
Peter Ekamper,
Netherlands Interdisciplinary Demographic Institute, The Hague, The Netherlands

Abstract
Population ageing is one of the most distinctive demographic events of the past several decades. This paper will focus on recent and future trends in the ageing of the labor force in the Netherlands. First the Dutch situation will be put in an international perspective. How does the ageing of the Dutch labor market compare to other (European) countries? Next, the paper will look into the Dutch labor market in more detail: what are the differences in labor force participation of men and women, of migrants and non-migrants, what are the differences between industries? Ageing of the work force is for instance rather high in public administration and education, but quite low in retail trade and the hotels and restaurants industry. The final part of the paper will deal with the consequences of future labor force ageing for Dutch society in general and industries and firms in particular.

1. Introduction
There are nearly one million firms in the Netherlands. About half of them have people in employment. For all firms with people in employment size and composition of the current and future labor market are of importance. An important issue to the labor market, both in the Netherlands and Europe, is the future changing age structure of the labor force. In this respect two groups of factors have to be taken into consideration. First, there is the purely demographic phenomenon of population ageing. Both the total Dutch population and the Dutch labor force are ageing. Due to the decrease of the number of births in the Netherlands since the end of the sixties the number of young new entrants to the labor market decreased. This will lead to both an increasing percentage elderly and a rise of the average age at the Dutch labor market now and for a medium long period. Secondly, there is the aspect of changing age-specific labor force participation. Both increase of labor force participation of young people and decrease of labor force participation of elderly slow down the ageing process of the labor force. Opposite trends of course will reinforce the ageing. This paper deals with main aspects of labor force ageing in the Netherlands. First the Dutch situation will be put in a European perspective. Next the paper focuses on the Dutch case, by looking at past and future trends, immigration and non-nationals, economic activity, and consequences of an ageing labor force.

2. Ageing of the European labor market
The next decades Europe will be inevitably confronted with an ageing population. In the 25 countries of the European Union for example, according to the Eurostat baseline population projection the share of the elderly aged 65 and over will increase by around 35% in twenty years and even by 80% in fifty years time. (Eurostat, 2004)
Also the potential labor force – that is, the population in the age group 15-64 years – will age. The population ageing is a direct consequence of at first a period with very high and after that with very low numbers of births. The age structure of the population of the European Union is dominated by the large post-war birth cohorts born in the period 1946-1965. These cohorts will gradually reach retiring age in the period 2005-2030 and consequently leave the labor force. Due to the fertility decline younger cohorts are much smaller.

The large size differences between the older and younger cohorts will change the future age structure of the European Union potential labor force to a large extent. Though the decrease
of the number of births did not happen at the same time and the same speed in all countries, the general trend is more or less the same throughout all the countries. The recently acceded countries particularly faced a rapid decrease of fertility rates after 1990, that will have its effect in due time (Van der Erf, 2001).

Recent studies on future European labor force ageing have been carried out by Bijak et al. (2005) and Carone (2005). These studies project a strong increase of the percentage older workers, both in the Netherlands and the European Union as a whole. In 2005 11.2% of the labor force population was aged 55-64 years; in 2025 around 17.4% of the labor force population will be in the age group 55-64 (Carone, 2005). This increase is partly due to higher labor force participation of older workers, but mainly due to the already mentioned consequence of the baby-boom generation approaching retiring age and the succeeding lower-birth-rate cohorts reaching working age.

Figure 1a and 1b. The population of the European Union by age, sex and labor status in 2005 (observed) and 2025 (projected). Sources: Eurostat; Carone (2005).

1a. 2005 (observed)

1b. 2025 (projected)

Though all countries of the European Union certainly will have to face a strong labor force ageing, there are substantial differences amongst countries. The first aspect of importance in
this respect is the level of labor force participation. Figure 2 shows observed (2000 and 2005) and projected (2025) labor force participation (i.e. employment) rates in all European Union countries. Countries are in ascending order of employment rates in 2005. The Scandinavian countries show high employment rates partly due to relatively high labor force participation of women. Austria, Belgium, Hungary, Italy, Poland, Slovakia and Slovenia have much lower labor force participation rates due to on average lower retiring ages. Nowadays the Netherlands takes a rather average position around the European Union average employment rate. However, in the 1980s the Netherlands was characterized by a relatively young work force with low employment rates of older workers.

