
Original Article

Population ageing and the affluent society: The case of the Netherlands

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ABSTRACT Developed countries are currently in an unprecedented transition to a new era with ageing populations. Ageing will result in a smaller proportion of the population being employed in the decades after 2010/2020. Changing demography, fewer workers and more retirees give rise to much concern about the fiscal sustainability of public pension schemes, healthcare systems and other social services. As a result, pension reform is under discussion in all developed countries. Under the plausible assumption that 1.7 per cent yearly growth in per worker production can be realized in the coming two decades and 1 per cent in the years after 2025, it can be demonstrated that the per capita consumption of the working population increases from 2007 to 2025 by 27.4 per cent and that of the 65⁺-population by 41.6 per cent. Only with a zero growth rate of labour productivity average will welfare decrease by about 9 to 1 per cent, whereas a minor 0.5 per cent productivity growth with unchanged labour participation rate (0,73⁵) suffices to maintain welfare at its present level.

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INTRODUCTION

Increased life expectancy and lower birth rates in the coming decades significantly will shift the age distribution of populations in developed countries towards older persons, and this will occur in developing countries as well, in the second half of this century.

As a result, the scope and structure of pension systems are under discussion throughout the world. Apart from lowering benefit levels, postponing retirement and increasing contribution

rates, the issue of funding versus pay-as-you-go is often raised to address the future problems of financing public pensions. The present financial crisis with its falling capital returns is a strong argument for further raising the retirement age. After some introductory observations in the 'Introduction' section, various economic scenarios for the coming decades are presented in the next. It is argued in the subsequent section that under realistic and plausible assumptions, the Netherlands and other western economies can indeed grow old rather comfortably. We then make use of some simple macroeconomic relationships ignoring, for example, cyclical economic developments.^{1–8} Alternative scenarios are presented in the penultimate section. The final section draws conclusions.

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Some preliminary observations

The economic costs of supporting the retired population can best be measured as that part of national product that is used for supplying the goods and services that the retired consume. This part of national product can therefore no longer be used for other purposes, such as producing consumer goods for the active population and producing investment goods. These economic costs are financed by some combination of transfers from labour earnings of the active population (pension contributions), general tax payments and investment revenues (earnings on assets owned by individual retirees or by pension funds). Different approaches to pension financing imply different allocations of pension costs between contributions out of labour income and capital returns. The total costs of a pension to the economy are always the same, though they may be distributed differently. Policies to promote economic growth are the best strategy to cope with the rising costs of an ageing population. Assuming that the standard of living of the retired population does not stay behind that of the working-age population, the economic costs of supporting the retired will increase proportionally. We believe, however, that the burden of an ageing society can be more easily borne when national product is larger; likewise, the burden can be felt as more problematic when national product is smaller.⁹

More emphasis on funding is generally recommended to cope with the adverse consequences of population ageing in the next century in the western world. From a welfare point of view, a crucial question arises: 'Does funding matter?' It appears that a major difference between funding and pay-as-you-go is that funding is generally leading to an additional flow of saving during the period of growing up – and under conditions also in an ageing economy with economic growth – thereby creating a resource base that enables higher levels of production and consumption for both future workers and retirees. When certain conditions are fulfilled, the question as to whether funding matters and can be part of the solution to the problems caused by, for example, adverse

demographic developments (and deteriorating ecological conditions) can be answered affirmatively. Clearly, the present financial crisis with its low capital returns is extremely disadvantageous for pension schemes based on funding. Funding will be preferential to the extent that it causes national product to be higher. It will become clear that the costs of population ageing cannot be avoided. On the other hand, by increasing savings and investments now – the economic costs or the benefits forgone are the reduced current consumption expenditures of the present generations – one is anticipating the difficulties that could otherwise (with no funding) arise in an economy with a lower national product. This favours future generations.

Note, however, that pension finance systems are not created, at least not initially, because of the impact they might have on the performance of the national economy. Foremost, they are designed as mechanisms to adequately provide for pension incomes to the elderly. The two purposes do not necessarily exclude each other, however; they can be compatible.

The impact of an ageing population on the economy

The ageing of the population, the costs of supporting the elderly and the way pension plans are financed have an important impact on the performance of the economy, as they influence saving behaviour, labour force behaviour, technological progress and productivity. The study of the relationships among ageing, pension finance and saving behaviour have produced a considerable volume of (empirical) publications. The primary issue has been whether pay-as-you-go-based pension systems reduce aggregate national savings and/or whether greater reliance on funded pension plans would increase national savings. The second question is whether population ageing affects other components of saving.

