

# The declining percentage of the working-age people



Perttu Salmenhaara

## **The declining percentage of the working-age population in the advanced economies, 2005-2050, by country, year, and age group: a survey of projections**

*Economically advanced countries currently have a distorted age structure. Their birth rate peaked after the Second World War, but soon declined to a low level and has remained there. The size of these large age groups is disproportionate in relation to the age cohorts that were born after them. During the next fifteen years, the large age cohorts will exit working age. Younger age groups that enter working age are much smaller and thus the percentage of the working-age population decreases. At the same time, the size of the elderly age groups increases. The outcome is a demand pressure for services and income transfers which are too extensive for the public sector to respond to. This paper is strictly descriptive. Especially during the next twenty years the viability of advanced economies depends to a great extent on immigration but this issue is not the topic of this paper.*

### **Introduction**

Several statistical reports by the United Nations (UN), the European Union (EU), and the Organisation for Economic Cooperation and Development (OECD) suggest that the age structure in the economically advanced areas in the world will go through a major change that will start and be most rapid during the next fifteen years, and last for decades after that. During the shift, the average age of the population will

increase, and the share of the working-age population decreases.

In this paper, I present a short overview of these results in terms of the variables of country, year, and age group.

In chapter one, I draw out the aforementioned organisations' projections and the reasons for the declining trend. In chapter two, I evaluate arguments that concern why the projected trend would have harmful political and economic effects on these countries. Chapter three presents a summary and a conclusion. Throughout the paper, I analyse the trends by country, year, and by age group. The gender variable is not included, because in relation to the topic of the paper, the difference between genders is not large enough to be relevant.

### **1. Birth rates and population aging**

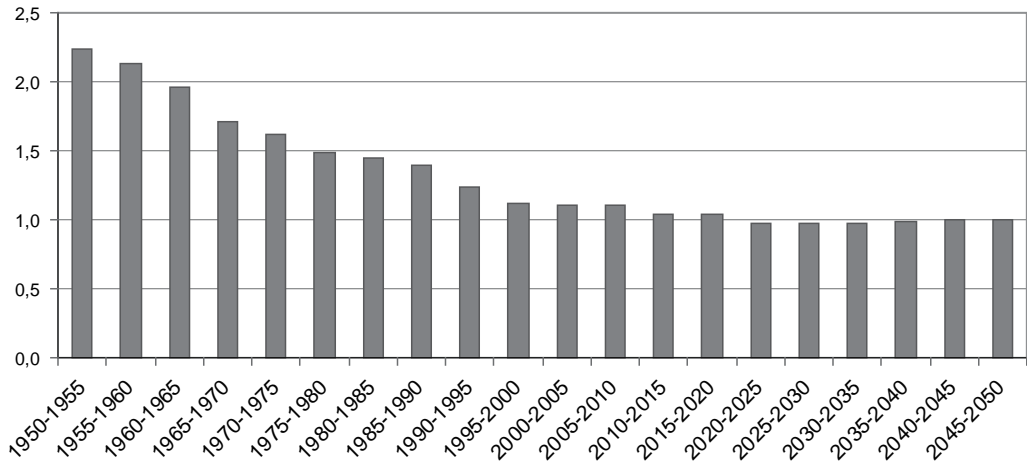
The most significant cause of the decreasing share of the working age populations is variation in birth rates since the Second World War. Birth rates affect the percentage of the working-age population with a long delay. Thus, as far as the birth rate is concerned, the *roots* of the number of the working-age population go way back, but the *impact* is experienced only during the coming years.

In short, the trend during the time following WW II is; that around 1950, the birth rate reached uncommonly high levels, even three to five in some countries (Parkkinen, 1998: 263) as the large age cohorts were born (United Nations 2006 - the so-called baby boomers). However, after this peak, the birth rates decreased rapidly and became very low. The birth rate has remained low since then, meaning over fifty years of low fertility. Today, the birth rate in the advanced economies is approximately one (ibid.).

The development of birth the rate in the advanced economies between 1950 and 2050 is described be-

---

*Perttu Salmenhaara, L. soc. sc. Doctoral student, faculty of social science, department of social policy, University of Helsinki. perttu.salmenhaara@helsinki.fi*



**Figure 1. The development of the birth rate in the advanced economies, 1950-2050.** Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2006 Revision. <http://esa.un.org/unpp> (June 11, 2008).

low. Also the projection from 2006 to 2050 is included. The numbers are 5-year averages.

