INTERNATIONAL MONETARY FUND

IMF Country Report No. 14/140

# FINLAND

## SELECTED ISSUES

May 2014

This Selected Issues Paper on Finland was prepared by a staff team of the International Monetary Fund. It is based on the information available at the time it was completed on April 30, 2014.

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**International Monetary Fund**
**Washington, D.C.**

INTERNATIONAL MONETARY FUND

# FINLAND

## SELECTED ISSUES

April 30, 2014

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**European Department**

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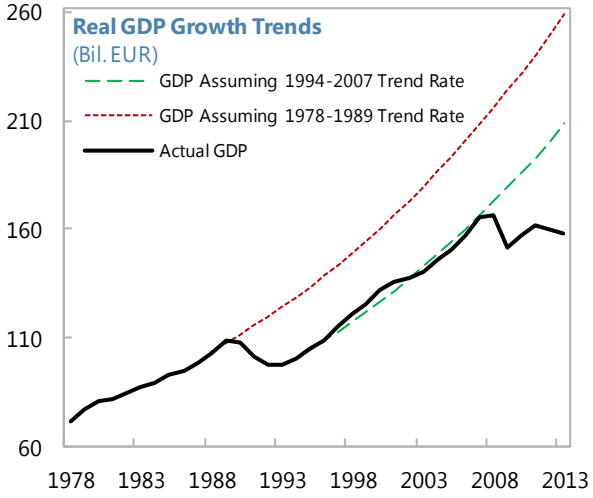
# ESTIMATING FINLAND'S POTENTIAL GDP[1]

*Finland, an economy known for its dynamic performance after the crisis of the early 1990s, is struggling to recover from the Great Recession, indicating that deeper, structural issues may be holding back growth. Has Finland's growth potential changed? Based on a selection of approaches to estimate potential output, this note argues that (1) potential output growth has slowed or is contracting, indicating the need for structural reforms to boost TFP since the economy has failed to return to trend growth as it had in the 1990s recovery, (2) the role of Nokia in the Finnish economy has implications for steady-state growth and the need for an examination of R&D policies, and (3) that estimation of potential for Finland is particularly difficult with a high degree of variability around the estimates suggesting that policies relying on these estimates should proceed with appropriate discretion.*

## A. Has the Longer-Term Growth Trend Changed?

1. **Finland has recovered from large negative shocks in the past.** GDP levels dropped markedly after the crisis in the early 1990s. However, on the back of strong structural reforms and an ICT sector dynamically expanding around Nokia, the Finnish economy quickly resumed its pre-crisis pace. In contrast, the drop in GDP after the financial crisis and recession of 2007-2009, has turned out to be more persistent.




Sources: ETLA, Haver Analytics, IMF World Economic Outlook, Statistics Finland, and Fund staff calculations.

2. **This raises the question whether growth will resume its pre-crisis trend.** One way to shed light on the issue is to look at the underlying or potential growth rate of the Finnish economy. In what follows, we approach this task in different ways, including (i) by assuming that potential growth can be extracted directly from GDP (*univariate filtering*), (ii) using a *production function* approach linking potential GDP to capital and labor input, among other things, (iii) and applying so-called *multivariate filtering* approaches that use information from variables correlated with the non-transitional component of GDP to identify its permanent or "potential" part. All of these approaches come with advantages and disadvantages, and there is considerable uncertainty surrounding their results.

[1] Prepared by Thomas Dowling.

## B. Methodology

### Hodrick-Prescott Filter (Univariate)

3. **Principle.** The Hodrick-Prescott (HP) filter remains one of the most widely used methods for decomposing time-series data into a trend component and a cycle component. Despite well-known weaknesses (e.g., endpoint sensitivity), the HP filter remains popular due to its simplicity as well as ease of use. Economically, it can be interpreted as a the attempt to capture the underlying factors driving potential output—such as changes in factor inputs and their utilization, including hysteresis effects on the capital stock and structural unemployment—by looking simply at the GDP outcome itself. Following Hodrick and Prescott (1997):

$$y_t = g_t + c_t, \text{ for } t = 1 \ldots T. \qquad (1)$$

$$\min_{\{g_t\}_{t=-1}^{T}} \{\sum_{t=1}^{T} c_t^2 + \lambda \sum_{t=1}^{T} [(g_t - g_{t-1}) - (g_{t-1} - g_{t-2})]^2\} \qquad (2)$$

where $y_t$ is log growth decomposed into a trend component $g_t$ and a cyclical component $c_t$ in equation (1). Equation (2) describes how to obtain $g_t$ where the first term is the sum of squared deviations from trend growth and the second term penalizes variability in the trend growth. $\lambda$ refers to the degree of penalty incurred by the variability term and is restricted to be greater than zero. The choice of $\lambda$ is critical and remains under some debate.

4. **Application**. In what follows, the HP is estimated using annual data, using two levels for $\lambda$ that yield estimates of potential output of different degrees of flexibility: $\lambda$=100, as suggested by Hodrick and Prescott (1997) and $\lambda$=6.25 as in Ravn and Uhlig (2002). The single input, GDP in constant prices, is projected to 2030 using a constant rate of growth after 2019 to alleviate the endpoint bias problem.

### Production Function Approach (PFA)

5. **Principle**. The production function approach derives potential output from a simple Cobb-Douglass production function with exogenously determined trend components. The model assumes constant labor and capital shares. Specifically,

$$Y^* = \theta K^{*\alpha} L^{*1-\alpha} \quad (3)$$

where $Y^*$is potential output determined by $\theta$ (total factor productivity), the smoothed real capital stock ($K^*$), smoothed volume of labor ($L^*$), and factor intensity $\alpha$.

6. **Application**. The PFA is estimated on annual data. The inputs are smoothed time series of employment, computed as the share of the labor force that is employed assuming that the rate of unemployment is at a level that will keep wage inflation constant (estimated separately), net capital stock, and total factor productivity (TFP), with factor intensity calibrated to the Finnish economy. As

for the HP filter, factor inputs are projected to 2030 to alleviate the endpoint bias. The PFA, although stepping beyond the simple univariate approach, is not without problems. Importantly, the rate of growth of total factor productivity needs to be estimated. Following the standard approach in this case, we estimate the underlying rate of productivity growth by applying a HP filter to the Solow-residual using (unfiltered) factor inputs and production function (3).[2] In line with the discussion above, we use two sets of calibrations for $\lambda$, 100 and 6.25, resulting in measures of productivity growth of different persistence.

**Multivariate Filter (MV) (Kalman State Space)**

7. **Principle**. The state space model, an augmented version of Borio and others (2012), expands the HP filter by adding additional covariates that help identify the transitory part of GDP, albeit without the theoretical constraints featured in the Benes and others (2010) approach.[3] The system of equations, used in estimating potential GDP, is as follows.

$$y_t - y_t^* = \rho(y_{t-1} - y_{t-1}^*) + x_t\beta + \varepsilon_t^0, \varepsilon_t^0 \widetilde{\imath\imath d} \text{ white noise } \sigma_0 \qquad (7)$$

$$\Delta^2 y_t^* = \varepsilon_t^*, \varepsilon_t^* \widetilde{\imath\imath d} \text{ white noise } \sigma_* \qquad (8)$$

$$\text{with } \lambda_a = \frac{\sigma_0^2}{\sigma_*^2} \qquad (9)$$

Building on the standard HP filter in a state-space framework, the first equation includes an autoregressive output gap term and a vector of observables $x_t$ which contains information on transitory variables. To match the frequency cutoff of the filter in (7) with that of the HP filter, the variance ratios for the state-space must be equal with those of the HP filter. Equalizing the variances is achieved by adjusting parameter $\lambda_a$in equation (9).

8. **Application**. Rather than the Bayseian approach employed by Borio and others (2013) , we use maximum likelihood estimation (MLE) to estimate the model. $\rho$ and $\beta$ are estimated in a two-step procedure. First, the autoregressive parameter $\rho$ is estimated by running an AR(1) regression on the output gap obtained from the simple HP filter. Then $\rho$ is substituted into (7) and estimated using MLE. Following Borio and others (2013), the choice of variables in $x_t$ roughly describes the asset market, the credit cycle, and in our case, capacity utilization, as in Benes and others (2010). In particular, this model uses as inputs GDP in constant prices, the real Nokia stock price, to reflect the potential—and potentially transitory—role of Nokia for the real economy and the Finnish asset portfolio, the real short-term interest rate, real bank external assets, and capacity utilization. All time

[2] NAIRU is obtained from the APC approach described below. Employment at NAIRU is calculated, then the entire series is smoothed using the HP filter. This approach is taken due to the high level of volatility in the Finnish employment data.

[3] See Mrkaic (2014). See Box 2 for an application of the model to Finland.

series are demeaned to reduce procyclicality and differenced to account for unit roots. Specifically, the measurement equation becomes:

$$y_t - y_t^* = \beta(y_{t-1} - y_{t-1}^*) + \gamma_1 \Delta r_t + \gamma_2 \Delta ba_t + \gamma_3 ns_t + \gamma_4 \Delta capu_t + \varepsilon_{4,t} \quad (10)$$

where $y - y^*$ refers to the output gap, $r$ the real interest rate, $ba$ banks' external assets, $ns$ Nokia stock price, $capu$ capacity utilization, and $\varepsilon$ is a disturbance term.

### Box 1. Smoothing Parameter Choice and Implication

The choice of smoothing parameters in filtering models is a widely debated topic (Maravall and del Río, 2001). Hodrick and Prescott (1997) suggest a lambda of 100 for annual data and 1600 for quarterly. Ravn and Uhlig (2002) present two approaches: the first, a time domain approach that determines lambda using the ratio of the variance of the cyclical components to the variance of the second difference of the trend component, thereby accounting for idiosyncrasies in the data; the second, a frequency domain approach building on King and Rebelo (1993) that yields the widely used lambda of 6.25 for annual data.

At the heart of the debate is the length of the cycle. Ravn and Uhlig's (2002) lambda of 6.25 for annual and 1600 for quarterly data (consistent with Hodrick and Prescott, 1997) implies a cycle length of around 9.8 years and yields estimates that reflect the lower level of smoothing. The standard Hodrick and Prescott (1997) lambda of 100 for annual data implies a much longer cycle of approximately 19.8 years whose estimates are reflective of the much higher level of smoothing. The corresponding lambda for quarterly data is 25,199.

The estimates produced by the three models are remarkably sensitive to the choice of the smoothing parameter. In this paper, we have used both the lambda values of 6.25 as well as 100 for annual data and correspondingly 1600 and 25,199 for quarterly data. The table below shows the extent to which the choice of smoothing parameter affects the level of potential output and the output gap and by implication, the estimates of structural balance and fiscal impulse.

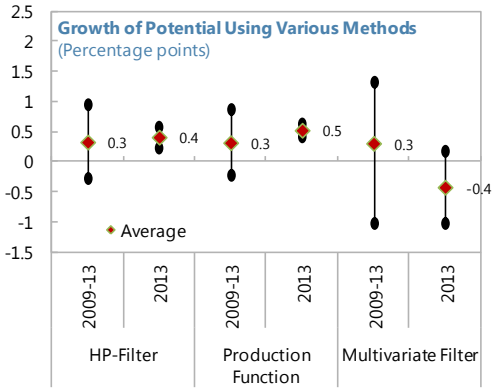
**Effect of Smoothing on Potential Estimates**

| | Difference in Potential Output, bil. EUR | | Difference in Potential Output Growth, percentage points | | | Difference in Output Gap, percentage ponts | | |
|---|---|---|---|---|---|---|---|---|
| | Average 2000-13 | 2013 | Average 2000-13 | 2013 | Number of sign differences 2000-13 | Average 2000-13 | 2013 | Number of sign differences 2000-13 |
| HP Filter | 1.9 | 2.7 | 0.5 | 0.4 | 3 | 1.3 | 1.7 | 3 |
| Production Function | 1.9 | 2.3 | 0.5 | 0.6 | 5 | 1.2 | 1.4 | 4 |
| Multivariate Filter 1/ | 1.4 | 1.1 | 0.4 | 1.0 | 1 | 0.8 | 0.6 | 3 |

Sources: Fund staff calculations.
Note: The difference is calculated as the absolute value of the high smoothing estimate less the low smoothing estimate.
1/ 2013 data is 2012 for the multivariate filter.

## C. Results

9. **All models estimate the current growth rate of Finnish potential output as low**. In particular, the HP filter and production function approach estimates potential growth in 2013 at around 0.4 and 0.5 percent, respectively, while the multivariate approach finds potential output growth on a declining path at -0.4 percent (see text figure and Figures 1–3). However, all approaches see average potential output growth at around 0.3-0.4 percent over the 2009–13 period. The Augmented Phillips curve approach by Benes and others (2010) provides similar point estimates (Box 2).




Sources: Haver Analytics, IMF World Economic Outlook and Fund staff calculations.

Note: The chart shows annual potential growth based on different models and for a range of assumptions about the smoothness of potential output.

10. **The assumed smoothness of potential output is a key determinant of these results**. Depending on the assumed smoothness, the estimated growth rate of potential will vary widely—especially when looking at longer periods of time. In particular:

- The Hodrick-Prescott filter (Figure 1) smoothes the path of GDP growth but fails to account for the structural breaks. The output gap is currently negative and is expected to close under both scenarios in the medium term (2017-18), however, potential growth under the low smoothing assumption (6.25) changes from 0.2 to 1.9 whereas under the high smoothing assumption (100) it increases from 0.6 to just 0.9. This suggests that much weaker GDP growth is required under the high smoothing assumption.

- The production function approach shows very similar characteristics (Figure 2). Under the low smoothing parameter (6.25), potential growth falls into negative territory from 2009-2013 while under the high smoothing parameter (100) it remains solidly positive despite slowing over the same period. Likewise, the output gap under the low smoothing parameter closes in 2014, while the high smoothing parameter series does not close until 2016.

- The Multivariate approach suggests that Finland's economy was growing at above potential for much of the period following the 1990s recession and before the Great Recession (Figure 3). One interpretation is that the model identifies much of the growth generated by the booming ICT sector as transitory, resulting in a lower estimate of potential growth. As a consequence, the model estimates a very low growth rate also for 2013. However, the model is quite sensitive to the level of smoothing and in the period 2007-2009 varies by almost 2.5 percentage points.

## Box 2. Augmented Phillips Curve Approach

The Augmented Phillips Curve (APC) approach follows Benes and others (2010). It comprises the output gap, the employment gap, and the manufacturing capacity utilization gap, each one with an identifying equation: equation (1) is founded in the new classical augmented Phillips Curve model and relates inflation to the output gap; equation (2) uses a dynamic Okun's law as a basis for establishing the relationship between output and employment; and equation (3) employs the general framework of Okun's law to describe the relationship between output and capacity utilization.

$$\pi_t = \pi_{t-1} + \beta y_t + \Omega(y_t - y_{t-1}) + \varepsilon_t^{\pi} \qquad (1)$$

where $\pi$ refers to current core inflation, $y$ represents the output gap, and $\varepsilon$ is a disturbance term;

$$u_t = \phi_1 u_{t-1} + \phi_2 y_t + \varepsilon_t^{u} \quad (2)$$

where $u$ is the current unemployment rate, $y$ is the output gap, and $\varepsilon$, a disturbance term;

$$c_t = \gamma_1 c_{t-1} + \gamma_2 y_t + \varepsilon_t^{c} \qquad (3)$$

where $c$ is the current manufacturing capacity utilization rate, $y$ is the output gap, and $\varepsilon$, a disturbance term.[1]

**Application**. The APC approach is estimated using quarterly data through the third quarter of 2013. The inputs to the model are: GDP, CPI, core CPI in level and growth, unemployment rate, capacity utilization, and long term inflation expectations.[2] The model is then estimated using Bayesian Regularized Maximum Likelihood with priors to ensure reasonable estimates. Forecasts are then generated to 2019Q4. The model uses the priors reported in Benes and others (2010), but Finland specific steady state priors and labor share assumption. Based on data 1990-2013, the steady state growth rate of output is estimated at about 1.7 percent.

**Results.** The point estimates from the APC approach are broadly comparable with the HP-filter and the Production function approaches, suggesting that potential GDP grew by about 0.4 percent over the 2009-13 period and 2013 (Figure 4).[3]

[1] See Benes and others (2010) for the estimating equations.

[2] For inflation expectations we use the 10 year expectations for Germany from Consensus Forecasts.

[3] However, the APC approach does not lend itself easily to varying the signal-to-noise ratio as the other models discussed in this paper.

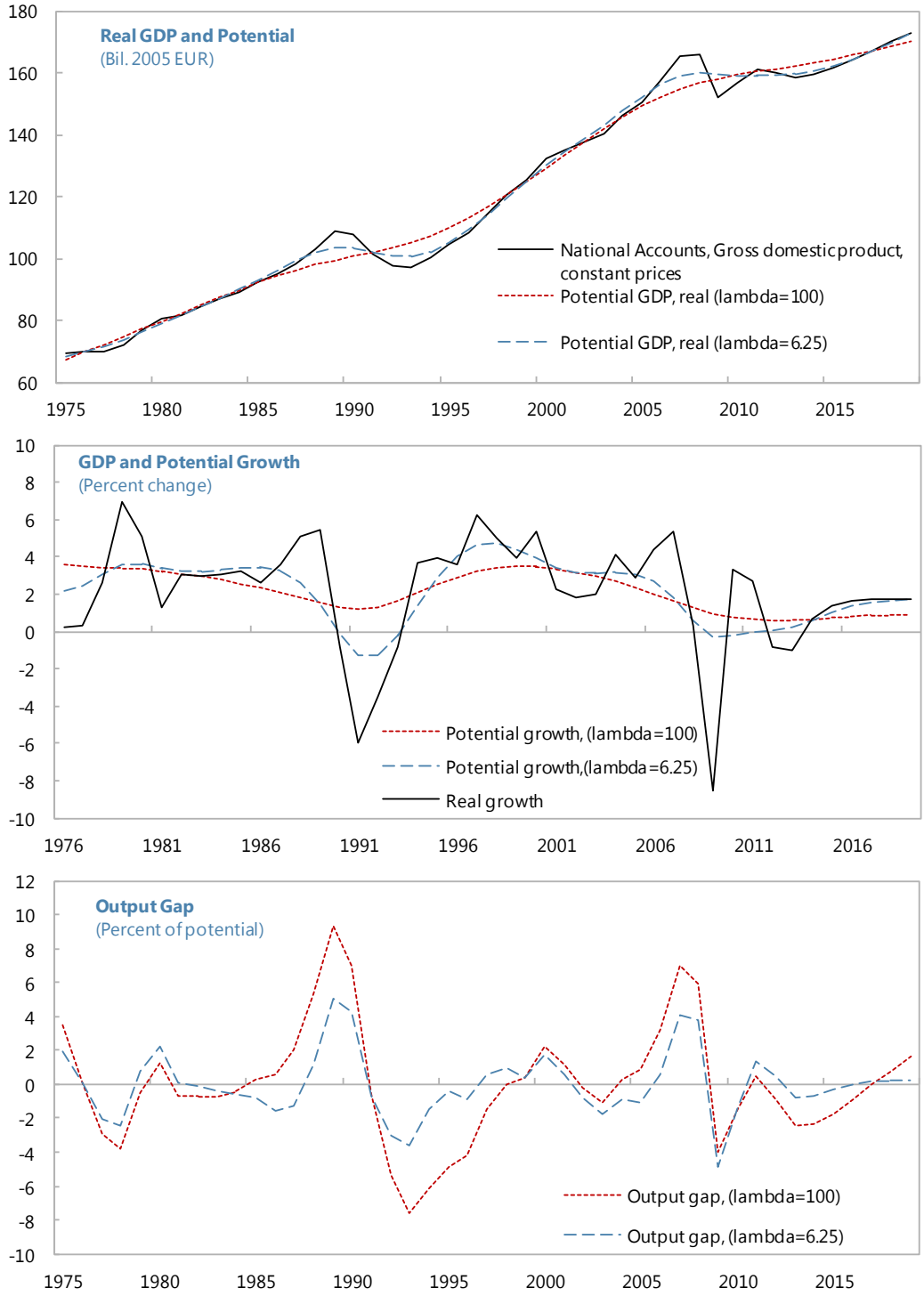
## D. Conclusion

11. **Estimates of potential output for Finland are an important part of the toolkit for policymakers—but they come with a degree of uncertainty**. As this paper illustrates, the use of different methodologies and assumptions can lead to different results. Under the HP, PFA, and multivariate approach, the choice of smoothing can just as reasonably produce a negative growth rate as well as a positive one. Likewise, output gap estimates, critical to fiscal policy, should also be carefully considered.

