INTERNATIONAL MONETARY FUND

FINLAND

SELECTED ISSUES

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CONTENTS

STRUCTURAL SHOCKS, PRODUCTIVITY, AND GROWTH[1]

Finland has gone from being a top performing advanced economy to a growth laggard since 2007 as it has suffered a unique combination of structural and cyclical shocks. The rapid decline of the (previously) high productivity ICT sector in recent years has weighed on overall growth and productivity, compounding the effects of the longer-run decline of the wood and paper industry. An analysis of industry level data indicates that shifts in the sectoral distribution of labor and capital towards lower productivity sectors is also contributing to slower aggregate productivity growth. Firm level analysis suggests that the aggregate TFP impact of reallocating resources within sectors is limited, though there is more scope to reallocate resources between sectors. Policy options to raise productivity, output, and employment are examined.

A.   Before the Crisis

1.   In the decade prior to the global financial crisis Finland grew faster than comparator countries. Over 1997–2007, Finland's average real GDP growth was 3.9 percent per year. This significantly exceeded the average Euro area growth rate of 2.4 percent over the same period. Finland's Nordic neighbors also grew more slowly, with average growth rates between 0.5 and 1.8 percentage points lower than Finland's.

Average Real GDP Growth Rates, 1997-2007 (Percent)
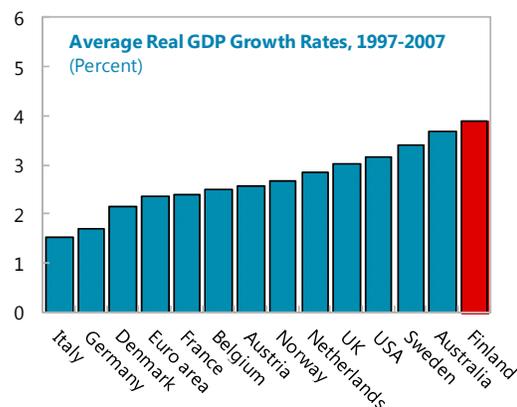
Sources: IMF World Economic Outlook and Fund

2.   Strong total factor productivity (TFP) growth was the most important driver of real GDP and labor productivity growth. Estimates of TFP derived from an aggregate production function approach suggest that, on average, TFP growth accounted for about 60 percent of annual real GDP growth. This is confirmed by decompositions of the growth of labor productivity (real GDP per hour worked) into contributions from TFP growth and various types of capital deepening, following Dabla-Norris and others (2015).[2] Figure 1 illustrates the contributions to labor productivity growth from information and communications technology (ICT) capital deepening, non-ICT capital deepening, human capital, and TFP growth.[3] In this decomposition TFP growth accounts for nearly 70 percent of labor productivity growth on average in Finland over 1997–2007. In comparison, in Sweden (Core Europe) TFP growth's contribution is

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[1] Prepared by Nathaniel Arnold and Pragyan Deb.

[2] We would like to thank Era Dabla-Norris, Kevin Wiseman, Minsuk Kim, and Jovana Sljivancanin for providing us with data and programs used in Dabla-Norris and others (2015).

[3] TFP is derived as a residual after accounting for the contributions of the various capital types to labor productivity. Hence, measurement errors in the ICT, non-ICT, and human capital series will be captured by TFP.

slightly more (less) than ½ of the total labor productivity growth, on average, while in the United States it is around ⅓.

Figure 1. Contributions to Labor Productivity Growth, 1997–2007

Sources: Conference Board, EU KLEMS, Dabla-Norris and others (2015), and Fund staff calculations.
Notes: Labor productivity is measured as real GDP per hour worked. Core Europe includes Austria, Belgium, Denmark, France, Germany, Luxembourg, and the Netherlands.
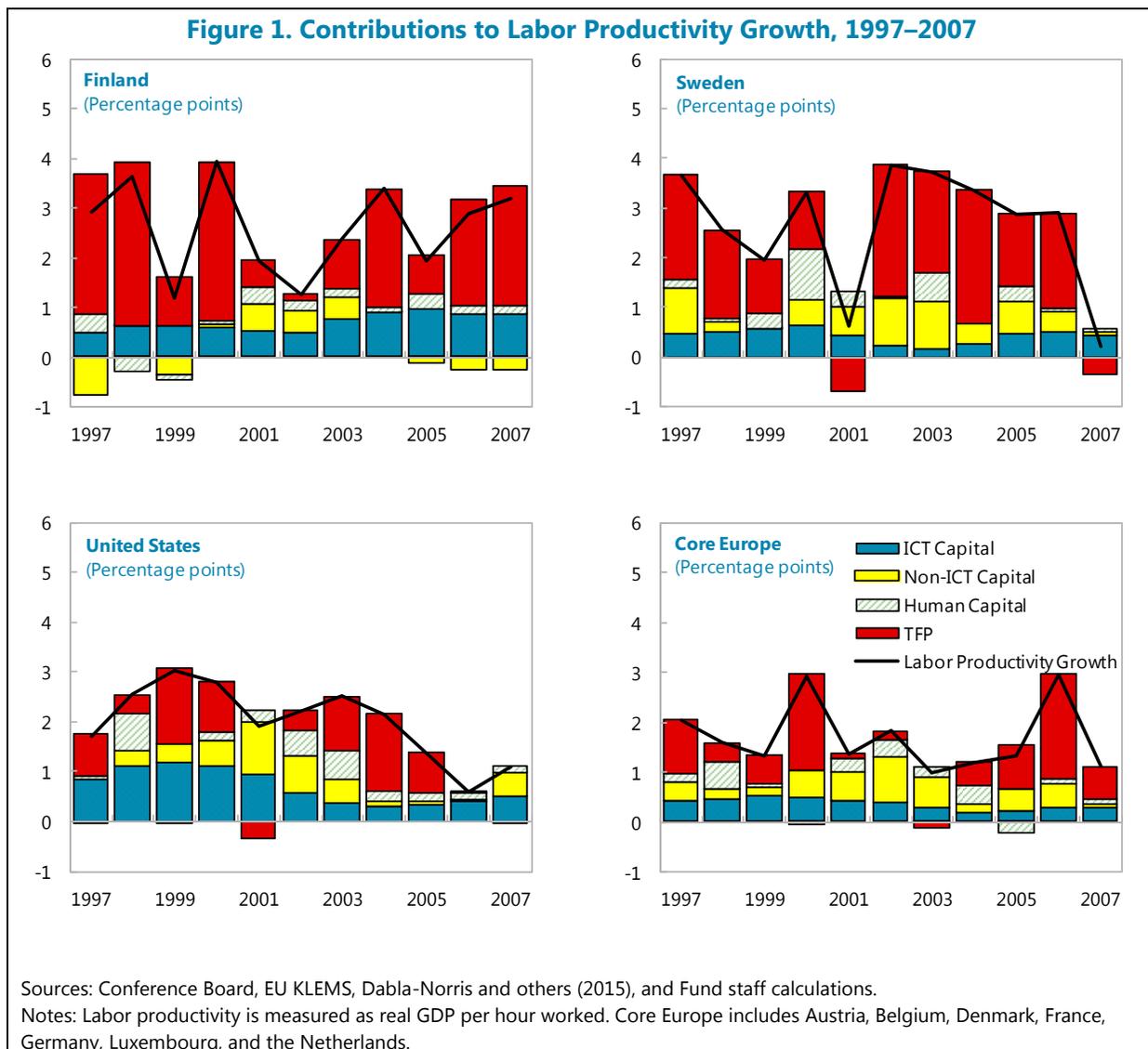
3.   Rapid TFP growth was partly due to a compositional shift of industries towards higher productivity sectors, especially the ICT sector. Industry level data from the EU KLEMS database provides a more detailed picture of different industries contributions to value added and productivity growth, as well as changing allocations of factors across industries. Looking at the contributions of different industries' TFP growth to total TFP growth over 1996–2007, we find that during

Sources: EU KLEMS and Fund staff calculations.
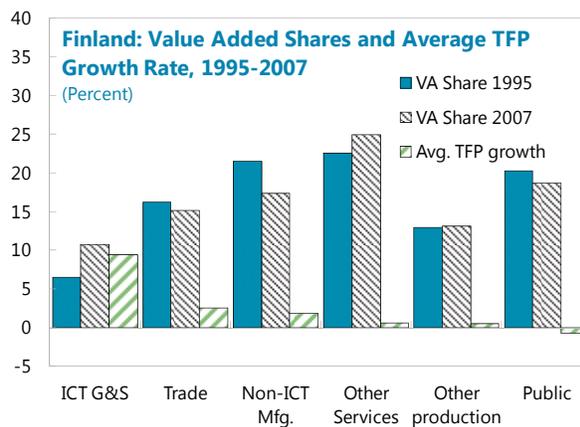
this period the ICT sector's contribution accounts for slightly more than half of the average total industry TFP growth.[4] Due in part to high TFP growth, which averaged 9.4 percent per year over 1995–2007, the ICT sector's share of total industry value added increased from 6.5 percent in 1995 to 10.7 percent in 2007. Three-fourths of this increase was driven by the growth of the electrical and optical equipment manufacturing industry. This was the industry classification applied to Nokia, which by 2008 was the world's largest mobile phone handset maker, accounting for nearly 40 percent of all mobile phones sold.

4.   The expansion of the ICT sector also helped offset the secular decline in non-ICT manufacturing, particularly that of the traditional wood and paper industry. In many advanced economies, manufacturing's share of total value added has been gradually declining over the past few decades. However, Finland managed to maintain a relatively stable manufacturing value added

share of 23–25 percent up until 2007. This is despite the decline starting in the mid-1990s of one of its most important and productive manufacturing industries, wood and paper products, which suffered from declining global demand for its products and increasing competition from emerging markets. The wood and paper industry declined from 7.2 to 4.0 percent of total value added between 1995 and 2007. The growth of electrical and optical equipment industry, from 3 to 6 percent of total value added over the same period, offset the decline of the wood and paper industry.

Manufacturing Share of Total Value Added
(Percent)
■ 1995   ◨ 2007

Sources: EU KLEMS and Fund staff calculations.
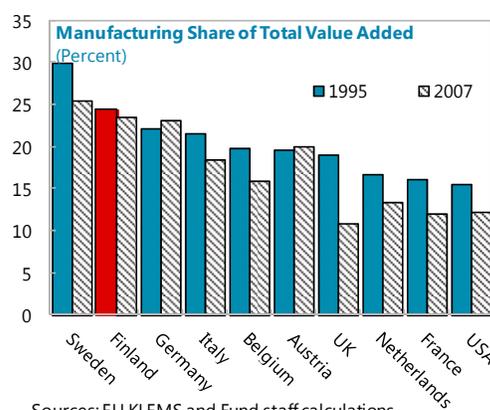
B. Structural Shocks and Sectoral Shifts

5.   Since 2007, Finland's economic performance has deteriorated sharply. Finland's GDP fell by more than 8 percent in 2009. After a partial rebound in 2010–11, the economy sank into recession again in 2012–14. As a result, Finland has gone from being one of the top performing advanced economies before to crisis, to being one of the worst performing ones over 2008–14. It has underperformed its Nordic neighbors, including Denmark, which suffered a housing bust during this period.

Average Real GDP Growth Rates, 2008–14
(Percent)

Sources: IMF World Economic Outlook and Fund

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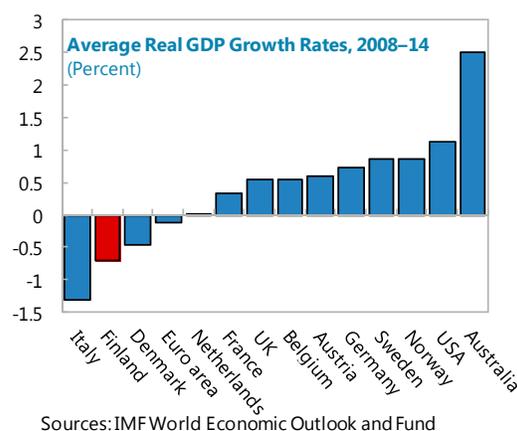
[4] In the EU KLEMS data, TFP is calculated as the residual factor in real value added after accounting for real capital and labor inputs. See O'Mahony and Timmer (2009) for the details of the EU KLEMS data construction.

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6.   The 2008–09 crisis coincided with technological and competitive changes in the global mobile phone industry that contributed to the collapse of Nokia's handset business. In 2007 Apple released the iPhone, which caused massive changes in the mobile phone industry over the next few years. Nokia's made strategic mistakes in how it initially responded to competition in the smart phone segment of the market, causing it to quickly lose market share to Apple. At the same

time, increasing competition from Asian firms such as Samsung began to undermine Nokia's position at the lower end of the global mobile phone market, especially in developing and emerging markets. The difficulties caused by these technological and competitive pressures were compounded by the negative effects of the global financial crisis and subsequent euro area crisis on demand in Nokia's core European market. As a result, even as total industry value added was declining, the electrical and optical equipment industry's share of total value

Sources: EU KLEMS and Fund staff calculations.

added collapsed. It halved between 2007 and 2009, falling from 6 to 3 percent, then continued to decline to 1.3 percent in 2012. The electrical and optical equipment industry alone was responsible for about ¼ of the decline in total industry real value added in 2009. It has also resulted in a substantial deterioration in labor productivity, both in the electrical equipment industry and in the economy overall.
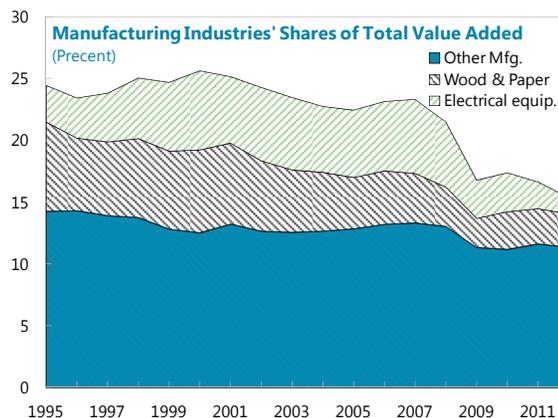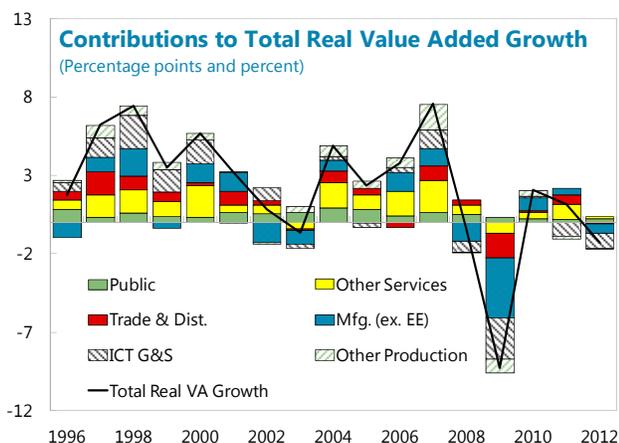
Sources: EU KLEMS and Fund staff calculations.
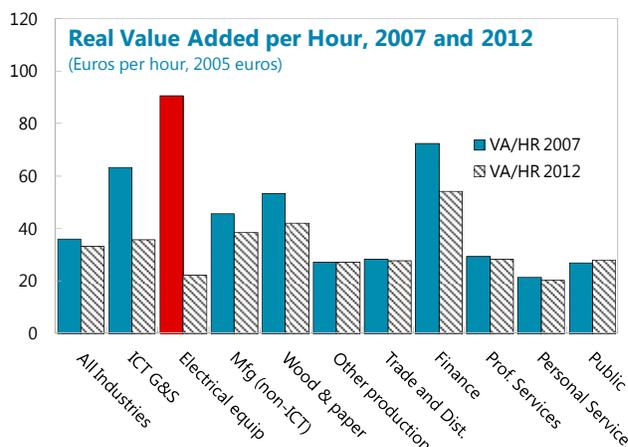
Sources: EU KLEMS and Fund staff calculations.

