# POPULATION AGEING AND PUBLIC EXPENDITURE TRENDS IN FINLAND

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Finland is greying fast, faster than most other European countries. Accordingly, some of the challenges ageing will pose to the economy will be faced in the medium rather than the longer term. On the expenditure side, a change in the population structure will push up spending on pensions and social welfare services for the elderly. As for the financial base, demographic ageing is reducing future labour force resources, and an increasing proportion of this diminishing labour force will shift to the production of basic public services. This poses problems for economic growth and the financing of services.

In fiscal policy, the risk of expenditure overrun grows with an increase in the number of older people eligible for public welfare services. There is a risk that in the future it may become politically difficult to cut down on social and health care services when the majority of voters are already consuming or soon will consume these services. Another important concern is the risk associated particularly with public expenditure prices. If the current unfavourable trends in public sector productivity are to continue, the so-called Baumol disease may worsen the public balance even more than witnessed during the past.

To address these issues, we made projections for public expenditure items classified according to purpose. Long-term projections for different expenditure items were made by using explicitly the unit cost concept and pricing principles applied in the State budget process when the costs of social services, health care and education are compensated to municipalities. The idea was to relate expenditure estimates directly with welfare policy parameters and thereby to make calculations as transparent as possible. When projecting GDP growth, the interdependence between the whole population structure and labour supply was factored in by setting up a consistent population/employment balance. The questions were analysed using the intertemporal deficit/debt accounting method.

The population/employment balance and employment trends will be discussed briefly in the first section. Section 2 describes calculation principles for projecting expenditure in volume and price terms. Section 3 presents estimates on public sector productivity and some simulation outcomes resulting from changes in this productivity. Section 4 will conclude.

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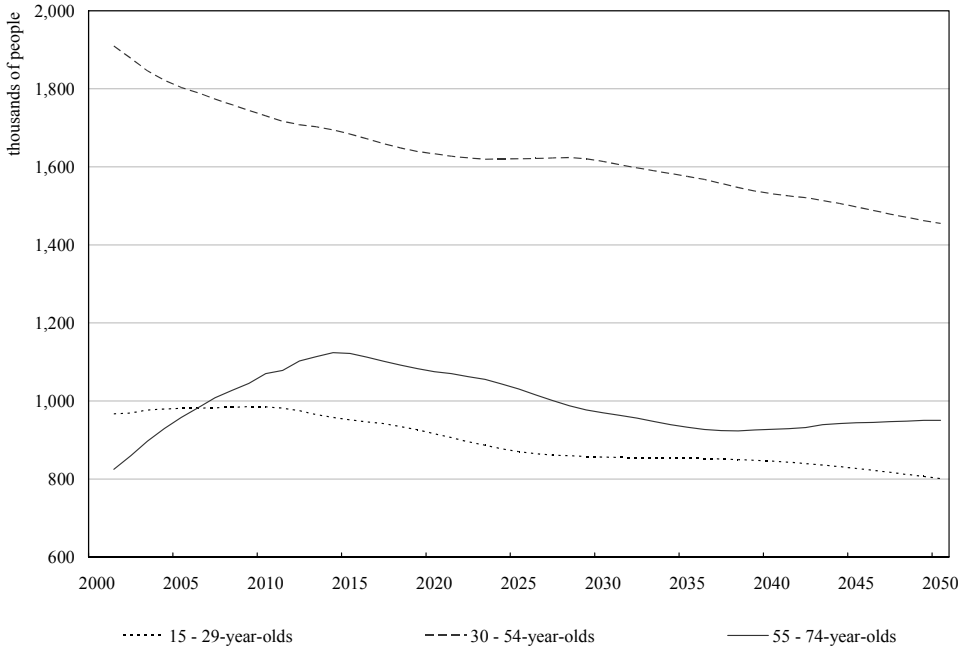
## 1. Labour supply trends

Demographic ageing will have a considerable impact on the labour market over the next 10-20 years. The working-age population near and in the retirement age will increase rapidly (Figure 1). According to statistics, Finland's population projections, the number of people aged 55-74 will increase by about 40 per cent by the middle of the next decade and, at the same time, the number of people of prime working age will decrease by nearly 15 per cent. The number of young people aged 15-29 declines by 10 per cent by 2030. The number of the elderly will also remain high in the long run, because the projection of life expectancy increases and the birth rate remains low. (The fertility rate in Finland is however expected to be clearly above the EU average.)