12. **However, there are indications that Finnish potential output growth is low at this juncture**. From 1997-2007, potential growth, independent of the choice of smoothing, averages 3.2 percent per year. In 2013, that average has dropped to 0.2 with several of the models producing negative growth. This result indicates that the lack of a recovery in Finland is largely structural in nature. Therefore, any indication that the output gap is closing is due to falling potential rather than a pickup in growth.

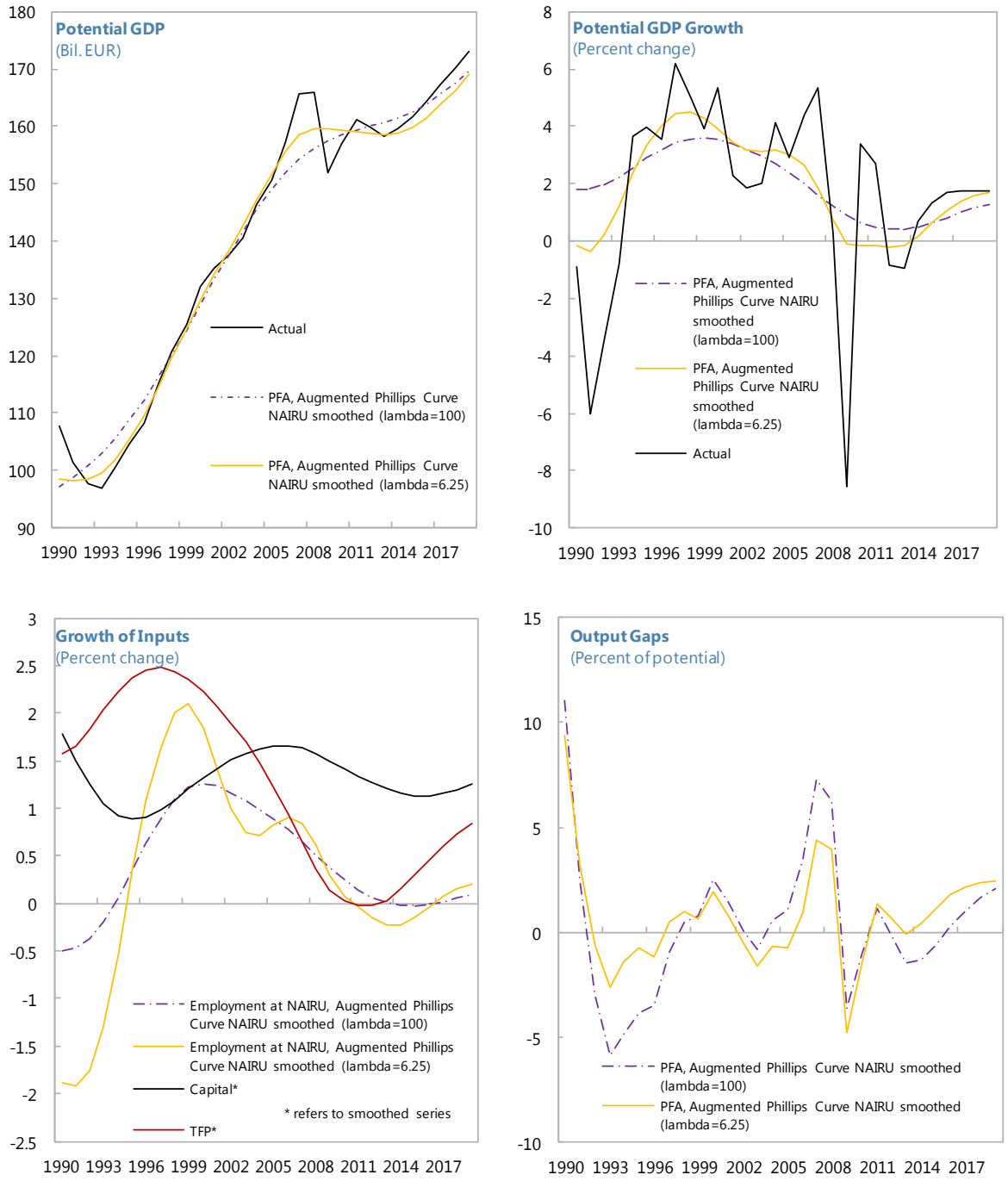
13. **This points to the advantages of structural reforms aiming to enhance Finland's long-term capacity**. In particular, TFP enhancing measures could be crucial in helping the economy recover despite the time it takes to implement them. This would require steps to adjust policies, especially policies to encourage R&D, to the post-Nokia era as well as additional effort to achieve innovation and growth in smaller firms outside the existing ICT cluster.

## Figure 1. Hodrik-Prescott (HP) Filter Approach



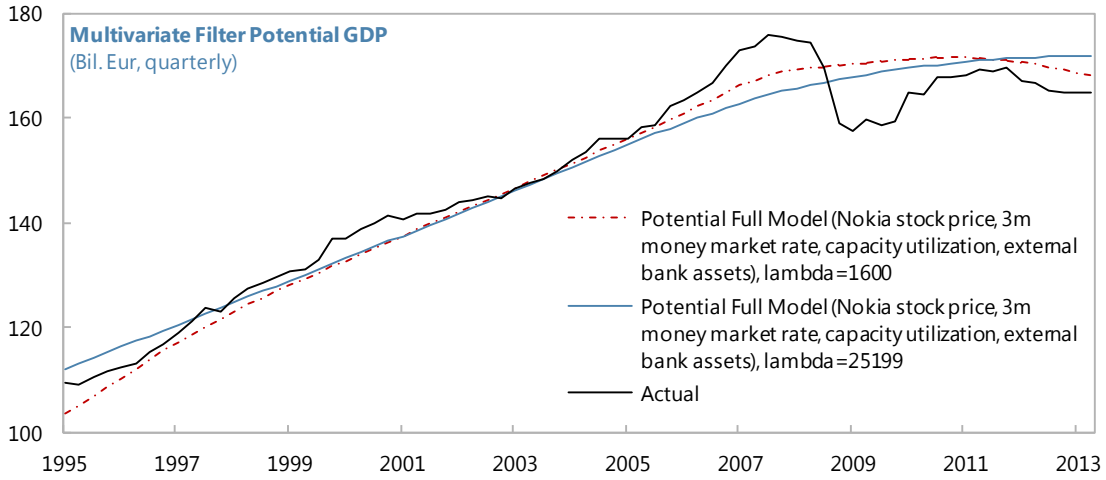

Sources: IMF World Economic Outlook and Fund staff calculations.

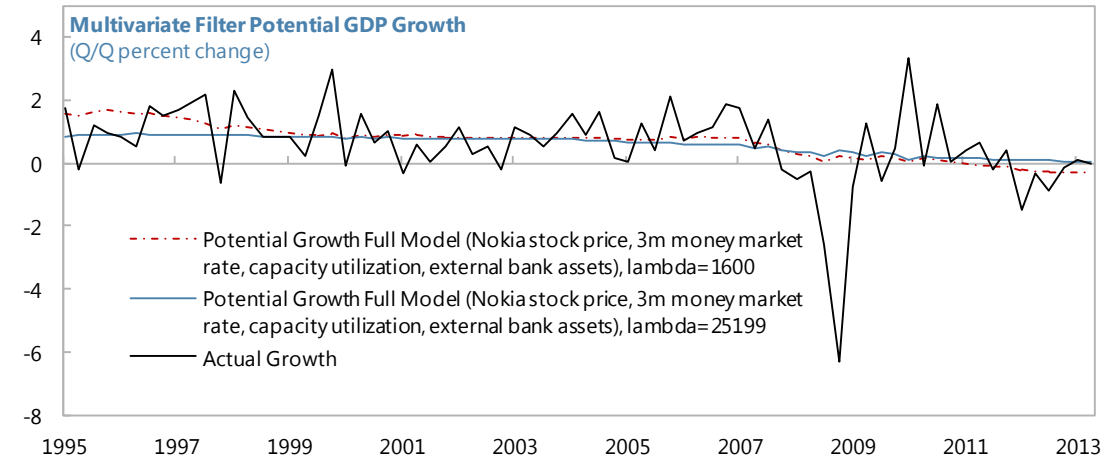
## Figure 2. Production Function Approach (PFA)

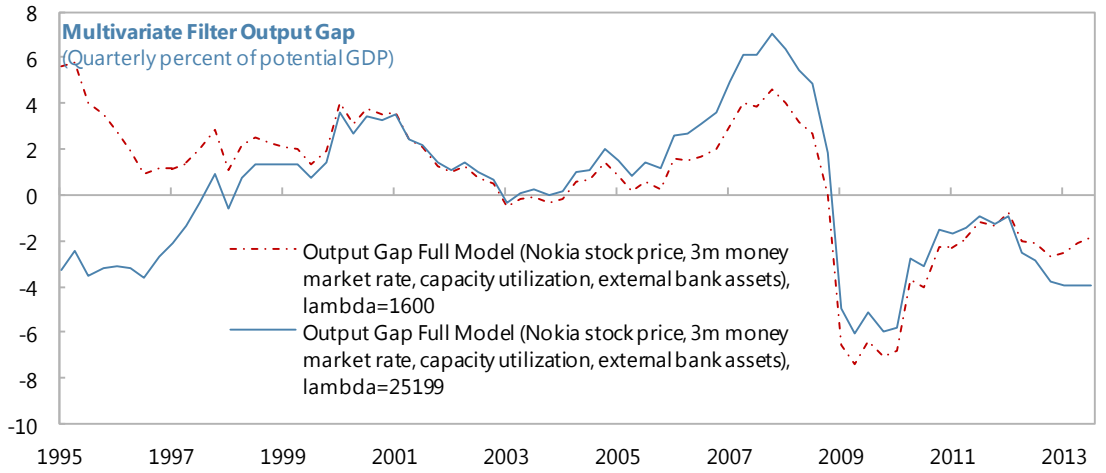



Sources: Eurostat, Haver Analytics, IMF World Economic Outlook, OECD, Statistics Finland, and Fund staff calculations.

## Figure 3. Multivariate Filter Approach

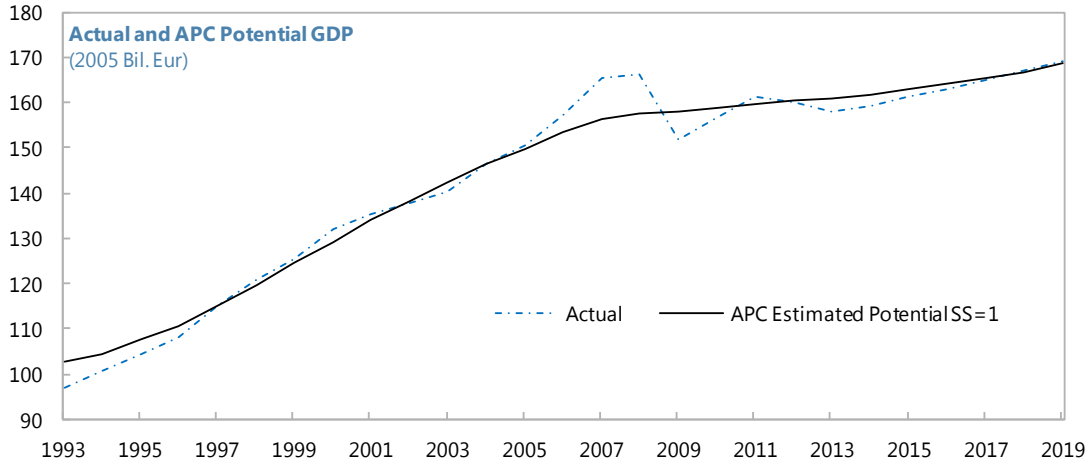


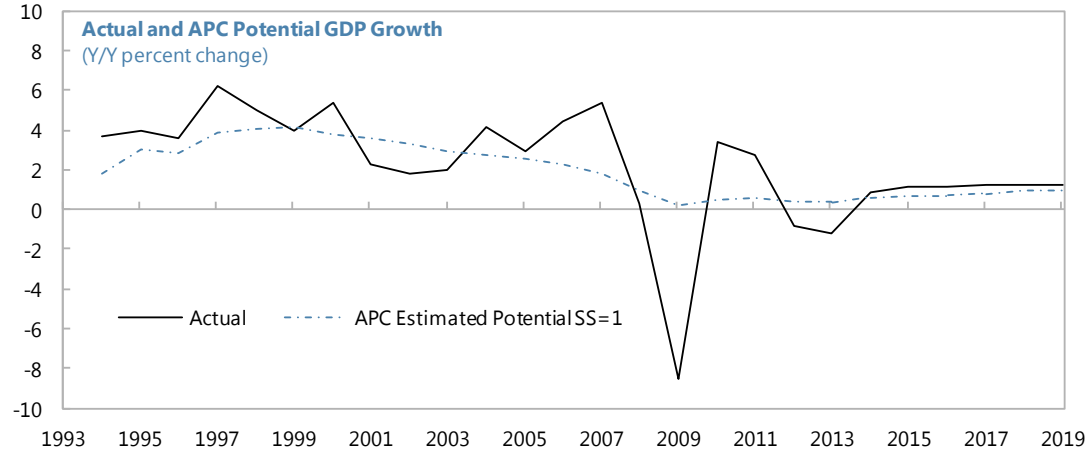



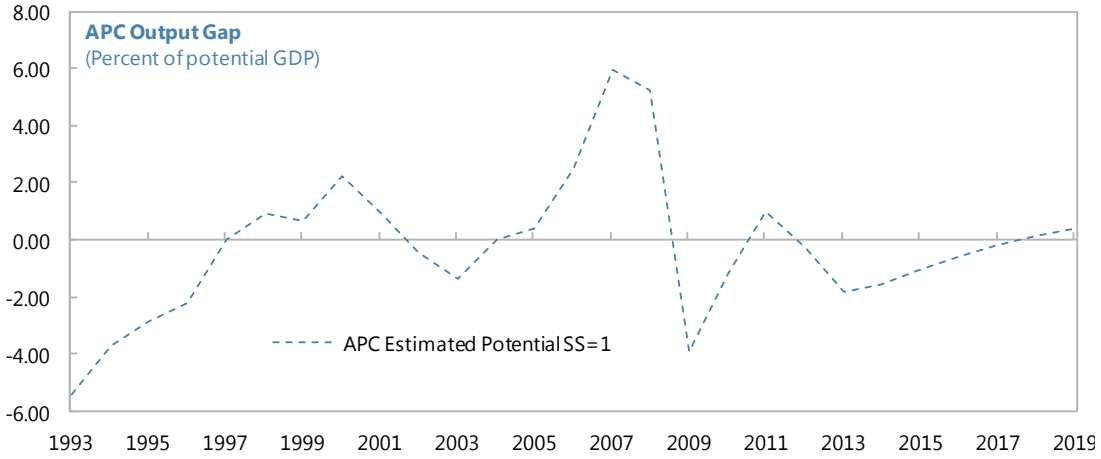




Sources: Eurostat, Haver Analytics, and Fund staff calculations.

## Figure 4. Multivariate Augmented Phillips Curve (APC) Approach




Sources: Bank of Finland, Consensus Forecasts, Eurostat, Haver Analytics, Statistics Finland, and Fund staff calculations.

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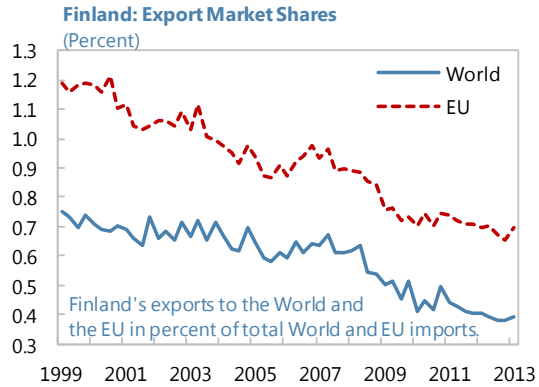
# STRUCTURAL HEALTH CHECK[1]

*Finland is a high-capacity economy, known for its skilled workforce, favorable business environment, and leadership in innovation. However, the recovery from the deep recession of 2008-2009 has been disappointing at best, indicating that deeper, structural issues could be holding back growth. Despite rising unemployment, Finnish unit labor costs have outrun European peers, reflecting high wage growth as well as an ongoing decline in productivity. Furthermore, a combination of relatively low labor market participation, as well as population aging, adds to the drag on growth, while long-standing issues such as the weak competitive environment in the services sector and the fragmentation in the provision of local public sector services remain unaddressed.*

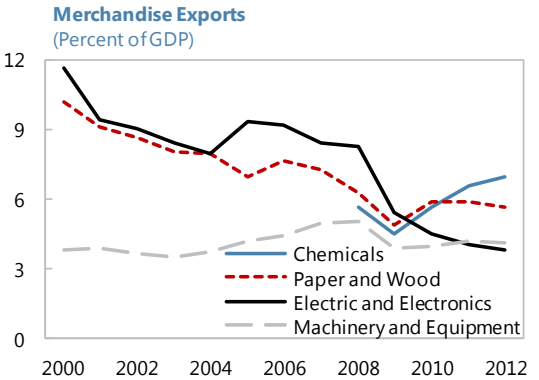
## A. Weakening Growth

1. **Finland is widely recognized for its strong business environment and track record of good policies**. Among euro area economies, it stands out as having met the Maastricht requirements every year since the introduction of the euro. The economy's strong public institutions, governance, rule of law, and well educated labor force regularly help it earn top rankings in a number of survey-based indexes. Specifically, the Doing Business Indicator[2] (DBI) and Global Competitiveness Index[3] (GCI) rank Finland among the most competitive economies in the world.