7. **The fall in demand during the crisis also accelerated the secular decline in the wood and paper industry.** After a gradual 3 percentage point decline from 1995 to 2007, the wood and paper industry's share of value added dropped another 1½ percentage points between 2007 and 2009. It then rebounded slightly in 2010 and has largely stabilized (in relative terms) since then. However, this is in the context of an economy that has been in recession for three years, so in absolute terms the wood and paper industry is still shrinking.

8. **Aggregate and sectoral TFP growth rates are substantially lower than before the crisis.** Even excluding 2008–09, when TFP growth was very negative, the contribution of TFP to real GDP has dropped dramatically. On average over 2010–14, TFP has contributed 0.3 percentage points to annual real GDP growth compared to the pre-crisis average of more than 2 percentage points. Looking at 30 industries in the EU KLEMS data set, 24 had negative average TFP growth over 2008–09. For 2010–12, nearly half of the industries still had negative average TFP growth, with the electrical equipment industry performing the worst (-15 percent).

9. **The structural shocks to key manufacturing industries and continued weakness of both domestic and external demand have also depressed investment.** Private investment as a share of GDP has declined by 5 percentage points between 2007 and 2014. This is partly driven by the response of relatively capital intensive manufacturing industries to the structural and demand shocks they have experienced since 2007. For industries where lower investment is due to weak demand, we can expect investment to pick-up when demand eventually recovers. However, industries facing permanent structural shocks will need to actively disinvest. This can be seen in both the electrical and optical equipment and wood and paper industries where the real fixed capital stock declined roughly 12 percent between 2007 and 2012.

10. **Along with slower TFP growth, weaker investment is a drag on labor productivity growth.** Investment is necessary to replace depreciated capital and increase the capital stock with more advanced equipment and software, which provide capital services in the production process. Before the crisis, capital services (ICT and non-ICT combined) were contributing as much as 1 percentage point to the annual growth rate of real value added. Since the crisis, capital services contribution to real value added growth has fallen to less than half the pre-crisis average, which further contributes to the slowdown in labor productivity growth.

11. **The sectoral composition of employment has gradually shifted as industries' fortunes have changed.** To understand how labor inputs (measured by number of people employed) have been shifting across industries, we decompose the contributions from each industry over different sub-periods. We can see that all industries were increasing employment in the period 1997–2001, but the pattern began to shift during 2002–2008. Despite being a significant driver of value added growth, employment in the ICT sector barely

Change in Employment and Average Productivity
(Thousands of employees and thousands of euros per employee)
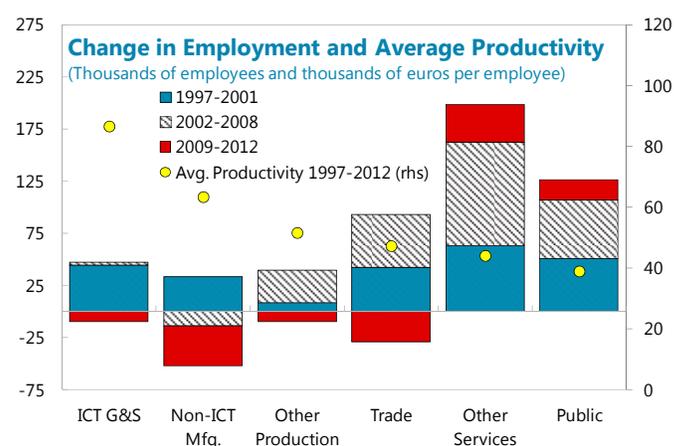
Sources: EU KLEMS and Fund staff calculations

changed over 2002–2008, as Nokia off-shored much of its production. Meanwhile, employment in the non-ICT manufacturing sector was shrinking even before the crisis due to the decline of the wood and paper industry. During 2009–2012 ICT sector employment began to shrink and the non-ICT manufacturing sector shed even more workers, but with the decline more broadly based across manufacturing industries. The only sectors with an increase in employment during 2009–2012 are the public sector and other services (e.g., finance, personal, and professional services), which, with the exception of finance, are all relatively low productivity sectors.

12.   Changes in the capital stock exhibit patterns similar to that of labor. In particular, the ICT and non-ICT manufacturing sectors' contributions to total capital stock growth were generally negative after 2003. In contrast, the public sector, other services, and other production (e.g., primary industries, construction, and utilities) all experienced positive growth in their capital stocks. However, even in those sectors the growth of the capital stock has slowed since the crisis, contributing to the ½ percentage point lower average growth rate of the total capital stock since 2009.
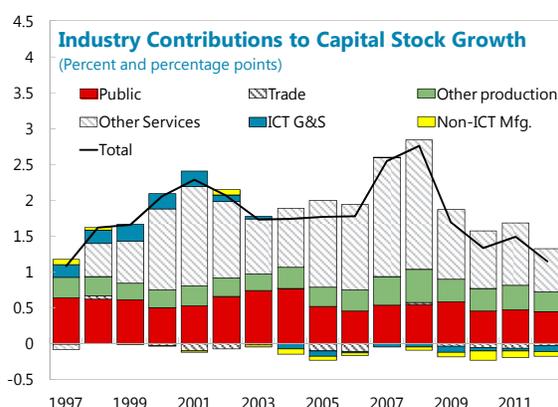
Sources: EU KLEMS and Fund staff calculations.

13.   The relative shift in the allocation of capital and labor to lower productivity sectors reduces Finland's potential growth rate. Aggregate TFP can be considered as the weighted average of the TFP of different sectors of the economy. As capital and labor are increasingly employed in sectors with lower productivity and slower TFP growth, aggregate TFP growth will decline. Currently, staff forecasts for aggregate TFP growth suggest it will be half of its pre-crisis average over the medium-term.
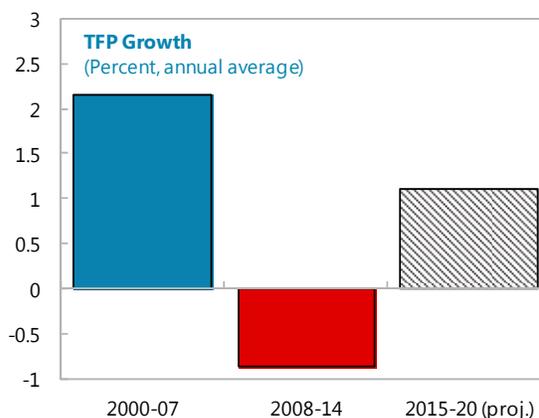
Sources: Statistics Finland and Fund staff calculations.

14.   Shifting resources towards more productive sectors would boost aggregate labor productivity and TFP growth. For example, shifting 3 percent of labor inputs (measured as hours worked) from lower productivity sectors (i.e., trade, other production, and the public sector) to higher productivity sectors (i.e., ICT and non-ICT manufacturing) would increase labor productivity by nearly 2½ percent immediately. It would also raise the TFP growth rate, as the sectors where resources are being reallocated to have typically experienced higher TFP growth.

C. Firm Level Analysis

15.   Firm level data allows us to investigate the within-industry distributions of firm size, productivity, labor, and capital. Using firm level data from Orbis, a worldwide database of primarily private company information, we can analyze the structure of industries in terms of the distribution of firms by size and how factors are allocated within each industry. This firm level data is also used for counterfactual analysis later. In particular, we focus on the post crisis period due to the more limited coverage of the firm level data before 2009.

16.   The Orbis data for Finland provides over 90 thousand firm-year observations over 1994–2014, though coverage before 2009 is limited. The value added of Finnish firms in the Orbis database accounts for less than 20 percent of total value added (less than 26 percent of value added excluding the public sector) from the EU KLEMS data before 2009. For 2009–12 the coverage improves, with the firms in the Orbis database accounting for 66 percent of the total value added (88 percent of the value added excluding the public sector) from the EU KLEMS database. In fact, Nokia is one of the firms included in the Orbis database only from 2009. We exclude agriculture and mining sectors from the analysis and group firms into six industries: Wood and Paper, ICT Goods and Services, Other Manufacturing, Construction, Trade, and Other Services.

17.   Small and medium size firms make up the greatest share of the number of firms, but very large firms dominate in terms of value added. The distribution of labor (share of employees in the sector) and capital (share of fixed assets) across firm sizes is highly skewed towards very large firms, and these firms tend to be relatively more capital intensive (Figure 2). Labor productivity is highest in very large manufacturing firms (see Appendix I for details).

18.   Firm level data can be used to estimate TFP for different firm sizes and sectors. Average TFP can be estimated by regressing real output measured by real gross value added on labor and capital inputs (all in logarithms). The coefficients of labor and capital input can be interpreted as the share of labor and capital in a Cobb-Douglas production function, while the constant term represents the average TFP level across firms and time (see Table A2 in Appendix II). Fixed effect dummies are added to the regressions to estimate the effect of firm sector and size characteristics on TFP and a time fixed effect to control for the impact of overall macroeconomic conditions.[5] Specifically, we estimate:

$$LGVA_{i,t} = \mu + \alpha LN_{i,t} + \beta LK_{i,t} + \tau YR_t + \pi SZ_i + \delta SECT_i + \mu_i + \varepsilon_{i,t} \qquad (1)$$

where $LGVA_{i,t}$, $LN_{i,t}$ and $LK_{i,t}$ are the logarithms of real added value (in euro), the number of employees, and the real fixed assets (in euro) for firm i at year t, respectively. This model includes fixed effects for time, YR_t, firm size, SZ_i, and sector, $SECT_i$.

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[5] See Budina and others (2015) for a similar analysis of Spanish firm level data.

Figure 2. Stylized Facts for Key Industries

Small and medium size firms make up the greatest share of the total number of firms...

Distribution of Firms by Size
(Percent of total, average 2010–12)
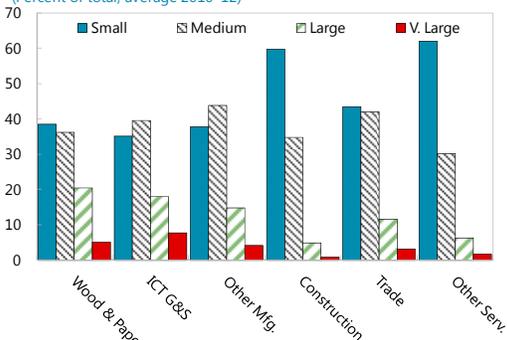
Sources: Orbis and Fund staff calculations.

...but very large firms dominate in terms of the share of value added.

Distribution of Value Added by Size
(Percent of value added, average 2010–12)
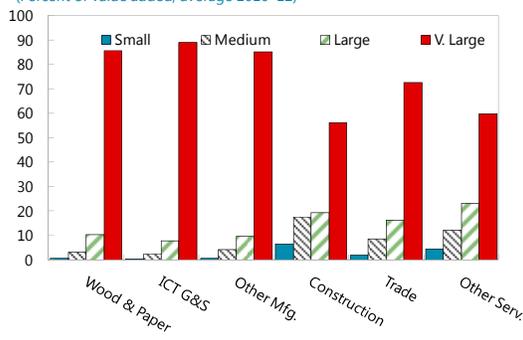
Sources: Orbis and Fund staff calculations.

The distribution of labor is skewed towards very large firms...

Distribution of Employees by Firm size
(Percent of total, average 2010–12)
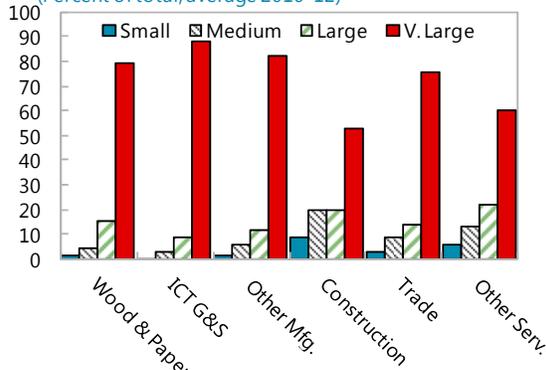
Sources: Orbis and Fund staff calculations.

...as is the distribution of capital.

Distribution of Fixed Assets by Firm Size
(Percent of total, average 2010–12)
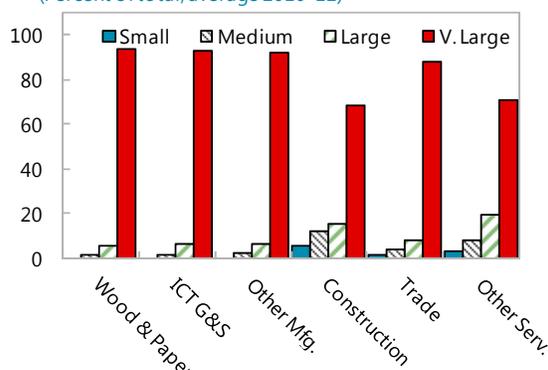
Sources: Orbis and Fund staff calculations.

Large and very large firms are more capital intensive.

Capital Intensity by Firm Size
(Thousands of euros per employee, 2005 euros, avg. 2010–12)
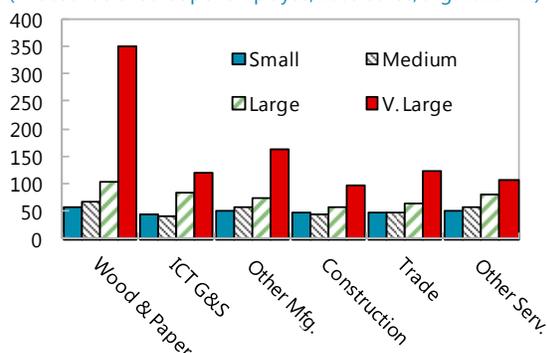
Sources: Orbis and Fund staff calculations.

Labor productivity is highest in very large manufacturing firms.

Labor Productivity by Firm Size
(Thousands of euros per employee, 2005 euros, avg. 2010–12)
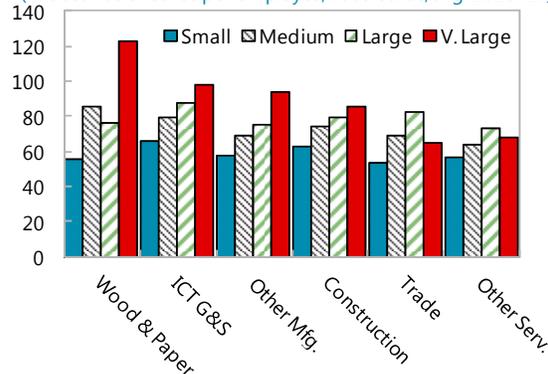
Sources: Orbis and Fund staff calculations.

19.   **The results show substantial TFP differences across sectors and firm sizes.** The firm size fixed effects are significant and suggest that firm size is positively correlated with TFP, with small firms 13 percent less productive than very large firms on average. Amongst the size cohorts, the gap is largest between small and medium sized firms, with the latter being 6 percent more productive on average (Figure 3). The sectoral differences, though smaller in magnitude, are significant as well. Wood and Paper, Trade. And Other Services are the least productive sectors, while ICT Goods and Services and Utilities are the most productive.

