | 48621 | 38276 | 118109 | 11876 | 29117 | 46545 | 30571 |
| 50 | 117826 | 10084 | 22656 | 47770 | 37317 | 115944 | 12480 | 29104 | 44656 | 29704 |
| 51 | 114457 | 10416 | 22041 | 46196 | 35804 | 113979 | 13077 | 29123 | 42880 | 28900 |
| 52 | 113404 | 10935 | 21871 | 45564 | 35034 | 111886 | 13630 | 29090 | 41093 | 28073 |
| 53 | 111856 | 11181 | 21604 | 44408 | 34663 | 110218 | 13771 | 30100 | 39878 | 26469 |
| 54 | 112296 | 11622 | 21722 | 44046 | 34907 | 110362 | 14133 | 31585 | 39327 | 25316 |
| 55 | 108488 | 11610 | 21016 | 42034 | 33827 | 106394 | 13957 | 31844 | 37332 | 23261 |
| 56 | 108904 | 12039 | 21128 | 41675 | 34061 | 107012 | 14373 | 33430 | 36965 | 22244 |
| 57 | 110398 | 12594 | 21450 | 41719 | 34635 | 108284 | 14882 | 35246 | 36813 | 21344 |
| 58 | 113840 | 12896 | 22551 | 43398 | 34995 | 111207 | 15822 | 37536 | 36871 | 20977 |
| 59 | 118996 | 13385 | 24025 | 45758 | 35827 | 117519 | 17290 | 41081 | 37976 | 21172 |
| 60 | 122767 | 13712 | 25253 | 47616 | 36186 | 120302 | 18282 | 43502 | 37864 | 20654 |
| 61 | 87335 | 9685 | 18297 | 34163 | 25190 | 86492 | 13563 | 32317 | 26495 | 14116 |
| 62 | 90574 | 9971 | 19320 | 35731 | 25552 | 90199 | 14582 | 34788 | 26872 | 13957 |
| 63 | 85380 | 9851 | 18319 | 33431 | 23779 | 85010 | 14257 | 33536 | 24443 | 12775 |
| 64 | 78219 | 9437 | 16881 | 30398 | 21503 | 78260 | 13598 | 31562 | 21688 | 11411 |
| 65 | 73599 | 9269 | 15976 | 28386 | 19967 | 74335 | 13365 | 30634 | 19828 | 10507 |
| 66 | 74069 | 9719 | 16171 | 28350 | 19828 | 76211 | 14164 | 32079 | 19536 | 10433 |
| 67 | 69635 | 9505 | 15291 | 26449 | 18390 | 73331 | 14072 | 31513 | 18035 | 9711 |
| 68 | 67084 | 9220 | 15625 | 24942 | 17297 | 71084 | 14479 | 30630 | 17256 | 8720 |
| 69 | 61465 | 8506 | 15136 | 22359 | 15464 | 66679 | 14368 | 28809 | 15973 | 7529 |
| 70 | 59709 | 8319 | 15500 | 21241 | 14649 | 65815 | 14958 | 28512 | 15556 | 6789 |
| 71 | 56592 | 7939 | 15445 | 19678 | 13530 | 63791 | 15251 | 27709 | 14874 | 5957 |
| 72 | 53868 | 7607 | 15420 | 18299 | 12542 | 62625 | 15711 | 27276 | 14402 | 5237 |
| 73 | 50928 | 7470 | 14581 | 17617 | 11260 | 60736 | 15474 | 26561 | 13648 | 5053 |
| 74 | 49735 | 7567 | 14242 | 17513 | 10412 | 61166 | 15822 | 26858 | 13424 | 5063 |

| | Male | | | | | Female | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Education categories | | | | | Education categories | | | |
| Age | Total | ISCED 01 | ISCED 2 | ISCED 34 | ISCED 56 | Total | ISCED 01 | ISCED 2 | ISCED 34 | ISCED 56 |
| 75 | 46368 | 7308 | 13280 | 16616 | 9163 | 58891 | 15463 | 25964 | 12615 | 4849 |
| 76 | 44358 | 7234 | 12707 | 16172 | 8246 | 58361 | 15551 | 25834 | 12195 | 4780 |
| 77 | 39800 | 6708 | 11403 | 14757 | 6931 | 54700 | 14789 | 24311 | 11143 | 4457 |
| 78 | 36968 | 6161 | 10406 | 13696 | 6705 | 53143 | 14466 | 23755 | 10863 | 4058 |
| 79 | 33039 | 5444 | 9134 | 12231 | 6231 | 49425 | 13546 | 22220 | 10138 | 3522 |
| 80 | 30415 | 4954 | 8255 | 11251 | 5955 | 47895 | 13215 | 21654 | 9858 | 3168 |
| 81 | 27197 | 4378 | 7245 | 10052 | 5521 | 45415 | 12614 | 20649 | 9380 | 2772 |
| 82 | 137231 | 21832 | 89218 | -2669 | 28850 | 312689 | 87429 | 200824 | 6950 | 17486 |
| Total | 8088514 | 2150869 | 1614325 | 2640248 | 1683072 | 8269478 | 2280677 | 2056206 | 2499567 | 1433028 |

Source: Author's calculations based on Statistics Netherlands (2008) and LFS Netherlands (2006)

**ANNEX B: TRANSITION PROBABILITIES**

**Table B. 1: Cumulative proportions and transition probabilities, 1995-2000, 2000-2003, and 2004-2007, Males, Italy**

| | | Cumulative Proportions | | | | Transition Probabilities | | |
|---|---|---|---|---|---|---|---|---|
| | | ISCED 01+ | ISCED 2+ | ISCED 34+ | ISCED 56+ | From ISCED 01 to ISCED 2 | From ISCED 2 to ISCED 34 | From ISCED 34 to ISCED 56 |
| 1995-1999 | 13 | 1.000 | 0.206 | 0.000 | 0.000 | 0.206 | 0.000 | 0.000 |
| | 14 | 1.000 | 0.687 | 0.000 | 0.000 | 0.481 | 0.000 | 0.000 |
| | 15 | 1.000 | 0.912 | 0.005 | 0.000 | 0.225 | 0.005 | 0.000 |
| | 16 | 1.000 | 0.941 | 0.012 | 0.000 | 0.029 | 0.007 | 0.000 |
| | 17 | 1.000 | 0.957 | 0.042 | 0.000 | 0.016 | 0.030 | 0.000 |
| | 18 | 1.000 | 0.966 | 0.127 | 0.000 | 0.009 | 0.085 | 0.000 |
| | 19 | 1.000 | 0.966 | 0.393 | 0.000 | 0.000 | 0.266 | 0.000 |
| | 20 | 1.000 | 0.966 | 0.542 | 0.001 | 0.000 | 0.149 | 0.001 |
| | 21 | 1.000 | 0.966 | 0.597 | 0.004 | 0.000 | 0.055 | 0.002 |
| | 22 | 1.000 | 0.966 | 0.598 | 0.005 | 0.000 | 0.001 | 0.001 |
| | 23 | 1.000 | 0.966 | 0.598 | 0.012 | 0.000 | 0.000 | 0.007 |
| | 24 | 1.000 | 0.966 | 0.598 | 0.018 | 0.000 | 0.000 | 0.006 |
| | 25 | 1.000 | 0.966 | 0.598 | 0.039 | 0.000 | 0.000 | 0.021 |
| | 26 | 1.000 | 0.966 | 0.598 | 0.058 | 0.000 | 0.000 | 0.019 |
| | 27 | 1.000 | 0.966 | 0.598 | 0.077 | 0.000 | 0.000 | 0.018 |
| | 28 | 1.000 | 0.966 | 0.598 | 0.079 | 0.000 | 0.000 | 0.003 |
| | 29 | 1.000 | 0.966 | 0.598 | 0.082 | 0.000 | 0.000 | 0.003 |
| | 30 | 1.000 | 0.966 | 0.598 | 0.091 | 0.000 | 0.000 | 0.009 |
| | 31 | 1.000 | 0.966 | 0.598 | 0.096 | 0.000 | 0.000 | 0.004 |
| | 32 | 1.000 | 0.966 | 0.598 | 0.097 | 0.000 | 0.000 | 0.001 |
| | 33 | 1.000 | 0.966 | 0.598 | 0.098 | 0.000 | 0.000 | 0.001 |
| | 34 | 1.000 | 0.966 | 0.598 | 0.099 | 0.000 | 0.000 | 0.001 |
| | 35 | 1.000 | 0.966 | 0.598 | 0.100 | 0.000 | 0.000 | 0.000 |
| | 36 | 1.000 | 0.966 | 0.598 | 0.101 | 0.000 | 0.000 | 0.001 |
| | 37 | 1.000 | 0.966 | 0.598 | 0.102 | 0.000 | 0.000 | 0.001 |
| | 38 | 1.000 | 0.966 | 0.598 | 0.108 | 0.000 | 0.000 | 0.006 |
| | 39 | 1.000 | 0.966 | 0.598 | 0.109 | 0.000 | 0.000 | 0.001 |
| | 40 | 1.000 | 0.966 | 0.598 | 0.122 | 0.000 | 0.000 | 0.012 |
| 2000-2003 | 13 | 1.000 | 0.181 | 0.000 | 0.000 | 0.181 | 0.000 | 0.000 |
| | 14 | 1.000 | 0.702 | 0.000 | 0.000 | 0.521 | 0.000 | 0.000 |
| | 15 | 1.000 | 0.927 | 0.005 | 0.000 | 0.225 | 0.005 | 0.000 |
| | 16 | 1.000 | 0.943 | 0.015 | 0.000 | 0.016 | 0.010 | 0.000 |
| | 17 | 1.000 | 0.963 | 0.046 | 0.000 | 0.020 | 0.031 | 0.000 |
| | 18 | 1.000 | 0.967 | 0.142 | 0.000 | 0.004 | 0.096 | 0.000 |
| | 19 | 1.000 | 0.969 | 0.443 | 0.000 | 0.002 | 0.301 | 0.000 |
| | 20 | 1.000 | 0.971 | 0.609 | 0.001 | 0.002 | 0.165 | 0.001 |
| | 21 | 1.000 | 0.972 | 0.655 | 0.005 | 0.001 | 0.046 | 0.004 |
| | 22 | 1.000 | 0.972 | 0.662 | 0.006 | 0.000 | 0.007 | 0.001 |
| | 23 | 1.000 | 0.972 | 0.662 | 0.015 | 0.000 | 0.000 | 0.010 |
| | 24 | 1.000 | 0.972 | 0.662 | 0.025 | 0.000 | 0.000 | 0.010 |
| | 25 | 1.000 | 0.972 | 0.662 | 0.045 | 0.000 | 0.000 | 0.019 |
| | 26 | 1.000 | 0.972 | 0.662 | 0.073 | 0.000 | 0.000 | 0.028 |
| | 27 | 1.000 | 0.972 | 0.662 | 0.094 | 0.000 | 0.000 | 0.021 |
| | 28 | 1.000 | 0.972 | 0.662 | 0.111 | 0.000 | 0.000 | 0.017 |
| | 29 | 1.000 | 0.972 | 0.662 | 0.121 | 0.000 | 0.000 | 0.010 |
| | 30 | 1.000 | 0.972 | 0.662 | 0.121 | 0.000 | 0.000 | 0.000 |
| | 31 | 1.000 | 0.972 | 0.662 | 0.121 | 0.000 | 0.000 | 0.000 |
| | 32 | 1.000 | 0.972 | 0.662 | 0.121 | 0.000 | 0.000 | 0.000 |
| | 33 | 1.000 | 0.972 | 0.662 | 0.121 | 0.000 | 0.000 | 0.000 |