Sources: International Financial Statistics and Fund staff calculations.

2. **However, growth has slowed, reflecting the unfavorable external environment but also more fundamental weaknesses**. The demand for Finnish exports, especially investment goods, weakened globally during the crisis. Finland has also lost market share due to non-price factors, in particular in the area of electronics along with Nokia's fading fortunes in the mobile handset business. In addition, the demand for traditional Finnish exports of paper and pulp has been decreasing with the global shift from paper to electronic media. Domestically, fixed investment has been weak as corporations postponed projects in light of the diminishing outlook for growth. As a result,



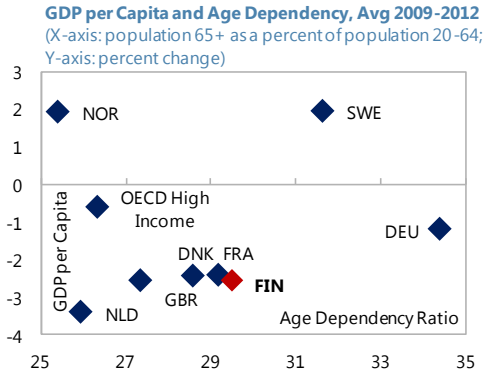
Sources: Finnish Customs, Statistics Finland and Fund staff calculations.

[1] Prepared by Borislava Mircheva

[2] http://www.doingbusiness.org/data/exploreeconomies/finland/

[3] http://www.weforum.org/reports/global-competitiveness-report-2013-2014

compared to its peers, growth per capita has declined in Finland since the financial crisis, which is particularly problematic for a rapidly aging society requiring higher productivity growth in order to maintain its living standards.



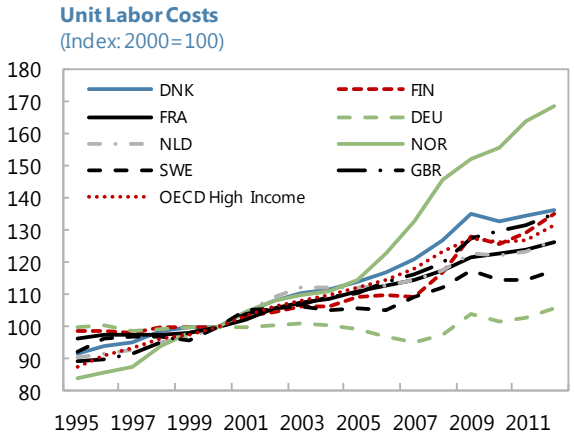
Sources: IMF World Economic Outlook, OECD and Fund staff calculations.

3. **A number of structural issues are holding back growth**. The drop in export shares also reflects a loss in competitiveness due to the relatively strong growth of Unit Labor Costs (ULC). This is due both to high wage growth and a decline in labor productivity, which, in turn, is linked to rigidities in the labor market and a significant drop in Total Factor Productivity (TFP) growth.

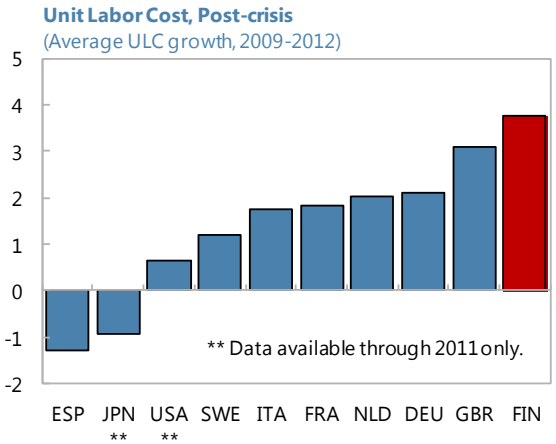
4. **This points to opportunities for improving Finland's growth performance**. In order to lift its prospects in what will remain a difficult external environment Finland can boost TFP growth, while ensuring that wages develop in line with labor productivity. Overall productivity could also be bolstered by improvements in the provision of public services, particularly at the municipality level, and the continued deregulation of the retail sector. Last but not least, strengthening the efficiency of the labor market and further improving the business climate will facilitate structural adjustment.

## B. Unit Labor Costs, Wages, and the Labor Market

5. **Finnish labor costs have seen a strong upward trend relative to some of its peers**. While broadly in line with other high income OECD economies, ULC have risen faster than in Sweden and Germany since 2000, and sharply accelerated since the global financial crisis.



Sources: OECD and Fund staff calculations.



Sources: OECD and Fund staff calculations.

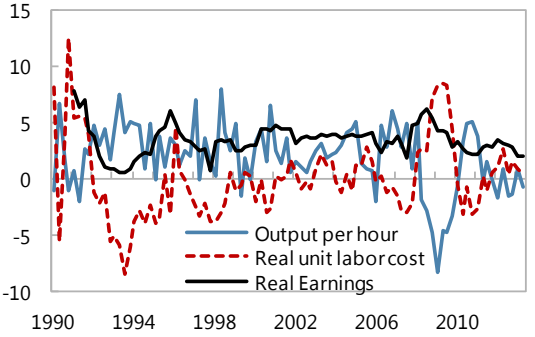
6. **Wage growth has contributed to the high ULC**. After a period of restraint following the Nordic crisis of the 1990s, real wage growth re-accelerated, often exceeding productivity growth since the early 2000s. The collective wage agreements of 2007-2008 led to a surge in wage growth just prior to the Great Recession, and wages reacted only moderately to the rise in unemployment, which has remained elevated at around 8 percent since 2009. The most recent wage agreement, negotiated in the fall of 2013, is set to slow wage growth, but may not be sufficient to restore competitiveness in light of decelerating productivity growth in the short-term (see also the discussion in section C).[4]

7. **These developments draw attention to key characteristics of the Finnish labor market**.

- A strong *collective bargaining system* has contributed to the reliable Finnish business climate through wage agreements broadly in line with productivity growth in the past—a practice that would benefit the competitiveness of Finnish exports in the future, as well. At the same time, it will be important to ensure sufficient wage flexibility at the firm level, especially in sectors that are facing structural change (see section E).

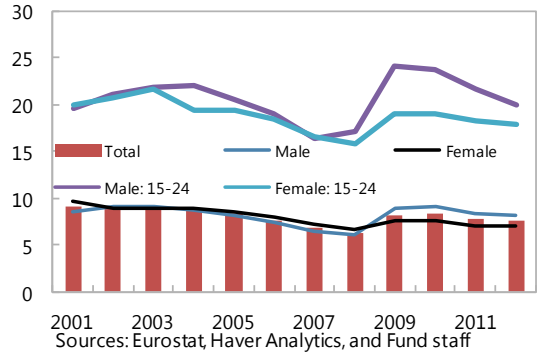
- *Unemployment insurance (UI) replacement rates* are relatively high compared to other advanced economies. High replacement rates are likely to reduce the incentives for unemployed workers to search for and accept jobs. This is especially the case when, as in Finland, monitoring may

**Wages and Productivity**
(Year on year change, percent)



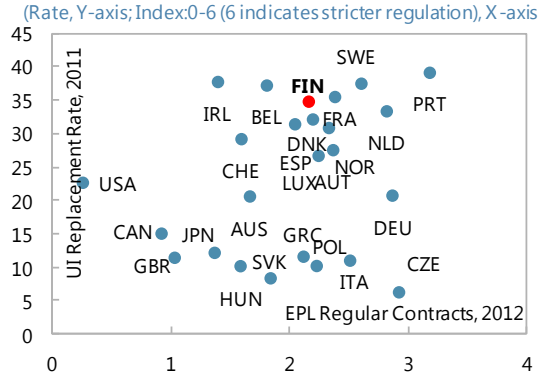

Sources: Eurostat, Haver Analytics, Statistics Finland and Fund staff calculations.

**Unemployment Rate**
(Percent of labor force)




Sources: Eurostat, Haver Analytics, and Fund staff calculations.

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



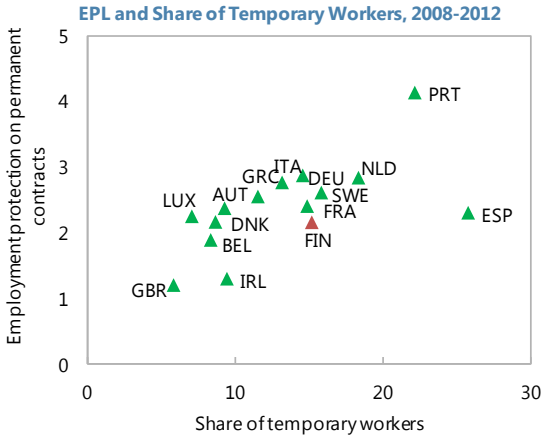

Sources: OECD and Fund staff calculations.

[4] 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.

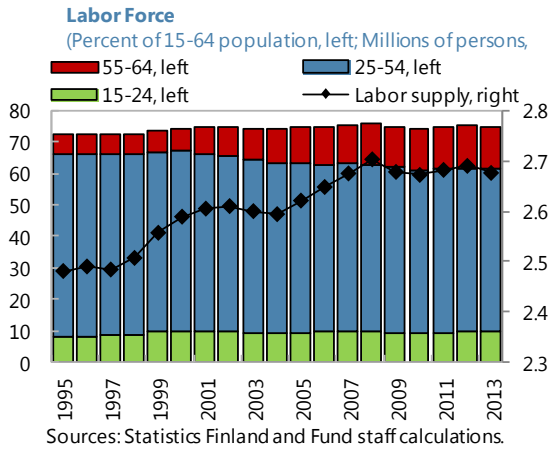
not always be sufficient or existing requirements for active labor market participation are not fully enforced.

- Finland has a relatively *high share of workers on temporary contracts*. On the one hand, this provides a measure of flexibility by facilitating employment adjustment as contracts approach renewal. On the other, it also raises potential duality problems as firms tend to invest less in the human capital of temporary employees (see Section E).

- *Labor market participation rates are low*, in particular for older workers, which not only narrows the labor supply given the relatively fast pace of population aging in Finland, but also adds to upward wage pressures.[5]



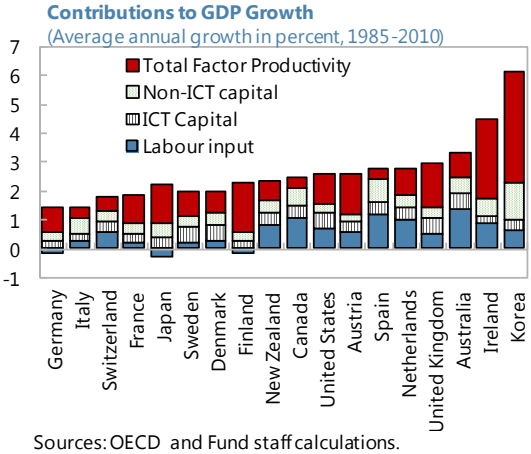

Sources: Eurostat, OECD and Fund staff calculations.




Sources: Statistics Finland and Fund staff calculations.

## C. Labor Productivity

8. **Productivity in the Finnish economy grew steadily up until the mid-2000s**. It was boosted by the rapid recovery after the 1990s recession which, in turn, was fueled by the Information and Communication Technology (ICT) sector. Government policies played an important role in this, including a competitiveness policy targeted at private sector innovation—focused heavily on the development of the ICT sector, with Nokia as the central player—and structural reforms, as well as Finland's European Union (EU) accession in 1995 (OECD, 2010a).



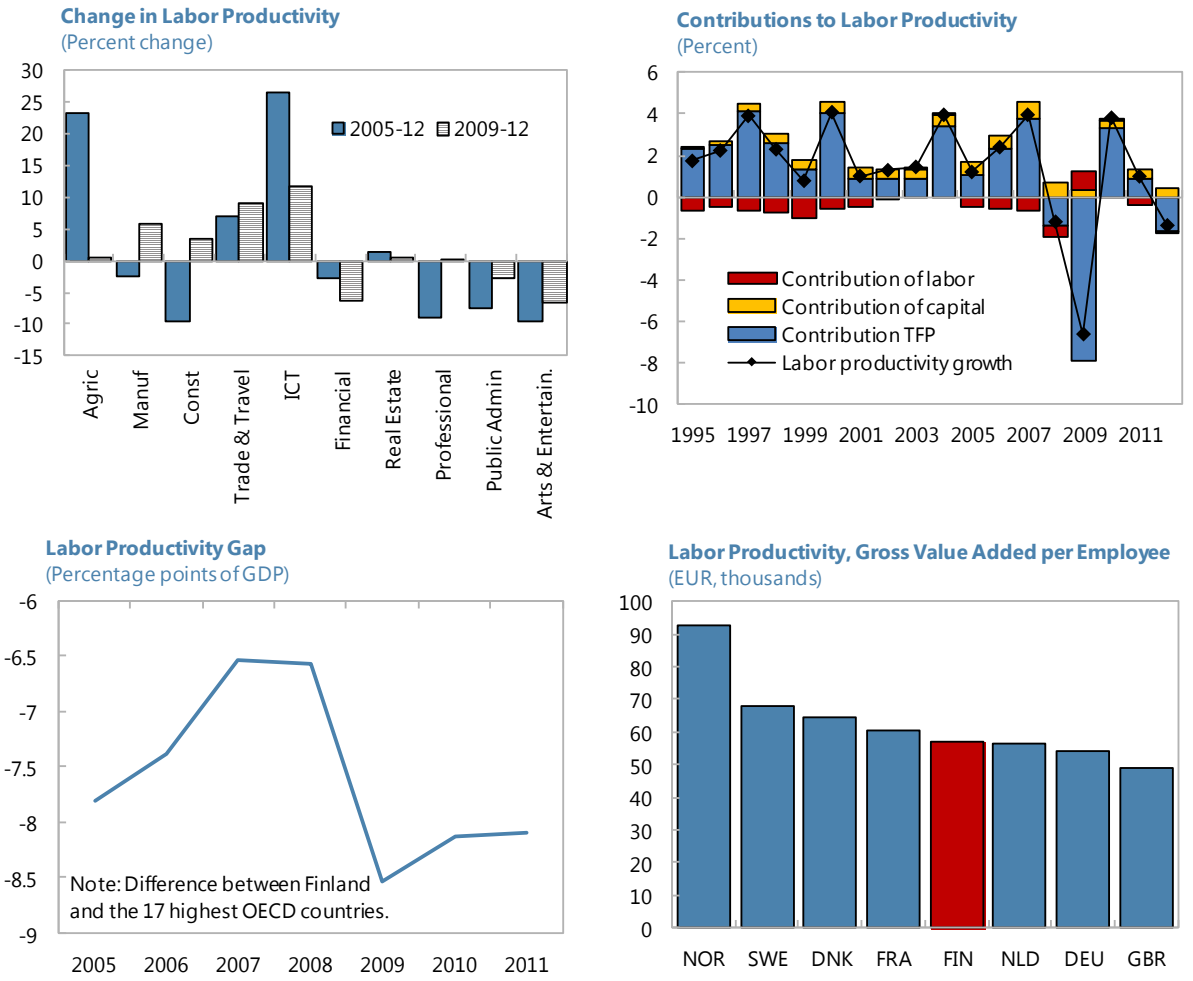

Sources: OECD and Fund staff calculations.

[5] At about 40 percent, the employment rate for those aged 60-64 is broadly in line with other OECD countries. However, only about 12 percent of the population aged 65-69 is working, compared to the OECD average of about 23 percent (numbers as of 2011) (OECD, 2013).

9. **Recently, labor productivity has slowed, reflecting mostly weaker TFP growth** (Figure 1). Between 1991 and 2008, Finland closed the gap to the best performing OECD countries, mirroring strong TFP developments and a shift in investment from physical capital towards R&D. However, the combination of the Great Recession and the decreasing importance of Nokia and the ICT sector has significantly damped productivity growth, and Finland is now lagging behind many European economies.

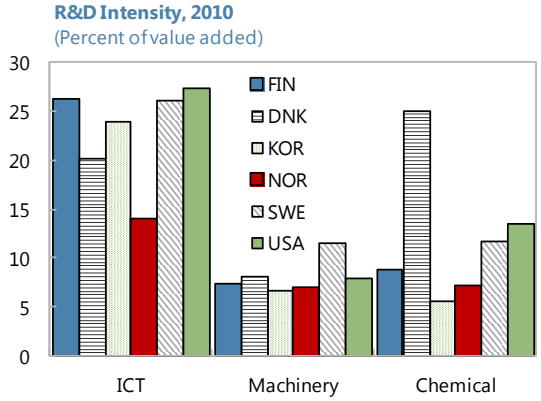
**Figure 1. Labor Productivity**

(Percent change; Percent; Percentage points of GDP; EUR, thousands)

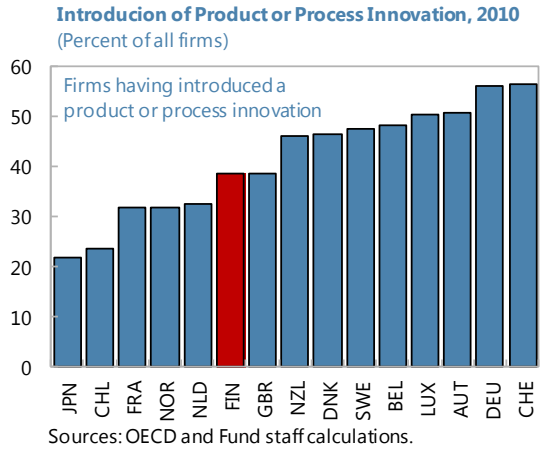



Sources: European Commission, Eurostat, Haver Analytics, OECD, Statistics Finland, and Fund staff calculations.