Figure 3. TFP differences by Firm Size and Sector

Estimated Size Fixed Effect and Productivity
(TFP Index controlling for time and sector effects, Small = 100)

Estimated Sector Fixed Effect and Productivity
(TFP Index controlling for time and size effects, Wood & Paper = 100)

Sources: Orbis and IMF Staff Calculations

Sources: Orbis and IMF Staff Calculations
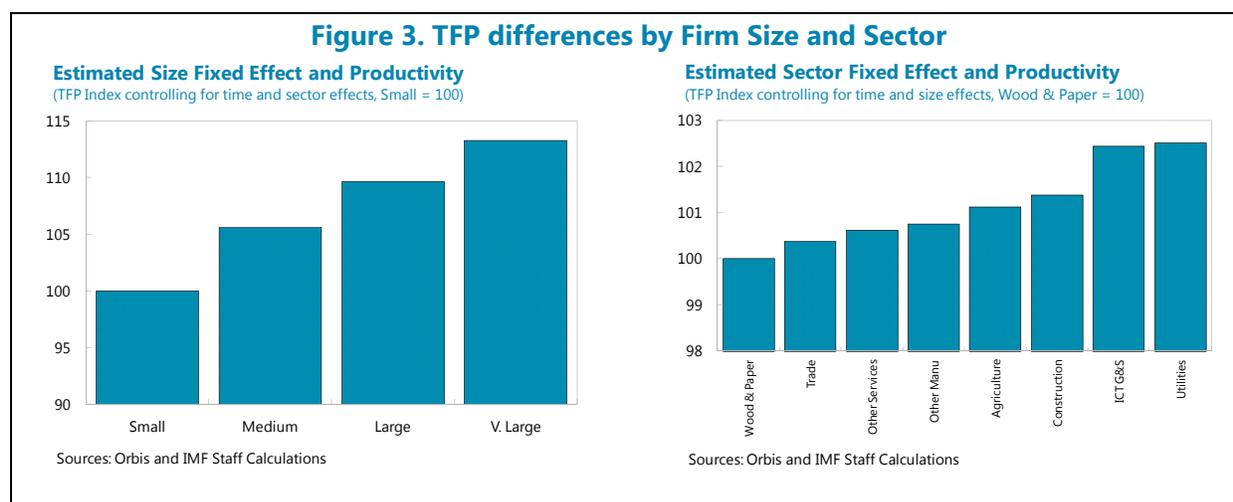
20.   **This difference in TFP due to firm size can be used to assess the impact of structural changes on the aggregate level of TFP.** A counterfactual scenario assumes that firms in each size cohort increase their productivity to match the productivity of the next larger cohort. The productivity of the V. Large firms —the cohort with the highest TFP—is assumed to remain the same. Similar scenarios are also constructed at the sectoral level – firms in a particular sector increase their TFP to match the TFP next larger cohort of the given sector.

Counterfactual Analysis
(logTFP)

Sources: Orbis and IMF Staff Calculations
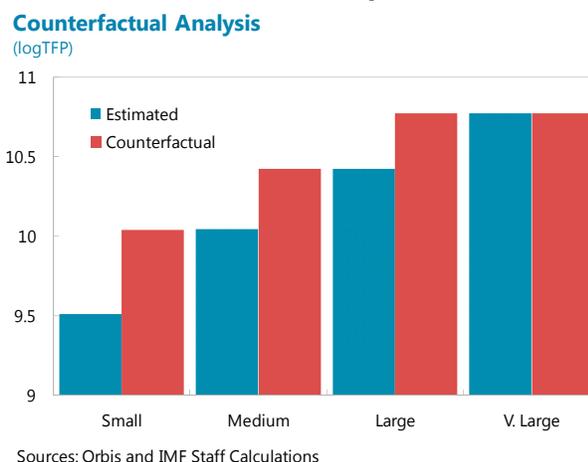
21.   **Productivity gains from adjustment within a sector appear limited.** The baseline counterfactual analysis yield productivity gains of less than 1 percentage point because over 75 percent of value added (and employment) is concentrated in very large firms that are already more productive. Thus, an increase in the productivity of smaller firms (or the reallocation of resources from small to large firms) has a marginal impact on aggregate productivity. To significantly increase aggregate productivity, the very large firms need to become more productive. Focusing on individual sectors, the gains are somewhat larger for the services sectors, where the very large firms are less dominant, but even in these sectors the aggregate productivity gain is less than 1.5 percent.

D. Potential Policy Responses

22.   A number of potential policy options exist to facilitate the reallocation of resources across sectors and raise productivity, employment, and output in key sectors. Both product and labor market reforms can have significant effects on the allocation between sectors. They can also have productivity enhancing effects on certain industries, especially trade and manufacturing. In addition, efforts to increase the use of high-skilled labor, invest in R&D, ICT capital, and infrastructure can increase employment and output.

23.   In particular, we look at reform impact estimates from Dabla-Norris and others (2015) and assess their applicability to Finland. Dabla-Norris and others (2015) estimate the cumulative short-term (3 years) and medium-term (5 years) effects of different "reform shocks" on TFP, employment, and output using industry level data for a panel of countries. The "reform shocks" they examine include:

- *Reducing product market regulations (PMR)*. This is based on the weighted average OECD PMR Indicator of Regulation Impact. In Finland's case, this would include measures such as liberalizing shop opening hours and reducing restrictions on large retail stores in cities.

- *Easing employment protection legislation (EPL)*. The OECD's EPL indicator is used as a proxy for overall rigidities in the labor market. See second chapter of the Selected Issues Paper for a detailed discussion of Finnish labor market issues and related reforms.

- *Reducing the labor tax wedge*. The labor tax wedge measure comes from the OECD Taxing Wages database. This is relevant for Finland where the labor tax wedge is relatively high.

- *Increasing the intensity of use of high-skilled labor*. The measure is the share of hours worked by employees with tertiary education in each sector from the EU KLEMS database. Broad support for higher education obviously matters here and is an area in which Finland is relatively strong. However, active labor market programs (ALMP) are another route to help unemployed workers improve their skills or retrain in new industries, which can facilitate labor reallocation between sectors and increase labor productivity.

- *Boosting R&D expenditure*. The measure is R&D expenditure by industry as a share of value added, taken from the OECD. R&D spending is another area where Finland has been very strong, with significant public support for R&D and with the ICT sector being a particularly R&D intensive sector. However, as the sectoral composition of the economy changes, it is worth examining how well the current system is suited to support R&D and innovative activities by firms and whether new modes of encouraging R&D (e.g., R&D tax credits) would be appropriate.

- *Investing in ICT capital*. From the EU KLEMS database, the share of ICT capital services in total capital services by industry is used to measure the intensity of ICT capital usage. Though it is an advanced economy, Finland has scope to increase ICT capital intensity in certain sectors, especially the public sector where the ICT capital intensity is less than $1/3$ of the aggregate economy's ICT capital intensity.

- *Investing in infrastructure.* This measure includes roads, phone lines, and electricity generation capacity. While Finland's infrastructure is well developed, there is undoubtedly scope to improve transportation and other infrastructure, especially in the Helsinki region.

24.   Most reforms have positive effects on TFP over the medium-term, though the extent of the effect will depend on the country's initial conditions. With the exception of easing EPL and increasing the intensity of high-skilled labor usage, Dabla-Norris and others (2015) estimate the reforms they consider could raise aggregate TFP in the average country by a few percentage points over 3–5 years. Investing more in R&D and ICT capital is estimated to have even larger effects over the medium-term, with the potential to raise aggregate TFP by around 10 percent. TFP in the manufacturing and ICT sectors especially benefit from increasing R&D spending and ICT intensity (by as much as 5–10 percent) in the medium-term. However, the effects of some reforms may be on the lower side of the estimates as Finland is already fairly close to the frontier and the scope for significant increases in R&D spending or ICT capital intensity may be more limited.

25.   Reforms also typically have a positive impact on output in different sectors. The cross-country regression results suggest that decreasing product market regulations can raise total output by up to 4 percent in the medium-term. The impact would probably be less than 4 percent in Finland, where the PMR indicator is slightly below the OECD average, but still positive. As with TFP, increasing R&D and ICT capital have the largest medium-term effects on output, boosting it more than 4 percent. Most of the increase stems from the impact of these measures on the manufacturing, finance and professional services, and ICT sectors. Infrastructure investment is also estimated to raise total output by between 2 and 4 percent in the medium-term, primarily through its effects on the other production, trade, and finance and professional services sectors.

26.   The effects of "reform shocks" on employment are more varied, as in some cases policy measures can decrease employment in certain sectors. In aggregate, reducing product market regulations and investing in infrastructure has the greatest short-term and medium-term effects on employment. Increased investment in ICT capital can have the most deleterious effect on employment, possibly because new ICT capital can serve as a substitute for labor (e.g., through greater automation of production). The effects of other measures vary across industries. For example, while boosting R&D is good for the finance and professional services sectors, it tends to decrease employment in the trade sector (potentially by more than 4 percent in the medium-term).

E. Conclusions

27.   Finland faces the challenge of raising productivity after the substantial decline of key high productivity sectors just as demographic pressures are mounting. Finland's rapidly aging population is driving a slowdown in labor force growth, which needs to be addressed by labor market policies.[6] The slower growth in the labor supply and rising number of retirees relative to workers makes the need to raise productivity even more pressing in order to maintain the country's social welfare system.

28.   Large firms already account for most resources and value added, so the scope for within industry reallocation is probably limited. In some euro area countries, small and medium-sized firms account for more substantial shares of employment and value added. However, in Finland larger firms account for the bulk of employment and output. Hence, measures to shift within industry allocations of capital and labor may have small effects in aggregate. Policies that instead promote the growth of small and medium-sized firms (e.g., support for R&D, assistance with becoming exporters), so they become larger and more productive firms, may prove more fruitful.

29.   However, there is scope for policy measures to boost productivity and output, including through facilitating the reallocation of resources between sectors. For Finland, measures that improve TFP in low productivity sectors include product market reforms that could raise TFP in the Trade sector. Additionally, increased infrastructure investment can boost output in the short-run in relatively high productivity sectors such as manufacturing, ICT, and finance, as well as in lower productivity sectors such as trade and other production (e.g., agriculture). Increasing R&D spending could not only raise output in the medium-term, it could also generate a shift in the composition of employment away from the lower productivity trade sector (e.g., due to R&D resulting in more efficient logistics) and towards the financial and professional services sector. Measures to increase the availability and intensity of use of high-skilled labor can also raise employment in the higher productivity manufacturing and ICT sectors, which is where increasing ALMP could have a positive impact.

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[6] See second chapter of Selected Issues Paper, for more on this.

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O'Mahony, M., and M.P. Timmer. 2009, "Output, Input and Productivity Measures at the Industry Level: The EU KLEMS Database," *The Economic Journal*, Vol. 119 (538): F374–F403.

Appendix I. Stylized Facts for Key Industries

- *Small and medium size firms make up the greatest share of the total number of firms, but very large firms dominate in terms of value added.* We utilize the Orbis database classification of firm sizes: Small, Medium, Large and Very Large (see Appendix II for definitions). The shares of small and medium firms are about equal in the manufacturing industries and the trade sector (including distribution, retail, and wholesale trade), with approximately 40 percent of firms in each size category. The shares of large and very large firms are relatively higher – around 25 percent of total firms in manufacturing industries and 15 percent in the trade sector. In the Construction and Other Services sectors, small firms account for about 60 percent of the total and medium firms another 30–35 percent, with large and very large firms constituting less than 10 percent of total firms. In contrast, very large firms account for over 75 percent of total value added in the aggregate, with the share of such firms ranging from just over 60 percent of value added for the Other Services sector to close to 90 percent for the ICT sector. Small and medium firms account for less than 5 percent of value added in the manufacturing sectors.

- *The distributions of labor and capital are skewed.* The distribution of labor (share of employees in the sector) and capital (share of fixed assets) across firm sizes is highly skewed in all industries, though more so in the manufacturing and Trade sectors. In all of the manufacturing sectors, about 80 percent of employees are engaged at very large firms and these firms own more than 90 percent of the fixed assets. In contrast, small and medium firms combined employ less than 7 percent of the people and owe less than 2 ½ percent of the capital in these manufacturing sectors, despite accounting for roughly 80 percent of the firms. In the trade sector, very large firms employee 75 percent of the people in the sector and own just less than 90 percent of the fixed assets. The distribution is less skewed in Construction, where 52 percent of employees work for very large firms, with small and medium firms employing nearly 30 percent of the workers. However, even in the construction sector, about 70 percent of the fixed assets are owned by very large firms while small and medium sized firms own about 17 percent of the fixed assets. Other Services is also less skewed, with 60 percent of the people and 70 percent of fixed assets employed in very large firms.

- *Large and very large firms are more capital intensive.* Given the skewness of the distributions of both labor and capital across firm sizes, it is not immediately obvious how much capital intensity (fixed assets per employee) varies across firm sizes. Notably the capital intensity of small firms is broadly similar across industries (between 43 and 54 thousand euros per employee) and the capital intensity of medium sized firms is similar to that of small firms. In the manufacturing sectors, capital intensity of large and very large firms is substantially higher than for small and medium firms, especially in the Wood and Paper sector, where capital intensity of very large firms is more than six times higher than in small firms. Very large firms in the Other Manufacturing, ICT, and Trade sectors all have capital intensities about three times greater than small firms. The distribution of capital intensity is most compressed in Construction and Other Services sectors, with very large firms' capital intensity about twice that of small firms.

- *Labor productivity is highest in large manufacturing firms*. The distribution of labor productivity (value added per employee) also exhibits skewness across firm sizes, though less than that of capital intensity. Again, the labor productivity of small firms across industries is relatively similar (between 53 and 66 thousand euros per employee). The productivity of very large firms differs substantially though, with the productivity of very large Wood and Paper producers nearly twice that of very large firms in the Trade sector. Interestingly, while very large firms have the highest labor productivity in most sectors, this is not the case for the Trade and Other Services sectors, where the labor productivity of large firms is higher. Within industries, the productivity of very large firms in the manufacturing sectors is between 50 and 120 percent higher than that of small firms. In the Trade and Other Services sectors the productivity of very large firms is only about 20 percent greater than that of small firms. Notably, though they are not typically more capital intensive, medium size firms are significantly more productive than small firms, except in the Other Services sector. Excluding the Other Services sector, medium size firms are between 20 and 50 percent more productive than small firms.

Appendix II. Firm Size Definitions and Regression Results

Table A1. Firm Size Categories

Category	Description
Very Large	Operating Revenue >= 100 million EUR (130 million USD) Total assets >= 200 million EUR (260 million USD) Employees >= 1,000 Listed
Large	Operating Revenue >= 10 million EUR (13 million USD) Total assets >= 20 million EUR (26 million USD) Employees >= 150 Not Very Large
Medium	Operating Revenue >= 1 million EUR (1.3 million USD) Total assets >= 2 million EUR (2.6 million USD) Employees >= 15 Not Very Large or Large
Small	Otherwise

Sources: Orbis and Fund staff calculations.