The ageing of the population tends to reduce labour supply, as labour force participation among the elderly is lower than among youngsters. One cause of lower participation is the income effect

of more generous public pension plans and a broader coverage of supplementary private plans. Other factors that are important are an increased willingness to retire on grounds of (bad) health, worsening labour market opportunities for the less skilled elderly and, above all, a higher valuation of leisure time.

The rapid shift to earlier retirement in many countries has slowed down since the 1990s; there is even a major reversal, like in the Netherlands. Programmes to encourage early retirement through disability benefits, more lenient unemployment insurance schemes and several early retirement schemes are gradually cut back. Although the trend towards earlier retirement has come to a halt nowadays, the continued population ageing on its own will lead to a lower future participation rate of the total working population. It is demonstrated below in a simple demo-economic scenario-analysis for the Netherlands that a rather moderate increase in labour productivity suffices to offset the negative impact of population ageing on average per capita consumption or the general standard of living. Assuming a growth of labour productivity of 1.7 per cent per year – thereby following Netherlands' Bureau for Economic Policy Analysis (CPB)^{10,11} – ensures significant welfare increases for both working-age groups and pensioners.

The demo-economic situation in the Netherlands

Over the coming decades, the population of the Netherlands is projected to increase from 16.4 million in 2007 to 16.8 million in 2050, with a peak value in 2038 of more than 17 million people. Over this period, the population will age as well. The proportion of those over 65 years of age will rise from 14 per cent in 2007 to 24 per cent of the total population in 2050. The working-age population (20–64 years of age) will decrease from 61 per cent to 56 per cent over this period. The increase in the number of elderly is the result of the fact that the first baby boomers will reach the age of 65 soon. Secondly, people are living longer. In the coming decades, life expectancy for men will rise

by 5 years to 83.2 years and for women by 3 years to 85.5 years. As a consequence, the old-age dependency ratio – that is, the number of people aged 65 years and over and the number between 20 and 64 years – is projected to show a marked increase over the coming decades, from 24 per cent in 2007 to 43 per cent in 2050. In contrast, for the EU-15 as a whole the ratio is expected to double from 28.8 per cent in 2007 to reach 57.3 per cent in 2050. Population ageing is hence less pronounced in the Netherlands than in almost all other European countries.

The Dutch economy was growing in 2006 and 2007 with about 3½ per cent and in 2008 with 2 per cent, but in the fourth quarter of 2008 the economy was shrinking with 0.6 per cent. Gross national product for 2009 is projected to decline by an unprecedented 4¾ per cent. Forecasts for 2010 and 2011 are quite uncertain, but will highly likely be negative. As a consequence, the unemployment rate will rise from 4.5 per cent in 2008 to about 9 per cent in 2010. Labour force productivity was growing in 2007 with 1.8 per cent and a slight 0.8 per cent in 2008, and is projected to decline with 3.5 per cent in 2009. Productivity growth will increase considerably in 2010, amounting to about 5 per cent.

Financial markets are undoubtedly the source of the present economic crisis. Supervision has not delivered what it was supposed to – in the United States and in European countries. Improvement is urgently needed.

The Dutch pension system and recent reform measures

The Dutch pension system is a comprehensive system consisting of four pillars. The basic old-age pension, AOW (the first pillar) provides a flat-rate pension income for all residents at a level related to the net minimum wage. The AOW is paid at the age of 65 to everyone who has been a resident of the Netherlands between the ages of 15 and 65, independent of wage or paid contributions. The basic pension scheme is pay-as-you-go-financed. The second pillar comprises the occupational pension schemes, supplementary to the state pension. If a pension

scheme is installed, the participation of employees is mandatory. The supplementary system covers 92 per cent of employees. Almost all work-related pensions are defined-benefit schemes of the average-pay type – remember that about 10 years ago, most pension plans still were of the final-pay type. They are administered by about 500 pension funds, as well as industry-wide and company-based funds, and their financing is based on funding. Pension contributions are deductible while pension benefits are taxed. Collective pensions, including the basic system plus the various supplementary plans, aim to achieve a pension result of 65–70 per cent of average lifetime earnings approximately after 40 working years. Those employees who have to (or want to) go beyond the collective pension result can use private individual supplementary pension insurance of the defined contribution type, termed the third pillar, and to an increasing degree continue working (the fourth pillar).