The projections of the overall labour and population balance were constructed by using estimates of the number of pensioners and by assuming that the labour market status of other groups outside the labour force – students, people doing housework, etc. – would remain relatively unchanged within each age group. The number of people in the labour market status groups and age cohorts was then

**Figure 1**

**Working-age Population (15-74-year-olds) by Age Group**




Sources: Statistics Finland and calculations by the Bank of Finland.

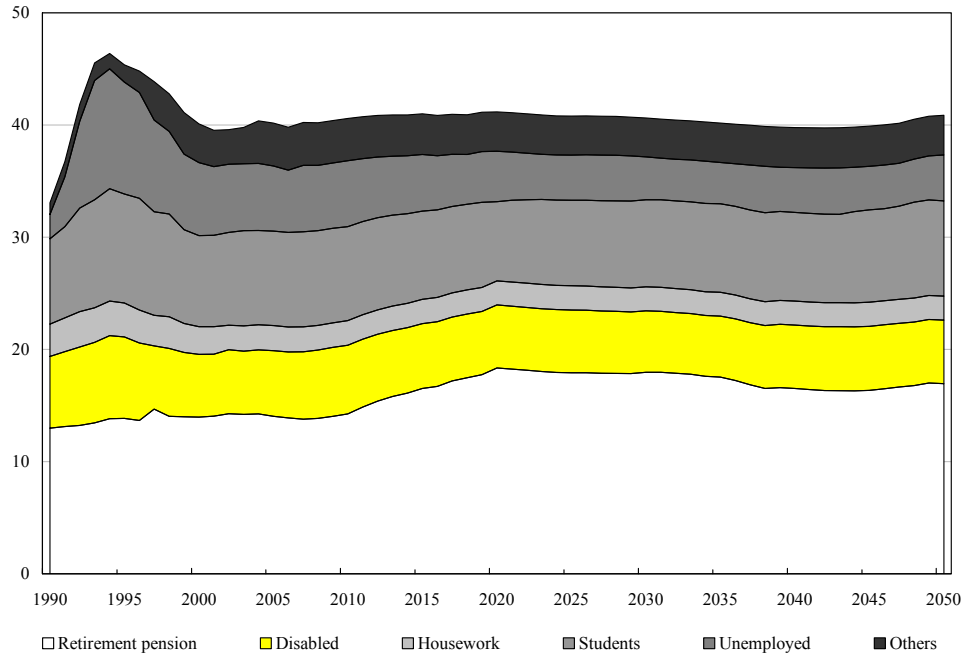
estimated using population projections by cohort. In this way we obtained data on people outside the labour force. Then in estimating the employment rate, we assumed that the employment rate for older workers, which has risen steadily in recent years, would continue to rise further. This is due to an improvement in levels of education and the overall health of the population. In addition to the cuts already made in early retirement benefits and the reform of the old-age pension schemes. The number of unemployed was calculated as a residual.

On the whole, the employment rate among 55-74-year-olds is reckoned to rise by a further by 3-4 percentage points on average by 2015. As well as pensioners, there are, for instance, far more students than there were before the recession in the middle of Nineties (Figure 2). Also the category "others" grew after the recession, and will remain relatively large in the future, as it consists mostly of young adults and those close to retirement age.

Altogether, the overall employment rate (in terms of the age group 15-64) is reckoned to rise to close to 70 per cent during the next 10 years, after which it will gradually rise further, to almost 72 per cent. Although structural unemployment is

**Figure 2**

**Proportions of Working-age Population (15-74-year-olds)**
*(percent)*




Sources: Statistics Finland and calculations by the Bank of Finland.

estimated to fall 2-3 percentage points, to 6 per cent, the ratio of non-employed to working-age population will remain virtually at the current level, approximately 40 per cent (Figure 2). That means that there will be only a slight growth in labour supply during the next 10 years, and the contribution of labour input for GDP growth will turn negative or near zero thereafter.

## 2. Expenditure developments

In Finland, the public sector produces more services and pays less transfers than the EU countries on average (Figure 3). Partly this reflects the fact that the services are produced mostly within the public sector instead of using private producers. Compared to other countries, relatively more resources are devoted to education and to other social services (mainly day care for children). As for social transfers, old-age pensions constitute the main part, but also prolonged difficulties in the labour market have kept unemployment benefits high.

The service orientation of the public sector means that the risk of expenditure overrun is mostly related to the production process itself, and the most crucial questions are the financial principles and incentives in budgetary processes of the State and municipalities.

