Analysis

Finland’s long-term growth prospects moderate

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The protraction of the recession following the financial crisis weakened Finland's growth potential, while population ageing and the accumulation of public debt continue to weigh on growth prospects. In spite of the economy's recent recovery, long-term growth is expected to remain below its pre-crisis level, averaging 1.5% per annum over 2026–2040.



The Finnish economy returned to growth in 2015 after a period of prolonged recession, buoyed by favourable cyclical conditions in the world economy and backed by monetary policy. However, economic growth is in the long term ultimately determined by the economy's supply factors, not demand, and is contingent on underlying trends in labour and labour productivity.

During the recession, the labour supply shrank, private sector investment was persistently subdued, and businesses reduced their spending on research and development. The economy also underwent a shift in its supply structure: by 2017, the manufacturing sector had shed 100,000 jobs compared with 2008. In addition, ICT's proportionate share of the economy's total output seems to have permanently contracted, where the sector was once a main source of productivity growth before the recession.

Long-term growth forecast: growth conditions ebbed by recession

This article presents the Bank of Finland's long-term growth forecast for the years 2026–2040. The forecast is based on a growth-accounting framework, which is used to estimate the economy's potential (real GDP) growth rate over the forecast horizon. Projections of the economy's main supply factors – labour, capital and total factor productivity – are primarily based on their past trends. The long-term growth forecast serves as an extension of Finland's medium-term potential growth outlook for 2018–2025, as presented in the corresponding article.

The Bank of Finland last assessed the economy's long-term growth prospects in 2015.[1] Already then, the growth rate for the decades ahead was projected to be slower than historical growth, and annualised average growth over the 2020s was forecast at 1.3%. Population ageing, the gradual shift into a service economy, and the worldwide slowdown in productivity growth were all deemed to cast a shadow over long-term growth. In the current forecast, these phenomena are still seen to weigh on the long-term growth potential of the Finnish economy.

In the model framework used to project long-term growth, the economy is divided into three sectors: general government, manufacturing industry and private economic activities other than manufacturing. Strictly speaking, the last sector includes property ownership and renting, but these have been exempted from analysis. Each individual sector is assessed in terms of its projected growth in labour, the capital stock and total factor productivity. The resulting estimates are inserted into a production function, which subsequently provides a representation of potential output for each sector. Finally, the output of all three sectors are combined to represent the output of the whole economy.

The framework is used to produce a baseline forecast. This is supplemented by a sensitivity analysis of two alternative growth paths based on stronger and weaker projected trends in the labour input and, respectively, public sector labour requirements.

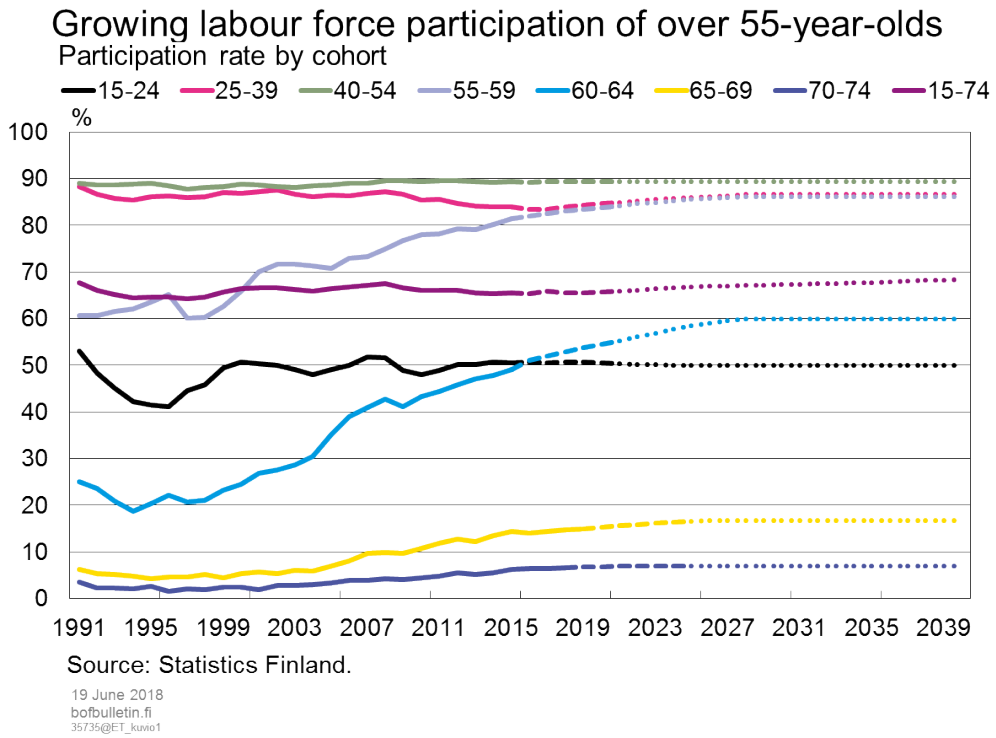
Population ageing's squeeze on labour supply beginning to ease