| | | Cumulative Proportions | | | | Transition Probabilities | | |
|---|---|---|---|---|---|---|---|---|
| | | ISCED 01+ | ISCED 2+ | ISCED 34+ | ISCED 56+ | From ISCED 01 to ISCED 2 | From ISCED 2 to ISCED 34 | From ISCED 34 to ISCED 56 |
| | 34 | 1.000 | 0.972 | 0.662 | 0.121 | 0.000 | 0.000 | 0.000 |
| | 35 | 1.000 | 0.972 | 0.662 | 0.121 | 0.000 | 0.000 | 0.000 |
| | 36 | 1.000 | 0.972 | 0.662 | 0.121 | 0.000 | 0.000 | 0.000 |
| | 37 | 1.000 | 0.972 | 0.662 | 0.121 | 0.000 | 0.000 | 0.000 |
| | 38 | 1.000 | 0.972 | 0.662 | 0.121 | 0.000 | 0.000 | 0.000 |
| | 39 | 1.000 | 0.972 | 0.662 | 0.121 | 0.000 | 0.000 | 0.000 |
| | 40 | 1.000 | 0.972 | 0.662 | 0.121 | 0.000 | 0.000 | 0.000 |
| **2004-2007** | 13 | 1.000 | 0.191 | 0.000 | 0.000 | 0.191 | 0.000 | 0.000 |
| | 14 | 1.000 | 0.695 | 0.000 | 0.000 | 0.504 | 0.000 | 0.000 |
| | 15 | 1.000 | 0.946 | 0.004 | 0.000 | 0.250 | 0.004 | 0.000 |
| | 16 | 1.000 | 0.964 | 0.008 | 0.000 | 0.019 | 0.004 | 0.000 |
| | 17 | 1.000 | 0.977 | 0.045 | 0.000 | 0.013 | 0.037 | 0.000 |
| | 18 | 1.000 | 0.981 | 0.147 | 0.000 | 0.004 | 0.101 | 0.000 |
| | 19 | 1.000 | 0.981 | 0.479 | 0.000 | 0.001 | 0.332 | 0.000 |
| | 20 | 1.000 | 0.982 | 0.652 | 0.001 | 0.001 | 0.173 | 0.001 |
| | 21 | 1.000 | 0.982 | 0.697 | 0.006 | 0.000 | 0.045 | 0.005 |
| | 22 | 1.000 | 0.982 | 0.699 | 0.025 | 0.000 | 0.002 | 0.019 |
| | 23 | 1.000 | 0.982 | 0.709 | 0.046 | 0.000 | 0.010 | 0.021 |
| | 24 | 1.000 | 0.982 | 0.709 | 0.067 | 0.000 | 0.000 | 0.020 |
| | 25 | 1.000 | 0.982 | 0.709 | 0.079 | 0.000 | 0.000 | 0.012 |
| | 26 | 1.000 | 0.982 | 0.709 | 0.105 | 0.000 | 0.000 | 0.026 |
| | 27 | 1.000 | 0.982 | 0.709 | 0.123 | 0.000 | 0.000 | 0.018 |
| | 28 | 1.000 | 0.982 | 0.709 | 0.128 | 0.000 | 0.000 | 0.005 |
| | 29 | 1.000 | 0.982 | 0.709 | 0.138 | 0.000 | 0.000 | 0.010 |
| | 30 | 1.000 | 0.982 | 0.709 | 0.138 | 0.000 | 0.000 | 0.000 |
| | 31 | 1.000 | 0.982 | 0.709 | 0.138 | 0.000 | 0.000 | 0.000 |
| | 32 | 1.000 | 0.982 | 0.709 | 0.138 | 0.000 | 0.000 | 0.000 |
| | 33 | 1.000 | 0.982 | 0.709 | 0.138 | 0.000 | 0.000 | 0.000 |
| | 34 | 1.000 | 0.982 | 0.709 | 0.138 | 0.000 | 0.000 | 0.000 |
| | 35 | 1.000 | 0.982 | 0.709 | 0.138 | 0.000 | 0.000 | 0.000 |
| | 36 | 1.000 | 0.982 | 0.709 | 0.138 | 0.000 | 0.000 | 0.000 |
| | 37 | 1.000 | 0.982 | 0.709 | 0.138 | 0.000 | 0.000 | 0.000 |
| | 38 | 1.000 | 0.982 | 0.709 | 0.138 | 0.000 | 0.000 | 0.000 |
| | 39 | 1.000 | 0.982 | 0.709 | 0.138 | 0.000 | 0.000 | 0.000 |
| | 40 | 1.000 | 0.982 | 0.709 | 0.138 | 0.000 | 0.000 | 0.000 |

Source: Author's calculations

**Table B. 2: Cumulative proportions and transition probabilities, 1995-2000, 2000-2003, and 2004-2007, Females, Italy**

| | | Cumulative Proportions | | | | Transition Probabilities | | |
|---|---|---|---|---|---|---|---|---|
| | | ISCED 01+ | ISCED 2+ | ISCED 34+ | ISCED 56+ | From ISCED 01 to ISCED 2 | From ISCED 2 to ISCED 34 | From ISCED 34 to ISCED 56 |
| **1995-1999** | 13 | 1.000 | 0.230 | 0.000 | 0.000 | 0.230 | 0.000 | 0.000 |
| | 14 | 1.000 | 0.740 | 0.000 | 0.000 | 0.510 | 0.000 | 0.000 |
| | 15 | 1.000 | 0.930 | 0.005 | 0.000 | 0.190 | 0.005 | 0.000 |
| | 16 | 1.000 | 0.950 | 0.014 | 0.000 | 0.020 | 0.008 | 0.000 |
| | 17 | 1.000 | 0.957 | 0.048 | 0.000 | 0.008 | 0.035 | 0.000 |
| | 18 | 1.000 | 0.962 | 0.154 | 0.000 | 0.005 | 0.106 | 0.000 |
| | 19 | 1.000 | 0.966 | 0.507 | 0.000 | 0.004 | 0.353 | 0.000 |
| | 20 | 1.000 | 0.967 | 0.655 | 0.001 | 0.001 | 0.149 | 0.001 |

| | | Cumulative Proportions | | | | Transition Probabilities | | |
|---|---|---|---|---|---|---|---|---|
| | | ISCED 01+ | ISCED 2+ | ISCED 34+ | ISCED 56+ | From ISCED 01 to ISCED 2 | From ISCED 2 to ISCED 34 | From ISCED 34 to ISCED 56 |
| | 21 | 1.000 | 0.967 | 0.681 | 0.006 | 0.000 | 0.025 | 0.005 |
| | 22 | 1.000 | 0.967 | 0.681 | 0.009 | 0.000 | 0.000 | 0.003 |
| | 23 | 1.000 | 0.967 | 0.681 | 0.019 | 0.000 | 0.000 | 0.010 |
| | 24 | 1.000 | 0.967 | 0.681 | 0.033 | 0.000 | 0.000 | 0.015 |
| | 25 | 1.000 | 0.967 | 0.681 | 0.054 | 0.000 | 0.000 | 0.021 |
| | 26 | 1.000 | 0.967 | 0.681 | 0.079 | 0.000 | 0.000 | 0.024 |
| | 27 | 1.000 | 0.967 | 0.681 | 0.095 | 0.000 | 0.000 | 0.016 |
| | 28 | 1.000 | 0.967 | 0.681 | 0.096 | 0.000 | 0.000 | 0.001 |
| | 29 | 1.000 | 0.967 | 0.681 | 0.098 | 0.000 | 0.000 | 0.002 |
| | 30 | 1.000 | 0.967 | 0.681 | 0.100 | 0.000 | 0.000 | 0.002 |
| | 31 | 1.000 | 0.967 | 0.681 | 0.101 | 0.000 | 0.000 | 0.001 |
| | 32 | 1.000 | 0.967 | 0.681 | 0.101 | 0.000 | 0.000 | 0.000 |
| | 33 | 1.000 | 0.967 | 0.681 | 0.101 | 0.000 | 0.000 | 0.000 |
| | 34 | 1.000 | 0.967 | 0.681 | 0.101 | 0.000 | 0.000 | 0.000 |
| | 35 | 1.000 | 0.967 | 0.681 | 0.102 | 0.000 | 0.000 | 0.000 |
| | 36 | 1.000 | 0.967 | 0.681 | 0.102 | 0.000 | 0.000 | 0.000 |
| | 37 | 1.000 | 0.967 | 0.681 | 0.102 | 0.000 | 0.000 | 0.000 |
| | 38 | 1.000 | 0.967 | 0.681 | 0.102 | 0.000 | 0.000 | 0.000 |
| | 39 | 1.000 | 0.967 | 0.681 | 0.103 | 0.000 | 0.000 | 0.000 |
| | 40 | 1.000 | 0.967 | 0.681 | 0.103 | 0.000 | 0.000 | 0.000 |
| **2000-2003** | 13 | 1.000 | 0.182 | 0.000 | 0.000 | 0.182 | 0.000 | 0.000 |
| | 14 | 1.000 | 0.740 | 0.000 | 0.000 | 0.558 | 0.000 | 0.000 |
| | 15 | 1.000 | 0.940 | 0.003 | 0.000 | 0.200 | 0.003 | 0.000 |
| | 16 | 1.000 | 0.943 | 0.014 | 0.000 | 0.004 | 0.010 | 0.000 |
| | 17 | 1.000 | 0.969 | 0.052 | 0.000 | 0.026 | 0.039 | 0.000 |
| | 18 | 1.000 | 0.969 | 0.155 | 0.000 | 0.000 | 0.103 | 0.000 |
| | 19 | 1.000 | 0.970 | 0.538 | 0.000 | 0.000 | 0.382 | 0.000 |
| | 20 | 1.000 | 0.972 | 0.714 | 0.002 | 0.002 | 0.176 | 0.002 |
| | 21 | 1.000 | 0.972 | 0.745 | 0.007 | 0.000 | 0.032 | 0.005 |
| | 22 | 1.000 | 0.972 | 0.748 | 0.010 | 0.000 | 0.002 | 0.003 |
| | 23 | 1.000 | 0.972 | 0.748 | 0.024 | 0.000 | 0.000 | 0.014 |
| | 24 | 1.000 | 0.972 | 0.748 | 0.050 | 0.000 | 0.000 | 0.026 |
| | 25 | 1.000 | 0.972 | 0.748 | 0.083 | 0.000 | 0.000 | 0.033 |
| | 26 | 1.000 | 0.972 | 0.748 | 0.111 | 0.000 | 0.000 | 0.028 |
| | 27 | 1.000 | 0.972 | 0.748 | 0.136 | 0.000 | 0.000 | 0.025 |
| | 28 | 1.000 | 0.972 | 0.748 | 0.147 | 0.000 | 0.000 | 0.011 |
| | 29 | 1.000 | 0.972 | 0.748 | 0.147 | 0.000 | 0.000 | 0.000 |
| | 30 | 1.000 | 0.972 | 0.748 | 0.147 | 0.000 | 0.000 | 0.000 |
| | 31 | 1.000 | 0.972 | 0.748 | 0.147 | 0.000 | 0.000 | 0.000 |
| | 32 | 1.000 | 0.972 | 0.748 | 0.147 | 0.000 | 0.000 | 0.000 |
| | 33 | 1.000 | 0.972 | 0.748 | 0.147 | 0.000 | 0.000 | 0.000 |
| | 34 | 1.000 | 0.972 | 0.748 | 0.147 | 0.000 | 0.000 | 0.000 |
| | 35 | 1.000 | 0.972 | 0.748 | 0.147 | 0.000 | 0.000 | 0.000 |
| | 36 | 1.000 | 0.972 | 0.748 | 0.147 | 0.000 | 0.000 | 0.000 |
| | 37 | 1.000 | 0.972 | 0.748 | 0.147 | 0.000 | 0.000 | 0.000 |
| | 38 | 1.000 | 0.972 | 0.748 | 0.147 | 0.000 | 0.000 | 0.000 |
| | 39 | 1.000 | 0.972 | 0.748 | 0.147 | 0.000 | 0.000 | 0.000 |
| | 40 | 1.000 | 0.972 | 0.748 | 0.147 | 0.000 | 0.000 | 0.000 |
| **2004-2007** | 13 | 1.000 | 0.208 | 0.000 | 0.000 | 0.208 | 0.000 | 0.000 |
| | 14 | 1.000 | 0.715 | 0.000 | 0.000 | 0.507 | 0.000 | 0.000 |
| | 15 | 1.000 | 0.962 | 0.006 | 0.000 | 0.247 | 0.006 | 0.000 |
| | 16 | 1.000 | 0.973 | 0.010 | 0.000 | 0.011 | 0.004 | 0.000 |
| | 17 | 1.000 | 0.986 | 0.045 | 0.000 | 0.013 | 0.035 | 0.000 |