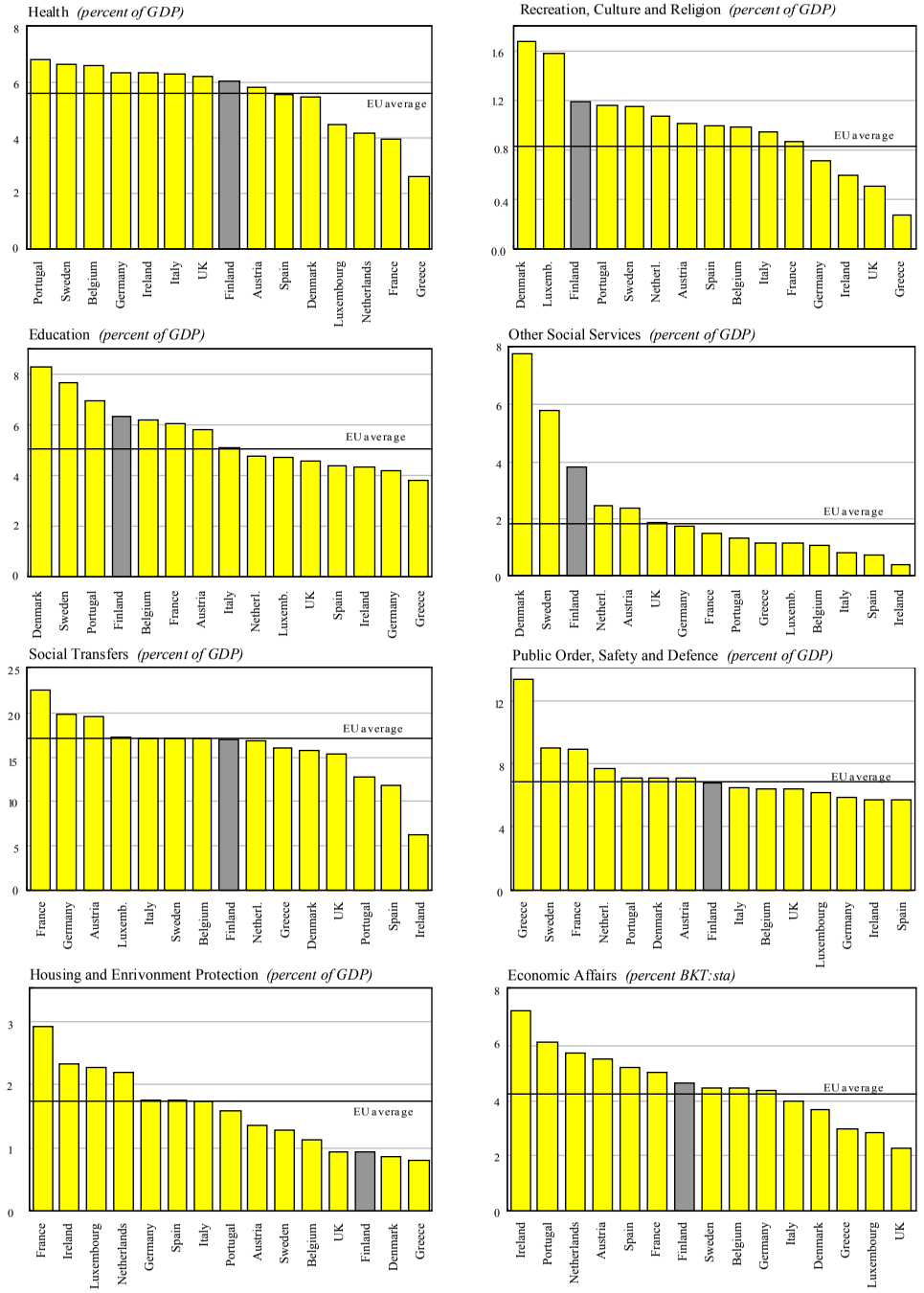
### *2.1 Volumes of health care, social services and education spending*

Demographic ageing will increase pension expenditure and will also affect on spending in social services, health care and education. Welfare services are mainly statutory and provided by local governments (municipalities) and partly financed from the State budget. Therefore, the volume of services was projected in the model following the principles which determine the actual central government transfers to local government. State aid to municipal services is established on the basis of costs by age groups and the age structure in the municipality. We have completed that calculation basis also by other cost items, such as child allowance and financial aid to students, to obtain per capita public expenditure for each category of expenditure and age cohort (Figure 4). Thereafter, using the population growth forecasts broken down by age cohort, we have calculated the long-term costs for different expenditure categories, the underlying assumption being that the expenditure base would remain at the first-year level.