The major pension reform measure in the Netherlands has been the considerable reduction in the facilities for early retirement by 2006. Employees born in 1950 or later have much less favourable conditions for early retirement than older employees. As a consequence, the effective retirement age was raised from 59 to 62 years. The Dutch old-age pension system, with a statutory retirement age of 65, has hardly been reformed in the last few years. The present financial crisis, however, has given rise to discussions on raising the regular retirement age to 67 years. Many other European countries have already taken steps in this direction.

The financial crisis

The year 2008 and up until now the year 2009 as well were very bad years for funded pension schemes in the Netherlands. This crisis also has a very human face. People soon to be retired with personal defined contribution (DC) accounts saw their pension capital declining dramatically. By the middle of 2009, most Dutch pension funds had a funded ratio between 90 and 95 per cent. This implies severe underfunding, as a ratio of at least 105 per cent is needed. The Dutch supervisory authority (DNB) requires a solvency

level of between 125 and 130 per cent of the liabilities.

A deficit has to be repaired within 15 years. If the funded ratio is below 105 per cent, repair is needed within 3 years. The Dutch government decided in March 2009 to allow pension funds 5 years for recovery. This mid-term response obviates the negative effects of abrupt policy measures without burdening new members too heavily with the scheme. As a result, for 2009 and probably for later years also, indexation of pension outlays to the elderly and of accrued pension rights of the working population in most pension plans will not be awarded. In a few cases, pension levels may be reduced. This will be the case particularly if interest rates remain low for a longer period ahead.

Every pension system must deal with the allocation of risks and costs between present and future generations involving redistribution issues, leading to conflicts of interests. Hence, pensions are income politics. In our view, further pension reform can only be successful, namely, financially and politically sustainable,¹² when it is depoliticised, for example by securing that ex-ante for each generation entering the pension scheme, the contributions paid during the working period roughly equal the pension benefits during the retirement period. Furthermore, apart from linkage to the funding ratio by linking indexation to economic growth and life expectancy at the time of retirement the pension burden can be managed. It goes without saying that to keep up the pension system, the ability and willingness of younger generations to join the system should be assured. The pension agreements between workers and retirees and between employers and employees are discussed now again.

In the next sections, the question as to whether western societies under various demo-economic scenarios can afford to grow older is answered.

SCENARIOS FOR THE NETHERLANDS

The size of birth cohorts has a significant impact on labour and capital markets. What can be said about this impact in the Netherlands in the coming decades? Some tentative lines of thinking

Table 1: Prospects for the Netherlands in respect of population, labour market and capital market; near term, medium term and long term

<i>Near term</i>	(2009–2020)
Population	
‘Last’ generation:	70+, sellers assets
Baby-boom generation:	54–65years, buyers assets
Baby-bust generation:	24–35years, entry labour market
First ‘next’ generation:	Child age
Labour market	Gradual tightening; increasing participation rate, higher level of wages, particularly in respect of young labour supply
Capital market	Structural large demand for assets; rather high asset prices; increased saving and investment level
<i>Medium term</i>	(2020–2030)
Population	
‘Last’ generation:	Dead
Baby-boom generation:	65–75years, exit labour market, sellers assets
Baby-bust generation:	35–45years, buyers assets
‘Next’ generation:	15–25years
Labour market	Tight, bottlenecks; high participation rate, rather high level of wages
Capital market	Relaxing, baby-boom generation seller of assets to the less numerous baby-bust generation; lower interest rate, lower asset prices; constant or slightly decreased saving and investment level
<i>Long term</i>	(2030–2050)
Population	
Baby-boom generation:	75+, sellers assets
Baby-bust generation:	45–65years, buyers assets
‘Next’ generation:	25–45years, entry labour market
Labour market	Normalized; high participation rate
Capital market	Relaxing, baby-boom generation seller of assets to the less numerous baby-bust generation; structural low interest rate and low asset prices; constant or slightly decreasing savings and investments. After 2050 towards a new equilibrium (?)

about developments of population, labour market and capital market in the coming decades are shown in Table 1. Taking 1955 as the year of birth of the average baby boomer, 1985 as the year of birth of the average member of the baby bust generation and 2005 as the birth year of the next generation, then in the *near* term – the years between 2009 and 2020 – the representative baby boomer will be between 54 and 65 years of age and the average baby buster will be between 25 and 35. The (first) next generation consists of children. In the *medium* term, 2020–2030, the average baby boomer is between 65 and 75 – his parents are no longer living during this period – and the average baby buster is between 35 and 45. The next generation is then between 15 and 25 years of age. In the *long* term – the period 2030–2050 – the average baby boomer will be older than 75 and the average baby buster will be between 45 and 65. The next generation is then between 25 and 45 years of age.