| | | Cumulative Proportions | | | | Transition Probabilities | | |
|---|---|---|---|---|---|---|---|---|
| | | ISCED 01+ | ISCED 2+ | ISCED 34+ | ISCED 56+ | From ISCED 01 to ISCED 2 | From ISCED 2 to ISCED 34 | From ISCED 34 to ISCED 56 |
| | 18 | 1.000 | 0.987 | 0.176 | 0.000 | 0.001 | 0.131 | 0.000 |
| | 19 | 1.000 | 0.987 | 0.607 | 0.001 | 0.000 | 0.432 | 0.001 |
| | 20 | 1.000 | 0.987 | 0.761 | 0.003 | 0.000 | 0.154 | 0.002 |
| | 21 | 1.000 | 0.987 | 0.787 | 0.007 | 0.000 | 0.026 | 0.004 |
| | 22 | 1.000 | 0.987 | 0.787 | 0.044 | 0.000 | 0.000 | 0.037 |
| | 23 | 1.000 | 0.987 | 0.787 | 0.084 | 0.000 | 0.000 | 0.040 |
| | 24 | 1.000 | 0.987 | 0.787 | 0.109 | 0.000 | 0.000 | 0.025 |
| | 25 | 1.000 | 0.987 | 0.787 | 0.143 | 0.000 | 0.000 | 0.035 |
| | 26 | 1.000 | 0.987 | 0.787 | 0.164 | 0.000 | 0.000 | 0.021 |
| | 27 | 1.000 | 0.987 | 0.787 | 0.176 | 0.000 | 0.000 | 0.012 |
| | 28 | 1.000 | 0.987 | 0.787 | 0.185 | 0.000 | 0.000 | 0.010 |
| | 29 | 1.000 | 0.987 | 0.787 | 0.188 | 0.000 | 0.000 | 0.003 |
| | 30 | 1.000 | 0.987 | 0.787 | 0.192 | 0.000 | 0.000 | 0.003 |
| | 31 | 1.000 | 0.987 | 0.787 | 0.192 | 0.000 | 0.000 | 0.001 |
| | 32 | 1.000 | 0.987 | 0.787 | 0.193 | 0.000 | 0.000 | 0.000 |
| | 33 | 1.000 | 0.987 | 0.787 | 0.193 | 0.000 | 0.000 | 0.000 |
| | 34 | 1.000 | 0.987 | 0.787 | 0.193 | 0.000 | 0.000 | 0.000 |
| | 35 | 1.000 | 0.987 | 0.787 | 0.193 | 0.000 | 0.000 | 0.000 |
| | 36 | 1.000 | 0.987 | 0.787 | 0.193 | 0.000 | 0.000 | 0.000 |
| | 37 | 1.000 | 0.987 | 0.787 | 0.193 | 0.000 | 0.000 | 0.000 |
| | 38 | 1.000 | 0.987 | 0.787 | 0.193 | 0.000 | 0.000 | 0.000 |
| | 39 | 1.000 | 0.987 | 0.787 | 0.193 | 0.000 | 0.000 | 0.000 |
| | 40 | 1.000 | 0.987 | 0.787 | 0.193 | 0.000 | 0.000 | 0.000 |

Source: Author's calculations

**Table B. 3: Cumulative proportions and transition probabilities, 1996-2000 and 2001-2006, Males, Netherlands**

| | | Cumulative Proportions | | | | Transition Probabilities | | |
|---|---|---|---|---|---|---|---|---|
| | | ISCED 01+ | ISCED 2+ | ISCED 34+ | ISCED 56+ | From ISCED 01 to ISCED 2 | From ISCED 2 to ISCED 34 | From ISCED 34 to ISCED 56 |
| **1996-2000** | 13 | 1.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 14 | 1.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 15 | 1.000 | 0.110 | 0.000 | 0.000 | 0.110 | 0.000 | 0.000 |
| | 16 | 1.000 | 0.310 | 0.043 | 0.000 | 0.201 | 0.043 | 0.000 |
| | 17 | 1.000 | 0.579 | 0.113 | 0.000 | 0.269 | 0.070 | 0.000 |
| | 18 | 1.000 | 0.801 | 0.285 | 0.000 | 0.222 | 0.172 | 0.000 |
| | 19 | 1.000 | 0.916 | 0.457 | 0.036 | 0.115 | 0.172 | 0.036 |
| | 20 | 1.000 | 0.937 | 0.580 | 0.072 | 0.021 | 0.124 | 0.036 |
| | 21 | 1.000 | 0.948 | 0.662 | 0.116 | 0.011 | 0.082 | 0.043 |
| | 22 | 1.000 | 0.952 | 0.722 | 0.151 | 0.004 | 0.060 | 0.035 |
| | 23 | 1.000 | 0.955 | 0.736 | 0.185 | 0.003 | 0.014 | 0.035 |
| | 24 | 1.000 | 0.957 | 0.757 | 0.231 | 0.003 | 0.021 | 0.046 |
| | 25 | 1.000 | 0.957 | 0.757 | 0.249 | 0.000 | 0.000 | 0.018 |
| | 26 | 1.000 | 0.957 | 0.757 | 0.259 | 0.000 | 0.000 | 0.010 |
| | 27 | 1.000 | 0.957 | 0.757 | 0.273 | 0.000 | 0.000 | 0.014 |
| | 28 | 1.000 | 0.957 | 0.757 | 0.277 | 0.000 | 0.000 | 0.004 |
| | 29 | 1.000 | 0.957 | 0.757 | 0.277 | 0.000 | 0.000 | 0.004 |
| | 30 | 1.000 | 0.957 | 0.757 | 0.276 | 0.000 | 0.000 | 0.004 |
| | 31 | 1.000 | 0.957 | 0.757 | 0.276 | 0.000 | 0.000 | 0.004 |

| | | Cumulative Proportions | | | | Transition Probabilities | | |
|---|---|---|---|---|---|---|---|---|
| | | ISCED 01+ | ISCED 2+ | ISCED 34+ | ISCED 56+ | From ISCED 01 to ISCED 2 | From ISCED 2 to ISCED 34 | From ISCED 34 to ISCED 56 |
| | 32 | 1.000 | 0.957 | 0.757 | 0.277 | 0.000 | 0.000 | 0.004 |
| | 33 | 1.000 | 0.957 | 0.757 | 0.279 | 0.000 | 0.000 | 0.004 |
| | 34 | 1.000 | 0.957 | 0.757 | 0.281 | 0.000 | 0.000 | 0.004 |
| | 35 | 1.000 | 0.957 | 0.757 | 0.283 | 0.000 | 0.000 | 0.004 |
| | 36 | 1.000 | 0.957 | 0.757 | 0.285 | 0.000 | 0.000 | 0.004 |
| | 37 | 1.000 | 0.957 | 0.757 | 0.290 | 0.000 | 0.000 | 0.004 |
| | 38 | 1.000 | 0.957 | 0.757 | 0.292 | 0.000 | 0.000 | 0.004 |
| | 39 | 1.000 | 0.957 | 0.757 | 0.294 | 0.000 | 0.000 | 0.004 |
| | 40 | 1.000 | 0.957 | 0.757 | 0.294 | 0.000 | 0.000 | 0.000 |
| **2001-2006** | 13 | 1.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 14 | 1.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 15 | 1.000 | 0.229 | 0.000 | 0.000 | 0.229 | 0.000 | 0.000 |
| | 16 | 1.000 | 0.531 | 0.000 | 0.000 | 0.302 | 0.000 | 0.000 |
| | 17 | 1.000 | 0.833 | 0.090 | 0.000 | 0.302 | 0.090 | 0.000 |
| | 18 | 1.000 | 0.932 | 0.280 | 0.000 | 0.099 | 0.190 | 0.000 |
| | 19 | 1.000 | 0.944 | 0.439 | 0.004 | 0.012 | 0.160 | 0.004 |
| | 20 | 1.000 | 0.949 | 0.585 | 0.016 | 0.006 | 0.145 | 0.011 |
| | 21 | 1.000 | 0.959 | 0.672 | 0.037 | 0.010 | 0.088 | 0.021 |
| | 22 | 1.000 | 0.963 | 0.721 | 0.068 | 0.004 | 0.049 | 0.032 |
| | 23 | 1.000 | 0.963 | 0.756 | 0.151 | 0.000 | 0.035 | 0.083 |
| | 24 | 1.000 | 0.963 | 0.778 | 0.218 | 0.000 | 0.022 | 0.067 |
| | 25 | 1.000 | 0.963 | 0.789 | 0.244 | 0.000 | 0.011 | 0.026 |
| | 26 | 1.000 | 0.963 | 0.790 | 0.270 | 0.000 | 0.001 | 0.026 |
| | 27 | 1.000 | 0.963 | 0.790 | 0.295 | 0.000 | 0.000 | 0.026 |
| | 28 | 1.000 | 0.963 | 0.790 | 0.302 | 0.000 | 0.000 | 0.006 |
| | 29 | 1.000 | 0.963 | 0.790 | 0.306 | 0.000 | 0.000 | 0.004 |
| | 30 | 1.000 | 0.963 | 0.790 | 0.308 | 0.000 | 0.000 | 0.003 |
| | 31 | 1.000 | 0.963 | 0.790 | 0.311 | 0.000 | 0.000 | 0.003 |
| | 32 | 1.000 | 0.963 | 0.790 | 0.314 | 0.000 | 0.000 | 0.003 |
| | 33 | 1.000 | 0.963 | 0.790 | 0.314 | 0.000 | 0.000 | 0.000 |
| | 34 | 1.000 | 0.963 | 0.790 | 0.314 | 0.000 | 0.000 | 0.000 |
| | 35 | 1.000 | 0.963 | 0.790 | 0.314 | 0.000 | 0.000 | 0.000 |
| | 36 | 1.000 | 0.963 | 0.790 | 0.314 | 0.000 | 0.000 | 0.000 |
| | 37 | 1.000 | 0.963 | 0.790 | 0.314 | 0.000 | 0.000 | 0.000 |
| | 38 | 1.000 | 0.963 | 0.790 | 0.314 | 0.000 | 0.000 | 0.000 |
| | 39 | 1.000 | 0.963 | 0.790 | 0.314 | 0.000 | 0.000 | 0.000 |
| | 40 | 1.000 | 0.963 | 0.790 | 0.314 | 0.000 | 0.000 | 0.000 |