The forecast of the labour input is based on projected trends in the labour force (age groups 15-74), the participation rate, the employment rate and the number of hours worked per employee. The estimate of the labour force has drawn on Statistics Finland's most recent population projection, published in 2015.[2] The participation rate has been estimated by decomposing the labour force into cohort-specific shares and projecting prior trends into the future. The employment rate is based on the Bank of Finland's estimate of structural unemployment in the long term. The number of hours worked per employee is similarly based on past performance.

According to the population projection, the number of 15-74 year-olds will reduce by slightly less than 30,000 persons during 2026–2040. The participation rate within the labour force is projected to stand at approximately 67% in 2026. Thus, the participation rate is expected to rise at a considerable pace at the start of the long-term forecast period. This can largely be attributed to the increased participation of over 55-year-olds, whose ubiquity in the labour force is expected to continue its long-standing growth.

In the framework, cohort-specific participation rates are held constant after the year 2026, such that changes in the participation rate during the forecast period are solely caused by shifts in the population structure. Therefore, while the participation will reach over 68% by 2040, it will be on the back of demographic transition. 40 to 50-year-olds, who have the highest cohort-specific participation rate, will see their presence in the labour force grow, while that of over 60-year-olds, whose respective participation rate is below-average, will decline.

Chart 1.



The growth in the participation rate will offset the decline in the working-age population, insomuch that the labour force will grow by approximately 40,000 persons during the forecast period. Further gains in the labour force are quite plausible, should the participation rates of over 55-year-olds continue to grow – the effects of which are outlined an in alternative scenario.

The employment projection is based on historical trends in structural unemployment. Structural unemployment is expected to remain at 7.7% which is also its projection over the medium term.

The number of hours worked per employee reduced notably from the 1990s into the early 2000s. In recent years, however, this trend has flattened out and even turned towards slight growth, owing both to an increase in hours worked by those in full-time employment as well as sustained growth in part-time employment. It is assumed that in the long term part-time work will become increasingly common; hence, hours worked per employee are projected to increase slightly, at approximately 0.2% per annum.[3]

Overall, the entire labour input, as measured by total hours worked, is expected to decline by approximately 1.4% over the forecast period. Calculations pertaining to the forecast of the labour input ignore potential changes in the qualitative aspects of labour, as such changes influence productivity and are therefore given their due in the forecast of total factor productivity.

Potential growth is not only influenced by the available labour but also by its distribution among the economy's three sectors. Labour resources are allocated such that the public sector's labour requirements are determined exogenously through the demand for age-related public and publicly-funded services as well as the level of productivity growth in the public sector. The economy's private sectors, i.e. manufacturing and other private production, share the remainder of the labour force according to the sectors' size, measured by labour resources required.