10. **While R&D spending remains high, it may not be as effective as it could be.** Finland continues to have relatively high private and public R&D intensity compared to other OECD economies, with aggregate R&D spending of about 4 percent of GDP in 2010. At the same time, these investments may not be effective, considering firms' measurable innovation performance remains in line with peers.[6] For example, innovation activity related to production and process innovation has declined and the number of patents granted to Finnish firms has been contracting since 2008.[7] In part, the shrinking patent activity is a reflection of the diminishing role of Finland's ICT industry in recent years, with Nokia's market share in the global mobile handset market falling from 36 to 17 percent between the third quarters of 2010 and 2011 (Gartner, 2011). Another factor could be a lack of innovation and entrepreneurship outside the core ICT cluster and among SMEs. Based on recent surveys, the number of SMEs innovating in-house or in collaboration with others shrunk by about 5 and 8 percent, respectively, from 2012 to 2013 (Figure 2).[8]



Sources: OECD and Fund staff calculations.



Sources: OECD and Fund staff calculations.

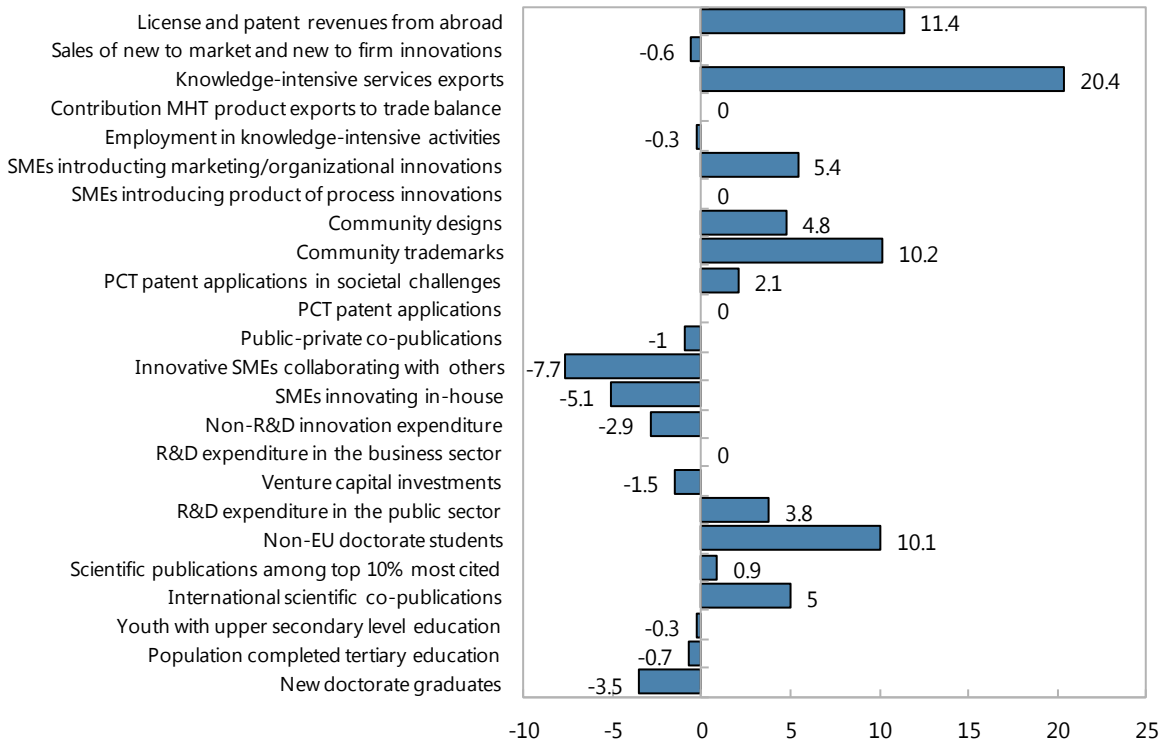
## D. Productivity in the Service and Network Sectors

11. **Further deregulating Finland's retail sector promises to generate additional productivity gains**. Despite recent progress, regulatory barriers are still among the highest in the EU. This includes zoning and planning restrictions, which, in addition to restricting entry, keep down the size of retail stores as existing locations cannot be expanded and large size shops can only be built outside of the city center. The passing of the 2011 Competition Act tightens merger control and is expected to lower market concentration. However, as of now, market concentration remains high, which likely curtails activity and contributes to higher prices. Restrictive legislation on opening hours further holds back retail productivity.

[6] For additional details please see OECD (2012) http://www.oecd.org/economy/surveys/49564001.pdf
[7] For additional information see Selected Issues Paper, Chapter III, *Finland: Stylized Facts on Innovation and Growth*.
[8] Innovation Union Scoreboard 2013, http://ec.europa.eu/enterprise/policies/innovation/files/ius-2013_en.pdf

## Figure 2. Innovation Union Scorecard, 2013

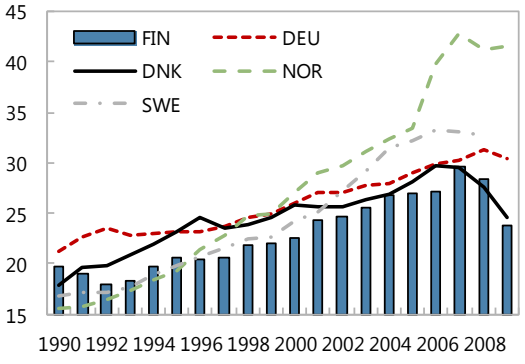
(Annual average growth)




Sources: European Commission Innovation Union Scorecard 2013 and Fund staff calculations.

**Wholesale and Retail Trade Productivity**

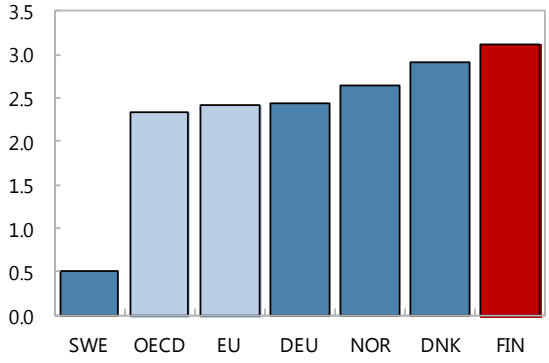
(Value added per hour)




Sources: OECD and Fund staff calculations.

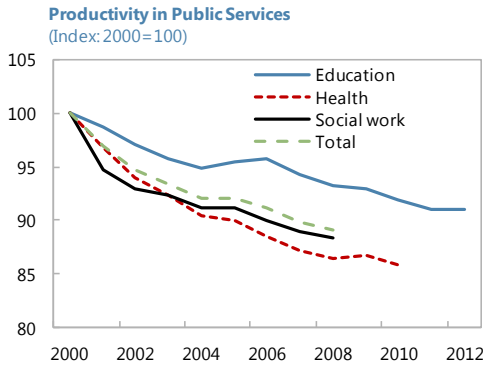
**Regulation in Retail Trade, 2008**

(Scale from 0 (least restrictions) to 6 (most restrictions))




Sources: OECD and Fund staff calculations.

12. **Productivity could also be bolstered by improvements in the provision of public services**. Since 2000, the efficiency of public services has deteriorated. Many of these services are provided at the local level, and there are indications that the fragmentation of municipalities and municipal services is a key factor in this regard. Individual municipalities are often small and serve sparsely populated areas, which prevents them from achieving economies of scale and reduces their ability to hire qualified and adequately skilled employees. The problem is particularly difficult in the area of public healthcare. Faced with an aging population, municipalities are increasingly hard-pressed to ensure equal, high-quality access to health and long-term care for all citizens.

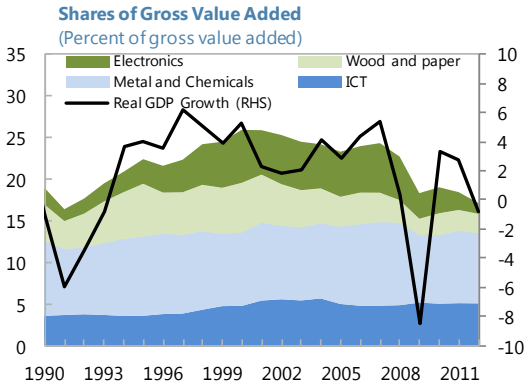



Sources: Statistics Finland Statistics on Local Government Productivity and Fund staff calculations.

13. **There is also some scope for further lowering regulatory boundaries in network industries**. Recent reforms have aided competition, but less so than in other OECD economies. Specifically, productivity remains low in sectors where the government is a dominant player such as electricity, gas, and water distribution as well as transport, storage and communication. Further opening these sectors up to private provision, and thus more competition, could lead to significant productivity gains.

## E. Adjustment

14. **Is Finland ready for adjustment?** At the peak of the ICT boom, Nokia's business accounted for nearly 4 percent of Finnish GDP, and the ICT sector employed roughly 2.3 percent of the Finnish labor force in 2010. The cooling-off of the ICT boom brings the need to reallocate factors of production—especially the shrinking workforce of the Nokia mobile phone cluster. While Nokia will continue to produce and export network services, the sale of its mobile telecommunications business to Microsoft (to conclude in 2014) could potentially affect 4,700 ex-Nokia employees in Finland, or about 0.2 percent of the labor force. Another structural challenge is the decline of the wood and pulp industry resulting from the contraction in the global demand for paper. The question therefore is whether Finland has an environment conducive to the required adjustment that will continue to foster innovation and entrepreneurship outside past patterns and would help the economy to rebound.




Sources: Statistics Finland and Fund staff calculations.

15. **Surveys suggest that important aspects of the business environment could still be improved** (Figure 3). The World Bank's Doing Business Indicators (DBI) ranks Finland 12$^{th}$ out of 189

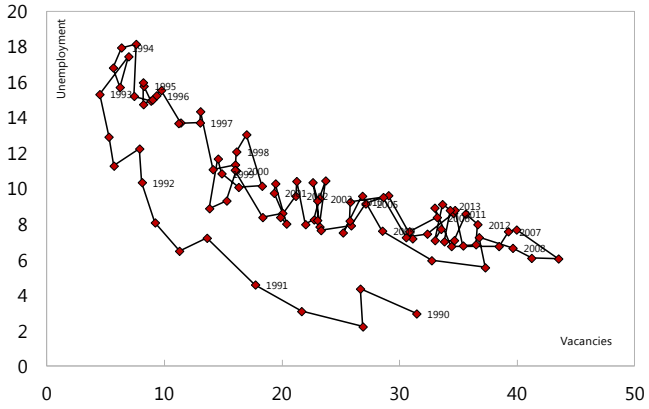
economies in 2014 and the World Economic Forum's Global Competitiveness Index (GCI) ranks the country 3rd in terms of overall competitiveness. However, Finland receives significantly lower grades in areas that would seem to matter most as the economy adjusts to its structural challenges. In particular, DBI ranks it only 55th and 42nd on starting a business and getting credit, respectively. There are also indications that not all firms see the climate for innovation as optimal. Furthermore, access to financing as well as insufficient capacity to innovate, are among the top most problematic factors for doing business listed by the respondents of the GCI survey.

16. **While there are no indications of decreasing matching efficiency, lowering EPL and encouraging job search would also help the ability to adjust**. After the outward shift of the Beveridge curve in the early 1990s, vacancy-unemployment movements seem to be largely along the (new) curve with no further structural shifts during the recent crisis episode, suggesting a broadly unchanged pattern of matching efficiency. At the same time, Finland is farther away from the spirit of "flexicurity" than other economies undergoing structural change, such as Ireland (see Section B). Specifically, the fact that unemployment insurance replacement rates are high and benefits are paid for relatively long periods (550 days) could mean that, in the absence of proper monitoring and other incentives, job searches might be less intensive than otherwise. In addition, high levels of EPL tend to slow down structural adjustment.

17. **Active labor market policies (ALMP) and better enforcement of existing activation rules can aid the adjustment** (Figure 4). Earlier intervention to get people back to work would help raise the labor participation rate. Currently, 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, 2010b). This means lower incentives for the unemployed to search for

**Finland Beveridge Curve**

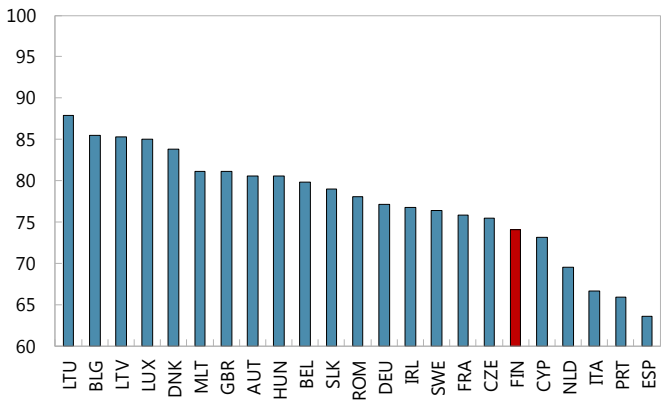
(X-axis: Thousands; Y-axis: Percent of labor force)




Sources: Haver Analytics, Statistics Finland and Fund staff calculations.

**Permanent Contracts, 2012**

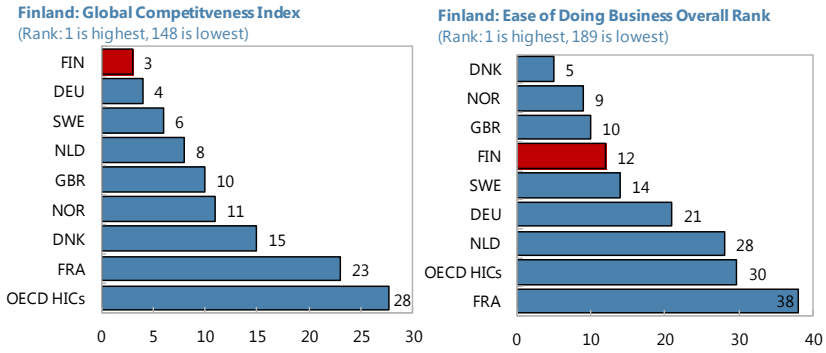
(Percent of total employment)

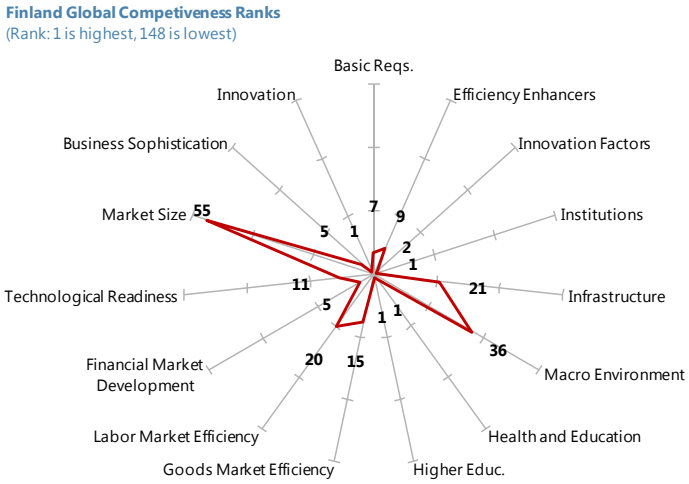


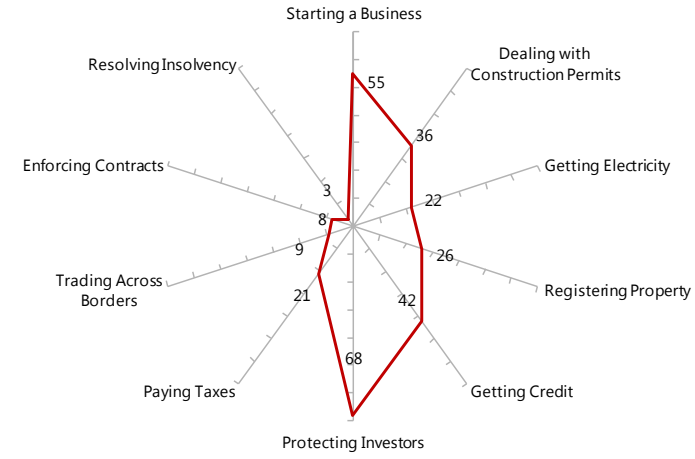

Sources: EUROSTAT and Fund staff calculations.

## Figure 3. Global Competitiveness Index and Doing Business Indicators

(Ranking)



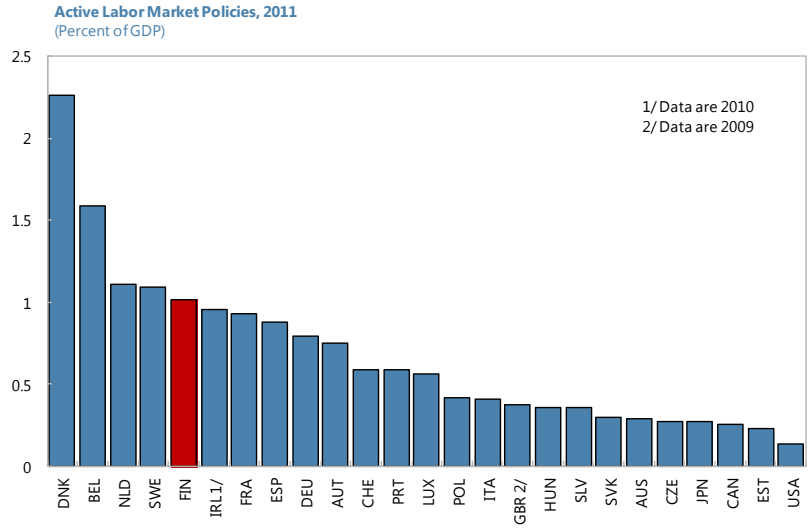



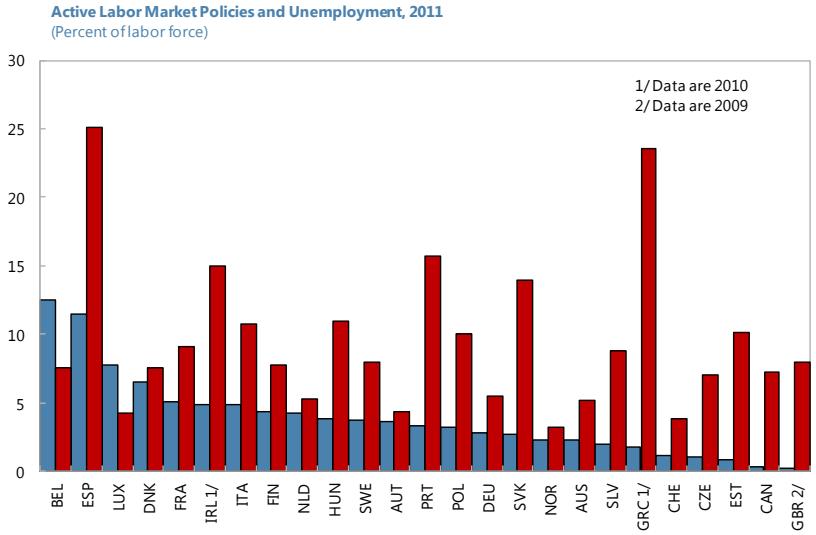

Sources: World Economic Forum GCI 2013, World Bank Doing Business 2014, and Fund staff calculations.

jobs early. The authorities have taken steps in 2010 towards earlier activation, including by removing the age limit on the compulsory activation requirement, demanding individualized work plans, and guaranteeing work or training for young workers after an unemployment spell of three month. Given the mixed evidence on the effectiveness of different ALMP–with training and matching programs generally considered more effective than other measures–and their fiscal cost (Estevao, 2007), continued monitoring of their effectiveness remains crucial.