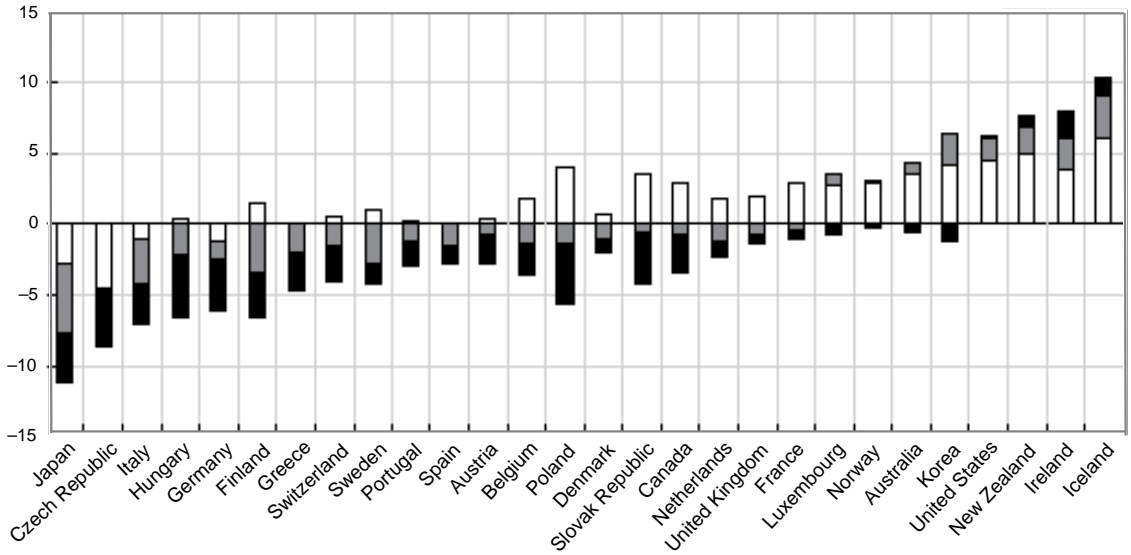
Today, the working age population consists mostly of the large age groups. As the working-age population reaches the statistical retirement age of 64 years, they exit working age and become pensioners. Thus the percentage of the working-age population decreases and that of the elderly increases (United Nations 2006; OECD 2007; European Commission 2002a; 2002b). As a result of the low birth rates, younger age cohorts that enter working age, are much smaller than the old age cohorts that exit that age (OECD 2007: 30-31). This causes the percentage of the working-age population to decline.

In the advanced economies, the percentage of the working-age population is projected to decrease by eleven percentage points from 2005 to 2050 (67 percent in 2005, 58 percent in 2050; United Nations, 2006). The projected decline differs markedly in different countries in terms of volume and timing (years). The main reason for this is that there is national variation over which years the birth rates peaked.

Below, I show how the birth rates affect the percentage of the working-age population in selected OECD countries between 2005 and 2020. The figure shows how the proportion of the working-age population is projected to develop in some countries, if the current death rates and birth rates remain, and there was zero net

migration. The figure indicates that during the 15-year period, the overall decline would be significant.

In the figure, the projected development is described country-wise in five-year periods (2005-2010, 2010-2015, 2015-2020). The numbers indicate percentages of the 2005 population. According to this projection, the total percentage of working-age population would increase throughout this period in only four of the included countries. In most countries, the decline would start between 2010 and 2015. In the 2005-2010 period in which we currently lie (white in the figure), the decline would start in only five countries. The decline would continue between 2010 and 2015 (grey), and in 2015-2020 (black) at a different pace in different countries. Also the increases in these countries slow down as time goes by. The different pace of the decline in different countries follows to a large extent from previous variation between birth rates in the countries. Countries on the left-hand side are experiencing the most severe declines. Countries on the right-hand side are projected to do slightly better; during previous decades, they have had better birth rates (e.g. Iceland) and especially more immigration (e.g. New Zealand and the USA; Ireland has done well in both). Foreign immigration tends to decrease the average age of population in the receiving country because immigrants' age structure is usually younger than that of natives (OECD 2008: 63-75).