Ageing and factor markets

The groups over 60 years of age are characterized by labour force exit and pension assets divestiture. They sell these assets to members of the next generations who are between 25 and 60 years of age, who are then in the labour force and who are accumulating pension capital for themselves. Pensioners start selling assets after 2010/2015 and increasingly in the following decades.

There is a close relationship between cohort size and *labour market* conditions. In the *near* term and medium term, the labour market is becoming gradually more tight as young cohorts entering the labour market are less numerous. In the *medium* term, the baby boom generations are leaving the labour market. As a result, labour is becoming more scarce, capital intensity increases as a result of a maintained high level of investment; labour productivity and wage rates will rise.

Following CPB^{10,11} and Commission-Bakker,¹³ we assume that the participation rate of the working-age population will rise from 0.73⁵ in 2007 to 0.76 and 0.80, respectively, in 2025. Hence, the workforce will in the *medium* term increase at a yearly rate of about 0.35 to 0.7 per cent. In the *long* term, with an unchanged participation rate and negative population growth, the work force will decline (about -0.3 per cent yearly).

Higher wages can have two contradictory effects: first (in a world of global competition), they induce capital substitution and hence further productivity and employment growth. Second, higher wages can harm competitiveness and impede productivity growth, leading to diminishing investment and increasing unemployment, particularly of low-qualified labour. The same argument applies to a relatively low wage rate: it either induces labour substitution and lower productivity growth or contributes to a strong competitive position.

Capital markets

Of equal importance is the behaviour of *capital markets* in reaction to demographic developments. In the *near* future, there will be a continuing demand for assets from the baby boom generation. Asset prices will remain rather high. Savings and investments continue to grow; a less increasing labour supply will give rise to a higher capital intensity and a lower rate of return to capital, but also to inflationary forces, which work in the opposite direction.

In the *near* and *medium* term, the capital market is relaxing, as the baby boom generation is a seller of assets to the less populous baby bust generation. As a result, asset prices will be lower, and the real interest rate will persist at a rather low level. Savings and investments stabilize at an equal or slightly lower level, leading to a further capital deepening.

In the *long* run, the baby boomers and the leading-edge baby busters are selling assets to the baby bust generation. Asset prices will remain rather low. Decreased savings and investments match with the decline in the rate of investments

required to achieve a constant capital – output ratio. Hence, the rates of return to labour and capital stabilize. In the next section, the assumption is made that a 1.7 per cent yearly growth rate in per-worker production can be realized in the coming two decades – in the years after 2025, 1 per cent growth is assumed – though a higher rate of capital accumulation combined with (mild) labour scarcity may induce a more rapid rate of technological innovation. These assumptions are crucial for the prospects of the Dutch economy in the coming decades (the medium and long term).

Adverse developments can arise nonetheless. Participation rates hardly increase (from 0.735 to 0.75) and higher wages (as a result of labour scarcity) will harm the competitiveness of the Dutch economy. This will impede product and process innovation and investments, leading to falling productivity. Production is increasingly relocated abroad.¹⁴ A downward spiral develops with lower consumption, saving, investment and employment. The old-age income system can no longer be sustained.

To the extent that the increase of wages, however, can be compensated by productivity growth (with undiminished investment and corresponding high capital deepening), such negative distortionary effects will be absent. This is assumed here to be the case. The Dutch competitive position then does not suffer from a higher (nominal) wage level. Domestic consumption, saving and investment are growing steadily. Moreover, an expanding world economy will prevent interest rates from declining. The living standard of the elderly in this favourable scenario stabilizes at a high level.

A larger labour supply as a result of higher participation will lead to lower wage increases and hence less incentives to substitute capital for labour and less productivity growth. On the other hand, lower wage increases may stimulate product and production-process innovation, leading to higher investment and productivity growth. The net effect is ambiguous. We assume that a larger labour supply does not affect per worker productivity.