**Figure 4. Active Labor Market Policies**

(Percent of GDP and Percent of Labor Force, respectively)



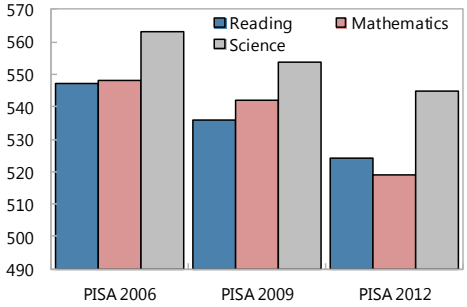




Sources: OECD and Fund staff calculations.

18. **The Finnish workforce is highly skilled, and there is little evidence of qualification mismatches**. About 87 percent of the population has completed education that exceeds upper secondary level, putting Finland in the top tier of OCED economies. Survey results point to a small shortage of low-skilled laborers and a small oversupply of laborers with upper-secondary qualification, while jobs and skills requiring more than upper secondary education look on par.[9]

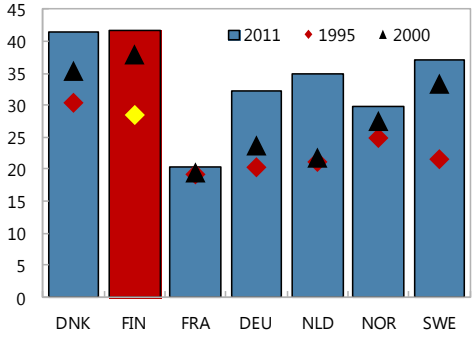
19. **That said, there is room for improving the education system in certain areas**. Finnish secondary school students score high and above the OECD average, but results have been deteriorating in recent years across all measured categories (reading, mathematics, and science). And even though universities rank higher than the OECD along most dimensions, their performance is lagging behind Nordic neighbors as well as European top performers. An important factor is the relatively long time it takes for students to enter the labor force, which can be linked, among other things, to cumbersome entrance procedures and requirements. In addition, tertiary study times are long, and only about 45 percent of the students complete their degrees in the targeted time (OECD, 2012).

**Finland Education GPS**
(OECD PISA Scores)




Sources: OECD PISA and Fund staff calculations.

**Enrollment Rates 20-29 Year Olds**
(Percent of population ages 20-29)




Sources: OECD Economic Survey Finland and Fund staff calculations.

20. **In principle, a downsizing ICT cluster should provide the economy with a well-educated and experienced workforce ready to fuel growth in other sectors**. Even though there are indications that many start-ups have been founded by ex-Nokia staff in the past, recent developments are more difficult to interpret. Between 1989 and 1994, about two-thirds of employees leaving Nokia staff joined a start-up (i.e. a firm less than two years old).[10] Between 2008 and 2010, this share dropped to about 15 percent as about half of ex-Nokia employees were moving to more established firms (11 years old or more), suggesting that the shift towards innovative activity in young startups may have lost pace.

## F. Conclusion

21. **Finland can grow faster than the current outlook indicates.** Scope for action exists along a number of dimensions, specifically:

[9] World Economic Forum, "Matching Skills and Labor Market Needs. Building Social Partnerships for Better Skills and Better Jobs" Davos-Klosters, Switzerland, 22-25 January.
[10] See Selected Issues Paper, Chapter III, *Finland: Stylized Facts on Innovation and Growth*.

- *Strengthening labor market performance*. Wage growth in line with productivity—a feat Finland's social partners have achieved in the past—will help Finnish exports regain lost competitiveness. Labor market participation can be increased, including by improved monitoring of search and training requirements, an earlier phase-out of UI benefits and/or reduction in replacement rates, effectiveness-tested ALMP, and measures to improve the participation of older workers (e.g., through further pension reform).

- *Improving TFP growth and productivity*. Raising labor productivity is at least as crucial for re-aligning ULC with global market conditions, which requires steps to adjust R&D policies to the post-Nokia era, where innovation and growth might be found in smaller firms outside the existing ICT cluster (e.g., consideration could be given to strengthen tax incentives at the expense of R&D subsidies). At the same time, regulatory reform can facilitate the business conditions for start-ups, and service sector reforms would improve competitiveness and productivity, especially in retail. There is also room to reverse the negative productivity trend in the public sector, where municipality reforms promise to enable economies of scale in the provision of healthcare, among other things.

- *Facilitating adjustment*. Measures that facilitate job change (including, by improving search incentives and training) will help Finland make the most of its capable and highly-skilled workforce. Shortening the duration of higher education would contribute to the flexibility of labor supply by allowing quicker adjustment to changing sectoral labor demand. In addition, employment protection should not become an impediment to adjustment—for example in the context of local government reform.

22. **The government's reform program promises to address many of these issues**. The government has agreed on an ambitious agenda outlined in its "Decision on Implementing the Structural Policy Program" from November 2013 (see Table 1 in the Appendix). Among the specific measures with clear time-tables, it includes elements of labor market reform (e.g., initiatives to increase labor market participation of older workers and the obligation of unemployed to take on jobs), service and product market reform (e.g., shopping hours and competition policy), and municipalities reform (e.g., streamlining local government in the Helsinki area). Other elements of the program are still awaiting specification, including possible changes to ALMP such as training programs, and the details of pension reforms.

23. **The effectiveness of the reform program is hard to gauge** The government program does not provide estimates of the growth impact of reforms, but does provide some numbers regarding the expected impact that broad areas of reform (in their nomenclature) will have on the fiscal sustainability gap, estimated by the government to be 4.7 percent of GDP (see text table). In many cases, there is insufficient detail in order to make an independent assessment of the claimed impact of many measures. However, the claimed impact of the specified reforms may be optimistic. The simulation results in Chapter IV suggest that a vigorous implementation of reforms, starting with those in the current government program and going further over time, could feasibly close the

sustainability gap. This would occur directly through fiscal savings (e.g., expenditure control and reductions) and indirectly through higher growth over the medium-term (relative to the baseline).

**Summary of the Government Structural Policy Program**

| Reform Areas | Possible Sustainability Gap Impact (percentage points) | Preliminary Staff View |
|---|---|---|
| Management of local govt. finances | -1.0 | Feasible if further measures taken beyond 2017 |
| Productivity of public services | -1.4 | More details needed |
| Working careers and labor supply | -1.4 | More details needed, depends largely on pension reforms TBD in 2015 |
| Structural unemployment | -0.3 | More details needed |
| Output potential of the economy | -0.6 | Feasible if reforms are implemented expeditiously & follwed by more reforms |
| *Total* | *-4.7* | Current plans are vague on many measures and leave many details TBD |

Sources: Finland *Government Decision on Implementing the Structural Policy Program (2013)* and Fund staff assessment.

Notes: Reform areas and possible impact numbers are taken from the government's program.

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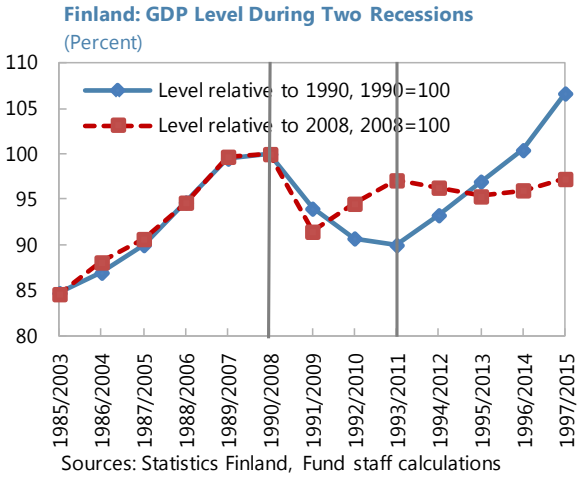
# STYLIZED FACTS ON INNOVATION AND GROWTH[1]

*Total Factor Productivity (TFP) has been a prime driver of Finnish growth, but it has contracted recently. The low or negative TFP growth since the financial crisis has coincided with a slowdown in innovation and patenting activity—in part explained by Nokia's decline. This paper discusses various policy challenges the government is facing in promoting innovation, and presents some evidence on the transformation taking place in the Finnish innovation space.*

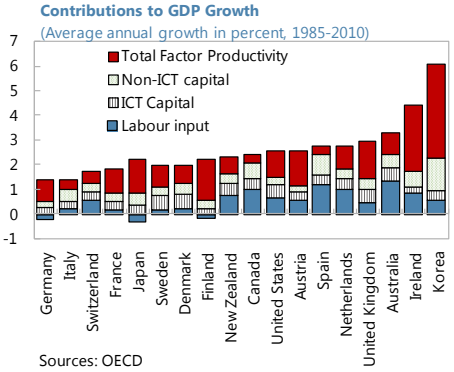
## A. Introduction

1. **The strong Finnish recovery following the sharp collapse in output in 2009 is losing steam.** Though Finland experienced a sharp contraction in 2009, the economy responded with a strong recovery in 2010-2011. However, the recovery has lost steam since and now clearly falls short of the pick-up in the mid-1990s, when Finland emerged strongly from the banking crisis on the back of significant structural reforms.

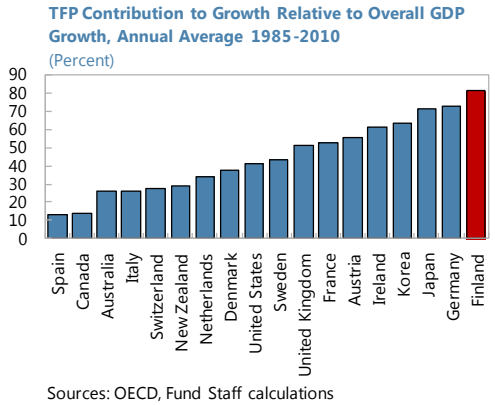


Sources: Statistics Finland, Fund staff calculations

2. **In the past Total Factor Productivity (TFP) has been a prime driver of Finnish growth.** A decomposition of contributions to GDP growth suggests that total factor productivity played a key role in Finland, when compared to other advanced countries, while labor input had negative contributions, partly reflecting an ageing population with relatively low net inflows of migrants. The share of total factor productivity relative to average annual growth over the period 1985-2010 was the highest in OECD at 81.9 percent.



Sources: OECD



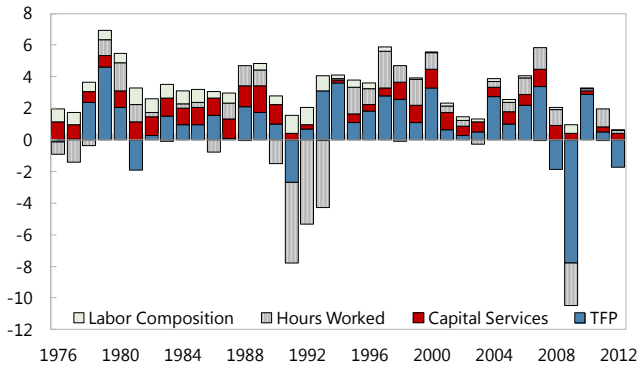
Sources: OECD, Fund Staff calculations

[1] Prepared by Ruchir Agarwal.

3. **Low or even negative TFP growth is behind the poor growth performance since 2008.** The recent negative contribution of TFP is unusual in the recent history of Finland. Over the period 1977-2007, Finland only experienced a negative contribution of TFP to value added growth twice. This suggests that an understanding of the recent contraction in TFP could add to an understanding of Finland's future growth prospects.

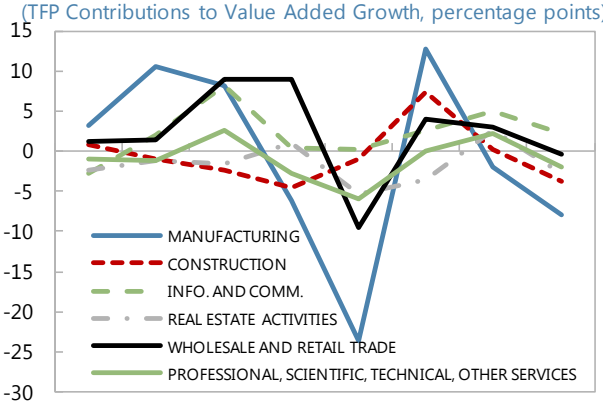
4. **In 2011-2012, TFP growth contracted in several key industries—manufacturing, construction, information and communication and real estate.** The industry-level analysis suggests that the TFP contraction is not limited to a single industry (or firm), but a broader phenomenon. Nevertheless, the contraction in some key industries such as manufacturing and construction is noticeably large.

**Growth Accounting: Growth Rate of Value Added Volume**
(Contributions of sub-component to value added growth, percentage points)




Sources: EU KLEMS and Fund staff calculations.
Notes: This growth accounting is for all industries combined.

**Growth Rate of Value Added Volume: TFP, Key Industries**
(TFP Contributions to Value Added Growth, percentage points)

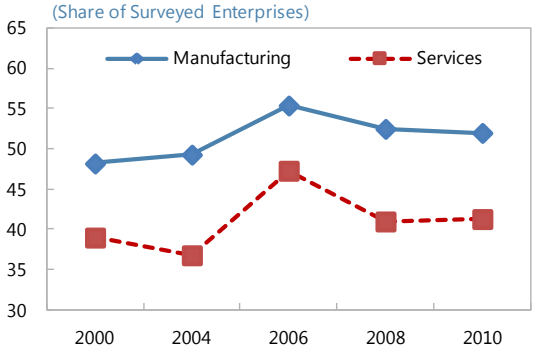



Sources: EU KLEMS, Fund staff calculations

## B. Innovation Activity and Patenting

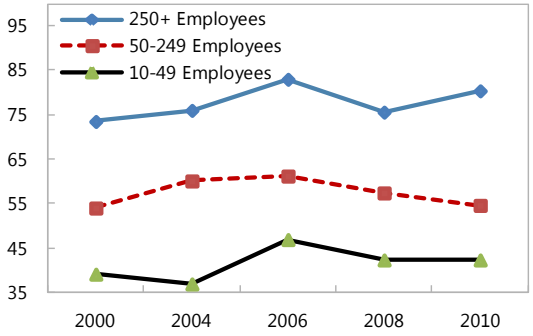
5. **Firms reported that innovation activity also declined since 2008 across industries—manufacturing and services—and across firm sizes.** Innovation activity related to goods, services and processes was more common in manufacturing enterprises than in service enterprises, but both of these industries reported a reduction in the latest two survey rounds. Relative to 2006, reported innovation activity fell in both manufacturing and services firms by about 5 percentage points. It

**Prevalence of Reported Innovation Activity in Finnish Firms, Categorized by Industry**
(Share of Surveyed Enterprises)




Sources: Statistics Finland, Fund staff calculations

**Prevalence of Reported Innovation Activity in Finnish Firms, Categorized by Firm Size**
(Share of Surveyed Enterprises)

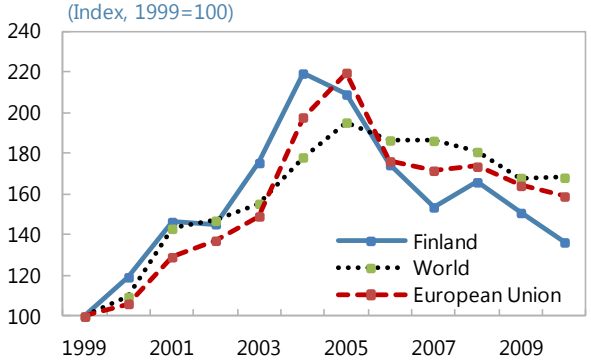



Sources: Statistics Finland, Fund staff calculations

also appears that while the reduction was prevalent across firm sizes, small and medium sized firms were relatively more affected.

6. **Deviating from the European Union trend, patent grants to Finnish innovators have been contracting since 2007.** Applying for a patent makes an invention public, but at the same time gives it protection. A count of patents is one measure of a country's inventive activity and also demonstrates its capacity to exploit knowledge and translate it into potential economic gains. In this context, indicators based on patent statistics are widely used to assess the inventive and innovative performance of a country. One problem with patent data, however, is that there is often a large heterogeneity in patent value. Therefore, researchers often study patent applications in foreign jurisdictions (e.g., the United States) since there is an additional fixed cost associated with making such applications, thereby partially refining the set of patents under study. Finland's growth in patent grants at the U.S. Patent and Trademark Office (USPTO) have closely tracked or outpaced the European Union average since 2000. However, since 2007 this relationship appears to have broken down with patent grants to Finnish innovators contracting faster than the European Union average.

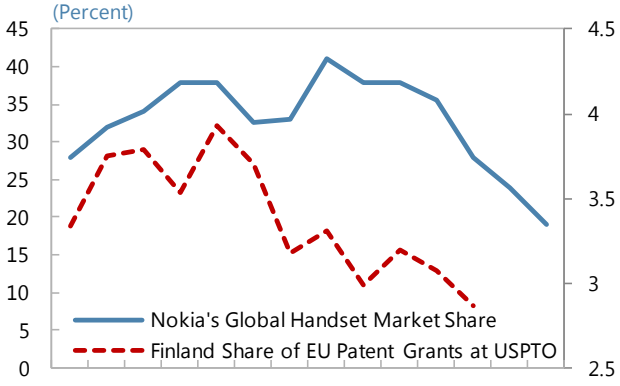
**Patents Grants at the U.S. Patent and Trademark Office, Relative to 1999**
(Index, 1999=100)




Sources and Notes: OECD, Fund staff calculations. The reference date used is the application date.