**Figure 2. Expected change in the working-age population assuming zero net migration over the periods indicated, 2005-2020 as a percent of the 2005 population, according to the OECD (2007: 31).** Original source: Eurostat, except for Belgium, Italy and non-European countries where data refer to the United Nations Population Division (not necessarily the same UN data I use elsewhere in this paper).

Declines like these are not necessarily economically problematic. The OECD (2007: 30) says that its member countries have previously gone through similar kinds of demographic developments, but that this time the impact of ageing on the public economy is much greater because the old age cohorts continue to consume at a high level. This consumption refers to pensions and elderly care, i.e. income transfers and public services that must be paid for and produced by the ever shrinking proportion of the employed. This issue is discussed next.

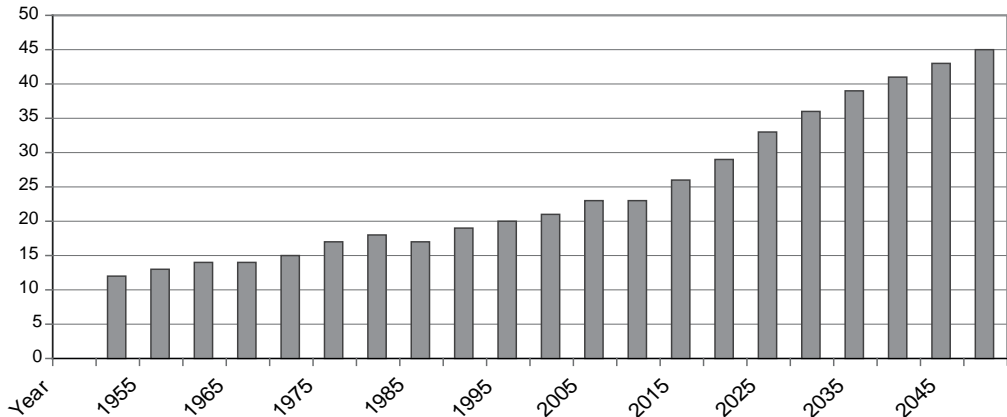
## 2. Ageing of this kind is a societal problem

The distorted age structure will be followed by the emergence of problems concerning public finance and the availability of labour. Through these effects, the negative impact of the distorted age structure would be reflected across societies. Not only income transfers and public services – i.e. the very core of the welfare state – would suffer, but also the general unemployment rate could increase. This is because the decreasing availability of labour would push foreign and domestic investment, production facilities and jobs abroad.

However, the main problem for the public sector is that, as many retire and the unemployment rate may be quite high, public finance lacks the capacity to carry out the demanded public services and income transfers. The problem is shown clearly in dependency ratios, that express the number of working age people in relation to the non-working age population. In other words, population dependency ratios express how many non-working age people one working age person has to support. (Statistics Finland 2008.) Dependency ratios are usually divided to young and old-age dependency ratio, which focus on the relative size of population that is below or above working age.

The figure below shows the projected increase in old-age dependency ratios – i.e. how much the percentage of the elderly population is calculated to increase until 2050. The post- WW II changes in birth rates – the 1950's peak and the crumble that followed it – will show as a significant increase in dependency ratios.

The more elderly people there are in relation to those of working age, the higher the number. In practice, the higher the number is, the greater impact it has. The number increases fourfold during this period. The most rapid increase would start in 2010, after which



**Figure 3. Projected development of the old-age dependency ratio in the economically advanced areas of the world, i.e. the number of the elderly per one hundred working-age people.** Source: United Nations (2006) World Population Prospects: The 2006 Revision, available at <http://esa.un.org/unpp> (July 28, 2008).

the ratio would almost double in forty years. The increased level of consumption of the elderly means that if the percentages were controlled by the level of consumption (i.e. how much each elderly person consumes), the pillars would be higher and the increasing trend would also be stronger.

The Finnish case describes well the overall trend in the OECD: Statistics Finland (2007) projects that the Finnish working-age population would decrease by eleven percentage points between 2005 and 2030 (from 66,5 to 57,5 percent), while the percentage of people over 65 would increase by ten percentage points by 2030 (from 16 to 26 percent) (*ibid.*). The old-age dependency ratio would almost double by 2030 (from 25% in 2005, to 40% in 2030 (Valtiontilintarkastajat 2006: 17).