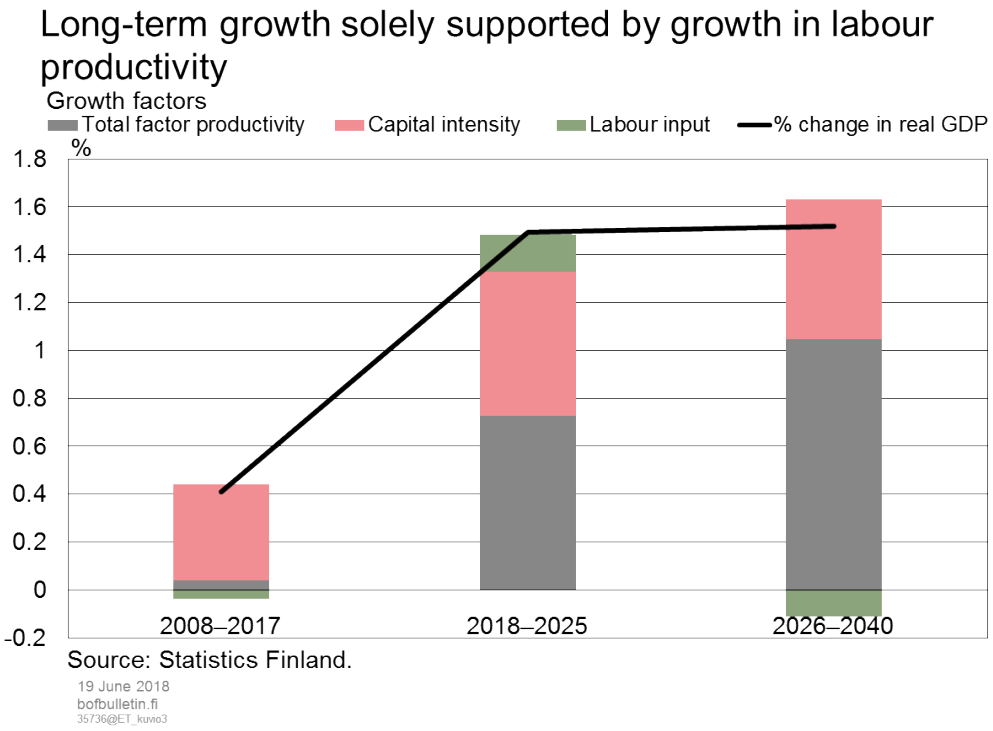
Productivity growth has traditionally been slow in the public sector and nor is its growth rate expected to markedly improve in the near future, so rising demand for age-related services is intimately linked with growth in age-related public expenditure.

Projections concerning the demand for age-related services are based on the assumptions that the Bank of Finland uses to assess the sustainability of the general government finances. Accordingly, age-related expenditure is projected to grow by an average annual rate of approximately 2% over 2026–2040 as the population continues to age. Age-related services comprise of healthcare and social services. The demand for other services is assumed to remain constant over the forecast period. As healthcare and social service costs account for approximately half of all general government spending, public sector employment will grow at a slower pace than age-related expenditure, at approximately 1% per annum.

Manufacturing and other private production share the remainder of the labour force. The entire labour input, as measured by hours worked, is projected to shrink by approximately 8% over the years 2026–2040 (Chart 2).[4]

The public sector's growing need for labour in the production of age-related services risks crowding out a considerable share of private output, particularly if productivity fails to meaningfully grow in public services.

Chart 2.



Growth in the capital stock slow

For the purposes of the model framework, capital input is derived from national accounting data on the net capital stock for each of the economy's three sectors. As the framework's real GDP figures do not include residential services, housing assets are similarly exempted from the capital stock.[5]

The computation assumes that the recession only left a permanent mark on the actual volume of the capital base in manufacturing but not on its growth rate. In addition, it is assumed that the supply structure of manufacturing will effectively remain unchanged over the forecast period although its transformation might otherwise be considered a continuous process. Currently, Finnish exports are being supported by traditional export industries such as forestry and paper as well as metals and chemicals, while the output share of electrical engineering and electronics remains comparatively low. This situation is assumed to persist throughout the long-term forecast period.

The capital stock of manufacturing is expected to increase moderately at an annual pace of 0.3%. The growth rate has been revised upwards by approximately two-tenths of a percentage point from what was assumed in the previous forecast just over four years ago. At the time, the

investment rate was thought to have permanently declined due to factors such as lowered growth expectations. The investment rate has since risen to approximately 23%, backed by three years of growth and revitalised investment activity, and has now returned to the average level it maintained in the decade preceding the financial crisis.