7. **The decline in Nokia's share of the mobile handset market may in part explain the decline in patenting activity.** Nokia is an important player in Finnish innovation. In 2011 it made 27 percent of Finnish patent applications.[2] Correspondingly, the decline in its share of the mobile handset market, and the subsequent sell-off of the devices and services business to Microsoft, may in part explain the decline in patenting activity in Finland. However, this relationship is not particularly strong (see chart), and cannot by itself explain the observed decline in patenting activity.

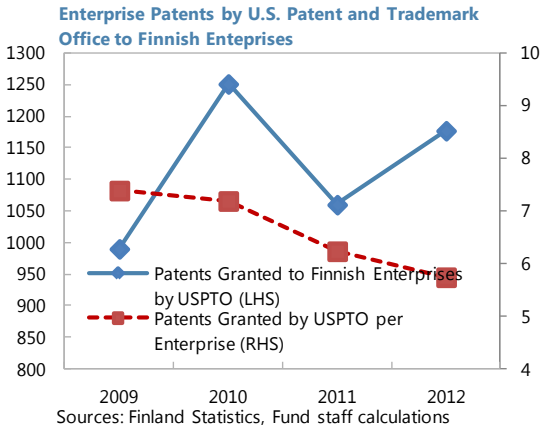
**Nokia's Handset Market and Finnish Patents**
(Percent)




Sources: OECD, Pajarinen and Rouvinen (2013) in ETLA Reports No 10, Fund staff calculations

[2] The Economist, August 25th, 2012, "The Nokia Effect."

8. **Recent patent data suggests that enterprise patenting activity remains subdued, while innovation activity is becoming less concentrated.** The ratio of patents granted to Finnish enterprises by USPTO divided by the number of enterprises receiving the patents is one measure of concentration of innovation activity. Since the financial crisis there has been an absence of a strong growth in patenting activity by enterprises, while the patenting activity has become less concentrated in the hands of fewer enterprises. Though this might be a consequence of a favorable transformation in the innovation system in the post-Nokia world, it might also be indicative of a falling efficiency in the patenting system (Aghion and Howitt, 2006).



Sources: Finland Statistics, Fund staff calculations

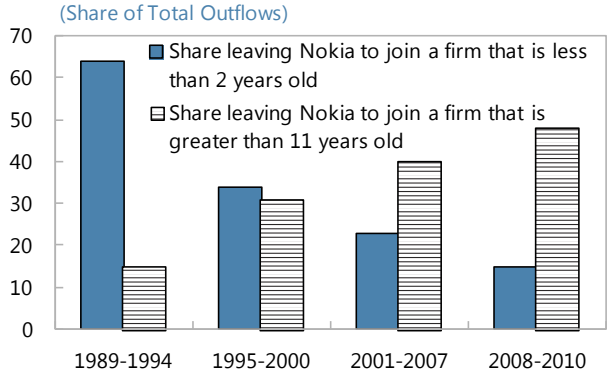
## C. Outlook

9. **Given complementarities in innovation activity, Nokia's decline may hurt the aggregate innovative activity in the system.** A strand of academic research suggests that the presence of a large, local, R&D-intensive firm—an "anchor tenant"—enhances the regional innovation system, by stimulating local research and innovation by universities and other firms (Agrawal and Cockburn, 2003). The classic example of an anchor tenant is the large department store in a retail shopping mall that creates demand externalities for the other shops. In the context of regional innovation, a large firm heavily engaged in R&D, by virtue of participation in local markets for technology and specialized inputs, creates significant externalities for smaller innovative firms. These externalities may facilitate entry by smaller firms seeking to utilize university research, lower their costs, and improve their prospects for future profitability and growth. Such an active presence of a fringe of smaller firms increases the impact of vertical knowledge spillovers in the local economy, beyond the direct effect of the anchor tenant. Over the last two decades Nokia served as such an anchor tenant, by being a driver of innovation activity.

10. **However, with Nokia destined to play a less important role in the future, innovation activity will likely come from younger and smaller firms**. Since Nokia's decline, no clear alternate anchor tenant has emerged. While this may be adversely affecting the innovative activity in the system, the implication is that others will have to step up. Indeed, there is an ongoing discussion in the academic literature suggesting that even though larger firms offer economies in scale in innovation, these tend to be more incremental and less disruptive in nature. In contrast, smaller and younger firms might be the ones opening new fields of business—not unlike Nokia in the 1990s (see, for example, Reid and Nightingale (eds.), 2011, and Cincera and Veugelers, 2013).

11. **In principle, a reduction in Nokia's R&D activity in Finland could open up opportunities for other—but this may take time.** Employees that have left Nokia recently have mostly moved to older firms suggesting that the spillovers from Nokia's decline may not lead to a burst of startup activity. Utilizing a Finnish linked employer-employee database (FLEED), Pajarinen and Rouvinen (2013) find that about 15 percent of employees leaving Nokia have joined a firm that is less than 2 years old (conditional on remaining in private sector employment). By contrast this number was close to 64 percent between 1989-1994. In 2008-2010, close to 48 percent of the employees leaving Nokia joined a firm that is greater than 11 years old, suggesting an absence of a great shift towards innovative activity in young startups. We may observe a reversal of trend since 2010, but will have to wait for newer data to become available to confirm this conjecture.

**Outflows of Nokia Employees (conditional on remaining in private sector employment)**
(Share of Total Outflows)

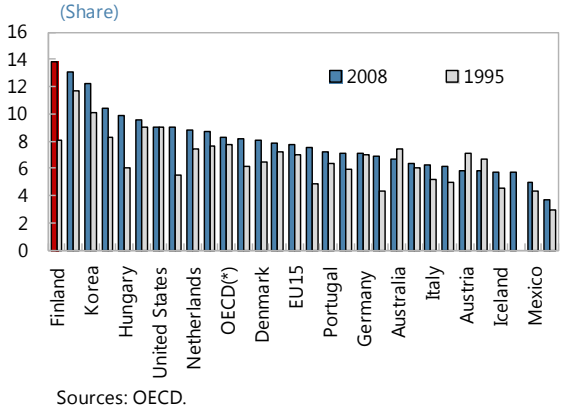



Sources and Notes: OECD, Pajarinen and Rouvinen (2013) in ETLA Reports No 10, Finland Statistics.

## D. Conclusion

12. **If the decline in TFP and innovation activity are part of structural changes in the Finnish economy—as the preliminary evidence indicates—a strong policy response will be needed to boost potential economic growth.** The government has launched various programs with the aim of enhancing economic growth through investments in early-stage technology companies. The 2014 Spring Budget Review states that the combined capital of such growth funding programs (government support plus investment received through private funding) may increase to around EUR 1 billion (or about 0.5 percent of GDP). While the strategy to target government programs to support small firms, innovative activity, and entrepreneurship may be well-placed, the absence of evidence of strong startup and patenting activity suggests that further streamlining the programs may prove fruitful. Also, since several industries have experienced a contraction in TFP and a decline in reported innovation activity, it is likely that a comprehensive set of policies may be required—for example, by making more effective use of R&D tax credits, better aligning research grants with performance, and improving the design of pre-seed and seed stage policy schemes (Luukkonen, 2010). This may also be an opportunity to reduce the reliance of the economy on the ICT sector and stimulate innovation in other sectors as well. As the cross-country experience suggests, creating a successful innovation

**ICT Value Added in the Business Sector Value Added**
(Share)




Sources: OECD.

policy framework remains a highly challenging task, and further refinements should focus on both the design and the effective implementation of programs (Lerner, 2009).

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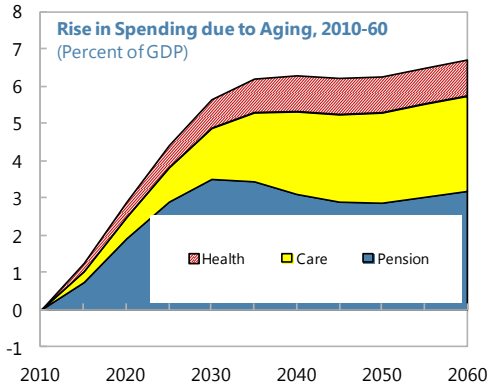
# FISCAL POLICY: PROMOTING GROWTH AND ENSURING SUSTAINABILITY[1]

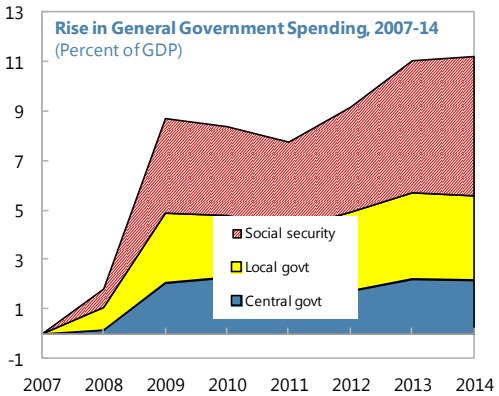
*Finland's public finances are facing pressure from two related problems: slowing trend growth and a rapidly aging population. The need for adjustment is complicated by a weak economy, which would be further harmed by a rapid tightening. Simulations suggest that structural reforms could offset the fiscal adjustment's drag on growth, especially product market reforms. Pension reforms would also be beneficial on both the fiscal sustainability and growth fronts.*

## A. Introduction

1. **Finland's public finances are facing pressure from two related problems: slowing trend growth and a rapidly aging population.** Low productivity growth and structural change (e.g., Nokia's break-up) are contributing to the recent decline in trend growth, but the rapid aging of the population is compounding the problem, as a growing share of the population joins the ranks of the retired. The fiscal pressure comes on two fronts. First slower trend growth means that nominal revenue will grow more slowly than in the past, necessitating that expenditure growth be reined in accordingly. At the same time, the demographic trends are starting to put pressure on age-related spending such as pensions and healthcare and long-term care for the elderly, which are set to rise substantially as a share of GDP over the next few decades—from 20.6 percent of GDP in 2010 to 26.2 percent in 2030 (EC, 2012). Age related spending pressures combined with a rapid and sustained increase in spending since 2007, driven mainly by local government and social security spending, have given rise to a sustainability gap estimated at roughly 4.7 percent of GDP. This means the government needs to implement a structural fiscal adjustment worth 4.7 percent of GDP over a 10-year period in order to maintain public debt sustainability over the long run (see Box 1). Delaying the start of the adjustment by 10 years would raise the size of the total adjustment needed by about ½ percentage point of GDP.




Sources: DG ECFIN 2012 Aging Report (EC, 2012) and Fund staff calculations.




Sources: Finnish authorities and Fund staff calculations.

[1] Prepared by Nathaniel Arnold.

2. **The need for adjustment creates a growth trade-off in the short term.** The sustainability gap needs to be addressed. At the same time, the economy has been in recession for two years and additional fiscal adjustment efforts beyond those already planned could undermine the modest recovery forecast for 2014. This is further complicated by the EU fiscal rules (incorporated in national legislation) that Finland is obliged to satisfy. In particular, there is a risk that the European Commission will call for further fiscal adjustment this year. This is based on its estimates of a deteriorating structural fiscal balance, for which the EU's Fiscal Compact sets a medium term objective of -0.5 percent of potential GDP, and that the public debt-to-GDP is projected to approach the 60 percent level in 2014 (see Box 2).

3. **The correct timing and composition of fiscal adjustment will be critical to both a successful economic recovery today and a sustainable fiscal position in the long run.** To sustain the recovery, in the short run the government should avoid enacting additional fiscal adjustment measures. A credible medium-term adjustment plan that ramps up the pace of adjustment only after the economy's return to growth is firmly entrenched would provide the right balance between shot-run growth concerns and longer-run fiscal sustainability concerns. Other policy measures could buttress the fiscal adjustment plans and offset the declining trend growth and labor force participation of older workers, particularly structural reforms that raise productivity and employment over the medium-term.

4. **Simulations illustrate how a balanced approach might look, but also indicates the inherent uncertainty in such exercises.** In the fiscal adjustment scenario, this stems from uncertainty regarding the size of the fiscal multiplier. In the structural reforms simulations, it stems from uncertainty about both the structural policy gap and how quickly the economy will react to key reforms. In addition, the potential policy options are outlined and compared to the government's current plans.

## B. Fiscal Adjustment Simulations

5. **The baseline projections do not reflect the recently announced government spending limits decision.** As a result, the baseline public debt-to-GDP ratio is projected to continue rising through 2019. The authorities recognize the need for fiscal adjustment over the medium term to put the public debt ratio on a downward trajectory and to close the fiscal sustainability gap, which their spending limits decision is geared towards.

6. **We simulate six scenarios to illustrate the impact of a faster or slower fiscal adjustment.** In each scenario, by 2019 there is a cumulative structural reduction in primary expenditures of 1.25 percent of GDP relative to the baseline, which is broadly similar in size

**Primary Expenditure Reduction Paths**
(*in percent of of GDP*)

| | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| Phased-in | 0.20 | 0.20 | 0.25 | 0.30 | 0.30 |
| Frontloaded | 0.40 | 0.30 | 0.25 | 0.20 | 0.10 |

to the government's recently announced adjustment plan.[2] Focusing the adjustment scenarios on primary expenditure reductions is consistent with the expenditure ceiling based fiscal framework in Finland. The simulations compare two adjustment paths, a "frontloaded" path and a "phased-in" path, by which the total adjustment can be achieved. The frontloaded adjustment path implements a 0.4 percent of GDP structural spending cut in 2015, with the size of cuts declining each year to a 0.1 percent of GDP spending cut in 2019.[3] The phased-in adjustment path implements smaller spending cuts in 2015–16 and gradually ramps up the cuts, with a 0.25 percent of GDP reduction in 2017, followed by a 0.3 percent of GDP cut in both 2018 and 2019.

7. **The impacts of each adjustment path are simulated for different sets of fiscal multipliers that vary with the state of the economy.** Estimates of spending multipliers for Finland are generally between 0.5 and 0.7 (OECD, 2010a, Barrell and others, 2012), based on pre-crisis data and reflecting, among other things (see text table), the fact that Finland is a small open economy, which tends to lower the impact of fiscal expansion or contraction through the trade channel. However, multipliers are likely to be larger than normal in the current context (IMF, 2013a; IMF, 2013b), as nominal monetary policy interest rates are at the zero lower bound (ZLB) and multipliers tend to be larger when the output gap is large and negative (Auerbach and Gorodnichenko, 2012, Battini and others, 2012, Baum and others, 2012), as is the case in Finland. These offsetting factors create uncertainty about the size of the multiplier. Given that, we simulate the two adjustment paths with a range of multipliers:

**Multiplier Uncertainty**

| |
|---|
| **Factors favoring a higher multiplier** |
| Zero lower bound |
| Negative output gap |
| Expenditure based adj. (in simulation) |
| **Factors favoring a lower multiplier** |
| Small open economy |
| Sizable automatic stabilizers |

Sources: IMF (2013a)

- The "central" multiplier *M* is set at 1, 0.75, and 0.5, in the high, medium, and low multiplier scenarios, respectively.

- We vary the multiplier in each year with the output gap, using the "central" multiplier if the output gap is between -1 and -2 percent of potential GDP, set it 0.25 lower if the output gap is greater than -1 percent, or set it 0.25 higher if the output gap is below -2 percent.

**Multipliers Vary with Output Gap**

| Output Gap (*OG*) | High | Medium | Low |
|---|---|---|---|
| ***OG* < *-2*** | 1.25 | 1 | 0.75 |
| ***-2* < *OG* < *-1*** | **1** | **0.75** | **0.5** |
| ***OG* > *-1*** | 0.75 | 0.5 | 0.25 |

[2] No revenue adjustment occurs, so revenue is assumed to fluctuate with GDP (i.e. revenue elasticity of 1). This differs from the government's adjustment plans announced recently, which include a mix of tax hikes revenue and spending cuts. For the purposes of these illustrative simulations, this difference is not crucial, but in reality the composition of the adjustment may influence the impact on output.

[3] The size and timing of the frontloaded path is roughly along the lines of the government's recently announced spending limits decision that lays out their proposed medium term adjustment, but does not include any mitigating factors, such as how the composition affects output or the government's proposed "growth package."

8. **We use a modified version of the framework developed by Abbas and others (2013) to simulate the effects of the two adjustment paths on output and public debt dynamics.**[4] In the framework, fiscal adjustment efforts (in percent of GDP) have an impact on growth, with the size of the growth impact depending on the size of the expenditure reduction, the size of the multiplier, and the multiplier's persistence (an exogenous parameter than determines how long it takes output to return to potential). Thus, the total impact on growth in year t includes the impact of current fiscal adjustment efforts, as well as past fiscal adjustment efforts and their marginal multipliers in period t. Hence, the size and phasing of fiscal adjustment efforts (i.e. the change in the structural primary balance) matter for determining the size of deviations in output from the baseline. This in turn affects the degree of actual improvement in the headline primary balance and debt-to-GDP ratio. The improvement in the structural primary balance will not be fully reflected in the headline primary balance, as nominal revenue levels will fall when expenditure cuts have a negative growth impact.

9. **The latest (April 2014) WEO projections for Finland are set as the baseline for the simulations.** This includes values for nominal and potential GDP, the output gap, real GDP growth, inflation, interest rates, and fiscal variables (revenue, primary expenditures, interest expense, and debt levels). One point to note is that by assuming that the path of potential output is consistent with the latest WEO projections, the simulations will abstract from any longer-run effects of fiscal consolidation on potential growth.

10. **Given Finland's strong fiscal track record, we abstract from any effects of the debt level (or its change) on the risk premium on new government borrowing.** Abbas and others (2013) simulate a response in the risk premium on interest rates to changes in debt levels, based on the idea that as a country's fiscal space is eroded the risk premium on its debt will rise (see, for example, Ostry and others (2010)). However, Finland's strong track record and the moderate projected rise in the baseline debt-to-GDP ratio over the forecast horizon suggest this dynamic is not pertinent here.[5]

## Simulation Results

11. **Both frontloaded and phased-in adjustments can cause the debt ratio to temporarily rise relative to the baseline.** As the adjustment is implemented, it slows GDP growth (i.e. the "multiplier effect"), reducing the denominator of the debt-to-GDP ratio relative to the baseline. The initial improvement in the headline primary balance is not sufficient to reduce the nominal debt level by enough to offset the growth impact on the debt-to-GDP ratio. Hence, under the frontloaded adjustment scenarios the debt ratio increases faster than the baseline ratio in the first

[4] See Appendix V of Abbas and others (2013) for a more detailed explanation of how their framework models the impact of fiscal consolidation on growth and public debt dynamics.