Source: Author's calculations

**Table B. 4: Cumulative proportions and transition probabilities, 1996-2000 and 2001-2006, Females, Netherlands**

| | | Cumulative Proportions | | | | Transition Probabilities | | |
|---|---|---|---|---|---|---|---|---|
| | | ISCED 01+ | ISCED 2+ | ISCED 34+ | ISCED 56+ | From ISCED 01 to ISCED 2 | From ISCED 2 to ISCED 34 | From ISCED 34 to ISCED 56 |
| **1996-2000** | 13 | 1.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 14 | 1.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 15 | 1.000 | 0.102 | 0.000 | 0.000 | 0.102 | 0.000 | 0.000 |
| | 16 | 1.000 | 0.324 | 0.056 | 0.000 | 0.222 | 0.056 | 0.000 |
| | 17 | 1.000 | 0.617 | 0.168 | 0.000 | 0.293 | 0.112 | 0.000 |

| | | Cumulative Proportions | | | | Transition Probabilities | | |
|---|---|---|---|---|---|---|---|---|
| | | **ISCED 01+** | **ISCED 2+** | **ISCED 34+** | **ISCED 56+** | **From ISCED 01 to ISCED 2** | **From ISCED 2 to ISCED 34** | **From ISCED 34 to ISCED 56** |
| | 18 | 1.000 | 0.834 | 0.377 | 0.005 | 0.217 | 0.210 | 0.005 |
| | 19 | 1.000 | 0.928 | 0.567 | 0.047 | 0.094 | 0.190 | 0.042 |
| | 20 | 1.000 | 0.949 | 0.682 | 0.062 | 0.021 | 0.115 | 0.015 |
| | 21 | 1.000 | 0.958 | 0.759 | 0.116 | 0.009 | 0.077 | 0.054 |
| | 22 | 1.000 | 0.958 | 0.772 | 0.176 | 0.000 | 0.013 | 0.060 |
| | 23 | 1.000 | 0.958 | 0.781 | 0.225 | 0.000 | 0.009 | 0.049 |
| | 24 | 1.000 | 0.958 | 0.788 | 0.275 | 0.000 | 0.007 | 0.050 |
| | 25 | 1.000 | 0.958 | 0.788 | 0.280 | 0.000 | 0.000 | 0.005 |
| | 26 | 1.000 | 0.958 | 0.788 | 0.280 | 0.000 | 0.000 | 0.000 |
| | 27 | 1.000 | 0.958 | 0.788 | 0.280 | 0.000 | 0.000 | 0.000 |
| | 28 | 1.000 | 0.958 | 0.788 | 0.280 | 0.000 | 0.000 | 0.000 |
| | 29 | 1.000 | 0.958 | 0.788 | 0.280 | 0.000 | 0.000 | 0.000 |
| | 30 | 1.000 | 0.958 | 0.788 | 0.280 | 0.000 | 0.000 | 0.000 |
| | 31 | 1.000 | 0.958 | 0.788 | 0.280 | 0.000 | 0.000 | 0.000 |
| | 32 | 1.000 | 0.958 | 0.788 | 0.280 | 0.000 | 0.000 | 0.000 |
| | 33 | 1.000 | 0.958 | 0.788 | 0.280 | 0.000 | 0.000 | 0.000 |
| | 34 | 1.000 | 0.958 | 0.788 | 0.280 | 0.000 | 0.000 | 0.000 |
| | 35 | 1.000 | 0.958 | 0.788 | 0.280 | 0.000 | 0.000 | 0.000 |
| | 36 | 1.000 | 0.958 | 0.788 | 0.280 | 0.000 | 0.000 | 0.000 |
| | 37 | 1.000 | 0.958 | 0.788 | 0.280 | 0.000 | 0.000 | 0.000 |
| | 38 | 1.000 | 0.958 | 0.788 | 0.280 | 0.000 | 0.000 | 0.000 |
| | 39 | 1.000 | 0.958 | 0.788 | 0.280 | 0.000 | 0.000 | 0.000 |
| | 40 | 1.000 | 0.958 | 0.788 | 0.280 | 0.000 | 0.000 | 0.000 |
| **2001-2006** | 13 | 1.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 14 | 1.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 15 | 1.000 | 0.312 | 0.000 | 0.000 | 0.312 | 0.000 | 0.000 |
| | 16 | 1.000 | 0.628 | 0.011 | 0.000 | 0.317 | 0.011 | 0.000 |
| | 17 | 1.000 | 0.876 | 0.105 | 0.000 | 0.248 | 0.094 | 0.000 |
| | 18 | 1.000 | 0.948 | 0.344 | 0.000 | 0.071 | 0.239 | 0.000 |
| | 19 | 1.000 | 0.962 | 0.555 | 0.011 | 0.014 | 0.211 | 0.011 |
| | 20 | 1.000 | 0.964 | 0.692 | 0.025 | 0.002 | 0.137 | 0.015 |
| | 21 | 1.000 | 0.964 | 0.765 | 0.072 | 0.000 | 0.074 | 0.047 |
| | 22 | 1.000 | 0.968 | 0.805 | 0.152 | 0.004 | 0.040 | 0.080 |
| | 23 | 1.000 | 0.968 | 0.818 | 0.250 | 0.000 | 0.013 | 0.098 |
| | 24 | 1.000 | 0.968 | 0.827 | 0.299 | 0.000 | 0.009 | 0.049 |
| | 25 | 1.000 | 0.968 | 0.827 | 0.317 | 0.000 | 0.000 | 0.018 |
| | 26 | 1.000 | 0.968 | 0.827 | 0.335 | 0.000 | 0.000 | 0.018 |
| | 27 | 1.000 | 0.968 | 0.827 | 0.353 | 0.000 | 0.000 | 0.018 |
| | 28 | 1.000 | 0.968 | 0.827 | 0.353 | 0.000 | 0.000 | 0.000 |
| | 29 | 1.000 | 0.968 | 0.827 | 0.353 | 0.000 | 0.000 | 0.000 |
| | 30 | 1.000 | 0.968 | 0.827 | 0.353 | 0.000 | 0.000 | 0.000 |
| | 31 | 1.000 | 0.968 | 0.827 | 0.353 | 0.000 | 0.000 | 0.000 |
| | 32 | 1.000 | 0.968 | 0.827 | 0.353 | 0.000 | 0.000 | 0.000 |
| | 33 | 1.000 | 0.968 | 0.827 | 0.353 | 0.000 | 0.000 | 0.000 |
| | 34 | 1.000 | 0.968 | 0.827 | 0.353 | 0.000 | 0.000 | 0.000 |
| | 35 | 1.000 | 0.968 | 0.827 | 0.353 | 0.000 | 0.000 | 0.000 |
| | 36 | 1.000 | 0.968 | 0.827 | 0.353 | 0.000 | 0.000 | 0.000 |
| | 37 | 1.000 | 0.968 | 0.827 | 0.353 | 0.000 | 0.000 | 0.000 |
| | 38 | 1.000 | 0.968 | 0.827 | 0.353 | 0.000 | 0.000 | 0.000 |
| | 39 | 1.000 | 0.968 | 0.827 | 0.353 | 0.000 | 0.000 | 0.000 |
| | 40 | 1.000 | 0.968 | 0.827 | 0.353 | 0.000 | 0.000 | 0.000 |

