Fiscal sustainability projections for Finland

7 December 2012

Finland has substantial problems with fiscal sustainability. The weak economic situation in the next few years, combined with economic growth that will remain subdued also in the long term and rising expenditure pressures denote a considerable need to strengthen the financial balance of both central and local government. Higher immigration would reduce these needs, but could not be a decisive factor. Faster output growth would ease the situation of the earningsrelated pension funds. A rise in the price of public services is a particular threat to the sustainability of the public finances.

Expenditure cuts and tax increases approved in connection with the decision on central government spending limits in spring 2012 decreased the risk of Finland's general government becoming overindebted. As a result of the deepening of the economic crisis in summer 2012 and the weakening of medium-term growth prospects, the outlook for public finances has deteriorated once again. Future developments are also clouded by the fragility of the tax base: in recent years, growth has been fuelled by rising household debt, the savings ratio has declined substantially and the current account has moved into deficit. Therefore, when analysing the long-term sustainability of public finances, we must take into account that growth cannot be based on a rise in private sector debt. The economy must eventually return to a balanced growth path.

The following sustainability projections are based on the assumption that private sector demand will return to a sustainable path by 2019, after which growth will no longer be based on rising private sector indebtedness. A further assumption is that, over the same period, no new decisions will be made that would improve fiscal sustainability. Hence, the calculations illustrate the pressures to strengthen public finances Finland would be faced with if, during the current or the next parliamentary term, no structural reforms increasing labour supply, for example, were to be implemented or no changes made in the public revenue or expenditure frameworks.

Medium-term economic developments

The sustainability calculation is based on the Bank of Finland forecast extending to 2014 and an outlined economic growth scenario running up to 2019. In the early part of the period, export demand will grow at a sluggish pace, and hence economic growth will rest primarily on domestic consumption. The savings ratio in the economy will remain low in the next few years, and the current account will post a substantial deficit. Household indebtedness is expected to peak in the middle of the decade, after which the savings ratio will begin to rise and the current account deficit begin to contract. By 2020 the economy as a whole is assumed to have returned to a sustainable path. At that time the current account will be balanced and the economy will continue to grow at a stable pace until the end of the review horizon in 2060.

Medium-term growth prospects have deteriorated due to the recession that followed the financial crisis, but also on account of a structural change in



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output. The share of manufacturing in total output is on a declining trend, while the share of services is correspondingly increasing. Growing demand for age-related services is pushing up the GDP share of public services. Since the productivity of public services has traditionally grown at a slow pace, if at all, productivity growth at the level of the total economy is slowing down.

Assessments of employment resources, investment and sector-specific output trends indicate that economic growth will already ease substantially in the immediate years ahead. In 2015-2019, growth will remain at $1\frac{1}{2}$ %, which means that average growth will not accelerate from that in 2014 (Table 2). Growth will stem solely from the rise in private-sector labour productivity (1.9%). Employment growth will remain muted in the next few years, and the unemployment rate will remain at around 7%. Since the labour input of the economy as a whole will not increase, the rise in public-sector labour input will subtract from private-sector labour resources. Growth in labour productivity will rest mainly on growth in total factor productivity.

Assumptions concerning long-term developments

Long-term supply of labour

The forecast for labour supply builds on a calculation undertaken at the Bank of Finland in spring 2011.¹ The scenario extends to 2040 and is based on the assumption that cohort-based labour force participation rates will increase over time as older cohorts make way for younger ones. Statistics Finland's new population projection published in autumn 2012 gears the forecast towards a slightly more positive direction. In the new population projection, the assumption concerning net immigration has been revised upwards, resulting in a faster growth in working-age population than estimated previously. Mortality has also been revised up relative to previous population projections, leading to a slight reduction in age-related cost growth.