[5] For example, Ostry and others (2010) estimate Finland's hypothetical debt limit–the point at which the debt becomes unsustainable–between 167 and 200 percent of GDP, well above the baseline level projected in 2019.

year. The debt ratio response under the phased-in scenarios is similar, with the adjustment starting in 2015, but slightly less pronounced as the initial fiscal effort is lower.[6]

12. **The simulation results show that both adjustment path put the public debt-to-GDP ratio on a downward trajectory after 2015** (Figure 1). For a given set of multipliers, both the frontloaded and phased-in adjustment paths can achieve nearly the same primary balance by the end of the projection period. However, the sums of the primary surpluses over the projection period are larger under the frontloaded adjustment paths than in the respective phased-in adjustments. The primary balance will not improve by as much as the adjustment effort initially due to the impact of slower growth on revenue. However, since the structural fiscal adjustment takes place sooner, even with the largest multipliers we use, a primary surplus is achieved more quickly under the frontloaded scenarios. This is the main reason the public debt ratio falls more in the frontloaded scenarios than in the phased-in ones, though the difference (for a given multiplier assumption) is less than 1 percentage point of GDP by 2019.

13. **However, the frontloaded adjustment path generally has a more deleterious impact on output than the phased-in adjustment.** The phased-in adjustment path reduces the adjustment efforts in 2015 and then it ramps up the adjustment over time. The phased-in path gives the economy more time to recover, which shrinks the output gap and generally results in smaller multipliers being applied in the outer years (relative to the frontloaded adjustment scenarios) when the bulk of the adjustment occurs. The deviations from the baseline output level and the cumulative output losses relative to the baseline are much larger for the frontloaded adjustment scenarios.

14. **While the simulations abstract from any longer-term impact on potential growth, fiscal consolidation could lower potential growth through hysteresis effects, for example.[7]** Dell'Erba, Koloskova, and Poplawski-Ribeiro (2014) find support for this, showing that fiscal consolidations during prolonged economic downturns have a persistent impact on output growth, primarily explained by hysteresis in the labor market. This illustrates the importance of implementing structural reforms that can help offset any persistent impact fiscal consolidation may have on the economy's growth potential. For instance, active labor market policies such as retraining for unemployed workers and job search assistance may help prevent or reverse hysteresis in the labor market (see below).

[6] As mentioned above, since Finland can borrow at exceptionally low rates already, there are no "credibility" effects of fiscal adjustment in our simulations. Such an effect would lower the risk premium on sovereign debt, thereby directly lowering the government's interest expense and stimulating output by reducing private sector borrowing costs. Abbas and others (2013) discuss this in further detail.

[7] Periods of prolonged high unemployment can cause hysteresis effects, as the long-term unemployed permanently drop out of the labor force and lower the potential labor supply (Blanchard and Summers, 1986).

## C. Fiscal Adjustment, Structural Reforms, and Growth

15. **Should Finland be resigned to accepting the drag on growth from fiscal adjustment?** As the above analysis indicates, the impact of fiscal adjustment on output varies with the phasing and the size of multipliers. In all cases though, it has a negative impact on growth. In the context of Finland, the scope for more accommodative monetary policy to offset the growth impact of fiscal adjustment is limited. The ECB is operating close to the ZLB. Even to the extent that further monetary expansion is possible, the potential impact of lower growth on expected inflation in Finland would have little weight in the overall euro area inflation targeted by the ECB's monetary policy. This suggests that other policy tools will have a larger role to play.

16. **One policy approach to boost growth would be to adjust the composition of taxes, though we do not model this in the simulations below.** Several recent empirical studies suggest that the composition of taxes can have long run effects on growth (Arnold and others, 2011, Gemmel, Kneller, and Sanz, 2011, Acosta Ormaechea and Yoo, 2012). For a given level of taxation, shifting the composition away from direct (i.e. income) taxes and towards property and indirect (i.e. consumption) taxes is associated with faster growth. Acosta Ormaechea and Yoo (2012) also find that for the different types of direct taxes, labor income taxes like social security taxes (SST) and personal income taxes (PIT) have a stronger negative association with growth than corporate income taxes (CIT). A high labor tax wedge, the difference between the total cost of employing a worker and the pay they receive, can reduce employment through both the supply and demand for labor. Simulations by Bouis and Duval (2011), for example, suggest that if Finland gradually reduced its labor tax wedge to the average of the of the six OECD countries with the highest employment rates in 2007, it would raise the employment rate by more than 1 percentage point over 5 years.

17. **Structural reforms will make a difference.** An extensive literature examines the impact of different structural reforms of growth, employment, and productivity, suggesting that structural reforms can boost an economy's growth potential over the medium-term (see, for example, Bouis and Duval, 2011, Barnes and others, 2013). The impact depends, in part, on the economic (e.g., global demand) and institutional environment. For instance, Lama and Medina (2014) look at the experience of Sweden. They find that following the financial crisis in the early 1990s, Sweden's economy grew strongly, even in the face of a substantial fiscal consolidation. The authors show that this is largely explained by the growth in TFP during that period, which the authors attribute to a series of substantial structural reforms enacted in the aftermath of the early 1990s crisis (see Box 3).

18. **Several recent papers simulate the impact of structural reforms on growth in models based on the IMF's Global Integrated Monetary and Fiscal (GIMF) model.**[8] Anderson, Hunt, and Snudden (2013) and Anderson and others (2013a) start with estimates of structural indicator gaps from the OECD (see OECD, 2013a)—the distance between a country's structural indicators and those

[8] See Kumhof and others (2010) and Anderson and others (2013b) for a description of the GIMF model and its properties.

of countries with the "best practice," as measured by their structural indicators—to determine a country's distance to the "frontier." They then combined these structural indicator gaps with empirical estimates of the impact of the structural reforms—such as changes to unemployment benefits, pensions, and product market regulations—on productivity, employment, and labor participation (see Bouis and Duval, 2011, and references therein). Together the structural indicator gaps and the estimated impacts of reforms are then translated into country (or region) specific changes in firms' mark-ups, productivity, and labor supply in the GIMF model.

19. **The different reforms works through a number of channels.** For example, product market reforms that increase competition and lower mark-ups would reduce the costs of goods and services for consumers, which would boost consumption and investment, as well as employment despite a rise in real wages. Similarly, lowering employment protection legislation (EPL) would reduce the cost of adjusting employment, making it easier to reallocate labor across firms and sectors. By increasing the efficiency of firm-employee matches and increasing productivity, such reforms have a positive impact on the economy.

20. **The structural indicator gaps are typically measured as the distance of a given country's indicator from the average of the "best" countries.** This is typically based on specific structural indicators, such as an index of retail trade regulations or spending on active labor market policies (ALMP). However, various reforms can be combined into more comprehensive measures of structural gaps to reflect the broader status of product and labor markets (see OECD, 2013a). Intuitively, countries with larger structural policy gaps can make larger strides in terms of productivity, growth, and employment if they reform their policies to match "best practices." The growth impact also depends on the pace of implementation of reforms, and, potentially, on how credible the reforms are (i.e. how quickly people believe the reforms are permanent and change their behavior).

21. **There is substantial uncertainty surrounding the average impact of reforms.** For one, there is the usual statistical uncertainty around point estimates from empirical models used to calibrate the model-based simulations. As noted above, the effects also depend on the economic context. Anderson and others (2013a) experiment with several variations of assumptions and factors that could change the impact of structural reforms (e.g., the state of the economy, the credibility of reform efforts). They simulate the model focusing on two regions calibrated to the euro area core and periphery to illustrate the larger output effects of reforms for countries farther from the frontier.

## D. Reforms and Growth: An Illustration for Finland

22. **To approximate the effects of structural reforms for Finland, we use the results from Anderson and others (2013a) to derive elasticities of output to structural reform efforts.** Their simulations show how the output of "core euro area" (core EA)[9] countries reacts to structural reforms that close half the gap with the average of the best performing OECD countries over a period of 13 years. This allows us to extract the elasticity of output to a change in a structural indicator index that combines key labor and product market characteristics over the period of simulation.[10] For example, if the deviation of output increases from t to t+1 by 0.5 percentage points and the structural indicator index improves by 2 units, the approximated elasticity is 0.25.

23. **The next step is to construct an indicator capturing the structural characteristics of Finland and calibrate the pace of reform.** We construct summary indices of structural characteristics along the lines for the core EA, but adjust the speed at which reforms will close the gap with the frontier to mirror the likely progress on structural reforms proposed in the government's current plans. For one, we assume that pension reforms only become effective in 2017, consistent with the government's reform plan. Also, the pace of reform for ALMPs, unemployment benefits' average replacement rate (ARR), and changes to EPL is initially modest, but increases over the forecast horizon until they achieve a constant rate of reform from 2019 onwards. This implies that over 13 years the overall structural index closes about 44 percent of the gap instead of closing half the gap as is done for the core EA countries in Anderson and others (2013a).

**Structural Reform Gaps for "Core Euro Area" and Finland**

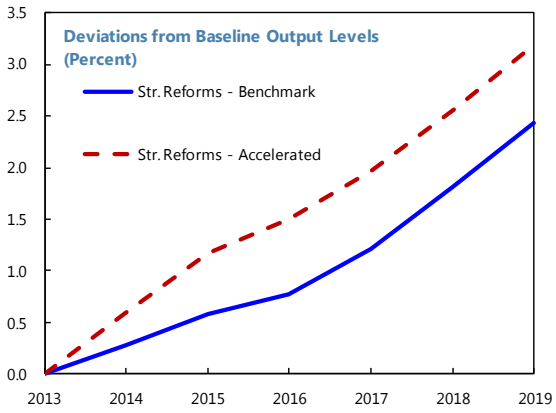
| | Core EA | Finland |
|---|---|---|
| **Product Market Reforms** | **8.6** | **5.5** |
| **Labor Market Reforms** | **26.3** | **27.6** |
| ALMP | 23.5 | 34.9 |
| Unemp. Benefits ARR | 20.2 | 28.8 |
| EPL | 33.6 | 28.1 |
| Childcare Benefits | 41.6 | 16.7 |
| Pension Reforms | 13.4 | 26.7 |
| **Overall Reform Gap** | **15.6** | **14.2** |

Sources: OECD and Fund staff calculations.
Notes: OECD structural indicators are converted to indexes with the OECD frontier normalized to 100. Gaps are calculated as the difference between the country's (or weighted average of countries for the Core EA group) index value for an indicator and the OECD frontier. Core euro area (EA) includes: Austria, Belgium, Estonia, Finland, France, Germany, Luxembourg, the Netherlands, the Slovak Republic, and Slovenia.

[9] Anderson and others (2013a) define the "core euro area" as including: Austria, Belgium, Estonia, Finland, France, Germany, Luxembourg, the Netherlands, the Slovak Republic, and Slovenia.

[10] For the core EA, the individual indicator indexes (e.g., the index for EPL) are based on a GDP (in PPP terms) weighted average of the structural indicators of the countries that constitute the core EA group, which are then combined into an overall product and labor market reform index. We use the overall product market reform indicator. Five labor market indicators are combined into a single labor market index (the underlying labor market characteristics are the same indicators as Anderson and others (2013a)). We use the OECD's ALMP measure, unemployment benefits' average replacement rate (ARR) of income, the EPL index, public spending on childcare (as a proxy for policies that support female labor force participation), and the implicit tax on continued work at older ages (based on old-age pensions).

24. **The overall product and labor market reform index and the output elasticities to structural reform efforts are then combined to simulate the impact of key reforms in Finland**. The output deviation elasticity to changes in the structural reform index derived from the results for the core EA countries in Anderson and others (2013a) are multiplied by the change in the Finnish overall structural reform index for each year. This gives the deviation of output (relative to the baseline) due to structural reforms for Finland in each year of the projection period (see Figure 2). Under our benchmark structural reform scenario, output would be about 2½ percent higher by the end of the forecast period (2019). Also, as discussed above, the full impact of most labor market reforms is explicitly set so that the pace of reforms builds up over time, rather than immediately proceed to close the gap at a constant rate. In comparison, in the "accelerated" case, where reforms are implemented steadily from the beginning (i.e. in line with the assumptions in Anderson and others, 2013a), the impact on output over the forecast horizon is stronger, with output 3.2 percent higher than the baseline by 2019. Unsurprisingly, in all scenarios, the higher output leads to better primary balances and public debt-to-GDP ratios than in the baseline WEO forecast (see Figure 2).



Sources: OECD, Anderson and others (2103), and Fund staff

25. **The effects of structural reforms are rather uncertain though.** In particular, as Anderson and others (2013a) show, the impact can vary with the demand environment—for example, in a scenario with strong (weak) global demand, the effects of supply side reforms are likely to be larger (smaller), as any additional capacity will be utilized more (less) quickly.[11] Following their example, we construct high and low impact scenarios for the effect of structural reforms in Finland. The implied range in terms of the output deviation from the baseline at the end of the forecast period in 2019 is between 1.1 and 3.3 percent (Figure 2).

**The results from combining structural reform and fiscal adjustment simulations suggest that reforms can significantly mitigate the drag on growth from consolidation.** Comparing the WEO baseline with a combined simulation scenario–assuming phased-in consolidation, medium-sized multipliers, and benchmark structural reforms—results in output levels more than 1 percent higher than the baseline (Figure 3). This contrasts with output levels more than 1 percent lower than the

[11] Anderson and others (2013a) show in simulations that mimic a weak economy (i.e. labor demand is inelastic) that reforms, such as reducing the ARR of unemployment benefits, may take time to improve employment. The rationale is that when the economy is in a slump, reductions in the reservation wage of unemployed workers may incentivize job search, but it might take time for labor demand to pick up. Moreover, cutting unemployment benefits in a downturn may reduce the income of households with a high marginal propensity to consume (hand-to-mouth consumers).

baseline in the simulation with fiscal adjustment and no reforms. However, as Figure 3 illustrates, the uncertainty around these point estimates is sizable.

## E. Policy Discussion

26. **A combination of a phased medium-term fiscal adjustment and structural reforms can raise growth and address the fiscal sustainability gap.** The results of the fiscal adjustment simulations point to the advantages of addressing the sustainability gap over the medium term, delaying further tightening until the recovery is more firmly entrenched. However, even with adjustment gradually ramped up over the medium-term, it will still be a drag on growth. Structural reforms can provide critical support in this regard. Indeed, at first approximation, embarking on a reform path that would close between 40 and 50 percent of Finland's existing reform gaps with the OECD's best performers over a 13 year period could potentially more than offset the effects of an adjustment plan that closes half of the fiscal sustainability gap by 2019.

27. **Given Finland's already high tax levels, fiscal adjustment will have to focus mostly on expenditures.** Some measures, such as pension reforms that gradually increase the retirement age and reduce the implicit tax on working at older ages, would benefit both the growth and fiscal agenda. Similarly, product market reforms that boost competition and productivity can complement reforms aimed increasing the cost effectiveness of the provision of public services through lower prices for goods and services purchased by the government. Beyond expenditure reductions, there may be room to tweak the tax structure to promote labor force participation and economic activity.

**Revenue**

28. **The room to raise substantial new tax revenues may be limited, but there is scope to make the structure of taxes more growth friendly.** As noted earlier, fiscally neutral shifts of some of the tax burden from labor income taxes to less distortionary consumption and property taxes can support employment and growth. Following the one percentage point increase of the standard VAT rate to 24 percent in early 2013—similar to other Nordic countries—the VAT revenue-to-GDP ratio of more than 9 percent is in the top quintile of OECD countries. In contrast, total property tax revenue is only 1.1 percent of GDP, which is less than 60 percent of the OECD average (IMF, 2013c).

- ***VAT*:** There is some scope to enhance VAT revenues by reducing the number of items subject to special VAT rates that are lower than the standard rate (e.g., 14 percent rate of food and restaurants, 10 percent rate on books, hotels, and pharmaceuticals). IMF (2013c) estimates that eliminating half of the "policy gap" (i.e. applying the standard VAT rate to more goods) could generate up to 2.4 percent of GDP in additional revenue. However, offsetting some of the regressive effects of such a measure, which tends to hurt the poor and vulnerable the most, would reduce its net-impact on the budget.

- ***Property tax*:** Raising the property tax revenue-to-GDP ratio to the OECD average could generate additional revenue of about 1 percent of GDP. In addition, property tax revenue tends to vary less with the business cycle than other tax revenue, so shifting the tax base of

municipalities away from corporate income taxes towards property taxes could contribute to making local public finances less procyclical overall.

- ***Other measures*:** Consideration could also be given to budget-neutral changes in R&D support. A shift from larger-scale direct support focused on large firms to tax-based schemes with the potential to benefit younger and smaller firms could boost innovative activity and growth.

29. **Changes in the allocation of the portfolio of public financial assets may also have the potential to lift revenue.** The stock of public financial assets is worth nearly 100 percent of GDP. As noted in the 2012 Article IV, this portfolio is invested relatively conservatively, resulting in low returns. Exploring options of shifting the portfolio allocation towards assets with higher returns could increase investment income, while the making sure to invest such that the reallocation limits any rise in revenue volatility.

### Expenditure

30. **Expenditure measures will be essential to ensuring Finland's fiscal position is sustainable in the long-run though.** Central government spending has remained fairly contained under Finland's spending limits system. But the rapid growth in local government and social security spending since 2007 indicates there is scope for reforms to ensure fiscal sustainability.

31. **Improving the cost-effectiveness of the public sector is critical, and the government is taking steps in this direction.** The productivity of government-provided services has declined more than 10 percent over the past decade, suggesting substantial room for improvement.[12] Consequently, a central goal of the government's structural reform program agreed in November 2013 is to improve public sector efficiency at all levels of government. The government foresees savings coming from a significant reduction in the government workforce compared to the baseline—the expected increase in the public workforce would shrink from an estimated 3,000 workers per year (or about 1.5 percent of the current workforce) to about 1,000 workers per year over the medium term.

- ***Municipalities reform*:** One pillar of the government's plan is to reduce the tasks and responsibilities of local governments and merge municipalities (or some of their functions) to reap the benefits of economies of scale, such as in procurement for health and long-term care (LTC). This should also assist with the recruitment and retention of qualified personnel, especially in regions outside of the Helsinki Metropolitan Area (OECD, 2013b).

- ***Central government reform*:** The *Central Government Productivity Program 2005-2015* sought to improve public sector efficiency by reducing government employment levels and other measures to curb expenditure growth. However, as the OECD (2013b) observes, without changes

[12] See the Selected Issues Paper, Chapter II, *Finland: Structural Health Check*.

in practices to improve productivity and align staffing with capacity needs based on the demand for services, staff reductions may just increase the workload for remaining workers. This may have a demoralizing impact on public servants and make retention of key personnel more difficult. Hence, reforms require regular assessments of how performance management mechanisms affect productivity and how the implementation of reforms is managed.