Source: Author's calculations

**ANNEX C: MEAN AGE AT LEAVING SCHOOL**

**Table C. 1. Age at leaving school by age (15+), male population, Italy, 1995-2007**

| Year / Age | 1995 | 1996 | 1997 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 13.9 | 13.9 | 13.9 | 13.9 | 14.0 | 14.0 | 13.9 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 |
| 16 | 14.0 | 14.1 | 14.0 | 14.1 | 14.1 | 14.1 | 14.1 | 14.1 | 14.1 | 14.1 | 14.1 | 14.1 |
| 17 | 14.2 | 14.2 | 14.2 | 14.3 | 14.3 | 14.2 | 14.2 | 14.4 | 14.3 | 14.3 | 14.3 | 14.2 |
| 18 | 14.7 | 14.6 | 14.7 | 14.7 | 14.7 | 14.7 | 14.8 | 15.0 | 14.9 | 14.7 | 14.8 | 14.8 |
| 19 | 15.9 | 15.9 | 16.0 | 16.2 | 16.1 | 16.1 | 16.3 | 16.5 | 16.5 | 16.4 | 16.5 | 16.6 |
| 20 | 16.6 | 16.7 | 16.7 | 17.0 | 17.0 | 17.0 | 17.1 | 17.3 | 17.4 | 17.3 | 17.4 | 17.5 |
| 21 | 16.9 | 16.9 | 17.0 | 17.3 | 17.3 | 17.3 | 17.4 | 17.5 | 17.5 | 17.6 | 17.7 | 17.7 |
| 22 | 16.9 | 17.0 | 17.1 | 17.3 | 17.3 | 17.3 | 17.5 | 17.5 | 17.7 | 17.7 | 18.1 | 18.1 |
| 23 | 16.8 | 17.0 | 17.0 | 17.3 | 17.3 | 17.4 | 17.5 | 17.7 | 17.8 | 18.1 | 18.2 | 18.4 |
| 24 | 16.9 | 16.9 | 17.0 | 17.3 | 17.4 | 17.4 | 17.5 | 17.6 | 17.8 | 18.1 | 18.4 | 18.6 |
| 25 | 16.8 | 16.9 | 17.0 | 17.4 | 17.4 | 17.4 | 17.6 | 17.8 | 17.9 | 18.1 | 18.2 | 18.5 |
| 26 | 16.7 | 17.0 | 17.1 | 17.4 | 17.5 | 17.6 | 17.7 | 17.9 | 18.2 | 18.1 | 18.4 | 18.5 |
| 27 | 16.8 | 16.9 | 17.1 | 17.4 | 17.5 | 17.7 | 17.8 | 17.9 | 18.2 | 18.2 | 18.4 | 18.7 |
| 28 | 16.8 | 16.9 | 17.0 | 17.4 | 17.5 | 17.6 | 18.0 | 17.9 | 18.1 | 18.3 | 18.2 | 18.5 |
| 29 | 16.7 | 16.7 | 16.8 | 17.1 | 17.3 | 17.4 | 17.9 | 18.0 | 18.1 | 18.0 | 18.3 | 18.3 |
| 30 | 16.8 | 16.9 | 17.0 | 17.3 | 17.4 | 17.6 | 17.5 | 17.9 | 17.9 | 18.0 | 18.2 | 18.2 |
| 31 | 16.8 | 16.9 | 17.0 | 17.2 | 17.4 | 17.4 | 17.7 | 17.7 | 18.0 | 18.0 | 18.1 | 18.4 |
| 32 | 16.8 | 16.9 | 16.9 | 17.1 | 17.3 | 17.4 | 17.5 | 17.6 | 17.8 | 17.9 | 18.1 | 18.3 |
| 33 | 16.8 | 16.8 | 16.8 | 17.0 | 17.1 | 17.3 | 17.3 | 17.5 | 17.8 | 18.0 | 17.9 | 18.0 |
| 34 | 16.9 | 16.9 | 16.9 | 17.2 | 17.1 | 17.1 | 17.4 | 17.4 | 17.7 | 18.0 | 17.9 | 17.9 |
| 35 | 16.9 | 17.0 | 16.9 | 17.0 | 17.2 | 17.2 | 17.2 | 17.3 | 17.6 | 17.7 | 17.9 | 18.0 |
| 36 | 16.9 | 16.8 | 17.0 | 17.0 | 17.0 | 17.2 | 17.1 | 17.2 | 17.6 | 17.5 | 17.7 | 17.8 |
| 37 | 16.9 | 16.8 | 16.9 | 17.1 | 16.9 | 17.0 | 17.0 | 17.1 | 17.4 | 17.5 | 17.6 | 17.8 |
| 38 | 16.8 | 16.9 | 17.1 | 17.2 | 17.1 | 17.1 | 17.0 | 17.2 | 17.4 | 17.4 | 17.4 | 17.7 |
| 39 | 16.8 | 16.9 | 16.8 | 17.2 | 17.2 | 17.0 | 17.1 | 17.1 | 17.4 | 17.5 | 17.3 | 17.4 |
| 40 | 16.8 | 17.0 | 17.0 | 17.2 | 17.1 | 17.1 | 17.1 | 17.2 | 17.3 | 17.2 | 17.4 | 17.3 |
| 41 | 16.5 | 16.9 | 17.0 | 17.0 | 17.2 | 17.1 | 17.1 | 17.1 | 17.3 | 17.2 | 17.3 | 17.3 |
| 42 | 16.4 | 16.7 | 16.8 | 17.0 | 17.1 | 17.1 | 17.1 | 17.1 | 17.2 | 17.3 | 17.4 | 17.3 |
| 43 | 16.3 | 16.6 | 16.7 | 16.9 | 17.1 | 17.1 | 17.0 | 17.1 | 17.3 | 17.2 | 17.5 | 17.3 |
| 44 | 16.1 | 16.3 | 16.6 | 16.7 | 17.1 | 17.0 | 17.0 | 17.1 | 17.1 | 17.2 | 17.0 | 17.4 |
| 45 | 16.1 | 16.3 | 16.2 | 16.7 | 16.9 | 17.0 | 16.9 | 17.1 | 17.1 | 17.1 | 17.4 | 17.0 |
| 46 | 15.8 | 16.1 | 16.3 | 16.8 | 16.7 | 16.8 | 16.8 | 17.1 | 17.2 | 17.3 | 17.0 | 17.2 |
| 47 | 15.4 | 15.9 | 15.9 | 16.5 | 16.7 | 16.8 | 16.8 | 16.8 | 17.0 | 17.1 | 17.2 | 17.0 |
| 48 | 15.2 | 15.6 | 15.9 | 16.4 | 16.5 | 16.7 | 16.8 | 16.9 | 16.9 | 17.1 | 17.2 | 17.3 |
| 49 | 15.3 | 15.4 | 15.7 | 16.0 | 16.3 | 16.5 | 16.6 | 16.8 | 17.0 | 16.9 | 17.1 | 17.2 |
| 50 | 14.9 | 15.3 | 15.7 | 15.9 | 16.0 | 16.3 | 16.5 | 16.8 | 17.0 | 17.0 | 17.0 | 17.2 |
| 51 | 14.9 | 15.1 | 15.5 | 15.9 | 16.0 | 16.2 | 16.3 | 16.5 | 16.6 | 16.7 | 17.0 | 17.1 |
| 52 | 14.6 | 14.8 | 15.1 | 15.6 | 15.8 | 16.0 | 16.2 | 16.3 | 16.5 | 16.7 | 16.7 | 16.8 |
| 53 | 14.8 | 14.8 | 15.0 | 15.4 | 15.4 | 15.8 | 15.8 | 16.3 | 16.3 | 16.5 | 16.7 | 16.6 |
| 54 | 14.4 | 14.7 | 14.8 | 15.0 | 15.3 | 15.6 | 15.7 | 16.0 | 16.3 | 16.5 | 16.6 | 16.5 |
| 55 | 14.3 | 14.6 | 14.7 | 15.0 | 15.1 | 15.2 | 15.5 | 15.8 | 16.0 | 16.3 | 16.6 | 16.6 |
| 56 | 14.2 | 14.4 | 14.5 | 14.8 | 15.0 | 15.1 | 15.2 | 15.6 | 15.8 | 15.9 | 16.2 | 16.5 |
| 57 | 13.9 | 14.1 | 14.3 | 14.8 | 14.6 | 14.8 | 15.1 | 15.5 | 15.7 | 15.8 | 15.9 | 16.4 |
| 58 | 13.7 | 13.9 | 14.2 | 14.6 | 14.6 | 14.7 | 14.8 | 15.2 | 15.5 | 15.7 | 16.0 | 16.0 |
| 59 | 13.6 | 13.8 | 13.9 | 14.3 | 14.5 | 14.6 | 14.9 | 14.9 | 15.3 | 15.5 | 15.7 | 16.0 |
| 60 | 13.5 | 13.6 | 13.8 | 14.0 | 14.3 | 14.4 | 14.8 | 15.0 | 15.1 | 15.3 | 15.7 | 15.7 |
| 61 | 13.3 | 13.4 | 13.6 | 13.9 | 14.1 | 14.2 | 14.4 | 14.9 | 14.9 | 14.9 | 15.2 | 15.5 |
| 62 | 13.2 | 13.2 | 13.3 | 13.7 | 14.0 | 14.2 | 14.1 | 14.6 | 14.6 | 14.8 | 14.9 | 15.0 |