Based on the new population projection, developments in labour supply will be more positive than previously estimated. According to the calculation based on the population projection published in 2009, the number of persons aged 21-64 would be lowest around 2030, ie about 150,000 persons fewer compared with the initial level. However, the rising cohort-based labour force participation rates would compensate for the declining working-age population, so the labour force would only contract by about 80,000 persons. According to the calculation based on the new population projection, population aged 21-64 would only decrease by about 120,000 persons at most, and labour supply would contract accordingly by about 50,000 persons. In fact, labour supply would actually exceed the current level around 2040 (Chart 1).

¹ Kinnunen, H & Mäki-Fränti, P (2011) Long-term supply of labour. Bank of Finland Bulletin 3/2011, p. 49–57.

Expenditure pressures on public finances

Population ageing will increase public expenditure far into the future. As the share of very old cohorts in the working-age population increases, health care and other long-term care expenditure relative to the funding base will grow, too. Similarly, the GDP share of pension expenditure will increase in step with the growing share of population aged over 60.

Besides demographic developments, expenditure growth will also be affected by other factors that are difficult to predict. At the level of individuals, the need for health care and long-term care services will depend, for example, on changes in the health status of individuals in each age group, the need for informal care and use of purchased services. Technological development in health care brings more efficient treatment but, at the same time, increases the expectation level set for health care and, hence, typically raises costs.²

The calculations presented in this article contain the assumption that the volume per person of individual public service expenditure, such as health care, education and social expenditure, grows in step with productivity, ie GDP per person employed. Hence, the volume of services increases along with rising living standards. It is also assumed that service price growth follows overall price developments.



Based on these assumptions, the GDP share of public service expenditure is only affected by changes in age structure or employment. These assumptions are in line with the practices agreed by the European Commission's Ageing Working Group. The age-related weights for health care, long-term care and education are also selected in accordance with the recommendations of the working group.³

Thus, growth in age-related expenditure is determined by the breakdown of costs by cohorts, the population projection and the assumptions on productivity and price developments. As in sustainability calculations in general, income transfers other than pensions, old age-related income transfers and unemployment benefits are expected to grow at the same pace as GDP. Hence, GDP growth originating from higher employment

² For more information on developments in age-related expenditure, see Kinnunen, H – Mäki-Fränti, P – Viertola, H (2013) Julkisen talouden kestävyystarkasteluja ('Fiscal sustainability projections'). BoF Online. Bank of Finland. Forthcoming.

³ On the working group's methodology, see European Commission (2012) The 2012 Ageing Report: Economic and budgetary projections for the EU27 Member States (2010–2060). Directorate-General for Economic and Financial Affairs. Economic Policy Committee. Ageing Working Group.

will not reduce the GDP share of income transfers. The rationale behind this assumption is not very good, but the intention is that this analysis would not diverge from generally agreed practices.

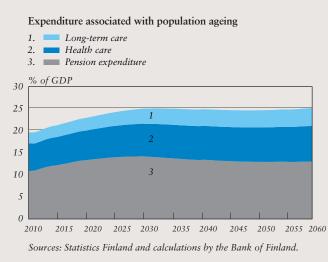
Estimating future developments in pension expenditure is more straightforward than estimating other age-related cost items. Trends in pension expenditure are linked to pension entitlements, which are, at the macro level, affected by earnings developments and the replacement rate. In the following projections, growth in pension expenditure was estimated on the basis of calculations undertaken by the Finnish Centre for Pensions on

long-term developments in the number of pension recipients and the average replacement rate.⁴

All in all, depending on the benchmark period, age-related expenditure will grow in the calcu-

⁴ See Risku, I – Elo, K. – Klaavo, T – Lahti, S – Sihvonen, H – Vaittinen, R (2012) Statutory pensions in Finland: long-term projections 2011. Finnish Centre for Pensions. Reports 02/2012.

Chart 2.



lations by 2½–5 percentage points relative to GDP (Chart 2 and Table 1). If the benchmark is 2010, for which the most recent statistical data is available, pension expenditure, in particular, will rise substantially. The retirement of baby-boomers will increase pension expenditure in the latter part of the 2010s, so that the GDP share of pension expenditure will be even higher in 2019 than in 2060. Nevertheless, pension expenditure will grow substantially until the turn of the 2030s (Table 1).