Table A2. Panel Regression for Log of Real Value Added

	(1)	(2)	(3)	(4)
log(Fixed Assets)	0.193***	0.157***	0.192***	0.156***
	(0.00177)	(0.00177)	(0.00181)	(0.00182)
log(Employment)	0.816***	0.690***	0.815***	0.690***
	(0.00252)	(0.00299)	(0.00255)	(0.00302)
Sector Dummy: Other			0.0672	0.0273
			(0.0464)	(0.0440)
Sector Dummy: Agriculture			0.0765***	0.0530***
			(0.0174)	(0.0165)
Sector Dummy: Wood & Paper			-0.0282	-0.0654***
			(0.0196)	(0.0186)
Sector Dummy: ICT G&S			0.267***	0.199***
			(0.0153)	(0.0146)
Sector Dummy: Other Manufacturing			0.0621***	0.0140
			(0.0101)	(0.00955)
Sector Dummy: Utilities			0.366***	0.208***
			(0.0268)	(0.0254)
Sector Dummy: Construction			0.118***	0.0822***
			(0.00869)	(0.00826)
Sector Dummy: Trade			0.0998***	-0.0263***
			(0.00829)	(0.00804)
Size Dummy: Small		-1.259***		-1.256***
		(0.0275)		(0.0277)
Size Dummy: Medium		-0.729***		-0.725***
		(0.0254)		(0.0254)
Size Dummy: Large		-0.347***		-0.341***
		(0.0249)		(0.0248)
Constant	9.080***	10.77***	9.022***	10.76***
	(0.0197)	(0.0387)	(0.0205)	(0.0399)
Time Dummy	Y	Y	Y	Y
Observations	90,321	90,321	90,321	90,321
Number of Firms	37,978	37,978	37,978	37,978

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Sources: Orbis and Fund staff calculations.

FILLING THE GAPS: LABOR MARKET REFORMS TO PROMOTE JOBS AND GROWTH[1]

Finland's labor market is facing two main challenges: (i) a need for structural transformation and resource reallocation in the context of the decline of Nokia and the wood and paper industry; and (ii) a shrinking labor force due to population ageing and declining labor participation, and rising unemployment. To cope with the challenges, labor market reforms are called for to promote labor market participation and job matching, allow more wage flexibility, facilitate labor mobility from low to high productivity sectors and regions, and boost labor productivity. Using a scenario analysis, we find that implementing such reforms would have a large positive impact on employment and growth.

A. Structure of the Labor Market

1.   Labor market institutions in Nordic countries are built around the idea of "flexicurity." This so called "Nordic model" aims to combine a flexible labor market with protection of workers against labor market risk. In its essence, flexicurity—protect workers, not jobs—has three distinctive features: (i) flexible hiring and firing for economic reasons through low employment protection (EPL); (ii) a generous social safety net in the form of high unemployment insurance (UI) replacement rates; and (iii) active labor market policies (ALMP) to aid labor reallocation. The labor markets in all Nordic countries share these features, with varying degrees of relative importance and emphasis given to the different elements.

Labor Market Protection
(Rate, X-axis; Index: 0-6 (6 indicates stricter regulation), Y-axis)

Sources: OECD and Fund staff calculations.
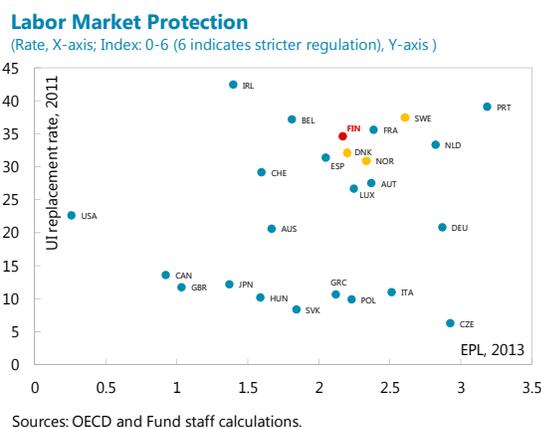
2.   Finland conforms to this model though long-term unemployment insurance tends to be more generous, and ALMP spending lower, than in Nordic comparators. The key features of the Finnish labor market are as follows (Figure 1):

- *Unemployment insurance (UI) replacement rates are high for the long-term unemployed.* According to OECD indicators, while unemployment benefits net replacement rates for short-term unemployment are similar in all three Nordic countries with Finland in the middle, long-term unemployment benefits are significantly more generous in Finland. In addition, benefits are paid for a relatively long period (500 days). This has the potential to slow down structural

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[1] Prepared by Pragyan Deb and Nan Geng.

adjustment by providing the unemployed with relatively weak incentives to seek employment in new sectors. In addition, in the absence of proper monitoring and other incentives, job searches might be less intensive than otherwise.

Figure 1. Labor Market Institutions

Finland's short-term unemployment benefits are similar to the other Nordics...

Short-term Unemployment Benefits Replacement Rates
(Percent of short-term unemployment)
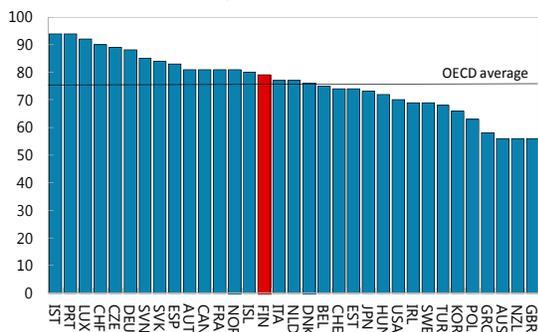
Sources: OECD and Fund staff calculations.

...but the long-term unemployment benefits are significantly more generous.

Long-term Unemployment Benefits Replacment Rates
(Percent, over 60 months of unemployment)
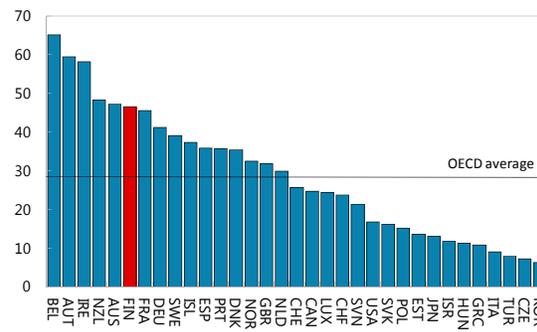
Sources: OECD and Fund staff calculations.

ALMPs are high by OECD standards, but lower than Denmark and Sweden.

Active Labor Maket Policies
(Percent of public expenditure)
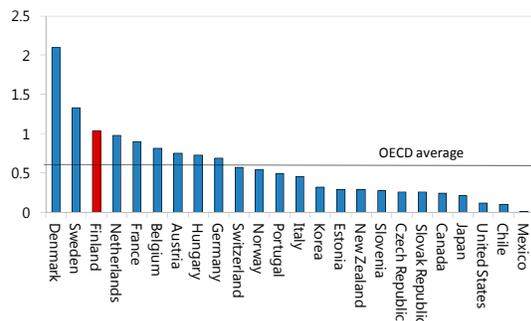
Sources: OECD and Fund staff calculations.

Finland has a relatively high share of workers on temporary contracts.

Share of Workers on Temporary Contracts
(Percent of total employment, 2014)
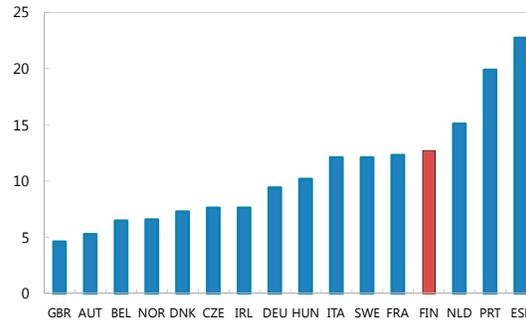
Sources: OECD and Fund staff calculations

Employment protection for regular workers is higher than the OECD average...

Employment Protection Regular Contracts
(Index, 2013)
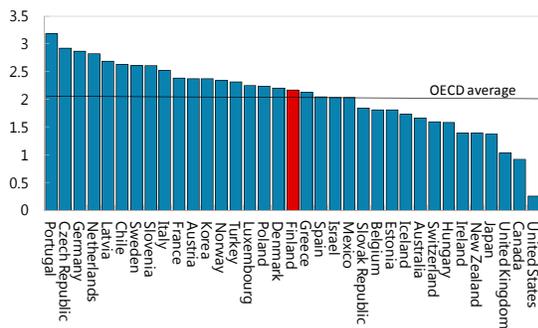
Sources: OECD and Fund staff calculations.

...while for those on a temporary contract, employment protection is marginally lower.

Employment Protection Temporary Contracts
(Index, 2013)
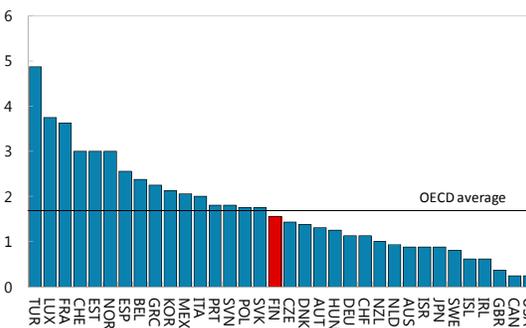
Sources: OECD and Fund staff calculations.

- *Spending on Labor Market Programs (LMPs), particularly ones focusing on out-of-work support, are amongst the highest in the OECD.* LMP expenditure in Finland accounted for nearly 2½ percent of GDP in 2012, substantially above the OECD average of less than 1½ percent of GDP. However, the share of Active Labor Market Policies (ALMPs), at around 1 percent of GDP, is relatively low in Finland, for instance when compared to Denmark and Sweden. ALMPs, particularly those that seek to get people
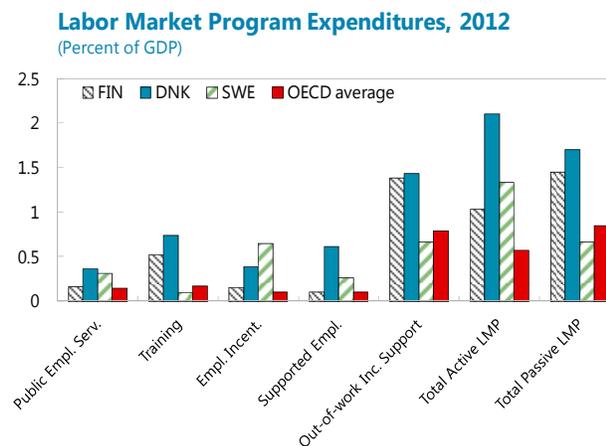
Labor Market Program Expenditures, 2012
(Percent of GDP)

Sources: OECD and Fund staff calculations.

  back to work such as training and matching programs are generally considered more effective than other passive policies. These passive policies, such as out-of-work support polices, are relatively extensive in Finland with a share close to 1½ percent of GDP. Moreover, the referral to an active labor market program in Finland takes place after 100 weeks, compared to mandatory referral after 60 weeks in Sweden and 40 weeks in Denmark (OECD, 2010). This implies lower incentives for the unemployed to search for jobs early.

- *Employment protection for regular contracts is higher than the OECD average, while for temporary contracts it is marginally lower.* Finland has a relatively high share of workers on temporary contracts. While this provides a measure of flexibility by facilitating employment adjustment as contracts approach renewal, it also raises potential duality problems as firms tend to invest less in the human capital of temporary employees.

- *Disability benefits and sickness leave are generous.* The number of weeks lost due to sick leave in Finland is the highest in the OECD and the expenditure on disability and sickness is over 3 percent of GDP – compared to the OECD average of around 2 percent (Figure 2). Disability benefits can in some cases be regarded as an additional form of unemployment insurance. Indeed, there is an inverse relationship among European countries between the unemployment rates and the disability benefit recipient rates; economies with low unemployment often have high disability rates, suggesting that the two forms of labor market insurance tend to be used as substitutes.

- *Incentive traps exist for effective early retirement.* Despite the abolishment of unemployment pensions in 2005, older people are still entitled to an extended period during which they receive an unemployment allowance. A person who turns 61 and has received an unemployment allowance for less than 500 days is entitled to continue to receive it until the start of his or her pension or until the age of 65. This so-called "unemployment tunnel" serves as an incentive for early retirement. In addition, part-time pensions, while providing flexibility in working time to those who may postpone full retirement, are heavily subsidized and hence in fact reduce working times significantly.

Figure 2. Disability Benefits and Sickness Leaves

Expenditure on disability and sickness is over 3 percent of GDP...

....and the disability receipt rate is high.

Expenditure on Disability and Sickness
(Percent of GDP)

Sources: OECD and Fund staff calculations.

Disability Benefit Recipiency Rates
(Percent of population aged 20-64)
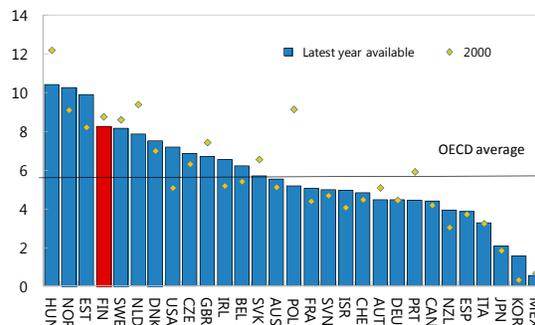
Sources: OECD and Fund staff calculations.

Sickness absence is high...

....with the weeks lost highest in the OECD.

Sickness Absence
(Incidence of sickness absence of employees)

Sources: OECD and Fund staff calculations.

Number of Weeks Lost Due to Sick Leaves
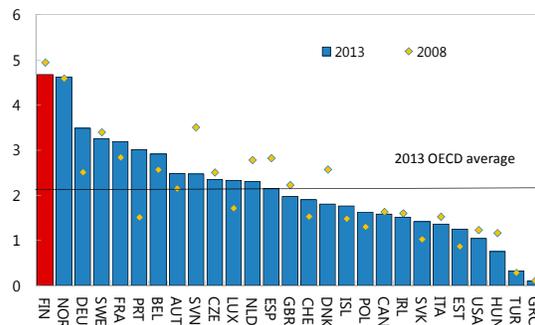
Sources: OECD and Fund staff calculations.

3.   Labor unions play a key role in the Nordic model. Nordic countries have the highest union density among OECD countries, and Finland is the second most unionized country in the sample. Finland has a strong collective wage bargaining system that is supported by the high union density and the mandatory extension rule of collective agreements (which are binding for all employees in an industry or occupation if more than half of them are unionized). This collective bargaining system, with varying levels of centralization, is a key feature in all Nordic countries and is thought to compensate for the relatively lighter regulation of the labor markets.

Trade Union Density
(Percent, 2012)
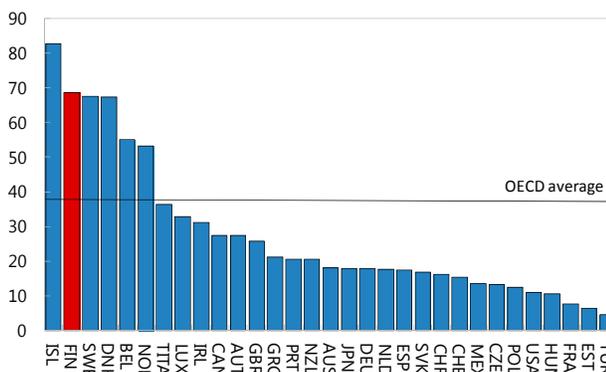
Sources: OECD and Fund staff calculations.

Box 1. Collective Bargaining in Finland

Since 1968, collective bargaining in Finland has been mostly centralized with a broad national agreement setting the framework for industry and company level negotiations. Under a three-stage system, a periodic national level agreement is reached through a process of centralized wage negotiations between labor unions, employers' federations and the government. The government plays a key active role in the negotiations, for example by offering changes in taxation or social security to facilitate agreement between the employers and the unions. The multi-year *national comprehensive collective settlements* cover not only wages, but also aim to secure improvements in working life and the social security system including through measures concerning gender equality, to the modalities of social welfare and pension schemes, taxation, working hours, holidays, sickness pay, and other aspects of the labor market (Asplund, 2007). Industry-level negotiators then use the national agreement as guideline to set rates and basic conditions for each individual industry. Subsequent company-level negotiations can further modify aspects of the industry settlement, though this is not common in practice and only restricted to non-wage aspects. In any case, if industry or company-level negotiations fail, the terms of the national agreement apply—the so-called fallback rule.