| Year / Age | 1995 | 1996 | 1997 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 63 | 13.2 | 13.0 | 13.2 | 13.5 | 13.8 | 13.9 | 14.2 | 14.4 | 14.6 | 14.7 | 14.7 | 15.1 |
| 64 | 13.1 | 13.1 | 13.0 | 13.5 | 13.5 | 13.8 | 13.9 | 14.4 | 14.4 | 14.6 | 14.9 | 15.0 |
| 65 | 13.2 | 13.2 | 13.3 | 13.3 | 13.4 | 13.6 | 13.7 | 13.9 | 14.2 | 14.6 | 14.5 | 14.8 |
| 66 | 13.1 | 13.1 | 13.2 | 13.1 | 13.4 | 13.3 | 13.5 | 13.7 | 14.1 | 14.1 | 14.5 | 14.5 |
| 67 | 13.0 | 13.1 | 13.2 | 13.1 | 13.2 | 13.3 | 13.3 | 13.5 | 13.6 | 14.1 | 14.3 | 14.3 |
| 68 | 13.0 | 13.1 | 13.2 | 13.2 | 13.1 | 13.1 | 13.3 | 13.4 | 13.5 | 13.6 | 14.2 | 14.3 |
| 69 | 13.0 | 13.1 | 13.2 | 13.2 | 13.1 | 13.2 | 13.1 | 13.3 | 13.4 | 13.6 | 13.8 | 14.0 |
| 70 | 13.1 | 13.1 | 13.3 | 13.1 | 13.0 | 13.0 | 13.2 | 13.2 | 13.3 | 13.5 | 13.5 | 13.7 |
| 71 | 13.1 | 13.1 | 13.1 | 13.1 | 13.0 | 13.2 | 13.1 | 13.2 | 13.1 | 13.1 | 13.3 | 13.6 |
| 72 | 13.0 | 13.0 | 13.0 | 13.1 | 13.0 | 13.0 | 13.4 | 13.3 | 13.4 | 13.0 | 13.2 | 13.4 |
| 73 | 13.0 | 13.0 | 12.9 | 13.2 | 13.3 | 12.9 | 13.0 | 13.3 | 13.1 | 13.1 | 13.0 | 13.1 |
| 74 | 12.9 | 13.1 | 13.1 | 13.2 | 13.0 | 13.2 | 13.1 | 13.2 | 13.4 | 13.0 | 13.0 | 13.2 |
| 75 | 12.8 | 13.0 | 13.1 | 13.0 | 13.0 | 13.0 | 13.3 | 13.3 | 13.2 | 13.3 | 13.1 | 13.1 |
| 76 | 12.9 | 13.0 | 13.0 | 13.2 | 13.0 | 12.9 | 13.0 | 13.3 | 12.9 | 13.4 | 13.3 | 13.2 |
| 77 | 12.8 | 12.7 | 12.8 | 13.1 | 13.2 | 13.0 | 13.1 | 13.2 | 13.3 | 13.2 | 13.2 | 13.4 |
| 78 | 13.0 | 13.0 | 12.9 | 13.1 | 13.2 | 13.2 | 13.0 | 13.1 | 13.1 | 13.3 | 13.3 | 13.3 |
| 79 | 12.6 | 13.2 | 13.0 | 12.9 | 13.0 | 13.0 | 13.0 | 13.1 | 13.0 | 13.0 | 13.1 | 13.5 |
| 80 | 12.5 | 12.6 | 12.8 | 13.1 | 12.9 | 12.7 | 12.8 | 13.2 | 13.3 | 13.0 | 13.0 | 13.2 |
| 81 | 12.2 | 12.4 | 12.6 | 12.8 | 12.9 | 13.1 | 12.9 | 13.2 | 13.2 | 13.4 | 13.1 | 13.0 |
| 82 | 12.5 | 12.5 | 12.5 | 12.8 | 13.0 | 12.8 | 12.8 | 13.0 | 13.0 | 13.1 | 13.5 | 13.1 |
| 83 | 12.2 | 12.3 | 12.4 | 12.6 | 12.5 | 12.8 | 12.8 | 13.0 | 13.2 | 13.3 | 13.1 | 13.3 |
| 84 | 12.2 | 12.4 | 12.4 | 12.2 | 12.5 | 12.4 | 12.6 | 13.2 | 12.8 | 13.1 | 13.4 | 13.3 |
| 85 | 11.9 | 12.1 | 12.4 | 12.2 | 12.3 | 12.6 | 12.7 | 12.8 | 12.6 | 13.1 | 13.2 | 12.8 |
| 86 | 11.8 | 12.1 | 12.1 | 12.5 | 12.4 | 12.4 | 12.9 | 12.6 | 12.9 | 12.7 | 12.9 | 13.0 |
| 87 | 12.5 | 11.9 | 12.1 | 12.7 | 12.7 | 12.6 | 12.5 | 12.6 | 13.1 | 13.7 | 13.0 | 13.1 |
| 88 | 12.2 | 12.4 | 11.9 | 12.3 | 12.4 | 12.9 | 12.4 | 12.2 | 12.6 | 13.2 | 13.8 | 12.8 |
| 89 | 12.2 | 12.1 | 12.5 | 12.1 | 12.8 | 12.3 | 12.6 | 12.4 | 12.4 | 12.4 | 12.7 | 13.5 |
| 90 | 12.5 | 12.2 | 12.4 | 12.5 | 12.1 | 12.7 | 12.4 | 12.7 | 13.4 | 12.6 | 12.2 | 12.5 |
| 91 | 12.0 | 13.2 | 12.7 | 12.1 | 12.3 | 12.2 | 12.4 | 13.2 | 12.8 | 13.2 | 12.4 | 11.9 |
| 92 | 13.0 | 12.6 | 13.3 | 12.9 | 11.8 | 12.2 | 12.2 | 12.3 | 12.6 | 12.7 | 12.8 | 13.2 |
| 93 | 12.6 | 12.7 | 13.1 | 11.8 | 12.7 | 12.0 | 12.2 | 12.1 | 13.0 | 12.9 | 13.3 | 12.8 |
| 94 | 13.4 | 13.4 | 12.6 | 12.5 | 12.1 | 12.1 | 12.4 | 13.1 | 12.5 | 12.3 | 12.0 | 13.3 |
| 95 | 13.3 | 13.1 | 13.8 | 12.6 | 12.1 | 12.2 | 11.8 | 12.9 | 12.0 | 11.3 | 11.4 | 11.9 |
| 96 | 11.2 | 15.1 | 13.6 | 13.9 | 12.2 | 11.8 | 11.9 | 12.5 | 11.6 | 12.9 | 11.8 | 11.7 |
| 97 | 11.8 | 12.1 | 12.4 | 13.6 | 11.4 | 13.3 | 11.5 | 11.8 | 12.9 | 13.0 | 13.7 | 12.5 |
| 98 | 11.3 | 12.4 | 13.1 | 13.5 | 12.0 | 13.1 | 11.7 | 12.2 | 11.7 | 14.5 | 12.1 | 15.3 |
| 99 | 11.3 | 11.8 | 12.3 | 15.8 | 13.2 | 12.1 | 13.9 | 12.5 | 11.0 | 11.3 | 13.4 | 11.7 |
| 20-64 | 15.8 | 16.0 | 16.1 | 16.4 | 16.5 | 16.6 | 16.7 | 16.8 | 17.0 | 17.1 | 17.2 | 17.3 |
| 20-30 | 16.8 | 16.9 | 17.0 | 17.3 | 17.4 | 17.4 | 17.6 | 17.7 | 17.9 | 18.0 | 18.1 | 18.3 |
| 30-40 | 16.8 | 16.9 | 16.9 | 17.1 | 17.2 | 17.2 | 17.3 | 17.4 | 17.6 | 17.7 | 17.8 | 17.9 |
| 40-50 | 16.0 | 16.3 | 16.4 | 16.7 | 16.9 | 16.9 | 16.9 | 17.0 | 17.2 | 17.2 | 17.3 | 17.2 |
| 50-60 | 14.0 | 14.1 | 14.3 | 14.7 | 14.9 | 15.0 | 15.2 | 15.5 | 15.7 | 15.9 | 16.0 | 16.2 |
| Total population 15+ | 15.3 | 15.4 | 15.5 | 15.7 | 15.7 | 15.8 | 15.9 | 16.1 | 16.2 | 16.2 | 16.3 | 16.4 |

Source: Author's calculations

**Table C. 2. Age at leaving school by age (15+), female population, Italy, 1995-2007**

| Year / Age | 1995 | 1996 | 1997 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Year / Age | 1995 | 1996 | 1997 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 13.9 | 13.9 | 13.9 | 13.9 | 13.9 | 13.9 | 13.9 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 |
| 16 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.1 | 14.1 | 14.1 | 14.1 |
| 17 | 14.2 | 14.2 | 14.2 | 14.2 | 14.2 | 14.2 | 14.2 | 14.4 | 14.3 | 14.2 | 14.2 | 14.2 |
| 18 | 14.8 | 14.7 | 14.8 | 14.8 | 14.6 | 14.7 | 14.8 | 15.0 | 15.0 | 14.8 | 14.9 | 14.9 |
| 19 | 16.4 | 16.3 | 16.5 | 16.7 | 16.5 | 16.5 | 16.7 | 16.8 | 17.1 | 17.0 | 17.2 | 17.1 |
| 20 | 17.1 | 17.1 | 17.2 | 17.4 | 17.4 | 17.5 | 17.5 | 17.7 | 17.9 | 17.8 | 17.9 | 17.8 |
| 21 | 17.2 | 17.3 | 17.3 | 17.6 | 17.6 | 17.7 | 17.8 | 17.7 | 18.0 | 18.0 | 18.0 | 18.1 |
| 22 | 17.2 | 17.2 | 17.3 | 17.5 | 17.6 | 17.6 | 17.7 | 17.9 | 18.1 | 18.3 | 18.4 | 18.5 |
| 23 | 17.1 | 17.2 | 17.3 | 17.6 | 17.7 | 17.7 | 17.9 | 17.9 | 18.3 | 18.3 | 18.8 | 18.8 |
| 24 | 16.9 | 17.1 | 17.3 | 17.5 | 17.6 | 17.8 | 17.9 | 18.0 | 18.3 | 18.5 | 18.8 | 19.1 |
| 25 | 16.9 | 17.1 | 17.1 | 17.6 | 17.6 | 17.8 | 18.0 | 18.1 | 18.4 | 18.6 | 18.9 | 19.3 |
| 26 | 16.9 | 17.0 | 17.2 | 17.7 | 17.9 | 17.9 | 18.0 | 18.1 | 18.6 | 18.6 | 18.9 | 18.9 |
| 27 | 17.0 | 17.0 | 17.1 | 17.6 | 17.8 | 18.0 | 18.0 | 18.2 | 18.5 | 18.7 | 19.0 | 19.0 |
| 28 | 16.9 | 16.9 | 17.0 | 17.4 | 17.6 | 17.8 | 18.1 | 18.2 | 18.6 | 18.7 | 18.9 | 19.1 |
| 29 | 16.7 | 16.8 | 17.0 | 17.1 | 17.4 | 17.7 | 17.9 | 18.1 | 18.5 | 18.6 | 18.8 | 19.0 |
| 30 | 16.8 | 16.9 | 16.9 | 17.4 | 17.5 | 17.8 | 17.8 | 18.0 | 18.5 | 18.5 | 18.6 | 18.7 |
| 31 | 16.7 | 16.9 | 17.0 | 17.2 | 17.4 | 17.5 | 17.8 | 17.9 | 18.5 | 18.5 | 18.6 | 18.6 |
| 32 | 16.6 | 16.8 | 17.0 | 17.1 | 17.3 | 17.4 | 17.5 | 17.8 | 18.4 | 18.4 | 18.7 | 18.7 |
| 33 | 16.7 | 16.8 | 16.8 | 17.1 | 17.2 | 17.4 | 17.5 | 17.5 | 18.2 | 18.5 | 18.4 | 18.7 |
| 34 | 16.7 | 16.7 | 16.8 | 17.0 | 17.1 | 17.2 | 17.4 | 17.6 | 17.9 | 18.3 | 18.4 | 18.5 |
| 35 | 16.5 | 16.7 | 16.8 | 17.0 | 17.1 | 17.2 | 17.2 | 17.5 | 18.1 | 17.9 | 18.1 | 18.3 |
| 36 | 16.4 | 16.6 | 16.8 | 17.0 | 17.1 | 17.1 | 17.2 | 17.3 | 17.6 | 17.9 | 18.0 | 18.2 |
| 37 | 16.4 | 16.5 | 16.6 | 16.8 | 17.0 | 17.0 | 17.1 | 17.2 | 17.5 | 17.5 | 17.9 | 17.9 |
| 38 | 16.2 | 16.4 | 16.4 | 16.7 | 16.8 | 17.0 | 17.0 | 17.2 | 17.5 | 17.5 | 17.6 | 17.7 |
| 39 | 16.1 | 16.4 | 16.5 | 16.8 | 16.8 | 16.9 | 17.0 | 17.1 | 17.5 | 17.5 | 17.5 | 17.7 |
| 40 | 15.9 | 16.2 | 16.4 | 16.7 | 16.7 | 16.9 | 16.8 | 16.9 | 17.3 | 17.4 | 17.5 | 17.5 |
| 41 | 15.7 | 16.0 | 16.2 | 16.6 | 16.7 | 16.7 | 16.8 | 16.9 | 17.1 | 17.2 | 17.4 | 17.4 |
| 42 | 15.6 | 15.8 | 16.0 | 16.4 | 16.5 | 16.7 | 16.8 | 16.8 | 17.1 | 17.1 | 17.2 | 17.5 |
| 43 | 15.4 | 15.7 | 15.8 | 16.4 | 16.4 | 16.3 | 16.6 | 16.9 | 17.1 | 17.2 | 17.2 | 17.1 |
| 44 | 15.1 | 15.3 | 15.7 | 16.1 | 16.3 | 16.5 | 16.3 | 16.7 | 16.8 | 16.9 | 17.2 | 17.1 |
| 45 | 15.0 | 15.3 | 15.5 | 15.9 | 16.0 | 16.4 | 16.3 | 16.5 | 16.9 | 16.7 | 17.0 | 17.0 |
| 46 | 14.9 | 15.1 | 15.3 | 15.7 | 15.9 | 16.1 | 16.2 | 16.2 | 16.7 | 16.8 | 16.8 | 17.0 |
| 47 | 14.5 | 14.8 | 15.1 | 15.5 | 15.9 | 15.9 | 16.0 | 16.3 | 16.5 | 16.5 | 16.7 | 16.8 |
| 48 | 14.3 | 14.5 | 14.6 | 15.3 | 15.6 | 15.8 | 15.9 | 16.1 | 16.1 | 16.5 | 16.5 | 16.7 |
| 49 | 13.8 | 14.2 | 14.6 | 15.2 | 15.2 | 15.5 | 15.8 | 16.0 | 16.2 | 16.2 | 16.6 | 16.7 |
| 50 | 14.0 | 14.0 | 14.2 | 14.8 | 14.9 | 15.3 | 15.5 | 15.9 | 16.0 | 16.2 | 16.3 | 16.7 |
| 51 | 13.6 | 13.9 | 14.1 | 14.6 | 14.8 | 15.0 | 15.2 | 15.7 | 15.8 | 15.8 | 16.2 | 16.6 |
| 52 | 13.6 | 13.8 | 13.9 | 14.4 | 14.6 | 14.6 | 15.0 | 15.3 | 15.6 | 15.8 | 16.0 | 16.1 |
| 53 | 13.3 | 13.7 | 13.8 | 14.2 | 14.4 | 14.5 | 14.6 | 15.1 | 15.2 | 15.6 | 15.8 | 16.1 |
| 54 | 13.4 | 13.4 | 13.7 | 13.9 | 14.0 | 14.3 | 14.5 | 14.8 | 15.1 | 15.3 | 15.5 | 15.9 |
| 55 | 13.2 | 13.4 | 13.5 | 13.7 | 13.9 | 14.1 | 14.3 | 14.7 | 14.9 | 15.2 | 15.4 | 15.5 |
| 56 | 12.9 | 13.2 | 13.4 | 13.6 | 13.7 | 13.9 | 14.2 | 14.4 | 14.6 | 14.9 | 15.2 | 15.5 |
| 57 | 12.8 | 12.9 | 13.2 | 13.6 | 13.5 | 13.8 | 13.9 | 14.1 | 14.3 | 14.6 | 14.8 | 15.3 |
| 58 | 12.7 | 12.9 | 13.1 | 13.4 | 13.5 | 13.5 | 13.7 | 13.9 | 14.2 | 14.2 | 14.6 | 14.9 |
| 59 | 12.5 | 12.7 | 12.9 | 13.2 | 13.3 | 13.5 | 13.5 | 13.8 | 13.8 | 14.3 | 14.2 | 14.6 |
| 60 | 12.4 | 12.5 | 12.7 | 13.0 | 13.2 | 13.2 | 13.4 | 13.6 | 13.6 | 13.8 | 14.1 | 14.4 |
| 61 | 12.4 | 12.4 | 12.6 | 12.8 | 13.0 | 13.2 | 13.4 | 13.6 | 13.8 | 13.7 | 13.9 | 14.2 |
| 62 | 12.3 | 12.4 | 12.5 | 12.7 | 12.8 | 12.9 | 13.2 | 13.4 | 13.4 | 13.5 | 13.7 | 14.0 |
| 63 | 12.3 | 12.4 | 12.4 | 12.5 | 12.7 | 12.9 | 12.8 | 13.2 | 13.2 | 13.4 | 13.6 | 13.6 |
| 64 | 12.3 | 12.3 | 12.4 | 12.5 | 12.5 | 12.7 | 12.9 | 13.1 | 13.1 | 13.1 | 13.6 | 13.5 |