The volume of social services for the elderly will be more than double in the next 30 years. The volume of health care expenditure will, in turn, increase by a third by the early 2030s. On the other hand, the decrease of the number of young people will lead to a drop in expenditure on education and other social services, primarily day care services. On the whole, the level of welfare expenditure seems likely to increase fairly slowly over the next two decades, by about 3 percentage points. The pace of increase is unlikely to accelerate until the 2030s.

**Figure 3**

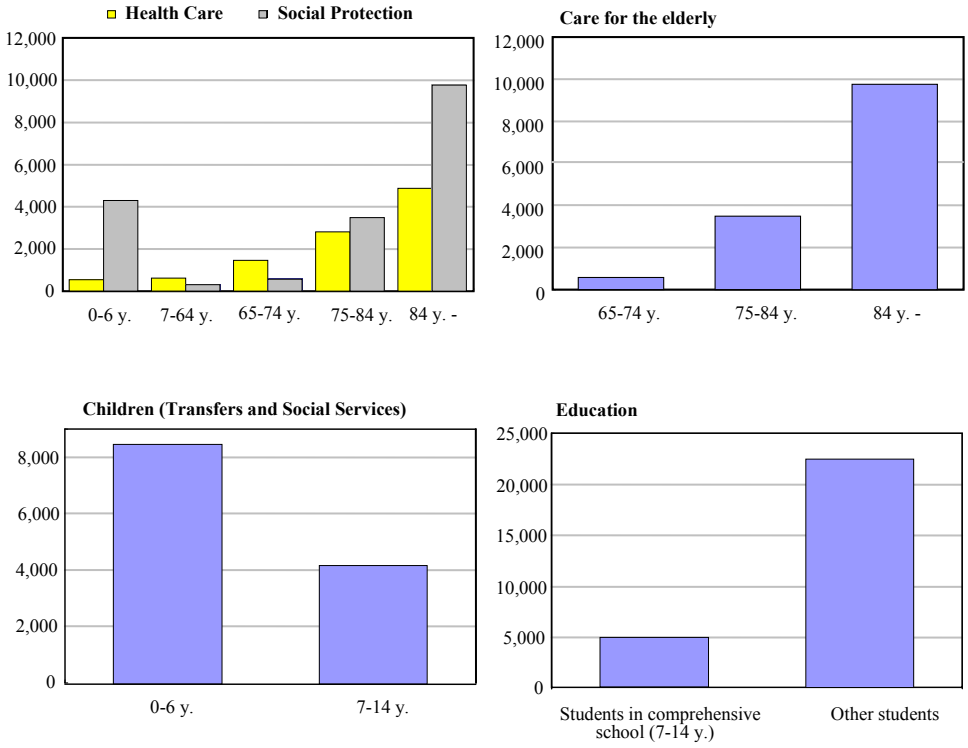
## Share of Public Expenditure to GDP in EU Countries, 2001




Source: Eurostat.

**Figure 4**

**Unit Costs by Age Group, 2004**




Source: Ministry of Finance.

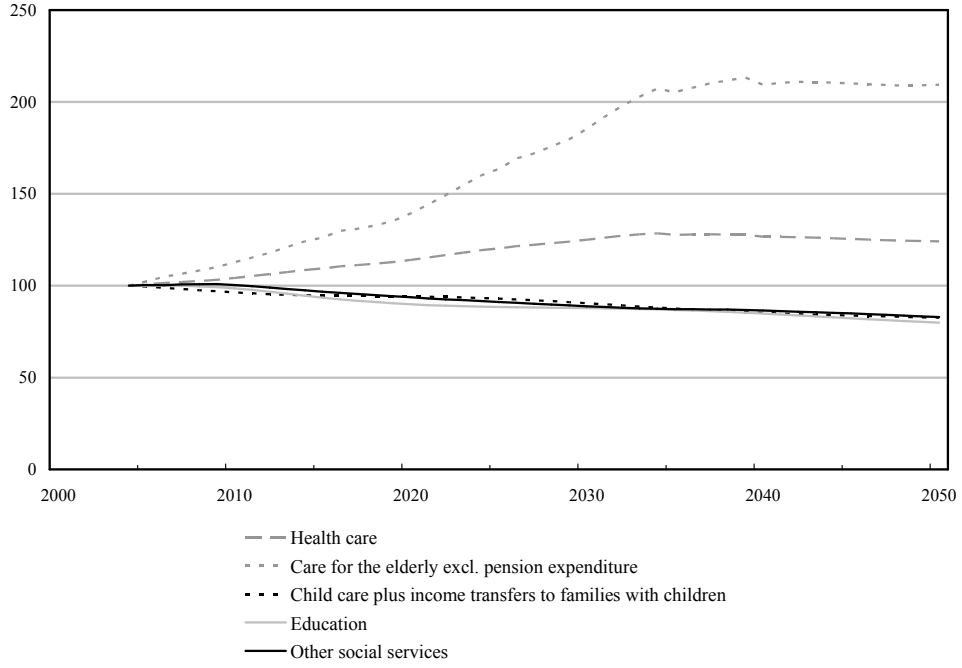
The change in the age structure leads to both positive and negative changes in expenditure (Figure 5). Ageing increases the use of social services and health care.