In 2007–10, the social partners tested a more decentralized system, with industry level agreements only and more room for company level bargaining. However the outcome was not satisfactory with uduly high wage growth overall and only limited improvements in local wage flexibility. Although local wage allowances increased as a share of the settlements, these were used in a mechanical way and therefore contributed little to aligning wages to local productivity conditions (Asplund, 2007). In 2011 the system reverted back to the national agreement framework. But unlike the earlier national agreement that covered the whole economy, the current centralized framework only applies to industries with existing collective agreements.

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4.   **Centralized collective bargaining has resulted in limited wage flexibility.** Centralized bargaining has contributed to the reliable Finnish business climate through wage agreements broadly in line with productivity growth. However, this has come at a cost of low wage differentiation—wages across industries and sectors are compressed and do not adequately reflect productivity diffrentials between industries, companies and regions. Finland has one of the lowest degrees of wage dispersion among OECD countries. Such wage compression can hamper the

Labor Compensation per Hour, 2007 & Latest (Indexed, median=100)
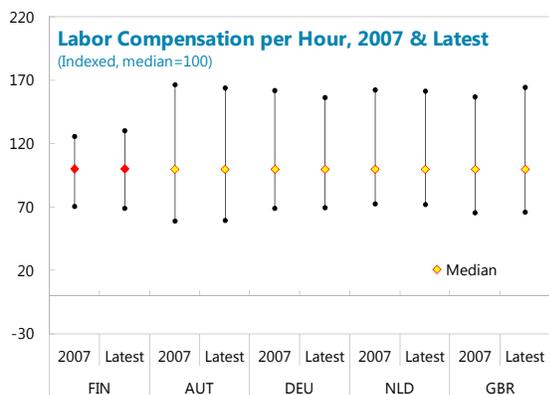
Sources: EU Klems and Fund staff calculations.

Wage Dispersion (Ratios of gross earning, decile 9/decile 1)
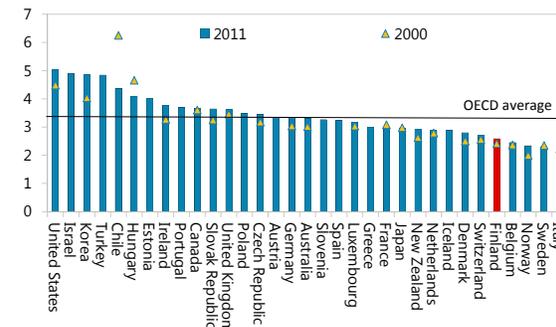
Sources: OECD and Fund staff calculations.

recovery and contribute to further unemployment (Holden and Wulfsberg, 2007). In addition, wage compression effectively introduces a relatively high minimum wage, which has likely lowered employment levels among marginal groups in the Finnish labor market. This may explain part of the high structural unemployment and the relatively low youth employment in Finland.

B.   Recent Developments in the Labor Market

5.   Finnish labor costs have seen a strong upward trend relative to some of its peers.
Although for long time periods collective bargaining has resulted in wage increases in line with productivity growth, unit labor costs (ULC) have risen faster than in Sweden and Germany since 2000, and sharply accelerated after the global financial crisis. The collective wage agreements of 2007–08 led to a surge in wage growth just prior to the crisis, and wages reacted only moderately to the rise in unemployment (Figure 3). The most recent wage agreement, negotiated in the fall of 2013, is set to slow wage

Unit Labor Cost, Post-Crisis
(Average ULC Growth, 2009-2014)

Sources: OECD and Fund staff calculations.

growth. However continued growth in unit labor costs on account of slow productivity growth suggests that this may not be sufficient to restore competitiveness.[2]
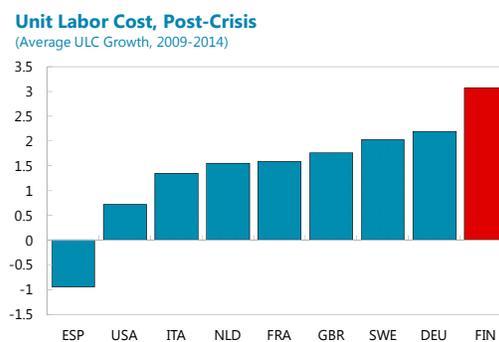
6.   Unemployment has risen sharply, with rising long-term and structural unemployment.
Unemployment increased to 8.7 percent in 2014–0.7 percentage points higher than projected by Finland's employment service statistics in early 2014. In August 2015 the seasonally adjusted unemployment rate stood at 9.5 percent. This exceeds the average level of unemployment in the OECD countries (Figure 3). The share of structurally unemployed people is close to 65 percent of total unemployment and continues to rise.[3] In the first 6 months of 2015, structural unemployment increased by around 15 percent compared to one year earlier. This increase was primarily driven by the close to 20 percent increase in the number of people who had been out of work for more than a year. The number of people unemployed after participation in ALMP also increased by around 20 percent in the first 6 months of 2015, although the numbers on repeatedly unemployed and those repeatedly participating in ALMPs were stable.

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[2] Contractual wages will rise by 0.7 percent in 2014 and 0.5 percent in 2015, compared to 1.4 percent in 2013 while the index of wage and salary earning will rise by 1.3 percent in 2014 and 1.2 percent in 2015, compared to 2 percent in 2013.

[3] The Employment service statistics define structural unemployment as an aggregate of four mutually exclusive statistical categories: (i) long term (more than 12 months) unemployed; (ii) recurrent unemployed (unemployed for at least 12 months during the last 16 months); (iii) unemployed after participating in ALMP; and (iv) recurrent participant in ALMP. Note that Employment service statistics are based on data from TE offices' customer register and is distinct from the labor force survey figures.

Figure 3. Labor Market Developments

Collective agreements of 2007-08 boosted wages, which, together with falling productivity, caused ULCs to spike.

Unit Labor Costs
(Index: 2005=100)

Sources: OECD and Fund staff calculations.
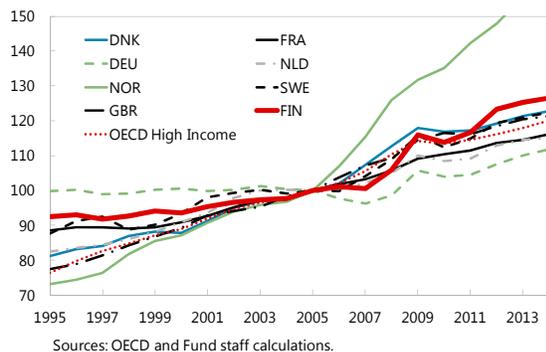
Unemployment is high relative to the rest of the OECD...

Unemployment Rate
(Percent, 2014)

Sources: OECD and Fund staff calculations.
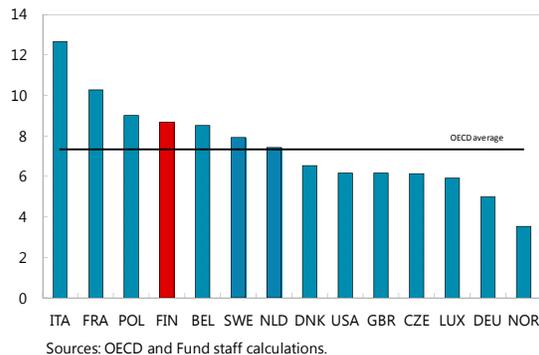
....and continues to rise...

Unemployment Rate
(Percent, SA)

Sources: Eurostat and Fund staff calculations.
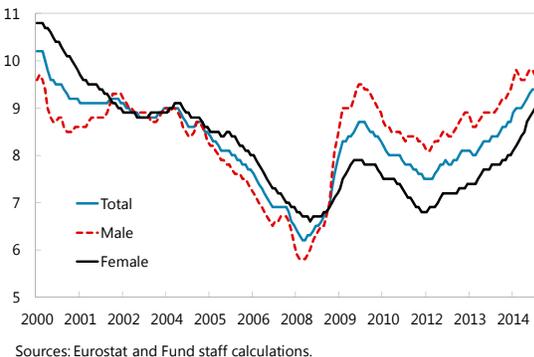
....with a rising share of long-term unemployed.

Components of Structural Unemployment
(share of unemployment, percent, 12-month MA)

Sources: Ministry of Employment and Economy and Fund staff calculations
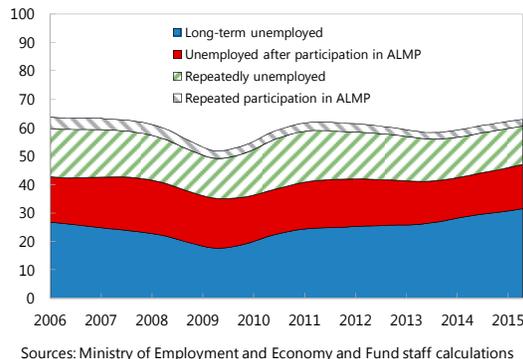
7.   Population ageing has resulted in a rapidly declining workforce. Finland's working age population—those between 15–64 years—has been declining rapidly since 2011 and this is set to continue. The working age population as a share of total population has already declined by close to 2 percentage points since 2000 and projections from Eurostat suggests that this share will decline further to just over 60 percent by 2030 (from over 65 percent at present). Compared to the

Population Projections
(Share of working age (15-64) population to total population, percent)

Sources: Eurostat and Fund staff calculations.
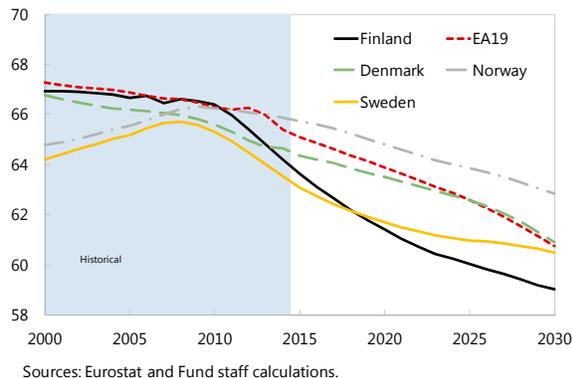
Euro Area and the other Nordics, the decline in Finland is earlier and more pronounced.

8.   Labor supply is held back further by low participation rates. The labor force participation rate has recently fallen most particularly in the age group 25–54 years—from over 84 percent in

2008 to a little over 80 percent in 2014. At about 48 percent, the participation rate for those aged 60–64 is broadly in line with other OECD countries. However, only about 13 percent of the population aged 65–69 is working, compared to the OECD average of about 25 percent (numbers as of 2014). However, in the oldest age groups labor participation rates have risen in recent years, albeit from a low level, which is encouraging because in the future these age groups will account for a growing proportion of the labor force.

Labor Force
(Percent of 15-64 population, left; Millions of persons, right)

Sources: Statistics Finland and Fund staff calculations.
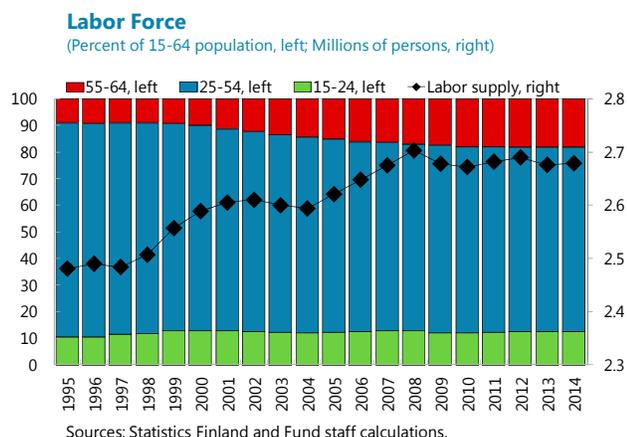
9.   Short work careers further reduce labor supply. The pension reform of 2005 has created incentives for a longer working life. However the majority of workers retire as soon as they are legally eligible, shrinking the labor force as the population ages. At around 61 in 2014, the average

effective retirement age remains considerably lower than in peer economies, despite increases in life expectancy. Projections by the United Nations suggest that life expectancy at birth in advanced economies will improve by 6 years between 2005–10 and 2045–50, lifting the expected retirement duration by 3 years for men and nearly 4 years for women.[4] In this context, the current agreement to increase the effective retirement age by 1.5 years by 2025 may be insufficient to increase labor participation in the upper age bracket.

Average Effective Retirement Age
(Years of age, 2007-12)

Sources: OECD and Fund staff calculations
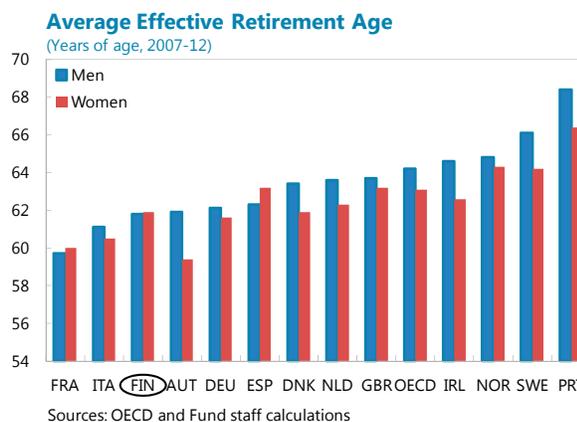
10.   Study times are lengthy. Although the quality of education is high, despite some decline in recent years, Finnish students take a relatively long time to enter the labor force. This is partly due to cumbersome entrance processes that can delay entering university, followed by long tertiary study times—with less than half of the students completing their degrees in the targeted time. In addition,

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[4] Estimation by OECD in "Economic Survey: Finland 2014."

reflecting generous and lengthy government funding, Finland has one of the longest average durations of tertiary education in the OECD. Efforts to streamline university entrance requirements and shorten study times to accelerate the transition into the labor market are therefore necessary.

11.   Net benefits from tertiary education appear relatively small. Reflecting in part wage compression, both private and public net benefits from education are relatively small in Finland. The net private benefits from tertiary education in Finland are less than 70 percent of the OECD average and the net public benefits are even lower at close to half of the OECD average (Figure 4). The main benefits from tertiary education (relative to upper secondary education) include the net present value of the estimated additional income and associated tax and social contributions, lower transfers and gains from lower incidence of unemployment. The corresponding costs are the direct costs of tertiary education as well as indirect costs such as foregone earning and taxes and the effect of grants (OECD 2014).

Figure 4. Costs and Benefits of Education

Quality of education remains high, albeit slipping.

2006 and 2012 PISA Scores
(Simple average of mathematics, science, and reading scores)

Sources: OECD and Fund staff calculations.

Study times are lengthy.

Average Duration of Tertiary Studies, 2011
(in years)

Sources: OECD.

Private benefits from education are relatively small...

Private Costs and Benefits from Tertiary Education
(Net present value compared to secondary education)

Sources: OECD and Fund staff calculations.

....as are the net public benefits.

Public Costs and Benefits from Tertiary Education
(Net present value compared to secondary education)

Sources: OECD and Fund staff calculations.