| Year / Age | 1995 | 1996 | 1997 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 65 | 12.3 | 12.3 | 12.4 | 12.3 | 12.4 | 12.6 | 12.7 | 13.0 | 13.0 | 13.0 | 13.2 | 13.4 |
| 66 | 12.2 | 12.4 | 12.3 | 12.4 | 12.4 | 12.5 | 12.5 | 12.7 | 12.8 | 13.1 | 13.1 | 13.3 |
| 67 | 12.2 | 12.3 | 12.3 | 12.5 | 12.3 | 12.4 | 12.4 | 12.6 | 12.5 | 12.8 | 13.0 | 13.1 |
| 68 | 12.1 | 12.3 | 12.3 | 12.4 | 12.4 | 12.3 | 12.3 | 12.5 | 12.5 | 12.6 | 12.9 | 13.0 |
| 69 | 12.1 | 12.2 | 12.3 | 12.3 | 12.3 | 12.3 | 12.4 | 12.5 | 12.3 | 12.5 | 12.7 | 12.8 |
| 70 | 12.2 | 12.2 | 12.2 | 12.3 | 12.3 | 12.4 | 12.4 | 12.4 | 12.3 | 12.4 | 12.6 | 12.8 |
| 71 | 12.2 | 12.3 | 12.3 | 12.4 | 12.3 | 12.3 | 12.4 | 12.4 | 12.3 | 12.4 | 12.4 | 12.6 |
| 72 | 12.0 | 12.1 | 12.3 | 12.2 | 12.3 | 12.3 | 12.3 | 12.5 | 12.3 | 12.3 | 12.4 | 12.4 |
| 73 | 12.1 | 12.1 | 12.0 | 12.1 | 12.3 | 12.2 | 12.2 | 12.4 | 12.5 | 12.4 | 12.3 | 12.3 |
| 74 | 12.0 | 12.0 | 12.1 | 12.1 | 12.1 | 12.3 | 12.1 | 12.2 | 12.4 | 12.4 | 12.4 | 12.4 |
| 75 | 11.8 | 12.0 | 12.1 | 12.1 | 12.1 | 12.2 | 12.2 | 12.3 | 12.2 | 12.4 | 12.3 | 12.4 |
| 76 | 11.8 | 11.9 | 12.0 | 12.1 | 12.1 | 12.1 | 12.2 | 12.2 | 12.2 | 12.2 | 12.3 | 12.3 |
| 77 | 12.0 | 11.8 | 11.9 | 12.0 | 12.2 | 12.0 | 12.1 | 12.4 | 12.3 | 12.1 | 12.2 | 12.2 |
| 78 | 11.9 | 11.9 | 11.9 | 12.0 | 12.0 | 12.1 | 12.1 | 12.2 | 12.3 | 12.3 | 12.3 | 12.2 |
| 79 | 11.7 | 11.7 | 11.9 | 11.8 | 11.9 | 12.1 | 12.1 | 12.2 | 12.1 | 12.3 | 12.4 | 12.2 |
| 80 | 11.7 | 11.7 | 11.8 | 11.9 | 11.9 | 11.9 | 12.1 | 12.2 | 12.0 | 12.3 | 12.2 | 12.3 |
| 81 | 11.7 | 11.7 | 11.7 | 11.9 | 11.7 | 11.8 | 11.9 | 12.1 | 12.0 | 12.1 | 12.3 | 12.1 |
| 82 | 11.5 | 11.7 | 11.7 | 11.8 | 11.9 | 11.9 | 11.7 | 12.0 | 12.2 | 12.1 | 12.3 | 12.2 |
| 83 | 11.6 | 11.5 | 11.5 | 11.9 | 11.9 | 11.9 | 11.9 | 11.8 | 12.1 | 12.1 | 12.1 | 12.1 |
| 84 | 11.6 | 11.7 | 11.6 | 11.6 | 11.8 | 11.8 | 11.8 | 12.0 | 11.8 | 12.0 | 11.9 | 12.0 |
| 85 | 11.5 | 11.5 | 11.6 | 11.6 | 11.6 | 11.8 | 11.7 | 11.8 | 11.9 | 11.8 | 11.8 | 12.0 |
| 86 | 11.4 | 11.5 | 11.6 | 11.5 | 11.6 | 11.6 | 11.7 | 11.9 | 11.7 | 11.7 | 11.8 | 11.7 |
| 87 | 11.6 | 11.4 | 11.6 | 11.5 | 11.5 | 11.6 | 11.7 | 11.8 | 11.7 | 11.7 | 11.7 | 11.9 |
| 88 | 11.7 | 11.5 | 11.5 | 11.6 | 11.6 | 11.7 | 11.7 | 11.8 | 11.9 | 11.8 | 11.6 | 11.7 |
| 89 | 11.6 | 11.7 | 11.7 | 11.6 | 11.6 | 11.7 | 11.7 | 11.7 | 11.5 | 11.9 | 11.9 | 11.5 |
| 90 | 11.6 | 11.6 | 11.8 | 11.4 | 11.6 | 11.5 | 11.7 | 11.8 | 11.7 | 11.5 | 11.7 | 12.0 |
| 91 | 11.5 | 11.6 | 11.6 | 11.7 | 11.6 | 11.7 | 11.6 | 11.8 | 11.8 | 11.6 | 11.6 | 11.7 |
| 92 | 11.5 | 11.7 | 11.8 | 11.6 | 11.5 | 11.4 | 11.6 | 11.6 | 11.7 | 11.6 | 11.9 | 11.6 |
| 93 | 12.0 | 11.5 | 11.6 | 11.9 | 12.0 | 11.8 | 11.7 | 11.4 | 11.5 | 11.9 | 11.5 | 11.8 |
| 94 | 12.0 | 12.1 | 11.6 | 12.0 | 11.7 | 11.8 | 11.9 | 12.0 | 11.5 | 11.7 | 12.2 | 11.9 |
| 95 | 12.6 | 12.0 | 12.3 | 11.7 | 11.5 | 12.4 | 11.6 | 11.6 | 12.0 | 11.5 | 11.9 | 11.9 |
| 96 | 11.7 | 12.5 | 12.1 | 12.4 | 11.8 | 11.8 | 12.2 | 11.6 | 12.2 | 11.8 | 11.7 | 11.5 |
| 97 | 11.7 | 11.9 | 12.9 | 12.8 | 11.8 | 12.2 | 12.1 | 11.4 | 12.3 | 12.1 | 12.2 | 11.7 |
| 98 | 11.7 | 11.6 | 11.9 | 12.6 | 11.7 | 12.1 | 12.4 | 11.5 | 12.0 | 11.5 | 12.3 | 11.8 |
| 99 | 11.0 | 11.2 | 11.1 | 13.1 | 12.3 | 12.5 | 12.6 | 11.6 | 12.0 | 13.1 | 12.0 | 11.7 |
| 20-64 | 12.9 | 13.1 | 13.2 | 13.5 | 13.7 | 13.8 | 14.0 | 14.4 | 14.5 | 14.7 | 14.9 | 15.2 |
| 20-30 | 15.2 | 15.4 | 15.5 | 15.9 | 16.0 | 16.1 | 16.2 | 16.4 | 16.7 | 16.8 | 17.0 | 17.1 |
| 30-40 | 17.0 | 17.1 | 17.2 | 17.5 | 17.6 | 17.8 | 17.9 | 18.0 | 18.3 | 18.4 | 18.7 | 18.8 |
| 40-50 | 16.5 | 16.7 | 16.8 | 17.0 | 17.1 | 17.3 | 17.3 | 17.5 | 18.0 | 18.0 | 18.2 | 18.3 |
| 50-60 | 15.0 | 15.3 | 15.5 | 16.0 | 16.1 | 16.3 | 16.4 | 16.5 | 16.8 | 16.9 | 17.0 | 17.1 |
| Total population 15+ | 14.5 | 14.6 | 14.7 | 14.9 | 15.0 | 15.1 | 15.2 | 15.4 | 15.5 | 15.6 | 15.7 | 15.8 |