The extent to which the labor force is ageing can be made evident by the share of older workers in the labor force. Figure 3 shows the percentage of older workers aged 55 and over in the total labor force for all 25 European Union countries in 2000, 2005 and 2025. Again the countries are in ascending order of the percentages in 2005.

Austria, Belgium, Poland, Slovakia and Slovenia have relatively low proportions of older workers in 2005, whereas Sweden has a high share of older workers. The picture will remain more or less the same in 2025. However the change of the proportion older workers shows remarkable differences amongst countries. In Sweden there is hardly any rise in the percentage of older workers. Particularly Austria, Italy, Slovakia, Slovenia and Spain will have to face a huge increase of the share of older workers. The Netherlands actually shows a modest future increase. However in the past decade the increase of the share of older workers was of all European Union countries the highest in Denmark, Finland and the Netherlands.

3. Ageing of the Dutch labor market
The ageing of the Dutch population actually started at the end of the 1960s. In the 1950s and 1960s the Dutch population was characterized by rapid population growth and a young population. Particularly the decrease of the fertility rate contributed to the population ageing. The number of births declined from 250 thousand at the beginning of the 1960s to below 200 thousand ten years later. This was a result of two trends: decline of the average number of children combined with at first (till 1970) a decrease and next an increase of the average women’s age at birth (Van Imhoff and Van Wissen, 2001). The average age of the Dutch population of 32 years in 1960 was around seven years lower than in 2005 (See Figure 4). For the working age population the ageing only started in the mid 1980s. The first cohorts of the post-war generation start contributing to the rise of the average age. Since then the average age of the total population and of the working age population show similar trends. Around 2010 the first cohorts of the post-war birth generation start leaving the working age population. The average age of the working age population remains stable from then on.

The change of the average age of the labor force and of the working age population show a similar pattern. However, changes in the average age of the labor force are only partially related to the ageing process since a number of developments have been taking place simultaneously. The effect of the ageing process among the male part of the labor force was (more than) offset by the reduced participation of the older workers in the labor market, mainly due to disability benefits and early retirement. On balance the average age of the male labor force still declined until 1990. Among the female labor force, on the other hand, the ageing process was reinforced by their increased labor force participation. This resulted in an increase by almost seven years in the average age of working women since 1960.
Figure 2. Employment rates of the population in age group 55-64 by country, European Union, 2000, 2005 (observed) and 2025 (projected)

Sources: Eurostat; Carone (2005).
Figure 3. Percentage of the employed population in age group 55-64 by country, European Union, 2000, 2005 (observed) and 2025 (projected)

Sources: Eurostat; Carone (2005).
Whereas the age of entering the labor market increased during the last decades, the average exit rates decreased particularly for men. Employment rates in the age group 55-64 dropped until the mid 1990s (Table 1). Particularly in the economically unfavorable 1980s a lot of older workers left the labor market before reaching the official retirement age of 65, using early retirement schemes, disability benefits and unemployment benefits. This is also evident from the shortened lifetime labor careers (see Liefbroer and Dykstra, 2000). Men born between 1901 and 1910 worked 45 years on average until reaching the age of 65. Men born between 1921 and 1930 worked 5 years less on average until reaching the age of 65.

The same men born between 1901 and 1910 worked 27 years on average until reaching the age of 45. Men born between 1941 and 1950 had only worked 24 years up to the same age. Men started entering the labor market later and later, and left the labor market earlier and earlier. Moreover due to the increased life expectancy the labor career becomes an increasingly shorter part of the entire life course. According to a study of Liefbroer and Henkens (1999) men born in the period 1903-1907 participated 74% of their lifetime at the labor market; men born thirty years later participated only 58% of their lifetime.