C. Regional and Sectoral Developments

12.   Restructuring has resulted in large numbers of job losses in traditional industries. At the peak of the ICT boom, Nokia's business accounted for nearly 4 percent of Finnish GDP, and the ICT goods and services sector employed over 6.5 percent of the Finnish labor force.[5] Nokia's decline has brought in the need to reallocate factors of production. While Nokia will continue to produce and export network services, the sale of its mobile telecommunications business to Microsoft and its subsequent downsizing has affected nearly 4,700 workers, or about 0.2 percent of the labor force. The other structural challenge is the long-term decline of the wood and paper industry resulting from the contraction in the global demand for paper and competition from emerging markets.

13.   The impact of these structural changes has been uneven across sectors and regions. The bulk of the job losses have been in the manufacturing sector, which has resulted in a disproportionately large impact on male employment. Since 2009, male unemployment has been close to 1.5 percentage points higher than female unemployment. In addition, the decline in the wood and pulp industry has had a larger impact on the North and East of the country compared with the Helsinki region.

Employment by Industry
(percentage of hours worked)
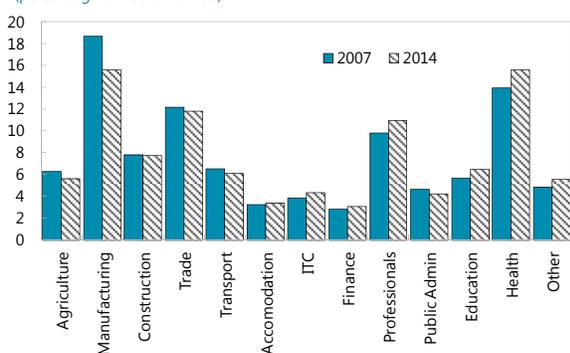
Sources: Statistics Finland and IMF Staff Calculations

Unemployment by Region
(Percent, 2015Q1)
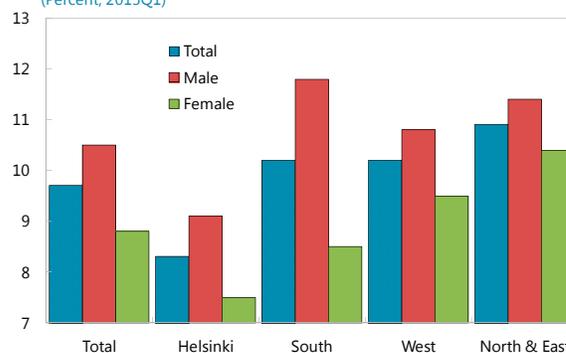
Sources: Statistics Finland and Fund staff calculations.

14.   Wage compression may have made adjustment more difficult by constraining regional labor mobility. Regional wage dispersion linked to local productivity and unemployment can encourage labor to migrate. However, in the absence of wage dispersion, workers may be reluctant to relocate. The lack of affordable housing in urban

Total Earnings by Region
(Euro per month, 2013)
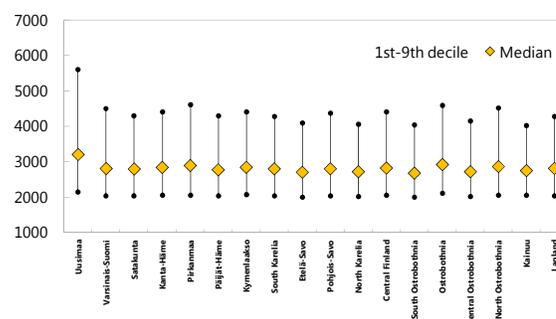
Sources: Statistics Finland and Fund staff calculations.
Note: Total earnings include all earnings for regular working hours as well as all bonuses and benefits in kind, but not one-off pay items, such as performance-based bonuses.

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[5] See Pajarinen and Rouvinen, 2013, "Nokia's Labor Inflows and Outflows in Finland".

areas such as Helsinki, where unemployment is low, serves as an additional constraint to labor mobility.

15.   Collective wage bargaining has led to a decoupling of wage and productivity growth at the industry level. Real wage and labor productivity have historically moved together relatively closely for the industrial sector as a whole, before diverging after the collective wage agreements of 2007–08 (Figure 5). However, while the wage developments have been similar across all sectors, sectoral developments in labor productivity have diverged. In particular, productivity declined significantly in the wood and paper and the ICT and electrical equipment sectors, while wage developments there have been in line with the rest of the economy. This may have exacerbated the decline in these sectors.

Figure 5. Productivity and Wage Developments by Sectors
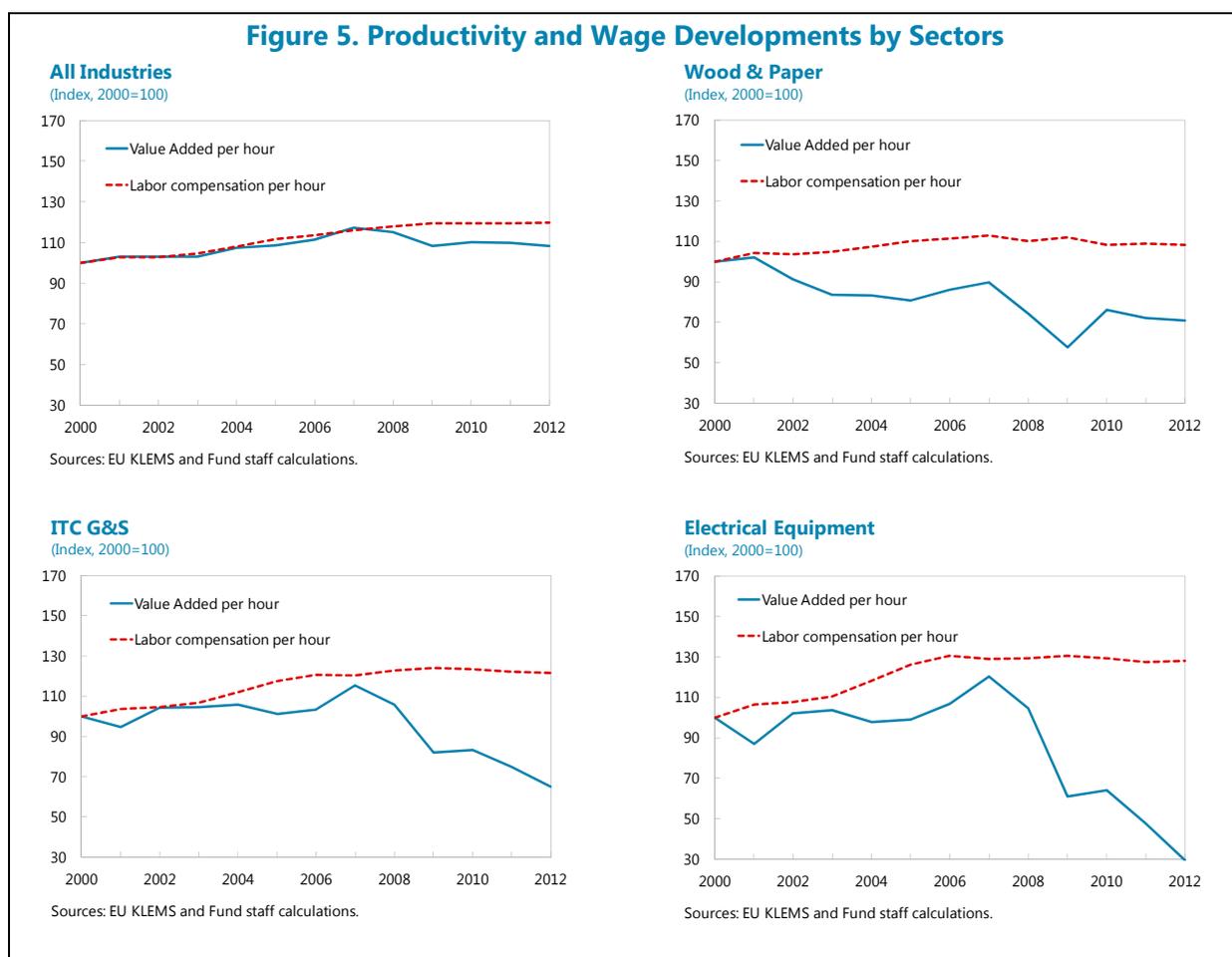
16.   This decoupling and the wage compression across industries may have constrained structural adjustment. Wage dispersion across industries, particularly when such dispersion is linked to productivity differentials, can facilitate adjustment by encouraging the workforce in declining industries seek employment in sunrise industries by retraining and acquiring new skills. However, the wage compression in the Finish labor market, coupled with generous long-term

unemployment insurance replacement rates, have the potential to make workers unwilling to make such investments, hampering labor mobility.

D.   Recent Policy Initiatives

17.   The new government's recent 2015 Strategic Program and the associated Action Plan outlined an ambitious reform agenda in a number of structural areas. Specifically,

- *Unit labor costs (ULC) and labor tax wedge:* During its term, the new government plans to close one-third of Finland's competitiveness gap with peers, or five percent of current ULC, via reducing labor tax wedge and holiday pay, and increasing unremunerated working hours.[6] In the proposed 2016 budget, to encourage acceptance of work and reduce financial incentives to retire, the labor tax will be reduced, particularly for low and medium incomes, by increasing the earned income tax credit by EUR 450 million in 2016. The easing of taxation on labor will be funded by increasing excise duties. In addition, following failed negotiations with social partners, the government recently announced proposals for legislation of a package of exceptional measures, including (i) eliminating two paid public holidays, (ii) cutting holiday bonuses by 30 percent, (iii) reducing the generosity of sick leave pay by having the first day unpaid and the following eight days paid at 80 percent, (iii) lowering the upper limit of annual leave from 38 to 30 working days, and (iv) narrowing the labor tax wedge by reducing private employer's social security contributions by 1.72 percentage points.[7] The package, if legislated, would apply to the next collective bargaining agreement starting in autumn 2016.

- *Employment protection legislation (EPL)***:** By mid-2016, the government plans to implement reforms to lower the threshold to employment and remove some employment protection by lengthening probationary periods, allowing fixed-term contract for employment of less than a year without separate justification, and easing the obligation to re-employ a worker in the event of redundancy. The impact on employers of sickness of employees during leave will also be reduced by including in annual leave of five weeks or longer a six-day personal contribution period for sickness during annual leave.

- *ALMPs***:** By the end of 2015, the government will develop a comprehensive reform proposal for employment services with the objective of enhancing service efficiency, easing labor market matching problems, especially for the least employable workers. Several measures are being considered, including (i) transferring and combining resources and employment responsibility to municipalities by commuting area, following the Danish model, which will make rapid

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[6] The government estimates the competitiveness gap with peer countries at about 15 percent of Finland's current ULC. Besides the one-third that is to be closed via increased working hours, another one-third of the gap is expected to be closed by zero nominal wage increase in the next round of collective bargaining in fall 2016, with the rest of the gap to be closed through reforms that raise private sector productivity.

[7] This will be partially offset by the planned increase of one percentage points in unemployment insurance contribution in the proposed 2016 budget.

reemployment of newly unemployed financially attractive to the municipalities, (ii) strengthening the role of private employment services and base their management and remuneration systems on job matching results, (iii) strengthening the link between ALMP and social assistance benefits such as housing and in-kind transfer benefits, and (iv) abolishing the job alternation leave system, or tightening it by making it means-tested and/or by changing the employment history condition. However, these efficiency-enhancing reforms are part of government's plan to reduce overall funding for ALMPs.

- **Social and unemployment benefits:** In the fall, the government plans to prepare, in dialogue with social partners, a reform proposal for social and unemployment benefits with a view to removing incentive traps, shortening unemployment duration, and reducing public unemployment spending. Measures considered include broadening the use of means-tested benefits, and tightening obligations to accept work and participate in activation measures.

- **Pension reforms:** In early autumn 2015, the government will submit to Parliament new legislation to implement the reform agreement on earnings related pension that was reached with social partners in September 2014. The agreement aims to gradually increase the effective retirement age by 1.5 years (to a still low 62.4) by 2025, with the official pension age being raised gradually for those born in 1955, or later, until the minimum statutory pension age is 65 (now 63). Moreover, the pension age will be linked to life expectancy from 2025. In addition, the current highly-subsidized part-time pension will be abolished and replaced by a partial early old-age retirement. The legislative amendments will come into force on January 1, 2017.

- **Collective bargaining:** The government has also started investigating the current setup of collective bargaining system, and appointed an internal expert to make specific reform proposals on the collective bargaining system later this year. However, the explorations are in an early stage and the scope of collective bargaining reform is yet to be defined.

- **Housing:** To increase house supply in growing areas to promote employment, the government intends to streamline planning and development rules such as the zoning and construction authorization schemes. It also considers providing more state-subsidized housing targeting low-income households.

- **Education:** Phased over the next ten years, there are plans to streamline university entrance requirements, enhance the link between skills attained by education and business needs, and improve the structure and quality of vocational and upper secondary education. These objectives would be achieved by reforming their governance and financing system and removing unnecessary overlaps in education and barriers between vocational education for young people and adults. Study times will also be shortened to accelerate the transition of students into the labor market. The government recently made a start with shortening the duration of financial assistance to students (while increasing the level).

- **Product market regulations:** During the government term, in order to improve competitiveness and business conditions, market regulations and "red tape" will be reduced, via

revisions of the Competition Act and procurement legislation, and by replacement of licensing processes with notification procedures. Also, sectoral regulation that prevents competition will be removed. While these are not labor market reforms, they would help improve labor market performance. As part of the retail market deregulation, the government has recently submitted to parliament a draft bill for liberalizing all restrictions on shop opening hours, which, if implemented, could have an immediate positive effect on employment and output.

18.   **The government's reform program is promising, but needs to be further developed and could in some areas also be strengthened.** The reform program envisages covers many relevant areas and envisages steps in the right direction. This said, at the present stage many of the reform plans still lack specificity and need to be fleshed out further. In certain areas, the agenda could also be strengthened. Concretely,

- *Collective bargaining and firm-level wage flexibility***:** It is welcome that the government has started investigating the collective bargaining system, but detailed plans should be quickly developed and implemented to facilitate the structural transformation of the economy. Allowing more wage differentiation across sectors and firms would help facilitate the reallocation of labor from low to high productivity sectors. In addition, more flexibility at the low end of the wage distribution can promote employment among the most vulnerable groups, including the young and the low-skilled. The literature suggests that a combination of national and firm-level bargaining could satisfy the needs for both flexibility and coordination in wage setting (see e.g., IMF, 2013). National agreements can set floors and, when needed, help the adjustment of wages and prices in response to major macroeconomic shocks. Firm-level agreements can adjust wages to the specific conditions faced by firms. Allowing a larger role for profit sharing or bonuses could also help enhance flexibility in the wage structure.

- *Unemployment benefit duration***:** The government's plan to reform unemployment benefits through increased means-testing and strengthening eligibility requirements is welcome. However, it is also important to reduce the average replacement rates of long-term unemployment benefits—currently the highest in the Nordics and among the highest in the OECD. This could promote labor participation, reduce reservation wages, and help constrain excessive collective wage increases.

- *ALMP***:** While the planned efficiency-enhancing measures are welcome, with unemployment high and rising, ALMPs should be expanded rather than scaled back to increase retraining and skill development opportunities. Strengthening ALMPs would also help ensure that reforms that increase labor supply do not lead to higher structural unemployment. The government's plan to cut ALMP funding therefore raises concern and should be reconsidered. In particular, some of the savings from unemployment benefits reforms should be used to strengthen ALMPs.

- *Duality of EPL***:** There is a need to tackle labor market duality. Strong protection of permanent contracts discourages firms from offering permanent contracts and from investing in the human capital of temporary employees. Empirical evidence (Banerji and others, 2015) shows that reducing the difference in contract provisions between permanent and temporary workers

would help reduce unemployment, in particular for youth and women. In addition, employment protection should not become an impediment to resource relocation—for example, in the context of private sector structural transformation and local government reform.