Although manufacturing's capital stock is projected to grow based on the given assumptions, its growth rate looks to remain substantially below the balanced-growth equilibrium. Achieving such a growth path would require the economy's capital base to grow at the combined pace of both productivity and labour,[6] whereupon productivity-adjusted capital intensity (per worker) would continue unchanged. However, the more moderate growth path assumed in the forecast better represents the average historical trend growth of the capital stock.[7]

The capital stock of other private sector production is projected to grow at a considerably quicker pace, at approximately 1.5% per annum. The growth rate is higher than in the previous long-term forecast (0.5%), as capital stock growth is now assumed to gradually adjust from its current pace towards the balanced growth rate. Growth in the capital stock of this sector has generally persisted at an annual rate between 1–2% since the mid-1990s.

The capital stock of the public sector steadily declined during the recession, despite the fact that the timing of public investments is partly determined by cyclical factors. However, public sector investment is expected to slightly increase over 2026–2040. Productivity growth in the public sector is ultimately driven by the improved organisation of existing tasks, but even achieving this often requires investment – into computing and information technology, for instance. Because the public sector's labour demands are projected to grow, even maintaining the current level of capital intensity per worker will require additional investment. The growth rate of capital stock in the public sector is expected to gradually adjust towards the balanced growth rate.

Total factor productivity growth to remain subdued

The longer the inspection horizon, the more economic growth is governed by the development of productivity within the economy. During the recession Finland's total factor productivity growth rate fell significantly below its trend, although it has since accelerated somewhat amid the economy's recovery.[8] Over the forecast years 2026–2040, total factor productivity will continue to grow at a moderate pace, at approximately 1.0% per annum.

One important yet answered question pertaining to total factor productivity growth is the extent to which digitalisation and other rapidly changing technologies such as automation might contribute to productivity, especially in service production. In spite of all the progress seen in

information technology leading up to this day, productivity growth has remained decidedly subdued across the advanced economies since the 1980s. However, recent productivity developments in Finland have undoubtedly been impacted by protracted recession. In the forecast's baseline scenario, total factor productivity growth is not projected to markedly accelerate. The baseline assumptions concerning productivity growth in each of the three productive sectors reach the same estimated magnitude of total factor productivity growth as outlined by the European Commission's Working Group on Ageing and Sustainability.[9] According to the Commission, the Finnish economy's total factor productivity growth rate will fluctuate between 0.8–1.0% over 2026–2040, slightly accelerating towards the end of the forecast period. Across the EU countries (28), productivity growth is estimated to be approximately one-tenth of a percentage pointer higher over the same time period.

Not only is total factor productivity determined by the performance of productivity in individual sectors, but it is also influenced by changes in the structure of the economy. Total factor productivity has traditionally seen faster growth in manufacturing than in the service industries. Out of the economy's three sectors, manufacturing has been most effective in harnessing new technologies to leverage output. Thus, the technological intensity of manufacturing has increased rapidly. Since the recession of the 1990s, most of the productivity growth observed in manufacturing has stemmed from electrical engineering and electronics. Consequently, the effects of this industry's fading will long weigh on future productivity growth in manufacturing.

Productivity growth has in recent years managed to gain foothold in several industries belonging to private sector services. During the recession years, when productivity growth remained especially weak in manufacturing, total factor production growth in the economy actually largely rested upon private sector services.[10] Productivity growth in public services, however, has remained subdued, and as the sector begins to account for an increasingly large share of output over the forecast period, so will its dampening effect on the economy's total factor productivity growth.

Total factor productivity growth for each of the three sectors decomposed for the model framework is estimated solely on the basis of its historical trend. Past performance can be obtained as a residual from the production function, as each sector's output growth and growth in capital stock is known.

In the baseline scenario, it is implicitly assumed that Finland's manufacturing sector will continue be supported by traditional industry. Thus, the projection for total factor productivity growth in manufacturing – 3% per annum – is based on the sector's average total productivity growth between 1997–2017, excluding electrical engineering and electronics.[11]

In other private sector production, the average annual rate of total factor productivity growth is projected at 1.5% and is also based on the sector's average growth over the past two decades. In the Bank of Finland's previous long-term growth forecast, it was assumed that the sector would underperform its historical trend, as the long-term effects of the recession were then estimated to be greater.