Table 2: Production and welfare in the Netherlands in the years 2007, 2025 and 2050 (indexes^a) for different population cohorts, 0–19 years, 20–64 years and 65+ years of age, assuming 1.7 per cent yearly production growth till 2025 and 1 per cent afterwards; and a labour force participation rate of 0.76 in 2025 and 0.75 in 2050 opposed to 0.735 in 2007 (baseline projection)

Age group	Population	Working-population	C/population	Y/working-population	C(=Y)
(1)	(2)	(3)	(4)	(5)	(6)
2007					
0–19	24.4	—	50	—	1220
20–64	61.0	44.8	100	192.7	6098
65+	14.6	—	90	—	1317
Total	100.0	44.8	Ave. 86.3	Total 8634	8634
2025 (Medium term)					
0–19	22.0	—	63.7	—	1398
20–64	59.1	45.0	127.4	261.0	7535
65+	22.0	—	127.4	—	2797
Total	103.1	45.0	Ave. 113.8	Total 11730	11730
2050 (Long term)					
0–19	21.9	—	77.0	—	1690
20–64	56.1	42.1	153.9	334.7	8635
65+	24.4	—	153.9	—	3755
Total	102.4	42.1	Ave. 137.4	Total 14080	14080

^aC is consumption and Y is a part of gross national product.

WILL WE GROW OLDER COMFORTABLY?

It is useful to have an idea of the economic consequences of the ageing population process. In Table 2, the population of the Netherlands in 2007 is taken as 100. The age distribution from row (1) is shown in row (2). Looking at the age distribution in the years 2007, 2025 and 2050, we discern the greying and the greening of the population in the Netherlands. It can be observed that the greying of the population in the Netherlands is more prominent than in any other OECD country.

Of the total population in 2007, 44.8 per cent was actually employed. At that time, the labour force participation, defined as the ratio of the currently employed population to the present population between 20 and 64 years of age, was 0.735. There still appears to be room for a further increase in female participation and that of older persons (55–65 years of age) in the labour force in the Netherlands. The CPB expects some further increase in the labour force ratio in 2025. A fraction of 0.76 of the working-age population – or 0.45 of the total population – can then be employed.^{10,11,15} For the period between 2025 and 2050, a modest decline is

foreseen in the aggregate labour participation rate, to 0.75. Behind this decline is a rising share of non-western immigrants with relatively low participation rates.

Assume that, in 2007, the per capita consumption of persons aged between 20 and 64 is 100 (index), that of youth (mostly children) is 50, and that the consumption level of older people is still lagging behind somewhat at 90 (Table 2). Hence, total consumption – which is a stable share of total national output – in the baseline year is 8634. Ignoring investments and a surplus or shortage in the (current account of the) balance of payments, the volume of production also amounts to 8634, that is, 192.7 per worker. Per capita consumption is a measure of personal welfare.

Productivity growth and welfare (baseline projection)

Growth in labour productivity in the Netherlands in the 1950s and 1960s was about 4 per cent annually, and in the 1970s it was 3 per cent. In the 1980s and 1990s, productivity growth declined to only 1 per cent. During the first years of the twenty first century, productivity growth amounted to 0.5–1 per cent per year. Hence, it is assumed that – if appropriate policy

measures are taken to promote participation and productivity growth – an average 1.7 per cent yearly growth rate in per-worker production can be realized in the coming two decades (the medium term).¹⁶ In the face of feasible negative consequences of population ageing on labour supply, labour productivity and saving/investment decisions, and the decrease in the productivity growth as the result of an ageing working population and a higher portion of services in national product, the presupposed 1.7 per cent growth rate is also considered an upper bound ceiling. Therefore, for extra safety after 2025, a modest yearly growth rate of 1 per cent is assumed.¹⁷

On the other hand, ongoing research on so-called endogenous growth models suggests that the ageing of the working population may induce incentives to invest in human capital, which, in turn, would increase economic growth in the long run. Although the combination of 1.7 per cent and 1 per cent productivity growth is far from excessive, appropriate policy measures should be taken in respect of labour supply, investment in human capital and technology to ensure that it will be realized. Of crucial importance is whether economic and fiscal policy measures to further increase the participation of the female labour force, that of people over 55 years of age and that of non-western allochthones, and particularly to reduce the persistently high disability rates, are successful.

Under these assumptions, in 2025 total production for consumption purposes – apart from investments and a surplus or shortage of the balance of payments – amounts to 11730, which makes possible an average per capita consumption of 127.4 for all people over 20 years of age (Table 2). Note that in 2025 equal consumption opportunities exist for the active population and the elderly. This marks the end of the struggle for emancipation.