- *Effective retirement age and benefits traps for effective early retirement:* While the planned pension age reform is welcome, given the low starting level and the gradual nature of the reform, further efforts will likely be needed to close the existing gap in the effective retirement age of around two and eight years compared with OECD average and OECD frontier, respectively. In this regard, the impact of the pension reform should also be assessed over time to ensure it is achieving its aims. In addition, to make sure that the pension reforms yield the expected result, it is key to remove the existing benefits incentive traps for effective early retirement. These include phasing out the extended period of eligibility to unemployment benefits for older people and tightening the access to disability pensions.

- *Removing obstacles to regional labor mobility*: Increasing the availability of affordable housing in growing areas would facilitate labor mobility away from regions with high unemployment. Besides the envisaged measures in the government's reform program, this also requires increasing competition in the construction sector, making more land available for development, and enhancing associated public investments, especially in transportation infrastructure. Tax incentives can help as well—for example, by raising property taxes on unused land zoned for development or improving the treatment of income from investment in residential rental property.

E.   Quantifying the Potential Impact of Structural Reforms on Labor Market Outcomes and Economic Growth

19.   A scenario analysis is used to quantitatively illustrate the benefits from the implementation of key structural reforms. These benefits include increasing labor inputs, boosting labor productivity and total factor productivity, and ultimately reviving economic growth.

20.   We use frontier analysis to quantify Finland's structural policy gap in key structural areas. Following OECD (2013), structural indicator gaps are estimated as a country's distance to the "frontier," with the latter set by those OECD countries with the "best practice" in respective areas, as measured by their structural or macroeconomic outcome indicators. Countries with significant structural policy gaps can make large strides in terms of productivity, growth, and employment if they reform their policies to match best practices. To illustrate the likely impact of structural reforms on labor market

Structural Policy Gap: Finland vs. OECD Frontier
(Index: 1=OECD frontier)
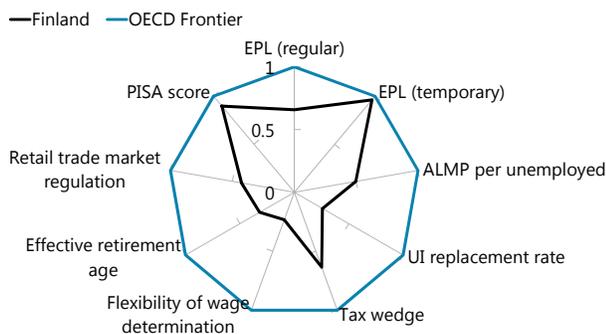
Sources: OECD and Fund staff calculations.
Note: For each indicator, OECD Frontier is set equal to 1, while the worst OECD performer is set equal to zero. OECD Frontiers for the indicators included in the table are defined as follows: the Danish level is used for ALMP per unemployed, OECD average for UI replacement rate and tax wedge, the average level of the three best-performing OECD countries for effective retirement age, the Swedish level for product market regula in retail trade, the Korean level for PISA score, and the average levels of the three best-performing OECD countries in terms of unemployment ra plus the USA for the rest of the indicators.

outcome and economic growth, we assume that decisive implementation of the structural reforms proposed in the government's recent strategic program and those recommended by the staff will close 50 percent of Finland's structural policy gap with the OECD frontier.

21.   **Closing half of the labor market policy gap is estimated to potentially reduce the unemployment rate by 4.2 percentage points (Table 1).** To estimate the potential impact of institutional reforms on labor market outcomes, we use elasticities of unemployment to labor market policies that were empirically derived by Schindler and others (2014) based on a panel, fixed effects model of OECD countries. The analysis suggests that closing half of the gap in Finland's labor market institutions with the OECD frontier would bring significant gains, more than half of which would be coming from declines in UI benefits and the labor tax wedge. The rest of the estimated unemployment rate reduction could be equally credited to an increase in ALMP expenditures half way closer to the frontier (in this case, the Danish level), a reduction of employment protection on regular contracts, and an increase in wage flexibility in collective agreements (proxied by union coverage in the analysis).

Table 1. Potential Gains from Adjusting the Finnish Labor Market Model (Percentage points)	
Unemployment rate reductions from closing 1/2 the labor market policy gap:	
EPL (regular)	0.5
EPL (temporary)	0.0
ALMP per Unemployed	0.7
UI Replacement Rate	1.1
Tax Wedge	1.4
Collective bargaining	0.5
All	**4.2**
Source: Fund staff calculations.	

22.   **To quantify the potential impact of structural reforms on output, we use Finland-specific elasticities.** Barnes and others (2013) evaluate the impact of various policy reforms in the areas of labor, product market, taxation and education on GDP per capita in the long run (or at steady state) in an accounting framework of a system of reduced-form equations. Their exercise links together coherently a range of empirical studies (mostly) by the OECD that estimate the partial effects of a number of structural policies on contributing factors to sub-components of GDP. One of the merits of this analysis is that it allows growth impacts of policy reforms to vary markedly across OECD countries by taking into account country-specific factors such as the composition of the labor force and employment, the demographic structure, and how far the economy is from its long-run potential labor productivity. Because this analysis only provides the long run growth impact of structural reforms, we use another study to translate the long run growth impact into the medium term (five year) impact. According to the GIMF model results from Anderson and others (2013), around one-third of the long run impact of structural reforms on output could be expected to

materialize in five years. Using this result, the estimated impact on steady state output is translated proportionally into the growth impact in the medium term.

23.   Estimation results suggest that closing half of the structural policy gap could raise Finland's GDP by 4 percent after five years (Table 2). The largest GDP per capita gains would be obtained from reforms that reduce the level and/or duration of unemployment benefits, strengthen competition in product markets, cut tax wedges, reduce EPL on regular contracts, and increase the effective retirement age. Meanwhile, although the direct growth impact of enhancing ALMP, raising the quality of education, and increasing wage flexibility in collective agreements tend to be smaller than some other labor market reforms, such policies are expected to have stronger benefits in a period of rapid structural change, as is the case in Finland after the end of the ICT boom.

Table 2. The GDP Impact of Structural (including Labor Market) Reforms	
Impact on GDP per capita from closing 1/2 the policy gap:	**In 5 years (Percent change)**
Labor market policies	
EPL (regular)	0.4
EPL (temporary)	0.0
ALMP per Unemployed	0.2
UI Replacement Rate	1.2
Tax Wedge	0.7
Collective bargaining	0.1
Effective retirement age	0.3
Product market regulation	
Retail trade	0.8
Human capital	
PISA score	0.2
All	**4.0**
Source: Fund staff calculations.	

24.   The results should be interpreted with caution. The point estimates of the impact of structural reforms presented here are subject to both model and statistical uncertainties. First, the growth impact also depends on the pace of implementation of reforms, price stickiness, and policy credibility (i.e. how quickly people believe the reforms are permanent and change their behavior). Second, the effects also depend on the economic context. For instance, reforms could be particularly effective if measures come into effect during a period of strong demand. In other words, if sluggish global demand continues, a weaker-than-estimated impact is expected. Third, there are risks of double-counting or missing the synergies of reforms (even though the applied empirical studies made efforts to minimize this). Finally, in the quantification exercise, we only evaluate the impact of the structural reforms that we are able to quantify with available data. In all, therefore, the results should be treated as illustrative and not as precise estimates.

F.   Conclusion

25.   The Finnish labor market faces important challenges. While its labor market setup seems to have served Finland well in the period before the global financial crisis, at present it faces two critical challenges. First, in the context of the precipitous decline of the once rapidly growing ICT sector and the secular decline in wood and paper industries, there is a need for structural adjustment and resource relocation across sectors, which requires enhanced labor mobility. Second, adverse demographic trends that are prompting a rapid shrinkage of the working age population, require higher participation rates to arrest the attendant decline in the labor force.

26.   Overcoming these challenges requires deep labor market reforms. The recently announced reform agenda of the government is a welcome step. While the specifics of the proposed measures need to be worked out further, the envisaged reforms of labor costs and taxes, employment protection, ALMPs, social and unemployment benefits, and pensions, if decisively implemented, promise to improve work incentives and labor mobility. The government's intention to reform the collective bargaining system is also welcome and should be quickly transformed into detailed proposals, to be implemented at the time of the 2016 wage bargaining round. Indeed, in this chapter we have argued that it is crucial to make the wage bargaining system more flexible, especially at the firm level and at the lower end of the wage distribution, to facilitate a closer link between productivity and wages, raise employment among the lower-skilled, and promote efficient labor allocation. In addition, further reaching measures to increase the availability of affordable housing in regions with relatively high employment and expanding ALMP with increased retraining and skill development opportunities would also aid labor mobility. Meanwhile, reducing the duality between temporary and permanent employment contracts could help reduce unemployment, while further efforts to promote participation of the young (through reduced study times) and the old (through weaker incentives for early retirement) would support labor supply.

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REDUCING THE NEGATIVE GROWTH IMPACT OF FISCAL CONSOLIDATION: A MODELING EXCERCISE USING GIMF[1]

The Finnish government has announced a set of fiscal consolidation measures worth about 1.7 percent of GDP on net basis over the next four years. Our analysis indicates that the implementation of these fiscal consolidation measures would affect output negatively in the short run. However, it also suggests that the negative effect on growth could be mitigated by changing the composition of revenue and expenditure measures. Furthermore, the envisaged growth package could also help to offset some of the negative effects on output.

A.   Introduction

1.   In this chapter we examine policy challenges related to the government's planned fiscal consolidation. The consolidation is needed to address aging related spending pressures and ensure long term fiscal sustainability as well as compliance with the SGP. However, in the short-term, the consolidation can threaten the already fragile growth. Weaker growth could have a direct negative effect on fiscal outcomes and further present a less conducive environment for the government's structural reforms to take hold. Therefore, the fiscal policy challenge is to ensure long-term sustainability while at the same time promoting a growth-friendly adjustment in the short run.

2.   The analysis confirms that the fiscal consolidation package could be structured to have a smaller negative impact on output. We use the IMF's Global Integrated Monetary and Fiscal Model (GIMF) to quantify the real impact of the government's consolidation package as well as with alternative compositions. First, we analyze the potential macroeconomic impact of the envisaged fiscal consolidation, based on our current understanding of the government's plans. As a second step, for illustrative purposes, we seek to improve the growth-friendliness of the fiscal package, using an expenditure and revenue neutral shift in measures. We also discuss the effect on output of the envisaged growth package.

3.   The chapter is organized as follows. Section B describes the GIMF model and its calibration. Section C presents the analysis of the fiscal consolidation package and the alternative scenarios. Section D presents Finland specific considerations and Section F concludes.

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[1] Prepared by Borislava Mircheva.

B.   The GIMF Model and Simulation Design

4.   The impact of fiscal consolidation and structural reforms is simulated using the IMF's GIMF model. [2] GIMF is a general equilibrium model that features nominal and real adjustment costs and incomplete asset markets. The model allows simulations to incorporate the effect of the monetary policy regime in evaluating the impact of fiscal policy. It features forward-looking households and firms optimizing their objective functions subject to given constraints. The model also includes frictions such as sticky prices and wages, real adjustment costs, and liquidity constrained households with finite planning horizons, leading to an important role for monetary and fiscal policy in affecting macroeconomic conditions.

5.   GIMF is well suited to analyze fiscal policy questions. The non-Ricardian features of the model provide non-neutrality of both spending-based and revenue-based fiscal measures: contractionary fiscal policy dampens the level of economic activity in the short run while lower government expenditure encourages higher private investment in the longer term. Fiscal policy is modeled using seven tax and expenditure categories, while imposing that the government respects its long-term inter-temporal budget constraint. Specifically, government spending can take the form of consumption, investment expenditure or lump-sum transfers, to either all (general) households or targeted towards liquidity-constrained households. Government investment spending augments public infrastructure, which depreciates at a constant rate over time. Taxation includes labor and corporate income taxes as well as consumption (VAT) taxes.

6.   The standard calibration of the model is augmented with additional information for Finland. The share of non-tradable sector accounts for roughly 60 percent of the economy. Markups are calibrated such that the non-tradable sector price markup is 20 percent versus 35 percent for the rest of the euro area. The calibration is consistent with a value added of 40 percent for the tradable sector price markup. [3] In addition, we consider a 4-region version of the GIMF model, based on Finland, the Nordic region, the euro area, and the rest of the world.

C.   Fiscal Consolidation in Finland

7.   Based on the government's announced consolidation measures, we assume a fiscal adjustment worth about 1.7 percent of GDP on a net basis over four years. The fiscal consolidation measures announced by the government amount to about 2 percent of GDP. However, some planned tax reductions, starting next year, will effectively spend some of the gains. In addition, consolidation measures pertaining to foreign aid are not expected to impact Finnish economic

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[2] For a detailed discussion on the theoretical foundation and properties of GIMF see Kumhof and others (2010) and Anderson and others (2013).

[3] Christopoulou and Vermeulen (2008).

performance. Taking account of these factors, we assume the net cutbacks to amount to 1.7 percent of GDP over a four year period.

- Expenditure reductions account for about ¾ of the planned consolidation measures, where education, foreign aid, and social benefits are targeted for some of the most substantial cuts. Specifically, some of the areas where cuts are planned include: compensation for consultation with private doctor and dentist, child allowance, adult education allowances, financial aid for students, ending of job alternation leave, and abolition of parental leave holiday accrual. Furthermore, the government is planning cuts to unemployment benefits as well as reducing public investment in new projects and in particular transport infrastructure projects.

- Revenue raising measures include unemployment insurance taxes which will increase by 0.1 percent of GDP per year in 2016–17. Fees and fines on several health and social services will also be raised. Other revenue measures include phasing out the tax deductibility of mortgage interest more rapidly than previously planned and gradually increasing excise taxes on alcohol, tobacco, and sweets. In addition, with the goal to increase tax revenues, a tightening of the corporate tax base is planned together with active efforts to combat the shadow economy. These revenue raising measures will be largely offset by tax reductions, including on the earned income deduction, capital, and corporate taxes. The car tax will also be lowered in favor of low-emission cars.

8. **The impact of the proposed fiscal consolidation can be simulated with GIMF.** The fiscal measures envisaged by the authorities, as described above, are mapped to the seven fiscal instruments available in GIMF. The numbers in each column of the Table 1 below represent the fiscal

Table 1. Fiscal Consolidation Effort, Percent of GDP				
	2016	2017	2018	2019
Total Revenue Adjustment	-0.05	0.01	0.01	0.04
Consumption taxes	0.05	0.12	0.15	0.17
Labor income taxes	-0.09	-0.07	-0.06	-0.03
Corporate income taxes	-0.01	-0.05	-0.08	-0.11
Total Expenditure Adjustment	-0.52	-0.50	-0.30	-0.37
Consumption	-0.12	-0.08	-0.06	-0.06
Investment	-0.16	-0.10	-0.05	-0.04
Targeted transfers	-0.11	-0.15	-0.08	-0.10
General transfers	-0.12	-0.17	-0.11	-0.16
Net Total adjustment (Rev-Exp)	0.47	0.50	0.31	0.41
Source: Fund staff estimated calculations.				

consolidation effort for each of the instruments made every year as percent of GDP.[4] E.g., on the basis of the current government plans, consumption tax revenues are expected to increase 0.05 percent of GDP in 2016, 0.12 percent of GDP the following year, etcetera.