Total factor productivity growth has long been weak in the public services. Over the years 1997–2017, public sector total factor productivity growth declined at an average annual rate of up to 0.5%. Efforts to raise productivity in public service production have become increasingly determined, however, and in the baseline forecast it is assumed that this would have resulted in concrete productivity-boosting policies by 2025. These policies are assumed to prevent public sector total factor productivity from deteriorating during the forecast period, but no further assumptions are made with regards to their efficacy. Consequently, public sector total factor productivity growth is assumed to remain unchanged over the forecast years 2026–2040.

Growth to persist near 1.5% over the long term

Long-term growth forecasts are presented for both the whole economy[12] as well as the public and private sectors (Table 1). The private sector includes both manufacturing industry and other private production.

Table 1.

Long-term growth forecast, average growth sector by sector

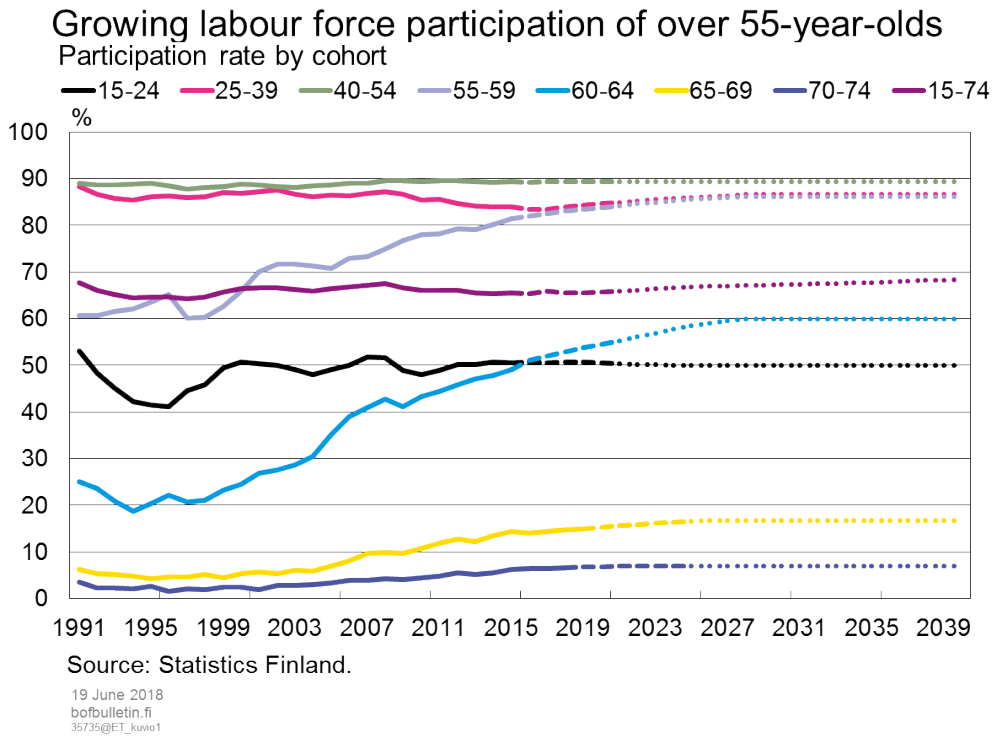
Whole economy	**2026–2040**
GDP	1.5 %
Labour	-0.1 %
Labour productivity	1.6 %
Total factor productivity	1.0 %
Capital intensity	0.6 %

Private sektor	
Output	2.0 %
Labour	-0.6 %
Labour productivity	2.6 %
Total factor productivity	1.8 %
Capital intensity	0.8 %
Public sektor	
Output	1.1 %
Labour	1.1 %
Labour productivity	-0.1 %
Total factor productivity	0.0 %
Capital intensity	-0.1 %

Gross domestic product is projected to grow at an average rate of 1.5% over 2026–2040. This is slightly faster than in the previous forecast, where average growth was projected at 1.3% over 2025–2035.

In Chart 3, the long-term forecast's growth components are compared with those of the medium-term outlook over 2018-2015 as well as the decomposition of growth since the financial crisis. The most significant departure from the medium-term outlook is that labour is no longer seen to contribute to growth after the mid-2020s, effectively meaning that growth will only be driven by labour productivity. However, labour productivity itself which will gain support over the long term from a deepening capital base as well as growth in total factor productivity.