The consumption of the active population increases by 27.4 per cent in the period between 2007 and 2025, and that of the 65⁺-population by 41.6 per cent (from index 90 to index 127.4). Note that in an unchanged population (no ageing from 2007 onwards), per capita consumption

would be 137.7 for all people over 20 years of age, instead of 127.4. The difference between the indexes 137.7 and 127.4 (10.3) can be considered the consumption sacrifice or the volume of consumption expenditures forfeited by the younger population groups in favour of the elderly.

Between 2025 and 2050, per capita consumption of the total population according to conservative assumptions increases by a slight 0.6 per cent annually.

Commission-Bakker's policy recommendations

Assuming that a labour force participation rate of 0.80 can be realized in 2025 and the following years (one of the major policy recommendations for stimulating the performance of the Dutch economy made by the commission-Bakker in June 2008¹⁸), the per capita consumption of the adult population increases further, from 127.4 to 134.1 in 2025 and to 164.5 in 2050 (as opposed to 153.9 under a constant participation rate of 0.76). A higher participation rate hence yields more than a 10-percentage-points welfare increase. When policies to increase productivity are successfully implemented, a continued labour force productivity in the period between 2025 and 2050 of 1.7 per cent annually takes place. This brings the average consumption of the adult population in 2050 on a much higher level, namely, 195.2 opposed to 153.9 of the baseline projection in Table 1.

ALTERNATIVE PRESENTATIONS

Table 3 shows the consumption level of the adult population in 2025 (2007 being 100) with different labour force participation rates and different growth rates of production per worker. Irrespective of the labour force participation rate (0.73⁵, 0.76 and 0.80), a zero growth rate of production per worker always induces a decrease in the consumption level of the adult population: from 100 in 2007 to 91, 94 and 99 in 2025, respectively, which seems serious but not dramatic. In all other scenarios, however, the standard of living can be maintained and there is still room for

Table 3: Consumption level of the 20+ population in 2025 (2007=100) under different growth rates of production per worker and different labour force participation

Participation rate	Growth rate of production per worker (%)		
	0	1	2
0.73 ⁵	91	109	130
0.76	94	112	134
0.80	99	118	141

a further increase, ranging from a modest 109 to a considerable 141.

Required growth rate to maintain or increase welfare

As mentioned we can also reverse the question and examine which yearly growth rate of labour productivity is necessary to offset the negative impact of population ageing on living standards or average per capita consumption in 2025. The question as to which level of productivity growth is necessary to arrive at a 25 per cent, 50 per cent or 75 per cent growth of average per capita consumption over the period between 2005 and 2025 is also answered. Evidence is presented in Table 4.

It turns out that a modest to moderate rate of technological progress is sufficient (and necessary) to offset the adverse consequences of ageing on welfare and the consumption level. Keeping the labour force participation rate of the working age population (0,73⁵) unchanged a growth rate of average production per worker of 0.5 per cent suffices to maintain welfare at the level of 2007.¹⁹ The required productivity growth rate is small compared with the productivity growth in the twentieth century, which amounted to about 1–2 per cent, respectively, in the 1980s and 1990s.

Furthermore, a growth rate of production per worker of zero necessitates the labour force ratio rising to 0.81 to offset any detrimental effect of population ageing on welfare.

On the other hand, yearly growth rates of labour productivity ranging between 1.5 per cent and 2 per cent, depending on labour force participation, give rise to considerable welfare increases in the year 2025 vis à vis the year 2007, varying between 19 per cent and 41 per cent.

Long-run trends

Population ageing is a long-run process occurring over the same period as major institutional and technological developments and the growth of international trade, which will reduce the adverse effects of population ageing and favour future economic development. It can be assumed (as we did in this article) that there exists a key trend of a further rise in labour productivity, which may far outweigh the relevance of population ageing. Population ageing does not operate in isolation. The gloomy short-term perspectives contradict the long-term prospect of global developments and technological change, which favour the international economy.²⁰ Or are there limits to growth?

Several long-run trends reduce the expected adverse effects of population ageing on the economy, the most important of which is the growth of labour productivity. Another major trend is the growing flexibility and decentralization of economic activities, indicated as institutional changes. There is a development from the (post-war) Keynesian economy – characterized by mass production techniques, large national corporations, standardized products, mixed economic order and an extensive welfare state with centralized pension systems – to the capitalist post-industrial society, with IT-induced smaller-scale production and flexible production techniques, diversified products and fewer commitments to the former welfare state.