Table 1. Employment rates (%) by age, sex and year, the Netherlands

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<tbody>
<tr>
<td>Men</td>
<td>50-54</td>
<td>93</td>
<td>87</td>
<td>83</td>
<td>77</td>
<td>81</td>
<td>82</td>
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<td>64</td>
<td>58</td>
<td>69</td>
<td>76</td>
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<tr>
<td></td>
<td>60-64</td>
<td>74</td>
<td>58</td>
<td>40</td>
<td>29</td>
<td>22</td>
<td>20</td>
<td>26</td>
<td>32</td>
</tr>
<tr>
<td>Women</td>
<td>50-54</td>
<td>21</td>
<td>17</td>
<td>24</td>
<td>27</td>
<td>36</td>
<td>45</td>
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<td></td>
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<td>8</td>
<td>8</td>
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The efforts of the Dutch government to try to turn round the trend towards a lower and lower early retirement age seem to be successful by now. Since 1995 employment rates of older workers are gradually increasing. Male employment rates in age group 55-59 for instance decreased from 1971 to 1995 from 87% to 58%, but increased since then to 76% in 2005. Female employment rates particularly increased tremendously at ages above 50.

The employment rate of women aged 50-54 for instance more than tripled since 1971. This growth is to a great deal due to increasing labor force participation of younger birth cohorts. Younger cohorts of women tend to stay longer in the labor market even if they get older (Van Solinge and Fokkema, 2000). The average age of employed women therefore increased by around seven years since 1960 (Figure 4). The average length of the working life career of women thus increased (starting from the cohort of women born between 1931 and 1940; see Liefbroer and Dykstra, 2000).

Projections carried out by Statistics Netherlands (De Jong, 2005a) show that the average age of the Dutch population will increase by another four years by 2030 and that the average age of the working-age population will increase by around two years by 2015.
Figure 4. Average age of the total population, working age population (age group 15-64) and labor force, the Netherlands, 1950-2050

Source: own computations based on Carone (2005).

Figure 5. Population in employment by sex and age group, the Netherlands, 1985, 2005 (observed) and 2025 (projected)

It is not quite clear how the age structure of the Dutch labor force will change since economic developments play a role alongside demographic trends. According to Eurostat labor force projections (Carone, 2005) the average age of the labor force will increase by one year in the coming decade. A decline will not set in until after 2020.

Trends in the average age of the total labor force are not always indicative of the ageing process. They do not acknowledge differences in the age structure. The proportion of the older workers is also a useful indicator of ageing. The percentage of 55 to 64-year olds is due to increase substantially, from 13 per cent in 2005 to 17 per cent in 2025 for men and from 9 per cent in 2005 to 14 per cent in 2025 for women (Carone, 2005). The ageing process is clearly reflected in the changing age pyramid of the labor force (Figure 4). In 1985 most males in the labor force belonged to the 30 to 39-year age group; in 2005 most males are part of the 35 to 44 age category, and in 2025 a large part will be part of the 50 to 54-age category.

Both the average age of the labor force and the share of older workers increased substantially the past decade. This process will go on the next couple of decades. The ageing of the labor force may even be greater than one would expect on the basis of the Eurostat baseline labor force projections (Carone, 2005) since efforts are being made to boost the participation of older workers.

Due to (future) labor shortages one might expect firms to lay off less older workers using unemployment benefit schemes and expect them to implement adjustments to prevent disability. Also transformations of pay-as-you-go early retirement schemes to flexible capital funded early retirement schemes could discourage exit from the workforce. In these new flexible early retirement schemes people are still able to stop working before they reach the official retirement age but at much higher costs than in the previous pay-as-you-go early retirement schemes. (Van Dalen and Henkens, 2002)

4. Immigration

In the discussion on the future population and labor force ageing the issue of immigration draws attention. Two aspects are of particular importance: the impact of immigration on population ageing as such, and the role of immigration to solve future labor shortages.

Immigration might slow down population ageing because immigrants are usually younger than the present population. However, immigration does not seem a solution to population ageing in the long run, since migrants also get older and will contribute to the population ageing themselves. To keep for instance the Dutch old-age dependency ratio (that is the ratio of the population aged 65+ to the population aged 20-64) constant at the current level, Dutch society would require an annual net migration of 150 thousand immigrants. The Netherlands would have a total population size of about 50 million at the end of the century (see Alders and Garssen, 2002). The study of Bijak et al. presents similar analyses using different dependency ratio definitions and concepts resulting in total Dutch population sizes varying between 50 and 63 million around 2050 already and annual net migration flows gradually increasing to 1 to 1.6 million. (See Bijak et al., 2005)