Chart 3.



Of the factors underpinning growth in labour productivity, total factor productivity growth is projected to be strong especially in the private sectors of the economy. Accordingly, total factor productivity growth in the private sector is expected to adjust towards its historical trend path from the past two decades, both in manufacturing and other private production.[13] Private sector productivity growth will also be backed by capital deepening. Not only will the capital stock itself expand, but capital intensity will increase on the back of the projected decline in the private sector's share of the labour input.

Public sector productivity growth will remain subdued throughout the forecast period. However, the sector's total factor productivity is not expected to further decline, in contrast to expectations in the previous long-term forecast. The effects of capital deepening will remain somewhat negative, as the capital stock is projected to grow at a slower pace than the labour input, resulting in slightly lowered capital intensity per employee.

Productivity growth will not only be governed by the sectoral performance of capital deepening and total factor productivity during the forecast period. Instead, productivity growth will also be dampened by the reallocation of resources from manufacturing and other private production into public service production where productivity growth is comparatively slower.

Alternative scenarios

The outlook for economic growth in the years ahead will ultimately be governed by growth in productivity. Technological breakthroughs usually occur in global cycles, which a small economy such as Finland must take as given. However, the growth potential of the Finnish economy is also influenced by the path set out in domestic economic policy. As the working-age population continues to decline and a larger share of the labour force becomes tied to the production of age-related services, the scarcity of labour alone will set constraints on growth opportunities, even for the economy's most productive sectors. Therefore, the baseline forecast is now followed by a sensitivity analysis of two alternative scenarios with regards to the development of the labour input and public sector labour demand.

In the scenario following a better-than-predicted outcome, the supply of labour is assumed to develop more favourably than in the baseline. Here the Swedish labour market serves as an alternative benchmark, as its employment and participation rates have been considerably higher than those of Finland in recent years.

In the 'good scenario', labour market reforms are successfully implemented to bolster the labour supply and alleviate the prominence of skills mismatch. Structural unemployment is then assumed to settle at approximately 7%, which corresponds with the OECD estimate of Sweden's NAIRU (non-accelerating inflation rate of unemployment). Similarly, the participation rate (15-74-year-olds) is assumed to have reached the Swedish level of 70% by the beginning of the forecast period in 2026.

The assumption of improved public sector productivity growth is introduced into the framework by way of reducing public sector expenditure growth. In this scenario, it is assumed that a target of reducing healthcare and social service expenditure by EUR 3 billion is successfully met by 2030. These cost savings subsequently lower growth in the public sector's demand for labour.

Given these assumptions, real GDP would grow by approximately one-tenth of a percentage point faster during 2025–2040 than in the baseline calculation. Contraction in the labour input would have less of a detrimental impact on private sector growth compared with the baseline, and the private sector's larger share of total output would raise the economy's average productivity. However, the positive growth effects of a larger labour share in the private sector would be mitigated by its reduction in capital intensity.

In the scenario following a worse-than-predicted outcome, the prolonged recession permanently displaces part of the working-age population from the labour force. Labour market reforms to increase the labour supply fail to pass. The participation rate is assumed to remain at

approximately 65% and the NAIRU at 8.5%. As for the public sector, it is assumed that the projected savings from the social and health care reform are completely lost and that public sector total factor productivity will decline by 0.2% each year over the forecast period.

Because the model assumes that public sector employment is determined by demand for public services, a greater decline in the labour input is only reflected in private sector output, whose growth rate would decline by approximately 0.2%. The labour share of the public sector would increase compared with the baseline scenario, but would only suffice to compensate for weaker productivity growth compared with the baseline. Overall, the 'bad scenario' would reduce the average growth rate by approximately one-tenth of a percentage point.

Sustaining living standards in the future

The long-term growth prospects of the Finnish economy appear rather modest in light of the decades leading up to the financial crises. For the most part, however, the diminished rate of growth rate can be attributed to phenomena shared across the advanced economies. Total factor productivity has generally remained sluggish and the investment rate remained low for a sustained period. Output and employment positions in high-productivity manufacturing have both declined, and while increased employment in services has helped compensate for the loss of jobs in manufacturing, the service sector has not made up for the lost productivity growth. Population ageing is by no means a Finnish phenomenon – it has simply manifested itself slightly earlier compared with several other European countries. Looking to the future, the most important question is whether or not the technological progress of recent years, especially in the ICT sector, will finally begin to contribute to improved labour productivity. Could digitalisation establish itself as a general purpose technology, such as electricity, or will the benefits of new these technologies be largely restricted the ICT sector itself.