The formal retirement at a fixed age in the former centralized welfare state will hence evolve in the post-industrial state into a flexible (earlier and partial) exit route at various ages, based on more diversified and to a large extent privatized arrangements, which are predominantly actuarially fair on an individual basis. Institutional innovations in respect of retirement practices – more diversified, less restrictive – will in an atomized society to a major extent solve the problems associated with ageing. The new exit routes comply with the new methods of production, the increased welfare of large groups of a population and a new balance between individual and collective responsibilities. Growth in labour productivity will do the rest, leaving

Table 4: Growth rate of production per worker (percentage) necessary to achieve 0 per cent, 25 per cent, 50 per cent or 75 per cent higher level of consumption of the 20⁺- population in 2025 under different labour force participation rates

	<i>Desired growth of consumption level from 2007 to 2025 (%)</i>			
Participation rate	0	25	50	75
0.73 ⁵	0.5	1.8	2.8	3.7
0.76	0.3	1.6	2.6	3.5
0.80	0.0 ⁵	1.3	2.3	3.2

room for a further increase in welfare. Evidently there appears to be much reliance on market forces with their own merits and demerits.

In this brave new world, we can rely upon the fact that societies can adapt their economies successfully and can get older comfortably.

CONCLUDING REMARKS

Real per capita output in Western countries doubled between 1965 and 2000 and will double again between 2000 and 2035. It can be concluded that without doubt we can afford to grow older. We in the Netherlands (and elsewhere in the developed world as well) are rich enough to sustain an old-age pension for a larger older population. A fortiori, it can be said that we are approaching saturation in the consumption of material goods, not only of necessities but of luxury goods as well, which were only science fiction or dreamed of during the first half of the twentieth century.²¹

Ageing is the result of a process of continuous and increasing civilization during the last one and half century in the developed world – first ameliorated sanitary conditions (for example adequate water supply, sewerage, general hygiene) and second a broad supply of medical services – and hence should be applauded cheerfully and gratefully. The ‘problems of ageing’ are the pessimistic way of looking at a great success of civilization. The more developed countries are faced with crises in their pension and healthcare systems not because they are poor, but because by historical and other standards they are extremely rich. The large increase in per capita production and income over the twentieth century has made it possible for the average length of the retirement period to increase fivefold, the proportion of a cohort living to

retirement age to be over 80 per cent – of a male cohort born in 1875, a proportion of only 0.25 or lower attained the age of 65 – and the amount of leisure time available to those who are in the labour force to increase at least threefold.

An ageing population is a minor problem compared with a serious disfunctioning of the formal labour market, high inflation, low real capital returns and, above all, low or stagnant productivity growth. There is more reason to be concerned about a qualified labour supply and, above all, the sustainability of an adequate healthcare system for the whole population.

Technological change and product specialization on a global scale together with international trade, institutional changes and population ageing are elements of the same long-term process. Hence, future production levels suffice to sustain a twice-as-large retired population. Society can afford to grow old. Population ageing is not likely to create an aggregate shortage of savings and investment, thereby lowering the future resource base. Note also that unemployment in many western countries has increased to almost unprecedented high levels in the last few months. Thus, there are many more resources that can be used in the period ahead.

In the face of ageing, the policy challenge for government and society is to recognize the relationships between various policy areas, namely, employment, lifelong education and learning, social protection and prevention of social exclusion, pensions and retirement, and health and long-term care, but also adequate housing and transport and so on. Individuals have a duty to take active advantage of lifelong training and learning, thereby increasing their earning capacity, and to promote their

own health and well being over the life course (obligation to healthy lifestyle). In other words, the comprehensive and effective policy strategy on active ageing is based on a partnership between citizens and society. Society and citizens of all ages will benefit. Both get the best from the investment in human capital, thereby enhancing productivity, increasing labour market and community participation, avoiding intergenerational conflicts and social exclusion, particularly in later life, and creating a fairer, more inclusive society.