Assumptions concerning economic developments

Scenarios regarding age-related expenditure developments are the key factor affecting the long-term dynamics of the public finances. Of the assumptions concerning the macro economy, employment developments are the most essential. In the baseline scenario, the path for employment growth is based on the projected path of the labour force participation rate presented above and the unemployment assumption. In the sustainability scenario, the unemployment rate is expected to fall to 61/2% in 2020 and to remain permanently at this level (Table 2). Despite the slight rise in the participation rate, labour input grows virtually at a zero rate. Therefore, real GDP growth rests solely on productivity growth. In the medium-term scenario, output growth is assumed to stabilise at the end of the 2010s and to remain thereafter at about $1\frac{1}{2}$ %. The inflation rate is 2%, and in the baseline scenario the real interest rate and the real income on pension funds are assumed to be $3\frac{1}{2}$ %.

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Primary public expenditure and age-ralated expenditure in the long term										
	2010	2011	2012	2013	2014	2019	2030	2040	2050	2060
Primary public expenditure, % of GDP	54.4	53.4	54.2	55.1	55.0	55.4	57.8	57.5	57.2	57.8
Of which: age-ralated expenditure										
Health care	6.2	6.0	6.1	6.2	6.3	6.6	7.3	7.6	7.7	8.0
Long-term care	2.5	2.4	2.5	2.5	2.6	2.7	3.3	3.7	3.8	4.0
Pension ecpenditure	12.5	12.6	13.0	13.4	13.7	14.5	15.5	14.6	14.1	14.3
Education	6.6	6.3	6.3	6.4	6.4	6.3	6.5	6.3	6.3	6.4
Sources: Statistics Finland and calculaions by the Bank of Finland.										

Table 2.

Assumptions concerning economic develpments

						Average				
	2010	2011	2012	2013	2014	2015-2019	2020s	2030s	2040s	2050s
Economic growth	3.3	2.7	0.3	0.4	1.5	1.6	1.4	1.6	1.5	1.4
Productivity, % change	3.7	1.8	-0.2	1.0	1.4	1.5	1.4	1.4	1.4	1.4
Labour input, % change	-0.4	1.0	0.5	-0.6	0.1	0.1	0.0	0.2	0.1	0.0
Empolyment rate										
Participation rate	66.1	66.1	66.2	66.0	65.8	64.6	65.0	65.8	66.1	65.4
Unemployment rate	8.4	7.8	7.8	8.4	8.2	6.8	6.5	6.5	6.5	6.5
Inflation (price of GDP)	0.4	3.1	2.8	2.1	1.9	2.3	2.0	2.0	2.0	2.0
Interest rate of debt	2.6	2.6	2.5	2.5	2.4	2.4	5.0	5.5	5.5	5.5

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

The public sector balance sheet was broken down into two parts: earnings-related pension funds and other public sector. The latter comprises central government, local government and social security funds other than the earnings-related pension funds. This breakdown, together with the age-related nature of costs, determines the necessary classification of expenditure and revenue. Therefore, pensions were broken down to earnings-related pensions and other pensions. Of the former, pensions paid by general government are analysed separately. Besides earnings-related pension contributions, pension expenditure and the return on fund assets, the balance sheet of earningsrelated pension funds includes transfers to and from central government.⁵

The fact that earnings-related pension funds have their own balance sheet made it possible to set a growth path for the balance sheet consistent

⁵ Transfers to central government reflect the share transferable from the State Pension Fund for budgetary purposes. The proportion of these transfers in employment expenditure is assumed to remain constant. Transfers from general government reflect, in turn, the central government share in pension contributions mainly to agricultural entrepreneurs.

with the targets set for the pension system. The target was a level of pension funds that remains constant relative to the wage bill, allowing pension contributions to adjust. In sustainability projections, where the total tax ratio is kept unchanged, the change in pension contributions was neutralised in other tax items.