## *2.2 Prices of health care social services and education*

The trend in public service prices was calculated with the help of the formula applied in calculating the cost index of central government transfers to local government. The index takes into consideration the labour costs of the local government sector, *i.e.* wages and employer's social security contributions, and also the procurement costs for goods and services. The proportion of labour costs in the index is 67 per cent, with general prices accounting for the remaining 33 per cent. In determining the price index for local government services, it is assumed that the cost structure for the various services is roughly similar. For example, education, day care and health care are assumed to require the same relative volumes of intermediate goods and labour input. It is further assumed that wage development in

**Figure 5**

**Public Expenditure Volumes**
*(index: 2004 = 100)*




Sources: Statistics Finland and calculations by the Bank of Finland.

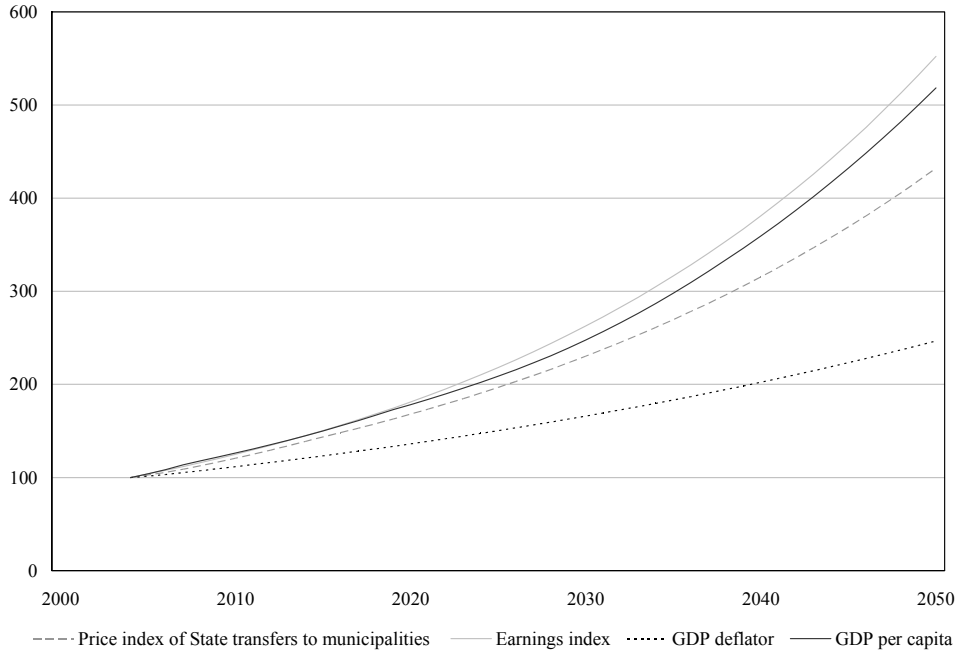
local government and the public sector as a whole is the same as for the economy overall, *i.e.* 3.75 per cent *per annum*.[1]

The choice of price index has a crucial impact on the estimated trend in public consumption expenditure relative to GDP (Figure 6). As public service productivity is not expected to improve, an increase in real wages also means an increase in the GDP ratio of public expenditure. In the basic calculation, the annual difference between the change in the cost of public expenditure and the GDP price index is a good percentage point. This is somewhat larger than the actual difference between the indices so far. For example, in 1990-2000 the difference was a little less than a percentage point. The Baumol effect, *i.e.* the increase in public

[1] Calculation inevitably underestimates the costs, as wage pressures on local government will clearly increase in the future, since roughly a quarter of the current municipal workforce are expected to retire by the end of the present decade. Therefore, the cautious assumption applied is that during the most intense period of recruitment, in 2008-15, local government costs will increase 0.5 per cent faster than they would solely on the basis of general wage development and other costs. Also adding to local government costs is the potential rise in indirect labour costs, which has been excluded from the calculations.