REFERENCES AND NOTES

- 1 A economic growth based model used by Büttler and Kirchsteiger² yields the same conclusions. Earlier studies about ageing and the performance of the economy are, for example, from Aaron *et al.*,³ Bosworth and Burtless,⁴ Disney,⁵ Kuné^{6,7} and OECD.⁸
- 2 Büttler, M. and Kirchsteiger, G. (2000) *Aging Anxiety: Much Ado About Nothing?* University of Vienna. Working Paper.
- 3 Aaron, H.J., Bosworth, B.P. and Burtless, G. (1989) *Can America Afford to Grow Old?* Washington DC: The Brookings Institution.
- 4 Bosworth, B. and Burtless, G. (1998) *Aging Societies, The Global Dimension*. Washington DC: Brookings Institution Press.
- 5 Disney, R. (1996) *Can We Afford to Grow Older; A Perspective on the Economics of Aging*. Cambridge, MA: MIT Press.
- 6 Kuné, J.B. (2004) *On Global Aging, Old-Age Income Systems in the EU and Other Major Parts of the World*. Heidelberg, Germany: Springer/Physica-Verlag.
- 7 Kuné, J.B. (2006) *Billijkheid en doelmatigheid in het systeem van de aanvullende pensioenvoorziening*. Utrecht, The Netherlands: Lemma Uitgeverij, (in Dutch).
- 8 OECD. (1998) *Maintaining Prosperity in an Ageing Society*. Paris: OECD.
- 9 Higher levels of future national product evidently will not alter the spending on old-age pensions in relative terms, but paying for pensions out of a larger economic 'pie', still leaving higher incomes (a bigger 'slice' out of the future larger economic pie) for the non-retired population in absolute terms, is much more comfortable.
- 10 CPB. (2006) *Ageing and the Sustainability of Dutch Public Finances*. The Hague, The Netherlands: CPB Publisher.
- 11 CPB. (2006) *Reinventing the Welfare State*. The Hague, The Netherlands: CPB Publisher.
- 12 Fiscal and budgetary sustainability is guaranteed if it is possible to keep up social security – particularly public pensions and publicly financed health and other long-term care and other essential government expenditures as well – at a democratically and mutually agreed level without having to raise taxes and other contributions more than the members of a society are able and willing to pay, taking into account that high tax rates are detrimental to the performance of the economy. Hence, government policies are sustainable if current policies can be continued forever without the government running into financial problems; that are policies where tax rates are constant over time and expenditures grow by the general rate of productivity growth.
- 13 Commissie Arbeidsparticipatie (commissie-Bakker). (2008) *Naar een toekomst die werkt*. The Netherlands: Min. SZW, Den Haag, (in Dutch).
- 14 The economic performance of many modern economies is heavily conditioned by the (degree of) openness of the economy and the world globalization. This makes these economies interdependent and also vulnerable. As a result independent and autonomous decision-making in respect of monetary and fiscal policy (in the first place), but, for example, also in respect of labour market, social and pension policy are severely constrained.
- 15 CPB.^{10,11} Note that – in calculating the results shown in Tables 2, 3 and 4 – the heroic assumption of an unchanged average number of hours worked per worker per year has been made. It can be expected that the number of part-time workers will increase further in relative terms in the coming two decades.
- 16 Assuming also that the present economic crisis will not have harmful effects on the performance of the economy for a longer time period ahead.
- 17 We assume a yearly growth rate of average production per worker of 1.7 per cent (in the period 2007–2025). After 2020 – when (a) capital deepening is assumed to come to an end, (b) the work force is ageing further and (c) the shift from the industrial sector with higher productivity growth to the service sector with lower productivity growth continues – a modest 1 per cent growth rate (technology) is presupposed.
- 18 There is an increasing concern in the Netherlands about a (very) serious shortage of labour from 2010 onwards, which will bring economic development to a halt. That is inadventagous in the face of ageing. Unfortunately, because of the present financial crisis, unemployment in the Netherlands is increasing tremendously in the second half of 2009, diverting away all attention of policy makers from secular developments to acute actual problems.
- 19 It can make a difference for workers' perception of bearing the pension burden in an ageing population whether GDP growth is reached by productivity growth with a constant or even smaller labour force or by expanding the working population. In the former case, higher gross wages and higher contribution rates will result than in the latter case with higher employment and slower productivity growth.
- 20 The most important determinants of the future economic welfare are the longstanding factors influencing growth: labour-force participation, saving, investment in human and business capital, technological change, entrepreneurial initiatives, managerial skills, government provision of infrastructure and so on.
- 21 In most western countries nowadays the poverty line is at a level of real income that was attained by only those in the highest 10 per cent of the income distribution about 1900.