Finland is, however, only a suitable example country. In reality, there is extensive variation in the development of the old-age dependency ratio, depending on country (i.e. when the birth rate peaked) and projection. The causes are the same that produce the differences described in figure two. The only difference between figure two and this figure is that the dependency ratio also takes into account the share of the elderly and therefore gives a picture about the fiscal burden that the ageing brings about.

In Finland, if the birth rate remains at its current level, the old-age dependency ratio is projected to be

the worst in the EU by 2030; but, even though the rate increases after that, it will be below the EU average in 2050 (Valtiontilintarkastajat 2006: 17).

### 3. Summary and conclusion

The countries that by the United Nations definition are “advanced” (United Nations 2006), have a distorted age structure with large age cohorts in their late fifties, followed by much smaller age cohorts. The large cohorts were born during the decade after the Second World War. Most of them reach retirement age during the next fifteen years and exit the working age. Young age groups that enter working age during the same period are much smaller and thus the size of the working-age population is projected to decline. This is certain in the case of the native population (on the EU, European Commission, 2002a; 2002b).

While the large cohorts exit working age, most of them become pensioners. The consumption level of pensioners is high because of developed pensions and public service systems. The number of the working age population that must pay for this consumption, is projected to be too small when the baby boomers retire. This is expected to increase the old-age dependency ratios to the point where national economies would have trouble in handling the change. The effects would be reflected across the societies.

In order to avoid the worst impact that follows from this shortfall in the working-age population, advanced economies should seek to mobilise unused domestic labour resources, to increase foreign labour migration, and to increase the productivity of work. If these measures are used in parallel, it is believed that the quantity of workers could compensate for the demand pressure coming from the elderly and other population groups.

There was much variation from country to country as to when the baby boom generation was born. Thus, there is national variation over when the decreases take place and how large a percentage of the working age population they effect. In addition, the percentage of the elderly and the relation between these two groups, expressed by the old-age dependency ratio, varies by country for the same reason.

## Bibliography

- European Commission (2002a) Communication from the Commission to the Council and the European Parliament. Europe's response to World Ageing: promoting economic and social progress in an ageing world. A contribution of the European Commission to the 2nd World Assembly on Ageing. COM (2002) 143 final, Brussels, March 18, 2002.
- European Commission (2002b) Commission says immigration cannot correct the effects of Europe's ageing population". Press release. [http://ec.europa.eu/employment\\_social/news/2002/jun/113\\_en.html](http://ec.europa.eu/employment_social/news/2002/jun/113_en.html), accessed August 28, 2008.
- Kautto, M. (2004) "Johdanto: syntyvyys ja maahanmuutto vaikuttavat väestönkehitykseen (The birth ratio and migration affect the demographic development)". In Valtioneuvoston tulevaisuusselonteon liiteraportti 3: Väestönkehitykseen vaikuttaminen – tulisiko syntyvyyttä ja maahanmuuttoa lisätä? (The Finnish government's document about future policy, annex report 3), Helsinki, Valtioneuvosto, 7–12.
- OECD, organisation for economic cooperation and development (2007) International migration outlook (SOPEMI 2007), Paris, OECD.
- OECD (2008) A profile of immigrant populations in the 21<sup>st</sup> century. Data from OECD countries [from the DIOC database], Paris, OECD.
- Parkkinen, P. (1998) "Vanhusten vuosisata (The century of the elderly)". In Pitkänen, Kari (1985, ed.) Artikkeleita Suomen väestöntutkimuksesta (Articles about Finnish population research). The University of Helsinki's Demographic Department's hand-outs 61/1998), 263–281.
- Statistics Finland (2007) Population projection 2007–2040. [http://www.tilastokeskus.fi/til/vaenn/2007/vaenn\\_2007\\_2007-05-31\\_tie\\_001\\_en.html](http://www.tilastokeskus.fi/til/vaenn/2007/vaenn_2007_2007-05-31_tie_001_en.html), accessed August 28, 2008.
- Statistics Finland (2008) E-course in statistics. [http://www.tilastokeskus.fi/tup/verkkokoulu/esittely\\_en.html](http://www.tilastokeskus.fi/tup/verkkokoulu/esittely_en.html), accessed August 28, 2008.
- United Nations (2006) World population prospects: the 2006 revision (database). <http://esa.un.org/unpp/>, accessed August 28, 2008.
- Valtiontilintarkastajat (2006) Valtiontilintarkastajien vuosikertomus 2006 (The Finnish State Treasury's annual report), Helsinki, Eduskunta.