Source: Author's calculations

**Table C. 3. Age at leaving school by age (15+), male population, Netherlands, 1996-2006**

| Year / Age | 1996 | 1997 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 12.5 | 12.6 | 12.7 | 12.8 | 13.3 | 13.1 | 13.2 | 13.5 | 14.2 | 14.0 |
| 16 | 13.5 | 13.7 | 13.6 | 13.8 | 14.7 | 14.6 | 14.5 | 14.8 | 15.1 | 15.1 |

| Year / Age | 1996 | 1997 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|---|---|---|
| 17 | 14.9 | 15.0 | 15.3 | 15.3 | 16.3 | 16.2 | 16.1 | 16.4 | 16.5 | 16.4 |
| 18 | 16.5 | 16.5 | 16.6 | 16.8 | 17.0 | 17.1 | 17.1 | 17.3 | 17.3 | 17.3 |
| 19 | 17.6 | 17.6 | 17.6 | 18.2 | 17.7 | 17.6 | 17.7 | 17.7 | 17.8 | 17.5 |
| 20 | 18.2 | 18.2 | 18.6 | 18.5 | 18.1 | 17.9 | 18.1 | 18.0 | 18.3 | 18.4 |
| 21 | 18.5 | 18.7 | 18.9 | 19.0 | 18.3 | 18.4 | 18.5 | 18.5 | 18.4 | 18.5 |
| 22 | 19.0 | 19.1 | 19.0 | 19.2 | 18.7 | 18.7 | 18.7 | 18.7 | 18.7 | 19.0 |
| 23 | 19.3 | 19.1 | 19.5 | 19.2 | 18.7 | 19.1 | 19.3 | 19.2 | 19.4 | 19.1 |
| 24 | 19.5 | 19.7 | 19.6 | 19.3 | 19.6 | 19.2 | 19.5 | 19.9 | 19.7 | 19.7 |
| 25-29 | 19.6 | 19.5 | 19.7 | 19.7 | 19.7 | 19.6 | 19.7 | 19.9 | 20.1 | 20.1 |
| 30-34 | 19.4 | 19.5 | 19.6 | 19.7 | 19.7 | 19.6 | 19.7 | 19.9 | 20.1 | 20.1 |
| 35-39 | 19.5 | 19.5 | 19.5 | 19.6 | 19.6 | 19.5 | 19.6 | 19.7 | 19.9 | 19.9 |
| 40-44 | 19.4 | 19.5 | 19.5 | 19.5 | 19.6 | 19.5 | 19.6 | 19.6 | 19.7 | 19.7 |
| 45-49 | 19.2 | 19.3 | 19.3 | 19.4 | 19.4 | 19.4 | 19.4 | 19.6 | 19.9 | 19.8 |
| 50-54 | 18.9 | 19.1 | 19.2 | 19.0 | 19.1 | 19.2 | 19.2 | 19.3 | 19.5 | 19.7 |
| 55-59 | 18.7 | 18.7 | 18.9 | 18.9 | 18.9 | 18.8 | 19.0 | 19.2 | 19.4 | 19.4 |
| 60-64 | 18.3 | 18.4 | 18.5 | 18.5 | 18.6 | 18.6 | 18.8 | 19.0 | 19.1 | 19.2 |
| 65-69 | 18.3 | 18.5 | 18.4 | 18.3 | 18.3 | 18.4 | 18.5 | 18.4 | 18.8 | 18.6 |
| 70-74 | 18.1 | 18.4 | 18.3 | 18.3 | 18.3 | 18.1 | 18.2 | 18.4 | 18.6 | 18.6 |
| 75-79 | 17.9 | 18.0 | 17.9 | 18.1 | 18.1 | 18.0 | 18.0 | 18.5 | 18.5 | 18.4 |
| 80+ | 17.3 | 17.0 | 17.5 | 17.7 | 17.7 | 17.2 | 18.0 | 17.9 | 18.2 | 18.1 |
| 20-64 | 19.2 | 19.2 | 19.3 | 19.3 | 19.3 | 19.3 | 19.4 | 19.5 | 19.7 | 19.7 |
| 20-30 | 19.3 | 19.3 | 19.4 | 19.4 | 19.2 | 19.2 | 19.3 | 19.4 | 19.5 | 19.5 |
| 30-40 | 19.4 | 19.5 | 19.6 | 19.6 | 19.6 | 19.6 | 19.6 | 19.8 | 20.0 | 20.0 |
| 40-50 | 19.3 | 19.4 | 19.4 | 19.4 | 19.5 | 19.5 | 19.5 | 19.6 | 19.8 | 19.8 |
| 50-60 | 18.7 | 18.8 | 18.9 | 18.8 | 18.9 | 18.9 | 19.0 | 19.2 | 19.4 | 19.4 |
| Total population 15+ | 18.7 | 18.8 | 18.9 | 18.9 | 18.9 | 18.8 | 18.9 | 19.1 | 19.2 | 19.2 |

Source: Author's calculations

**Table C. 4. Age at leaving school by age (15+), female population, Netherlands, 1996-2006**

| Year / Age | 1996 | 1997 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 12.5 | 12.4 | 12.5 | 12.6 | 13.4 | 13.4 | 13.4 | 13.7 | 14.2 | 14.2 |
| 16 | 13.7 | 13.6 | 13.8 | 13.7 | 15.0 | 14.9 | 15.0 | 15.1 | 15.2 | 15.1 |
| 17 | 15.4 | 15.1 | 15.2 | 15.3 | 16.4 | 16.3 | 16.2 | 16.3 | 16.5 | 16.6 |
| 18 | 16.7 | 16.8 | 16.8 | 16.7 | 17.2 | 17.1 | 17.2 | 17.2 | 17.1 | 17.2 |
| 19 | 17.6 | 17.6 | 18.1 | 17.7 | 17.6 | 17.8 | 17.6 | 17.6 | 17.8 | 17.9 |
| 20 | 18.2 | 18.0 | 18.1 | 18.1 | 17.9 | 17.9 | 18.1 | 17.9 | 18.2 | 18.3 |
| 21 | 18.3 | 18.5 | 18.7 | 18.6 | 18.2 | 18.3 | 18.3 | 18.3 | 18.5 | 18.7 |
| 22 | 18.6 | 18.7 | 18.8 | 18.7 | 18.6 | 18.8 | 18.6 | 18.8 | 18.8 | 18.9 |
| 23 | 18.6 | 18.9 | 19.1 | 19.1 | 18.9 | 18.9 | 19.0 | 19.1 | 19.3 | 19.3 |
| 24 | 18.8 | 19.1 | 19.2 | 19.2 | 19.0 | 19.2 | 19.2 | 19.4 | 19.4 | 19.4 |
| 25-29 | 18.8 | 18.9 | 19.1 | 19.1 | 19.1 | 19.2 | 19.2 | 19.4 | 19.6 | 19.6 |
| 30-34 | 18.6 | 18.6 | 18.7 | 18.9 | 18.9 | 19.0 | 19.0 | 19.1 | 19.3 | 19.4 |
| 35-39 | 18.4 | 18.4 | 18.5 | 18.5 | 18.6 | 18.6 | 18.8 | 18.8 | 19.1 | 19.1 |
| 40-44 | 17.9 | 18.1 | 18.2 | 18.3 | 18.3 | 18.4 | 18.4 | 18.6 | 18.7 | 18.8 |
| 45-49 | 17.6 | 17.6 | 17.7 | 17.9 | 17.9 | 17.9 | 18.2 | 18.3 | 18.5 | 18.6 |
| 50-54 | 17.3 | 17.4 | 17.6 | 17.4 | 17.6 | 17.6 | 17.6 | 17.9 | 18.1 | 18.1 |
| 55-59 | 17.0 | 17.1 | 17.2 | 17.2 | 17.2 | 17.2 | 17.4 | 17.5 | 17.8 | 17.7 |

| Year / Age | 1996 | 1997 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|---|---|---|
| 60-64 | 16.5 | 16.6 | 16.6 | 16.7 | 16.8 | 17.0 | 17.1 | 17.2 | 17.3 | 17.3 |
| 65-69 | 16.2 | 16.2 | 16.3 | 16.4 | 16.6 | 16.6 | 16.6 | 16.7 | 16.9 | 17.0 |
| 70-74 | 16.2 | 16.3 | 16.2 | 16.2 | 16.1 | 16.3 | 16.3 | 16.4 | 16.5 | 16.6 |
| 75-79 | 15.7 | 15.9 | 15.8 | 16.0 | 16.1 | 16.3 | 16.4 | 16.3 | 16.5 | 16.2 |
| 80+ | 15.1 | 15.2 | 15.3 | 15.4 | 15.5 | 15.3 | 15.8 | 15.8 | 16.2 | 16.0 |
| 20-64 | 18.0 | 18.1 | 18.2 | 18.2 | 18.2 | 18.2 | 18.3 | 18.4 | 18.6 | 18.7 |
| 20-30 | 18.7 | 18.8 | 18.9 | 18.9 | 18.9 | 18.9 | 18.9 | 19.1 | 19.2 | 19.2 |
| 30-40 | 18.5 | 18.5 | 18.6 | 18.7 | 18.7 | 18.8 | 18.9 | 19.0 | 19.2 | 19.2 |
| 40-50 | 17.8 | 17.9 | 18.0 | 18.1 | 18.1 | 18.2 | 18.3 | 18.4 | 18.6 | 18.7 |
| 50-60 | 17.0 | 17.1 | 17.2 | 17.2 | 17.3 | 17.3 | 17.4 | 17.6 | 17.8 | 17.8 |
| Total population 15+ | 17.4 | 17.5 | 17.6 | 17.6 | 17.7 | 17.7 | 17.8 | 17.9 | 18.1 | 18.1 |

Source: Author's calculations