Finland's growth prospects are also limited by a variety of domestic issues, some of which might even be described as home grown. The recession coincided with a structural shift in manufacturing, where the output share of electrical engineering and electronics shrank into a fraction of its size before the recession. Finnish exports are once again dependent on basic industry whose productivity has been unable to match that of the ICT sector.

Labour force participation remains low compared with the other Nordics, and structural unemployment is poised to remain high. The growing demand for age-related services threatens to tie an increasingly large share of the country's labour resources to its public sector. Even Finland's product markets feature obstacles to competition which weaken productivity growth. All of the above, however, may at least in part be addressed through appropriate domestic economic policy.

Notes

1. A Finnish-language update on the previous long-term forecast is found in the article: Mäki-Fränti (2015): "Rakenteelliset tekijät hidastavat pitkän aikavälin talouskasvua", Kansantaloudellinen aikakauskirja 3/2015. ↑
2. Statistics Finland's projection concerning population growth may yet prove to be overly optimistic, as the birth rate has underperformed estimates. Their next population projection is due for publication in November 2018. ↑
3. Average hours worked declined even in positions of full-time employment from the early 2000s up until 2015. Working hours have since begun to grow slightly, but is thought to reflect the economy's cyclical phase instead of indicating a more sustained upwards trend. ↑
4. Labour has not been evaluated by sector in the medium-term forecast. In Chart 2, values for the years 2016–2025 are based on calculations similar to those used in the long-term forecast. ↑
5. The capital stock based on national accounting data is valued by purchase price and adjusted for depreciation. An alternative way of approximating the capital stock with respect to growth accounting would be to use an estimate of 'productive capital stock' published by Statistics Finland. While such estimates better reflect the productivity of capital than data obtained from national accounting, the latter was selected to maintain consistency with the assumptions made in the unobserved components model used for the medium-term forecast. ↑
6. The assumption of balanced growth in the capital stock is consistent with assumptions related to the model used to decompose historical trend data. To simplify calculations, each sector is assumed to observe its own balanced growth path. ↑
7. The assumed growth rate of 0.3% is based on the average growth rate in the capital stock of manufacturing (excluding ICT) during the time period between the 1990s' recession and the post-crisis recession. ↑
8. Finland's observed TFP trend growth may be somewhat underestimated in the early 2010s due to weak cyclical developments. The number of employed declined relatively little in light of the sharp decline in GDP during the years 2008–2009. Yet there is little evidence of a simultaneous slowdown the in technological advancement of industries driving total factor productivity growth. ↑
9. Working Group on Ageing and Sustainability (2015). ↑
10. According to Pohjola (2017), average annual total factor productivity growth in services helped offset the productivity decline of manufacturing during 2006–2015. Of the industries belonging to services, average total factor productivity growth remained highest in information and communications (0.2%), but growth also improved in distribution services (0.1%). (Pohjola, M. Tuottavuus, rakennemuutos ja talouskasvu 1975–2015. Kansantaloudellinen aikakauskirja 4/2017). Finnish only. ↑
11. The selected time frame contains years of robust economic growth as well as the post-crisis recession. Underlying growth in total factor productivity is still assumed to be governed by factors related to technology and technical change which are, in the long term, unaffected ↑

by the business cycle.

12. The levels of output calculated for each sector cannot be aggregated to produce total output by simply adding their fixed values together, as the relative prices between sectors may differ from the base year. For this reason, the whole economy's growth path has been calculated from the growth rate of each sector, weighted by their respective shares of value added. The share of value added accounts for the development of relative prices. ↑

13. Much of the deviation from the previous long-term forecast stems from growth in total factor productivity. In the earlier forecast, the whole economy's total factor productivity growth rate was projected to remain near 0.5% over the entire forecast period. ↑

Keywords

economic growth, investment, labour productivity, labour supply, productivity