9.   The planned fiscal consolidation has a negative effect on output in the short run. The combination of revenue and expenditure measures would have a cumulative negative effect on output of about 1.4 percent relative to the baseline of unchanged policies (Figure 1).[5] It is assumed that the government's fiscal consolidation is perceived by economic agents to be fully credible, where households and firms believe policies to be immediate and permanent. Therefore, firms and households are adjusting their behavior as expected, starting in the first year of the fiscal consolidation package. Output would revert to positive territory in the medium term.

10.   Revenue neutral shifting of taxation from direct to indirect taxes could increase the incentives to work and invest and thus output. The balance of the literature suggests that corporate income taxes have the most negative effect on growth, followed by labor income taxes, than consumption taxes, and finally property taxes.[6] High tax wedges are found to increase aggregate unemployment and associated with lower employment prospects.[7] Thus, shifting taxes away from the labor factor and toward consumption offers strong potential for growth gains. Indeed, Bouis and Duval (2011) find that reducing labor tax wedges has the potential to deliver sizeable employment gains in many OECD countries. Allard and others (2010) show that transferring the tax burden from labor-related tax to VAT in the euro area would increase the incentive to work and hire labor, which would consequently increase the labor supply and real GDP. Shifting the tax burden from corporate taxes to VAT would similarly increase the return on capital and thus investment and real GDP.

11.   In addition, a "fiscal devaluation" achieved through tax switching could help competitiveness. Moving from the taxation of final goods according to where they are produced to their taxation according to where they are consumed is essentially equivalent to an exchange rate devaluation because such a shift effectively brings imports into tax and takes exports out. Thus the

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[4] It is assumed that cuts to investments are related to unproductive infrastructure. Cuts to targeted transfers include social assistance grants, social benefits in kind, and unemployment benefits. Cuts to general transfers comprise cuts to subsidies, partial cuts to social security benefits, and cuts to other transfers to domestic sectors.

[5] The implied fiscal multiplier from this GIMF simulation is relatively large compared to the empirical fiscal multiplier estimates for Finland. While empirical fiscal multiplier estimates are more appropriate for macroeconomic forecasting purposes, the GIMF simulations have an illustrative purpose.

[6] While many studies suggest the above ranking of tax instruments, the literature is not unanimous. E.g., Acosta-Ormaechea and Yoo (20012) find that a revenue neutral rebalancing from income taxes to consumption and property taxes is associated with faster long-term growth, but do not find that the corporate income tax is more harmful to growth than the personal income tax. In addition, Xing (2012) argues that the ranking of instruments is not robust to different specifications. For example, a corporate tax that falls only on rents would have quite a different effect on growth from a corporate tax falling on total returns.

[7] Bassanini and Duval (2006).

essence of a "fiscal devaluation" lies in the shift away from production-based taxes and towards destination-based ones. Specifically, this shift would offset the revenue loss by increasing broad-based destination-based taxes, such as the VAT. The most common form of "fiscal devaluation" mentioned in the literature comprises a combination of a reduction in the social contributions paid by employer and an increase in VAT. The literature also shows that "fiscal devaluation" with a revenue-neutral shift from employer's social contributions towards value added tax increases output and employment.[8]

12.   Shifting expenditure from transfers to investment could also raise output. Expenditure measures, particularly changes in government investment, tend to have higher multipliers than revenue measures. Empirical literature such as Spilimbergo and others (2009) suggest that in advanced economies, as a rule of thumb, government consumption multipliers are 0.5 or less in small open economies, with smaller values for revenue and transfers and slightly larger ones for investment.

13.   A stylized simulation for Finland confirms the positive effect on output of revenue neutral tax switching. A tax reform to shift taxation from direct to indirect taxes could promote growth by about 0.8 percent. This effect could be achieved with a tax reform package which lowers labor and corporate tax rates by 0.75 and 0.25 percent respectively and is offset by a 1 percent increase of the consumption tax (VAT) rate. On one hand, the consumption tax increases would affect negatively the consumers' marginal propensity to consume immediately. On the other hand, the direct tax cuts would not have as large an offsetting effect on the behavior of households and firms. Therefore, consumption would fall initially but would increase in the medium and long run as the direct tax cuts boost employment and raise total consumption, which would eventually more than offset the increase in VAT. Employment would increase by 0.3 percent while real wages would decrease in the medium term but increase in the long run. Despite the real wage increase, unit labor cost would fall slightly. Competitiveness would improve since the tax cuts would affect directly the cost of capital and labor. Real exports would rise by almost 1 percent in the long run while the real exchange rate would depreciate by less than a half percent.

14.   It also shows that shifting expenditures from transfers to investment would raise GDP. In our stylized model simulation, shifting government expenditure from transfers towards investment by 1 percent of GDP would have a positive effect of 2 percent on output in the long run. The highest return can be achieved by a shift toward spending on productive, well-targeted infrastructure. Improving the stock of infrastructure can make all sectors more productive as a whole. Therefore, an increase in the government investment in infrastructure could lead to long-lived and persistent gains in the productivity of the whole economy. To make the spending increase neutral, general lump-sum transfers, which have a smaller negative multiplier, are cut.

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[8] See for example IMF Country Report 12/168 as well as Mooij and Keen (2012).

15.   An alternative fiscal consolidation package could decrease the negative effect on output (Figure 1). Building on the theoretical simulations presented in paragraphs 13 and 14, an alternative fiscal consolidation package comprising tax and expenditure switching, as outlined in Table 2 below, would have a smaller negative effect on output. Under this scenario, consumption taxes are increased by 1/8 percent of GDP every year while labor taxes are cut correspondingly. On the expenditure side, the envisioned cuts to investment are

Fiscal Consolidation Scenarios

Sources: IMF Staff Calculations

applied as additional cuts to consumption. Similarly, the planned cuts to targeted transfers are added towards the general transfer cuts. Subsequently, the effect of the consolidation on output is less negative for three main reasons: (i) there are no direct cuts to investment; (ii) because of the exclusion of cuts to targeted transfers, the consumption behavior of liquidity constrained households would not be affected as much; and (iii) the direct tax cuts increase consumption in the medium and long run. As a result, overall consumption and investment are dampened less and so is output.

| Table 2. Alternative Fiscal Consolidation, Percent of GDP				
	2016	2017	2018	2019
Total Revenue Adjustment	-0.05	0.01	0.01	0.04
Consumption taxes	0.17	0.25	0.28	0.30
Labor income taxes	-0.21	-0.19	-0.19	-0.16
Corporate income taxes	-0.01	-0.05	-0.08	-0.11
Total Expenditure Adjustment	-0.52	-0.50	-0.30	-0.37
Consumption	-0.29	-0.18	-0.11	-0.11
General transfers	-0.24	-0.32	-0.20	-0.26
Net Total adjustment (Rev-Exp)	0.47	0.50	0.31	0.41
Source: Fund staff estimated calculations.				

16.   Implementing the planned fiscal consolidation in Finland together with the government's growth package would yield a more growth friendly result. In this scenario, it is assumed that the fiscal consolidation is undertaken as described in paragraph 9 and Table 1 and is complimented by the government's growth package as outlined in Table 3. The growth package is envisaged to account for about 0.7 percent of GDP over a three year period. However, as specific details are yet to be fleshed out, the growth package is simulated as an increase in public investment and consumption spread over three years. The results indicate that the implementation of the growth package would mitigate the initial negative effect of the fiscal consolidation and boost growth by more than 1 percent in the long run. Overall, this scenario yields more growth friendly results compared to the fiscal consolidation scenario with tax and expenditure switching. Only the effect on consumption is slightly more negative in the long run, compared to the previous scenario. This is because the government's fiscal consolidation includes cuts to targeted transfers, which leads to a decrease in the consumption for liquidity constrained households.

Table 3. Growth Package				
	2016	2017	2018	2019
Total expenditure	**0.15**	**0.29**	**0.28**	**0.00**
Consumption	0.03	0.06	0.06	0.00
Investment	0.12	0.23	0.23	0.00
Source: Fund staff estimated calculations.				

17.   The most growth-friendly scenario comprises tax and expenditure switching together with an implementation of the growth package. An implementation of the alternative fiscal consolidation package with tax and expenditure switching as described in paragraph 15 and Table 2 together with the growth grogram, as outlined in Table 3, would have only a very small initial negative effect on output. Moreover, in the long run, this composition of measures would boost growth by more than 2 percent. This positive outcome is driven by two components. First, consumption is dampened only slightly by the consolidation as cuts are made only to general transfers and not to targeted ones. Therefore, liquidity constrained households are less affected by the consolidation. Second, investment is not affected by the consolidation and boosted by the growth package.

Figure 1. Fiscal Consolidation

—Gov. Cons. - - - Cons. & Growth Package   —Alt. Cons. - - - Alt. Cons. & Growth Package

Real GDP
(Percent deviation from baseline)

Consumption
(Percent deviation from baseline)

Investment
(Percent deviation from baseline)

Real Short Term Interest Rate
(Percent deviation from baseline)

Real Wage
(Percent deviation from baseline)

Core CPI Inflation
(Percent deviation from baseline)

Real Effective Exchange Rate
(Percent deviation from baseline)

Unit Labor Cost
(Percent deviation from baseline)

Source: Fund Staff Calculations

D. Some Finland Specific Considerations

18.   The high tax wedge in Finland indicates room for improvement. The tax wedge in Finland measures above the OECD average as well as Nordic peers. In addition, all of the increase in the tax wedge between 2013 and 2014 can be attributed to higher social security contributions. In particular, increasing employer social security contributions have the largest part in the rise in the tax wedge in Finland, 0.53 percent.[9] Reducing the tax wedge by shifting taxation from direct to indirect taxes could boost employment, growth, and competitiveness.

Tax Wedge
(Indicator, Total percent of labor cost, 2014)
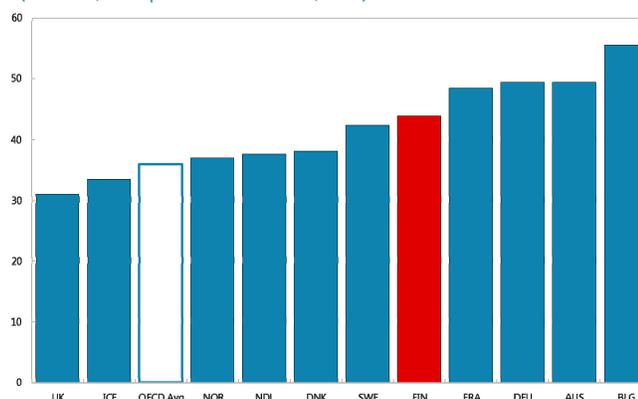
Sources: OECD and Fund Staff Calculations

19.   How can the revenue gaps be closed in a growth friendly fashion? VAT has been the focus of most research in this area partially because its potential base is relatively easy to quantify. In addition, on average, VAT accounts for about one third of revenue in advanced economies. The standard rate is one of the revenue factors that policymakers can control. The second factor is the C-efficiency, which represents the revenue from VAT divided by the product of the standard rate and aggregate private consumption.[10] For example, the C-efficiency would be 100 percent for a VAT with no exemptions, a single rate and full compliance. The C-efficiency in advanced economies is at only about 60 percent.

Standard Rates of VAT
(2014)

Sources: OECD and Fund Staff Calculations

20.   Room for raising the VAT rate may be limited in Finland. The standard VAT rate was increased to 24 percent (from 23 percent), effective January 1st, 2013. At the same time, the reduced rate for food stuff and animal feed as well as restaurant and catering service was raised by 1 percent

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[9] OECD, Taxing wages 2015.

[10] For a discussion on the issues regarding the measurement and interpretation of C-efficiency see Keen (2013).

to 14 percent. Similarly, the remaining reduced rates were also raised by 1 percent to 10 percent.[11] The VAT rate in Finland is above the OECD average but slightly lower compared to Nordic peers. However, further increases in the standard VAT rate may be problematic for Finland, as there is a general agreement between EU member states (although not a legally binding one) not to go beyond a maximum of 25 percent.[12]

21.   However, improving the VAT C-efficiency could be an option. The C-efficiency can be decomposed into a policy gap where a 0 is applied at a single rate to all consumption and a compliance gap where a 0 indicates that the implementation of the VAT is perfect. Data indicates that the VAT rate in Finland accounts for 8.7 percent of GDP and the C-efficiency is measured at 61 with a compliance gap of 5 and a policy gap of 36. The policy gap is comparable to neighbouring peers and reflects extensive exemptions and a frequent use of multiple rates.[13] Closing half of the policy gap in Finland, all else equal, would raise a very substantial 2.4 percent of GDP in revenue. A simultaneous increase in social transfers to protect the poor from the subsequent price increases would reduce the revenue gain somewhat but not eliminate it completely. [14]

22.   Property taxation could also help achieve a more growth friendly fiscal consolidation. Although VAT has been the focus of debate, it is not the only way in which revenue can be recouped and mitigate the negative impact of a fiscal consolidation. Taxes on residential property would have the same effect. The appeal of residential property taxation is that it has very little direct impact on production costs and thus a relatively growth friendly source of finance with untapped revenue potential. For example, Arnold (2008) concludes that property taxes, and particularly recurrent taxes on immovable property, seem to be the most growth-friendly form of revenue generation. In this analysis, the coefficient on recurrent taxes on immovable property is highly positive, demonstrating that these taxes are significantly better for growth.

23.   Property taxation in Finland allows room for additional revenue generation. Property taxes, as percent of GDP, are below the OECD average in Finland and present a potential growth-friendly revenue generating option. Real estate taxes are paid annually to the municipalities, which set the tax percentage.[15]

Tax on Property
(Total, percent of GDP, 2013)
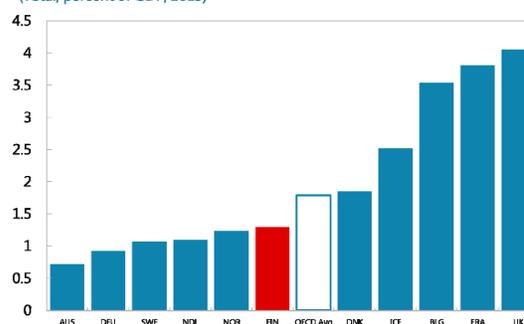
Sources: OECD and Fund Staff Calculations

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[11] https://www.vero.fi/en-US/Precise_information/Value_added_tax/Rates_of_VAT/Change_in_VAT_rates_as_of_1_January_2013(27098).

[12] Mooij and Keen (2012).

[13] The policy gaps for Denmark, Netherland, and Sweden are 33, 38, and 42 respectively.

[14] IMF Fiscal Monitor, October 2013.

[15] http://www.vero.fi/en-US/Individuals/Real_estate_tax.

E. Concluding Remarks

24.   In recent years, the Finnish government has been implementing growth friendly measures. Specifically, over the past few years, steps to increase the progressiveness of the tax system and shift taxation towards indirect taxes, have been adopted. For example, the government has lowered the tax burden on low and medium-level incomes, increased VAT, adopted large reductions in mortgage interest deductibility, as well as raised environmental taxes and lowered environmentally harmful subsidies. Furthermore, the current government is considering a reduction in employer social security contributions as well as rising VAT further if needed.

25.   The analysis in this chapter suggests that further revenue and expenditure shifting would help support growth. As illustrated in this chapter, the negative effect of the planned fiscal consolidation could be mitigated by a tax and expenditure switching. The growth friendliness of the fiscal consolidation could be increased further with a simultaneous implementation of the growth package. Furthermore, a more limited use of reduced VAT rates and exemptions would increase the efficiency of the VAT system, while further changes in property taxation could provide a potential source of additional government revenue.

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