Irrespective of immigration being an answer to population ageing, immigration could very well offer a solution to preventing future labor shortages. The past decade the number of immigrants varied between 95 and 130 thousand per year. The number of migrants coming to the Netherlands because of job reasons is between 10 and 20 thousand. The majority thus
migrates for other reasons, like family formation and family reunification. There is a
difference between immigrants from western countries and other countries: for instance, in
2004 around 50% of the immigrants from the “old” European Union (EU-15) countries came
for job reasons against 24% for non-western countries (Statistics Netherlands). These kinds
of differences are also apparent in employment rates of the current foreign born population in
the Netherlands. (See Table 2)

Table 2. Employment rates (%) by sex, ethnic background and year, the Netherlands

<table>
<thead>
<tr>
<th></th>
<th>Native Dutch</th>
<th>Foreign</th>
<th>Western</th>
<th>Non-western</th>
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<tr>
<td></td>
<td></td>
<td>All</td>
<td></td>
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<tr>
<td>Men</td>
<td>1995</td>
<td>74</td>
<td>57</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>79</td>
<td>66</td>
<td>74</td>
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<tr>
<td></td>
<td>2004</td>
<td>76</td>
<td>63</td>
<td>71</td>
</tr>
<tr>
<td>Women</td>
<td>1995</td>
<td>45</td>
<td>37</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>54</td>
<td>44</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>56</td>
<td>46</td>
<td>54</td>
</tr>
</tbody>
</table>

Source: Statistics Netherlands.

Though employment rate differences between the native Dutch population and the population
with a foreign ethnic background diminished, employment rates of the foreign born
population remain below average (See Van Gils, 2003). Particularly employment rates of the
population with a non-western background are much lower. This applies to all educational
levels. Employment rates of the children of the population with a non-western background
(second generation) are slightly higher though than their parents’ (first generation). (See
Reemers, 2003)

To potentially solve labor shortages essentially three migration flows are of importance:
migration from other Western European countries, migration from Central and Eastern
European countries, and other migration. Statistics Netherlands expects a declining net
migration flow, from -13 thousand in 2006 to 30 thousand in 2025 of which around 20
thousand from non-western countries (Alders, 2005b). The labor capacity from other western
EU countries is limited (see Van Imhoff and Van Wissen, 2001). The net migration between
these countries is rather small in general. Moreover economic differences are relatively small
and these countries face similar ageing problems with respect to the labor force. Hugh
migration flows from the Central and Eastern EU countries are not very likely (Van Imhoff
and Van Wissen, 2001). These countries in general will also have to deal with population and
labor force ageing. A relatively high temporary flow of higher educated migrants from the
poorer to the richer European Union countries may very well be possible. However,
according to the Statistics Netherlands population projection assumptions, the Dutch share is
expected to be rather limited (Alders, 2005a; Alders, 2005b; De Jong 2005b). The largest
flow of migrants is expected to come from non-western countries, mainly related to family
formation and family reunification. Labor force participation of this group might, like with
the current population with a foreign background, lag behind the native Dutch born
population (Van Imhoff and Van Wissen, 2001). All in all, migration is probably only a very
limited solution to future labor market shortages due to population ageing.
5. Ageing by economic activity

The ageing of the Dutch labor market of course has implications for the age-structure of personnel in individual firms and organizations and thus for the several economic industries. The extent to which organizations will be faced with problems related to an ageing workforce, and when these problems are likely to arise, depends for a part on their current age structures. Other factors which play a role are the question of whether the organization is growing or cutting back on staff numbers, as well as patterns of age-specific inflow and outflow (See for instance Ekamper, 1997). Also the economic industry is of importance to the age structure. Hug differences exist between industries for instance regarding to required educational level, type of education, and skills.

Figure 6. Percentage of the employed population in age group 55-64 by industry, the Netherlands, 1995, 2000 and 2005

The share of younger and older workers per economic industry is a useful indication of industrial age structure differences. Figure 6 and Figure 7 show the percentages of the employed population in age group 55-64 and 15-24 respectively in 1995, 2000 and 2005. From Figure 6 it is clear that in the past decade the share of older workers increased in all industries but agriculture and fishing.