Public sector income was broken down relatively exhaustively in detailed tax categories. Tax base developments were also fairly detailed. For example, employment expenditure and unemployment contributions affected the level of income tax accruals.

Sustainability projections

Debt trajectories

The calculations show that Finland's public finances are not on a sound footing. Both central and local government debt are rising drastically. The primary balance of central and local government will remain negative, with public expenditure rising briskly in an environment of slow economic growth and high real interest rates. On the other hand, towards the end of the review horizon, the surplus on the earnings-related pension funds will begin to increase, as pension expenditure growth moderates due to the contracting number of baby-boomers among pension recipients. If pension contributions remained unchanged, the GDP share of the pension funds would rise to 80% by 2060.

A more accurate picture is gained of the pressures on public sector debt when the general government net debt is analysed by keeping the pension funds relative to GDP at the level of the base year (2019). This curbs growth in pension contributions towards the end of the review period. With an unchanged total tax ratio, general government debt will begin to grow at a rapid pace. Central and local government debt will already exceed the level of GDP at the beginning of the 2030s (Table 3).

Fiscal consolidation needs

Keeping indebtedness under control requires fiscal consolidation, the scale of which is measured by the sustainability gap and the required increase in the tax ratio. These are alternative perspectives in analysing the need for fiscal consolidation. The sustainability gap indicates the scale of a one-off adjustment required for public finances to return to a sustainable footing. It measures how much, initially, taxation should be permanently increased or public expenditure reduced for indebtedness to remain contained, taking into account expenditure arising from population ageing and public debt in the initial situation. The required tax ratio increase, in turn, denotes the path of the tax ratio, changing over time, with which public debt can be maintained at a desired level.

Measured by the sustainability indicator, the overall fiscal adjustment need will be about 4% of GDP (Table 4). Central and local government are burdened by negative primary balances, forthcoming expenditure increases and the initial high level of debt. As the adjustment of earnings-related pension

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Table 3.

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% of GDP	2010	2011	2012	2013	2014	2019	2030	2040	2050	2060
<i>Central and local government balance</i>	-5.8	-3.7	-4.0	-3.5	-3.1	-2.3	-7.9	-11.5	-14.7	-19.4
Central and local government primary balance	-4.4	-2.2	-2.6	-2.1	-1.6	-0.9	-2.9	-3.5	-3.1	-3.4
Employee pension funds balance	3.0	2.8	2.7	2.4	2.3	1.6	2.1	2.6	1.8	2.1
Central and local government debt	51.2	52.2	56.6	58.9	60.3	63.0	98.7	155.8	62.7	310.5
Pension funds	77.7	72.0	72.6	73.2	73.1	69.6	67.7	68.5	70.7	69.2
Sources Statistics Finland and calculations by the Paul of Finland										

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

Table 4.

Sustainability gap indicators and their components, % of GDP										
		Present value of future interest expenditure	Primary balance in 2019	Present value of future primary balances						
S2 *	4.2	1.1	-0.9	-2.1						
S1 *	4.1	1.2	-0.9	-2.0						

* For the definitions of the sustainability gap indicators, see European Comission (2012) The Ageing Report. Economic and budgetary projections for the EU27 Member States. Source: Calculations by the Bank of Finland.

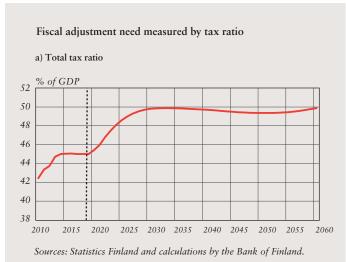
contributions will bring the balance sheets of the earnings-related pension funds into balance, the pressure for fiscal adjustment will be reflected in the balance sheets of central and local government and other social security funds. For this reason, in the presented sustainability gap calculation, pension expenditure growth is not reflected in the change in the primary balance, and the primary balance in 2019 illustrates the position of central and local government.