**Figure 6**

**Price Indices**
*(index: 2004 = 100)*




Source: Ministry of Finance, Bank of Finland.

expenditure relative to GDP resulting from a rise in relative prices, would have been about 3.5 percentage points in the same period.

### *2.3 Other expenditure items*

The recently agreed pension reform in Finland will reduce the pressure on pension expenditure. The raising of the retirement age and the linking of pension benefits to life expectancy (by the inclusion of a life expectancy coefficient in the pension formula) plus the change in pension indexing are expected to cut pension expenditure to GDP by about 2-3 percentage points. Even so, the ratio will still rise by about 4-5 percentage points as the number of pensioners increases.

Public expenditure also includes items which are unaffected by the age structure of the population. The most significant of these items are internal and external security, administration and subsidies. We assume that these items will remain unchanged relative to nominal GDP.

All in all, old-age-related expenditure to GDP was projected to grow by 6 percentage points (Table 1). Unemployment benefits and other unemployment related spending decrease slightly with improving employment. Increasing transfers to the elderly is reflected in an increase in taxes and social contributions paid by pensioners. Otherwise primary income grows along with GDP.

The calculations presented in the table, which comprehensively account for the impact of changes in population age structure on the development of public expenditure volumes, create a somewhat more positive general picture for sustainability developments than previous estimates, such as the one presented in the Finnish stability program a year ago. There are many explanations for this: the BoF forecast of balanced general government finances in the medium term affects also the general government finances in the long run. Increased income tax revenues from pensions due to growth in the number of pensioners also improve the picture somewhat. The long-term prospects for financing public funding commitments are also fair, provided that jobs growth is favourable, the retirement age rises as expected, and people do not withdraw from the labour force for any other reasons as extensively as in the recent years.

## 3. Expenditure projections and decreasing productivity of public services

One of the main threats for fiscal sustainability comes from cost developments of public services. Cost pressures originate from two sources. First, there are pressures for excessive increase in wages as the municipalities need to hire a large number of new employees while labour supply is shrinking and thereby tightening the labour market. The second factor pushing up costs is the weaknesses in productivity developments of the public sector.

### *3.1 Public services employment*

The production of public basic services (education, health care and social services) in Finland in 2003 employed about 380,000 persons, primarily in local government. Of these, 130,000-140,000 persons each were employed in education and health care services. Social services employed about 110,000 persons.

There was a rapid rise in the numbers employed in basic service production towards the end of the Seventies and through the Eighties: between 1975 and 1985 the numbers more than doubled. During the recession years of the early Nineties the number of basic service employees fell, and in the early years of the present decade there has been an increase of 3,000-8,000 jobs *per annum*.

Relative to the total numbers employed in the economy as a whole, the ratio of basic service employees was highest during the recession years in early Nineties, since when the ratio has decreased somewhat alongside the overall improvement in employment, and has now stabilised at around 16 per cent. If the number employed in basic services produced by non-profit institutions – about 100,000 persons – is