Particularly public administration and education faced a strong increase in the percentage older workers. In agriculture the share of older workers was already very high in the past (16% in 1995) compared to other industries. The educational sector had a high share of older workers as well in 1995 already (13% aged 15-64). Above that the share of older workers in the educational sector increased to 17% in 2005.
The highest increase of the share of older workers occurred in the public administration: a rise from 5% in 1995 to 14% in 2005. Typically young industries are the wholesale and retail trade industry and the hotels and restaurants industry. They both show high and still increasing shares of younger workers (age group 15-24). The share of older workers is relatively low but increasing as well in the past couple of years. In wholesale and retail trade almost one third of the workers are younger than 25 years of age. In the hotels and restaurants industry the share of younger workers is nearly 50%, whereas the share of older workers is only 5%. (See Figure 7)

Even within industries differences can be observed. Within wholesale and retail trade supermarkets and department stores show an even younger workforce and within the educational sector secondary education is even more aged than the educational sector as a whole.

6. Consequences of labor force ageing

The next decades the European Union will be inevitably confronted with an ageing labor force. The Dutch labor force used to be relatively young but takes an average position nowadays. In the Netherlands like in most other European Union countries the labor force ageing process will continue a couple of decades. Studies of consequences of population ageing usually focus on the financial consequences particularly with respect to the old age pension schemes and the health system (see for instance Van Ewijk et al., 2000). The strong increase of the Dutch population aged 65 and over will start around 2010, when the large post-war birth cohorts will reach retirement age. Until then ageing will mainly affect the labor market. Without dramatic changes in exit flows from the labor market (like early retirement) the inactive population within the potential workforce will still increase. This might negatively affect the willingness of younger workers to pay contributions or premiums for older inactive persons. However, at the organizational or firm level this is hardly a
problem, since organizations and firms themselves only pay part of these contributions. These costs can be shifted on to society as a whole, or like often in case of early retirement schemes, to all workers in a sector. An aspect that is of importance to firms and organizations is the future replacement demand for labor. Within a decade individual organizations and industries as a whole with a high share of older workers will not only loose a substantial number of workers, including their skills and knowledge, but also need to replace them with qualified new staff. As long as these older workers do not reach retiring age, consequences of their numerical share in the organization are dominant. An increasing number of older workers possibly has consequences with respect to the productive capacity and the related costs.

Little study has been done into the direct relationship between age and productivity, especially because it is difficult to find a good measurement for individual productivity. Studies were carried out hypothesizing a direct relationship between productivity and wage costs. However, research which addresses on the directly measurable productivity in relation to age is scarce. The research available indicates on no relationship between the two. McEvoy and Cascio (1989) state that there is persuasive evidence from different studies across a wide variety of jobs that no general relationship between age and performance exists. Stabilization or decline in functioning sometimes remains limited to some aspects of the work. Sometimes even functioning increases with age. Only the ability to cope with physical strain decreases with age (Shephard, 1995). (Negative) stereotypes about older workers in the organization often play an important role (Henkens, 2003). Older workers of today already are incomparable with the older workers in the past (see for example De Klerk, 2001). Older workers nowadays on average have higher education and more skills, are more prosperous, have a higher life expectancy, and are healthier. The older workers of today build a group more heterogeneous than in the past. In the future older workers probably will be on average even higher educated and more prosperous than the current generation of older workers (WRR, 2000).

Where productivity is not clearly related to age, wage is. Wage scales with automatic increments are rather general in the Netherlands. Therefore strongly increasing income profiles by age are dominant. This results that for men average income between age 25 and 50 roughly doubles; for women the increase is somewhat smaller (Timmermans, 1997). The last earned salary generally is the highest salary. A lot of pension and benefit schemes are based on this highest salary. For this reason an ageing work force can lead to a strong increase of the total wage costs. This possibly has negative consequences on both the competitive position of firms and the competitive position of older workers within the organization.

However, pension reforms in the Netherlands include a change to pension benefits based on the average salary. Also transformations of pay-as-you-go early retirement schemes to flexible capital funded early retirement schemes could discourage exit from the workforce. In these new flexible early retirement schemes people are still able to stop working before they reach the official retirement age but at much higher costs than in the previous pay-as-you-go early retirement schemes.

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