The required tax ratio increase indicates how much central and local government would need to increase taxes so that their combined debt ratio would not exceed 60% of GDP. At the same time, it is assumed that the earnings-related pension funds adjust contributions so that the funds relative to the wage bill remain roughly at the same level as in 2019.

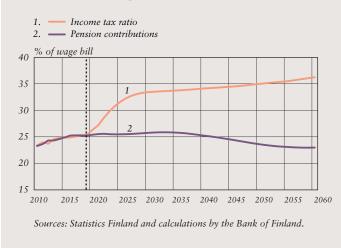
The need to increase taxes will be strongest in the 2020s when growth in employment expenditure also increases employment contributions. Since the general government debt has reached the benchmark of 60% already in the initial situation, the deteriorating primary balance will directly increase central and general government tax rates as well (Chart 3). Measured by the total tax ratio, taxation would tighten by almost 5 percentage points in the first years of the 2020s. Taxes could The sustainability gap calculations are subject to uncertainty. later be eased slightly, but weaker growth in labour input at the end of the period will increase the need to raise taxes again.

The calculation contains the assumption that tighter central and local government taxation would pertain solely to earnings. Income taxes would have to be raised by about 8% in the next decade. At the same time, earnings-related pension contributions

Chart 3.



b) Income tax ratio and pension contributions



would have to be increased by just under 1 percentage point, and could even be reduced slightly after the end of the 2030s (Chart 4).⁶

The picture of fiscal adjustment needs provided by the sustainability calculations is conditional on a number of choices. The assumption of the initial level of the central and local government structural deficit is fundamental. In the projections presented in this article, the base year is relatively far ahead (2019), so the uncertainty related to the initial situation is very high. However, a sufficiently long adjustment time is needed, since sustainability calculations require that the economy is close to equilibrium at the starting point. At present, the Finnish economy is undergoing significant structural changes, and the economic crisis has also eroded the balance of the economy in other ways than through the public finances. This pertains, in particular, to household indebtedness, unemployment and the current account deficit.

Developments in public service costs are another essential source of uncertainty. Since producing public services is labour-intensive, the costs of these services tend to increase faster than the general level of prices. Hence, scenarios easily underestimate costs arising from the production or provision of services. Scenarios are also naturally affected by assumptions

⁶ Growth in the surplus on the pension funds was also observed by Vanne, R & Vaittinen, R (2012) in their article 'Kestävyysvaje eläkejärjestelmässä ja muussa julkisessa taloudessa' ('Sustainability gap in the pension system and in other public finances'). Talous & Yhteiskunta 2/2012. Labour Institute for Economic Research.

regarding interest rates and the return on pension funds. Furthermore, the productivity assumption, too, is important from the perspective of adjustment needs.

The third central source of uncertainty pertains to labour force dynamics. Population projections have underestimated developments in the size of working-age population throughout the 2000s. This is mainly due to the fact that actual net immigration has increased faster than predicted. Therefore, the immigration assumption has constantly been revised upwards in population projections. For example, the 2001 population projection contained an assumption that immigration would be 5,000 persons per annum, while in the latest 2012 projection it was already assumed to be 17,000 persons per annum.

The following sections illustrate the impact of the various assumptions on adjustment needs.