**Table 1**

## Public Revenue, Expenditure and Fiscal Balance

*(forecast, percent of GDP)*

| | 2004 | 2005 | 2010 | 2020 | 2030 | 2040 | 2050 |
|---|---|---|---|---|---|---|---|
| **Revenue** | | | | | | | |
| Taxes | 31.9 | 31.6 | 32.1 | 32.5 | 32.7 | 32.6 | 32.6 |
| Corporation tax | 3.8 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| Income tax on wages | 9.0 | 9.1 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 |
| Income tax on pensions | 1.8 | 1.8 | 2.0 | 2.4 | 2.6 | 2.5 | 2.5 |
| Taxes on unemployment benefits | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Taxes on other income | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 |
| Taxes on output and imports | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 |
| Social security contributions | 12.2 | 12.3 | 12.1 | 12.2 | 12.2 | 12.2 | 12.2 |
| Employee contributions | 3.1 | 3.2 | 3.0 | 3.0 | 3.1 | 3.1 | 3.1 |
| Employer contributions | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 |
| Income from pension funds | 1.6 | 1.6 | 2.1 | 2.1 | 1.4 | 0.3 | –0.8 |
| Other income on assets | 1.8 | 1.6 | 1.3 | 0.9 | 0.7 | 0.7 | 1.5 |
| Other income | 5.2 | 5.4 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| **Total revenue** | 52.6 | 52.5 | 53.2 | 53.2 | 52.4 | 51.3 | 51.0 |
| **Expenditure** | | | | | | | |
| Health care | 6.8 | 6.8 | 6.9 | 7.4 | 8.0 | 7.9 | 7.7 |
| Pensions | 11.1 | 11.2 | 12.1 | 14.6 | 15.8 | 15.4 | 15.5 |
| Care for the elderly | 1.3 | 1.3 | 1.4 | 1.6 | 2.1 | 2.4 | 2.3 |
| Children | 3.4 | 3.3 | 3.2 | 3.0 | 2.9 | 2.6 | 2.5 |
| Unemployed | 2.6 | 2.5 | 2.3 | 1.9 | 1.6 | 1.6 | 1.7 |
| Other social security | 3.3 | 3.3 | 3.2 | 2.9 | 2.7 | 2.6 | 2.5 |
| Education | 6.6 | 6.5 | 6.6 | 5.2 | 5.3 | 5.1 | 5.2 |
| Expenditure on assets | 1.9 | 1.8 | 1.6 | 1.0 | 0.3 | 0.0 | 0.0 |
| Other expenditure | 13.5 | 13.7 | 13.9 | 13.9 | 13.9 | 13.9 | 13.9 |
| **Total expenditure** | 50.4 | 50.3 | 51.2 | 51.5 | 52.8 | 51.5 | 51.4 |
| **Fiscal balance** | 2.2 | 2.2 | 2.0 | 1.6 | –0.4 | –0.2 | –0.3 |

Source: Bank of Finland calculations.

taken into consideration, basic services that are publicly produced or dependent on public financing currently employ one fifth of the employed labour force.

Demographic ageing will increase the need for basic services further still. Assuming no change in the structure of service production and no increase in productivity, about 55,000 new employees will be required in the production of public services over the next three decades. When the working-age population declines, about 20 per cent of the labour force will be employed in producing public services. This would be the case despite the assumption in our long-term calculation of a slight rise in the employment rate and a decline in the unemployment rate.

Labour demand in the public sector is particularly prominent on a gross basis, since a large number of municipal employees are retiring. It is estimated that about a third of municipal personnel will retire during the next decade.

### *3.2 Estimates of productivity development of public services*

Public sector productivity cannot be measured in terms of the relation between output and inputs, since public goods and services have no market prices. Instead, estimates of productivity have been made by comparing the number of various activities against real inputs.[2] The main problem in these estimates is that the volume variable of activities is fairly heterogeneous even within a single field and quality changes cannot be taken into account even at the most general level. For instance, health care productivity declines if treatments become more complex or the patient-base ages.

There is therefore considerable uncertainty relating to productivity estimates based on this method of calculation. It is difficult to assess if an observed decline in productivity reflects a genuine fall in efficiency. Be that as it may, estimates of productivity development are in any case fairly bleak. Productivity in health centres and overall productivity in local government have declined annually since 1998 (Table 2).

If productivity were to continue to decline, as has been the case in recent years, the prices of public services would rise accordingly and labour demand would increase compared with the baseline scenario in which productivity is assumed to remain unchanged. In contrast, if productivity could be improved, which is the Government's objective, this would have important implications for the labour market and the outlook for general government finances.

The implications of these changes in productivity can be illustrated by a simulation in which the current productivity trends in service production are

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[2] Discussions on measurement practices in Finland see Aaltonen *et al.* (2004) and Junnila (ed.) (2004). In addition, overall productivity in local government has been studied in a productivity report by Statistics Finland (*Tuottavuuskatsaus*, 2003) and in the Finnish Government's report on the management and state of central government finances (*Hallituksen kertomus valtiovarain hoidosta ja tilasta*, 2003, annexes available in English).

**Table 2**

**Productivity of Public Sector, 1998-2003**
*(percent of change on previous year)*

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|---|---|
| Total factor productivity, central government | | 0.7 | –0.7 | 2.8 | –1.4 | –2.1 |
| Labour productivity, central government | 3.3 | –1.5 | –1.1 | 0.3 | –0.2 | 0.2 |
| Total factor productivity, local government | –2.2 | –1.4 | –1.8 | –2.5 | –3.2 | |
| Education | –3.3 | –1.1 | –1.3 | –1.5 | –3.4 | |
| Libraries | 2.0 | –0.3 | –0.5 | –0.5 | 0.3 | |
| Social services | –1.1 | –1.9 | –2.7 | –4.5 | –3.2 | |
| Health centres | –0.2 | –2.4 | –0.9 | –3.4 | –3.7 | –3.0 |
| Specialised medical care | | | | –2.2 | 0.1 | –0.3 |
| Institutional care for the elderly | | | | –6.4 | –0.5 | –0.5 |