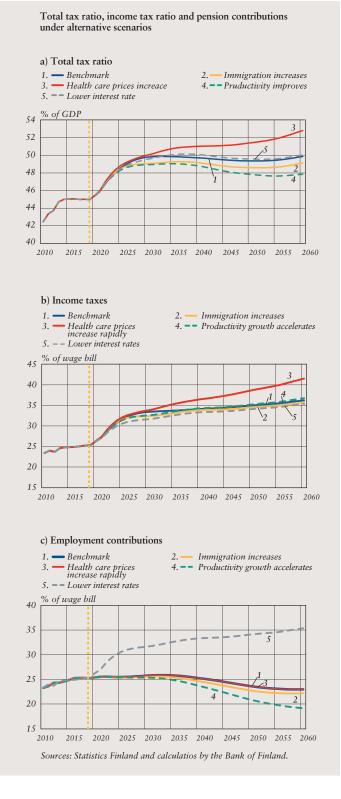
Alternative development paths

Immigration increases

Since actual immigration has systematically been higher than estimated, it can be assumed that this could also hold true in the future, especially when economic developments outside the EU area are very asymmetric and the labour market in Finland is likely to tighten further in response to the growing demand for long-term care services.

In what follows, it is assumed that net immigration would increase by 25,000 persons per annum in

Chart 4.



2021–2060, ie substantially faster than estimated in the latest population projection (17,000 persons). Furthermore, it is schematically assumed that the distribution of the rise in the number of immigrants by 1-year cohorts would equal the share of immigrants in the population estimated in the current population projection. At the end of the review horizon, immigrants would account for 18% of the total population, compared with 14% in the current population projection.

Immigrants are younger than the population on average,7 hence growth in immigration increases the size of the working-age population. At the same time, it also slightly increases the number of children in the initial phase, and later the number of pension recipients and therefore public expenditure. Expenditure growth arising from immigrants was taken into account in the calculation on the basis of age group-specific expenditure breakdowns. Growth in the number of pension recipients stemming from higher immigration was, in turn, assumed to accelerate in proportion to the rise in the share of persons over 64. Hence, the pension replacement rate was assumed to remain unchanged, and the average earnings of immigrants were assumed to equal those of the original population. In addition, it was schematically assumed that the employment and productivity of

immigrants would equal those of the indigenous population.

The assumed growth in immigration has a relatively small impact on fiscal adjustment needs. Nevertheless, the average tax rate would still be about 1 percentage point lower than in the benchmark scenario (Chart 4), and the sustainability gap would be 0.6% smaller. It can be schematically calculated that halving the sustainability gap via immigration would require immigration inflows of about 47,000 persons per annum. This would increase the share of immigrants in the total population to 28% in 2060.

Rise in the prices of public services

Cost developments constitute an essential source of uncertainty for analyses of developments in the prices of public services. The baseline scenario contained an assumption that service prices will rise at the same pace as costs in the economy as a whole. However, statistics from recent years indicate that the price index for basic services has increased considerably faster than the general level of prices. For example, in 2001–2011 the index rose by 22%, while the price of GDP rose by 12%.

The impact of the uncertainty stemming from developments in public service prices is illustrated, to take an example, by assuming that health care prices would be determined purely on the basis of developments in input prices. The average share of labour costs (wages and employer contributions) was estimated at 60%, while the remaining input prices follow consumer price developments. This would substantially

⁷ For more information on age breakdown, see eg Kinnunen, H – Mäki-Fränti, P – Viertola, H (2013) Julkisen talouden kestävyystarkasteluja ('Fiscal sustainability projections'). BoF Online. Bank of Finland. Forthcoming.

increase the need for fiscal adjustment. In 2060, the total tax ratio would be over 3 percentage points and the sustainability gap 2 percentage points higher than the benchmark (Chart 4).

Productivity and the interest rate assumption

An improvement in the productivity of the economy has only a slight impact on central and local government balance sheets in the sustainability calculations. This is due to the common assumption used in the projections that higher living standards stemming from faster productivity growth also raise the level of public services. Hence, increased productivity does not reduce the GDP share of central and local government expenditure. Improved productivity does, however, enhance the balance on the earnings-related pension funds. The pension replacement rate declines, as higher earnings levels, which are assumed to follow productivity developments, increase the pension index by a weight of just 20%. The impact of improved productivity is also reflected through the debt discount factor. As increased productivity reduces the difference between real growth and the real interest rate, debtservicing costs relative to GDP decrease compared with the benchmark.