Sources: Statistics Finland, Government Institute for Economic Research (VATT) and National Research and Development Centre for Welfare and Health (Stakes).

assumed to continue and labour productivity is assumed to decrease annually by 1 per cent in 2006-15. As a result, the prospects for general government finances would be much weaker than in the baseline scenario. The decline in productivity would accelerate the rise in basic service prices,[3] which in turn would increase the GDP ratio of basic services by 1.4 percentage points in the long term (Table 3). This would push general government finances into deficit, and debt/deficit dynamics would increase the effect to almost 5 per cent of GDP in the long term. Lower labour productivity would also mean that, compared with the baseline scenario, about 40,000 additional employees would be needed in the production of basic services.

Productivity growth of a similar magnitude has a symmetrical effect in the calculation. If productivity were to grow by 1 per cent, the need for additional labour would vanish almost completely and general government finances would record a sizeable surplus. This is, however, based on the assumption that wages would not respond to the growth in productivity.

## 4. Conclusions

The exercise above showed that the number of assumptions that lay behind the sustainability calculations is quite huge. Therefore, it is of utmost usefulness to

[3] The rise in prices would accelerate annually by about 0.7 percentage points in 2006-15 compared with the baseline scenario, which corresponds to the share of labour input in the price component.

**Table 3**

**Impact of Change in Productivity of Basic Service Employees***
*(change with respect to baseline)*

| | 2010 | 2020 | 2030 | 2040 | 2050 |
|---|---|---|---|---|---|
| Number of employees *(thousands)* | 19.6 | 39.4 | 39.4 | 39.4 | 39.4 |
| Expenditure on services and health care to GDP | 0.7 | 1.4 | 1.5 | 1.4 | 1.4 |
| General government net lending to GDP | –0.8 | –2.0 | –2.8 | –3.7 | –4.6 |
| General government budgetary position in baseline scenario | 2.0 | 1.6 | –0.4 | –0.2 | –0.3 |

* Productivity decreases by 1 per cent annually in 2006-15.

Sources: Statistics Finland and calculations by the Bank of Finland.

be as transparent as possible when setting these assumptions. This has been the main motivation in constructing our calculation set.

For Finland, of great concern is the cost trend in public expenditure. It is clear that the renewal of the public sector labour force due to large scale retirement coupled with a rapidly growing need for labour in the social and health care will cause significant pressures on expenditure growth. Hence, improved public sector productivity, which the Government has made a strategic priority,[4] would be a necessary and welcome step in preparing for the increase of expenditure pressures resulting from ageing.

Productivity development in public services is actually a key factor for the future financing of welfare services. If productivity growth were to lead to permanent cost savings, there would even be room for tax cuts without endangering fiscal stability, despite the rise in the dependency ratio. Therefore, the Government's objective of increasing productivity is well founded. It is also a natural objective, as there is great potential for productivity growth in the public sector. This is due to the fact that there are still substantial differences in productivity within different production units which cannot be explained by customer base or other similar external factors.

Signs of very poor productivity development for several years now give, however, reason to fear the present negative trend could continue. The incentives for cost savings are unclear. In addition, competition is virtually lacking from most activities. On the other hand, the most significant cost savings will probably come from more efficient organisation of services, a point that was highlighted in the

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[4] Ministry of Finance (2002), *Kohti tehokkaampaa ja laadukkaampaa julkista taloutta*. Valtiovarainministeriön työryhmä VM 128:00/2001, (*Report on improving the efficiency and quality of general government*, Ministry of Finance Working Group VM 128:00/2001).

Government's productivity programme. However, it is unlikely that this alone would be a sufficient solution to the increasing problem of costs. It is still essential to keep a tight rein on expenditure.

For the labour market, demographic changes are of concern. As an increasing part of the decreasing labour force will be employed in public sector, resources of market based production will be cut. The increase of the proportion of the public sector labour force will also lower the overall productivity and growth potential of the economy. The long-term challenge for fiscal policy is, therefore, to adjust expenditures to a level which can withstand even the gloomier scenarios of economic growth, employment and productivity of labour. In this respect, the relatively tight controls and expenditure limits placed on the government spending provides a good starting point. But an even longer planning horizon for the government finances is needed. For instance, estimates of demand for welfare services in the long run should be included in cost calculations when improvements in the services are planned.

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