An alternative scenario estimated the impact of a ½ a percentage point faster productivity increase. The pension replacement rate declines significantly in the longer term. While in the baseline scenario the pension replacement rate was assumed, in line with the assessments of the Finnish Centre for Pensions, to fall to 48% by 2060, in the alternative scenario the replacement ratio would contract to 41% due to faster productivity growth.

A decline in the replacement rate boosts the surplus on the earningsrelated pension funds significantly. This would allow a 4 percentage point reduction in pension contributions (Chart 4). Faster productivity growth would decrease the total tax ratio by 2 percentage points and the sustainability gap by about 1 percentage point.

The interest paid by central and local government on their debt and, on the other hand, the impact of the return on pension fund assets do not have a material impact on the sustainability gap, provided they are not assumed to differ from each other. In fact, a 1 percentage point lower real interest rate would increase the sustainability gap slightly, since the level of pension funds is higher than the level of debt (Chart 4). What could be of material importance is if the rate of return on the pension funds were higher than the interest paid on central government debt. In fact, it can be mechanically calculated that if the return were 1 percentage point higher than the interest, the sustainability gap would contract by 0.7 of a percentage point.8

Analysis of projection results

Finland has substantial problems with fiscal sustainability. If fiscal policy

A improvement in productivity has only a slight impact on central and local government balance sheets in the sustainability calculations.

⁸ The expected rate of return on the pension funds can exceed the expected interest rate level on government debt if pension fund assets are invested in instruments that are riskier than government bonds. At present, slightly over half of pension assets have been invested in instruments other than short-and long-term debt securities.

remains unchanged after 2014 and no new structural measures are undertaken, significant consolidation needs would build up in the public finances. If indebtedness were then turned on a downward trend solely by changing the revenue framework, this would mean that the total tax rate would need to be raised in 2021-2025 by an amount corresponding to about 4% of GDP. Tax increases on such a scale would inevitably affect economic growth. These dynamic effects have not been taken into account in the projections presented in this article, meaning the actual need to tighten taxation would be even higher.9

Of the factors affecting long-term economic growth, the impact of the assumptions concerning immigration, public service price dynamics and productivity growth were illustrated. From the perspective of the sustainability of the public finances, the most important among these factors are the costs related to the production of public services. Alone, a change in health care prices to correspond to the assumed labour input prices would increase the sustainability gap by over 2 percentage points.

The exogenous increase in labour force via higher-than-expected net immigration would ease the state of the public finances somewhat. However, it would have a significant impact only if growth in immigration inflows were substantial. In addition, the impact is based on the assumption that the employment and productivity of immigrants is at the same level as those of the indigenous population.

The impact of growth in economic productivity on the pension system yielded an interesting result. A small weight for earnings developments in pension indexation would induce a significant change in the relations between wages and pensions, should productivity growth accelerate. This would build room for reductions in pension contributions, which would considerably reduce the need for fiscal adjustment.

The sustainability projections illustrate the forthcoming expenditure pressures and debt-servicing costs. The sustainability indicator shows what should be done if adjustment were implemented in full and right at the beginning of the review period. The adjustment paths based on the debt ceiling and the funding ratio provide for a time dimension in the projections. The message is clear: if there are no major structural reforms in the current decade, we will very shortly be faced with a situation where taxes must be raised and/or public expenditure cut substantially. The time path of the tax rate also reveals that a new fiscal policy strategy cannot be postponed to the next parliamentary term. This would lead to strong corrections in fiscal policy, which would be particularly detrimental to the course of the economy.

Keywords: sustainability of the public finances, population ageing, indebtedness

⁹ For the dynamic effects of tax increases analysed with a general equilibrium model, see Kinnunen, H & Railavo, J (2011) Analysis of the macroeconomic effects of population ageing using a general equilibrium model. Bank of Finland Bulletin 5/2011, p. 85–93.