- ***Electronic service delivery and data provision*:** Developing new technologies to improve the delivery of services, including in health and social benefits, can increase the efficiency of the public sector. The government plans to increase investment in ICT to better coordinate and deliver services online. It also plans to broaden the public provision of data collected by the government over 2015-18, which could both help with monitoring public sector efficiency, as well as stimulate innovative new private sector ventures.

32. **Measures to contain local government spending involve reforms in areas such as healthcare, long-term old-age care, social services, and education.** The government's structural reform program agreed in November 2013 aims to achieve savings in local government spending of around €1.3 billion (0.6 percent of GDP) by 2017 relative to the baseline with no policy change. However, some of the underlying details have yet to be presented.

- ***Healthcare*:** Savings are projected to total roughly €180 million (0.1 percent of GDP), mostly due to discontinuing archiving of paper records for patients (€94 million) and reforms of the emergency system (€60 million). The merger of smaller municipalities could rein in costs by improving their bargaining power with providers and achieving greater economies of scale. Finally, measures to reduce the reliance on hospitals and specialists, shifting the provision of healthcare towards outpatient general care, could also generate savings (OECD, 2012).

- ***Long-term care*:** Plans to tighten eligibility for long-term care (LTC) of the elderly are projected to save €300 million (0.14 percent of GDP), by reducing, relative to current rules, the facilities required to provide long-term care. However, LTC spending is still projected to rise by 1.4 percent of GDP by 2030 (EC, 2012). Reform efforts in LTC provision over the last few years should be continued and expanded, including measures: (i) to increase competition amongst providers of LTC services, (ii) to promote the use of remote technologies and assistive devices, and (iii) other measures to help the elderly remain healthy and at home as long as possible (e.g., in home assistance) (OECD, 2012).

- ***Social services*:** A plethora of measures to more efficiently deliver social services, including closer integration of health care and social services provision are projected to yield savings of €125 million (0.05 percent of GDP). Measures to increase competition in service provision and greater electronic delivery of services will assist in this effort, but how much savings these reforms may generate remains to be determined.

- ***Education*:** Reforms are expected to save nearly €300 million (0.14 percent of GDP) by 2017, mainly through education provider network and funding system reforms (€195 million) and a shift to only funding the attainment of qualifications (i.e. degree or certification granting upper

secondary level programs) (€65 million). Other planned reforms include: (i) streamlining the application procedures and qualification system for vocational programs, (ii) changes to financial aid to incentivize students to finish the studies at the tertiary level in a timely manner, and (iii) a temporary increase in the intake rate in higher education. These reforms may help to support post-education employment prospects, but their fiscal impact is unclear at this time.[13]

33. **Further pension reforms will also be critical to ensuring long-run fiscal sustainability.** Pension costs are expected to rise by 3.5 percent of GDP by 2030 and are a key contributor to the sustainability gap. Reform efforts over the last few years have raised the effective retirement age and introduce an adjustment for longevity to new pensions. The government's current reform plan includes the negotiation of additional pension reforms by autumn 2014 that would come into force in 2017. The aim of these reforms would be to gradually raise the average effective retirement age from 60 years old to above 62 years old by 2025, as well as change the contribution and benefits formulas to strengthen the public finances. However, there are other measures the authorities could pursue to narrow the channels to early retirement.

- ***Disability benefits*:** Though it has fallen by over a percentage point since the mid-1990s and is lower than in Sweden and Norway, the share of the population aged 15-64 years old receiving disability benefits still appears high at nearly 9 percent (OCED, 2010a). Hence, tightening eligibility for disability benefits, while also providing adequate support for such workers in terms of ALMPs, could provide fiscal savings while supporting the structural reform goal of increasing the labor market participation of older workers.

- ***Statutory retirement age*:** The statutory retirement age was lowered from 65 to 63 as part of the 2005 pension reform. Additionally, as the implicit tax on working beyond age 63 is high, there is a little incentive to work longer, resulting in a significant decline since 2005 of individuals working to age 65 (OECD, 2010b). The simulations of the impact of structural reforms on growth suggest that pension reforms to increase the effective retirement age would boost growth. Hence, returning to a statutory retirement age of 65 and providing an actuarial adjustment for income from work beyond age 63–to reduce the implicit tax on working beyond that age–would have a positive impact on both growth and fiscal sustainability.

34. **While Finland's current fiscal framework and rules can help anchor medium-term adjustment plans, its coverage could be expanded.** Currently the central government's spending limits framework only covers 80 percent of budgeted spending by the central government and excludes local governments, which account for roughly one third of general government spending. A more comprehensive framework, covering more of the general government spending, would improve expenditure control. However, there may be legal difficulties in terms of enforcing such a rule at the local government level. A new steering system for local government finances is being

[13] See the Selected Issues Paper, Chapter II, *Finland: Structural Health Check*.

established (work has begun and related legislation will come into force in 2015). Similar to the central government spending limits system, the new steering system aims to include binding medium-term limits on local government finances. This could potentially offer a solution to the expenditure control dilemma. However, it is still too early in its development to evaluate its impact on local government spending growth. Bolstering the role and capacity of Finland's de facto fiscal council, the National Audit Office, would also help to ensure fiscal discipline and to meet fiscal targets in the future (see also, IMF, 2012a).

### Structural reform

35. **Structural reforms can enhance growth, mitigating the impact of fiscal consolidation, and Finland's structural reform gaps point to several critical areas that are ripe for reform**. Finland's reform gaps are somewhat larger, though of the same order of magnitude, as other core euro area economies. The reform potential is particularly high in the labor market area (ALMP, ARR of unemployment benefits) and for pension reforms. While the structural reform gaps in the overall product market reform indicator is lower than for labor market indicators, the output elasticity of product market reforms is higher, which suggests a comprehensive approach. In particular:

- ***Pension reforms*:** Pension reforms have both growth and fiscal benefits that accrue over time, suggesting that quickly implementing reforms is particularly helpful. This points to the advantage of starting the necessary dialogue between all stakeholders soon, including social partners, to avoid unnecessary delay in terms of legislation and implementation.

- ***Active labor market policies*:** Increasing spending on ALMP can boost output, and can complement pension reforms if some ALMP spending is targeted towards older people to encourage them to stay in the labor force. While this may have some fiscal cost, it could be offset by savings from reforms of pension and unemployment benefits.

- ***Unemployment benefits average replacement rate*:** Gradually reducing the generosity of unemployment benefits over time could raise employment and help reduce long-term unemployment, which could increase the labor supply. It would be particularly effective if the measure comes into effect during a period of strong demand (and is accompanied by effective ALMP). Otherwise, a gradual phasing-in, commensurate with economic conditions, would maximize the impact over the medium-term.

- ***Employment protection legislation*:** The direct growth impact of reducing EPL tends to be smaller than other labor market reforms, but a policy that protects workers rather than jobs has potentially strong benefits in a period of rapid structural change, such as the one Finland finds itself in after the end of the ICT boom.[14]

[14] See the Selected Issues Paper, Chapter III, *Finland: Stylized Facts on Innovation and Growth* for more details.

36. **Product market reforms are also critical to improving productivity and countering the decline in trend TFP growth.** While Finland's overall product market reform gap is not terribly large, in certain sectors the gaps are substantially worse than the overall indicator suggests. As the Structural Health Check SIP describes, Finland's retail sector regulatory barriers among the highest out of OECD countries, with its retail sector regulation indicator (lower is better) in the top quintile. Reforms here would help boost service sector productivity. Increased productivity and competition lead to lower prices for consumers and could have positive spillovers to other sectors, including domestically oriented non-tradable sectors (e.g., construction, public sector). Similarly, reforms in network sectors such as rail and utilities could have beneficial cost and productivity effects.

### Box 1. The Sustainability Gap

**The sustainability gap indicator is the structural fiscal adjustment (i.e. total change in structural primary balance) needed to ensure the government's intertemporal budget constraint is satisfied.**[1] The first step to estimate the sustainability gap is to calculate the public debt-to-GDP ratio at time $t$ ($b_t$) minus the present value of all future primary balances ($p_t^{PV}$) for a given fiscal stance (usually measured as the structural primary balance path).[2] If this is positive using the baseline long-run forecast for structural primary balances (SPB), then the government's intertemporal budget constraint (IBC) is not satisfied. Next, one needs to define a fiscal adjustment path that generates an alternative SPB path, such that the government's IBC *is* satisfied (i.e. $b_t - p_t^{PV} = 0$). Given the starting point of the current (time $t$) SPB and an adjustment path (and corresponding SPB path) that satisfies the IBC, the total adjustment (change in SPB) needed over the specified time period gives us the sustainability gap.

**This suggests that the sustainability gap will depend, in part, on the timing of the adjustment path**. Any delay in adjustment will increase the sustainability gap, since higher surpluses will be needed in the long-run to offset the lower present value of the SPBs expected in the future. That said, the increase may not be very large—for example, if the envisaged shift is small and if the spending pressures forecast to lead to declining SPBs in the long-run will not be realized for several decades.

[1] This is consistent with the Europe Commission's S2 indicator. For a more technical exposition of how the sustainability gap is defined and derived, see Analytical Note 6 in IMF (2012b).

[2] Note that this involves making very long-run forecasts on a number of variables (e.g., growth, interest rates, demographics), making the sustainability gap sensitive to the underlying assumptions of these forecasts.

### Box 2. Potential Output Uncertainty and Structural Balance Estimates

**The structural fiscal balance can be a useful tool for trying to ascertain the underlying fiscal stance.** The structural fiscal balance attempts to measure the underlying fiscal position by adjusting the headline balance for cyclical and one-off factors. Accounting for the elasticities of revenue and expenditure to the business cycle (i.e. the output gap)—as well as asset and commodity price cycles and other one-off items, where applicable—allows for the calculation of the cyclical component of the headline balance. Subtracting this cyclical component from the headline balance gives us the structural balance. This can help policymakers "see through" the fluctuations in the headline balance due to cyclical factors, which, in turn, can help reduce the procyclicality of fiscal policy.[1]

**However, measuring the cyclical position of the economy depends on estimating potential output, which is subject to substantial uncertainty.** As the Selected Issues Paper (Chapter I) on potential GDP illustrates, potential GDP can be estimated with a number of different approaches and these estimates can have sizable confidence bands around them. Forecasts of potential output and its growth rate (and, consequently, the output gap) are also subject to as much (if not more) uncertainty as forecasts of real GDP and its growth rate. Recent work by Fund staff looks at revisions to European Commission (EC) estimates of the output gap and the cyclically-adjusted primary balance (CAPB), comparing forecasts at the time of budget preparation to the latest available estimates. They find that for 2003–2012 the average size of (absolute) revisions of the output gap and CAPB estimates are around 2.5 percent and 1.1 percent of potential GDP, respectively, with a higher average size of (absolute) revisions for 2007–2009. To be sure, such revisions are not unique, but the example illustrates the underlying measurement issue.

**Large shocks and structural changes in the economy can compound the uncertainty surrounding any potential output estimate.** The global financial crisis hit Finland particularly hard, with real GDP falling more than 8 percent in 2009. At the same time, Finland's ICT sector continues to lose steam and other traditional export industries, such as pulp and paper manufacturing, have been in decline, while services have grown as a share of the economy. These compositional changes in the economy have probably contributed to the slowdown in Finland's potential TFP and output growth rates (see, Chapters I, II, and III, above). However, the extent of that contribution is difficult to determine due the simultaneity of cyclical and structural developments.

**Structural fiscal balance estimates may also change if there are fundamental shifts in the way revenue and expenditure components change with the business cycle.** Sizable downturns may have stronger effects than more mild recessions, while rapid structural changes in the economy may fundamentally change the cyclical behavior of various revenue and expenditure components. In such cases, revenue and expenditure elasticities estimated on historical data may not accurately capture the cyclical component of the fiscal balance. Thus, beyond uncertainty related to estimating potential output and the output gap, if revenue and expenditure elasticities are changing, it can introduce additional uncertainty when measuring the structural fiscal balance (see, for example, Kiss and Vadas, 2005).

[1] See Larch and Turrini (2009) for a discussion of the cyclically-adjusted balance and its use in EU fiscal policy making over time.

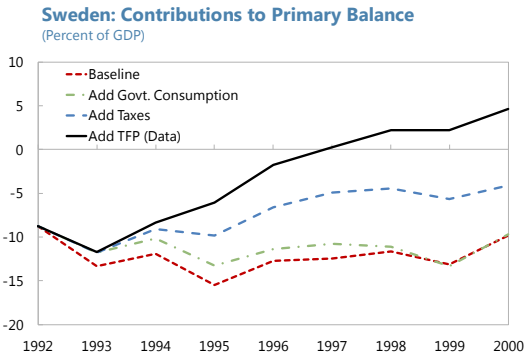
### Box 3. The Role of Structural Reforms and Productivity in Fiscal Consolidations:

## The Swedish Experience[1]

**Fiscal consolidations tend to have a depressing effect on aggregate demand and employment.[2]** However, the Swedish fiscal consolidation episode in the 1990's provides an interesting case study of a fiscal adjustment implemented in a context of high economic growth and a declining unemployment rate. Lama and Medina (2014) argue that this scenario was possible, primarily, as a result of the implementation of productivity-enhancing structural reforms.

**Sweden experienced a substantial acceleration in total factor productivity (TFP) growth after the early 1990s financial crisis due in large part to structural reforms.** Between 1970 and 1990 Sweden's TFP growth averaged 0.5 percent per year. However, during the 1993-2000 period, TFP increased at an annual rate of 2.7 percent. These productivity gains became possible after the implementation of a package of structural reforms. In 1993 the government enacted a new "Competition Act" in order to prevent the formation of cartels and the abuse of dominant market position. By joining the European Union in 1994, the government lowered trade barriers, which increased competition from abroad and encouraged firms to become more efficient. Several network industries were deregulated such as telecommunications, electricity and rail transport. Many state-owned enterprises were privatized. In addition, new planning regulations were enacted to encourage competition in the retail sector by granting licenses to new entrants. The model in Lama and Medina (2014) estimates that the Swedish GDP increased by 20 percent due to TFP gains after the implementation of structural reforms. Interestingly, this estimate is similar to the upper bound of the structural reform effects on output calculated by the OECD (2012) (see also Bouis and Duval, 2011).

**Without structural reforms that boosted TFP growth, Sweden's fiscal consolidation would have tanked the recovery after the financial crisis.** Figure 1 shows the results of a simulation of the primary balance and GDP under alternative scenarios using a DSGE macroeconomic model. In the absence of a fiscal adjustment and productivity gains (red line), the primary balance would have remained in deficit and GDP would have remained stagnant. Once the discretionary measures were adopted (green and light blue lines), the primary balance improved by 5 percentage points of GDP, though at the cost of a declining GDP. Finally, once the observed gains in productivity are considered in the model (black line), the primary balance increases by 10 percentage points of GDP and the output increases by 6 percent above the trend by the year 2000.[3] Higher productivity contributed to closing the primary deficit by expanding the tax base and fiscal revenues. The simulation illustrates that by implementing productivity-enhancing structural reforms it was possible to expand output and consolidate public finances simultaneously.



Source: Lama and Medina (2014) and Fund staff calculations.

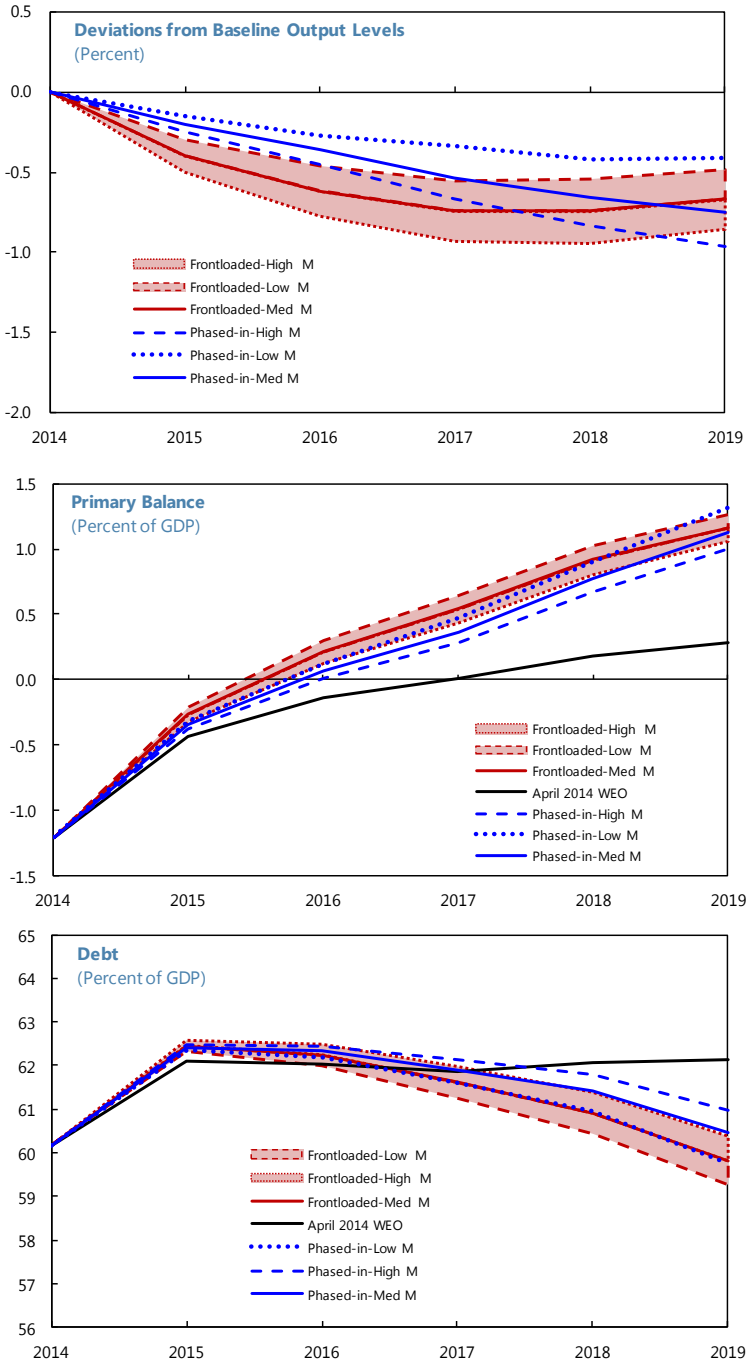
[1] Prepared by Ruy Lama.

[2] See Guajardo and others (2011).

[3] The simulation considering the productivity growth fits the actual data on GDP and the primary balance.

## Figure 1. Simulations for Frontloaded and Phased-in Fiscal Adjustment Paths

(Percent and percent of GDP, respectively)

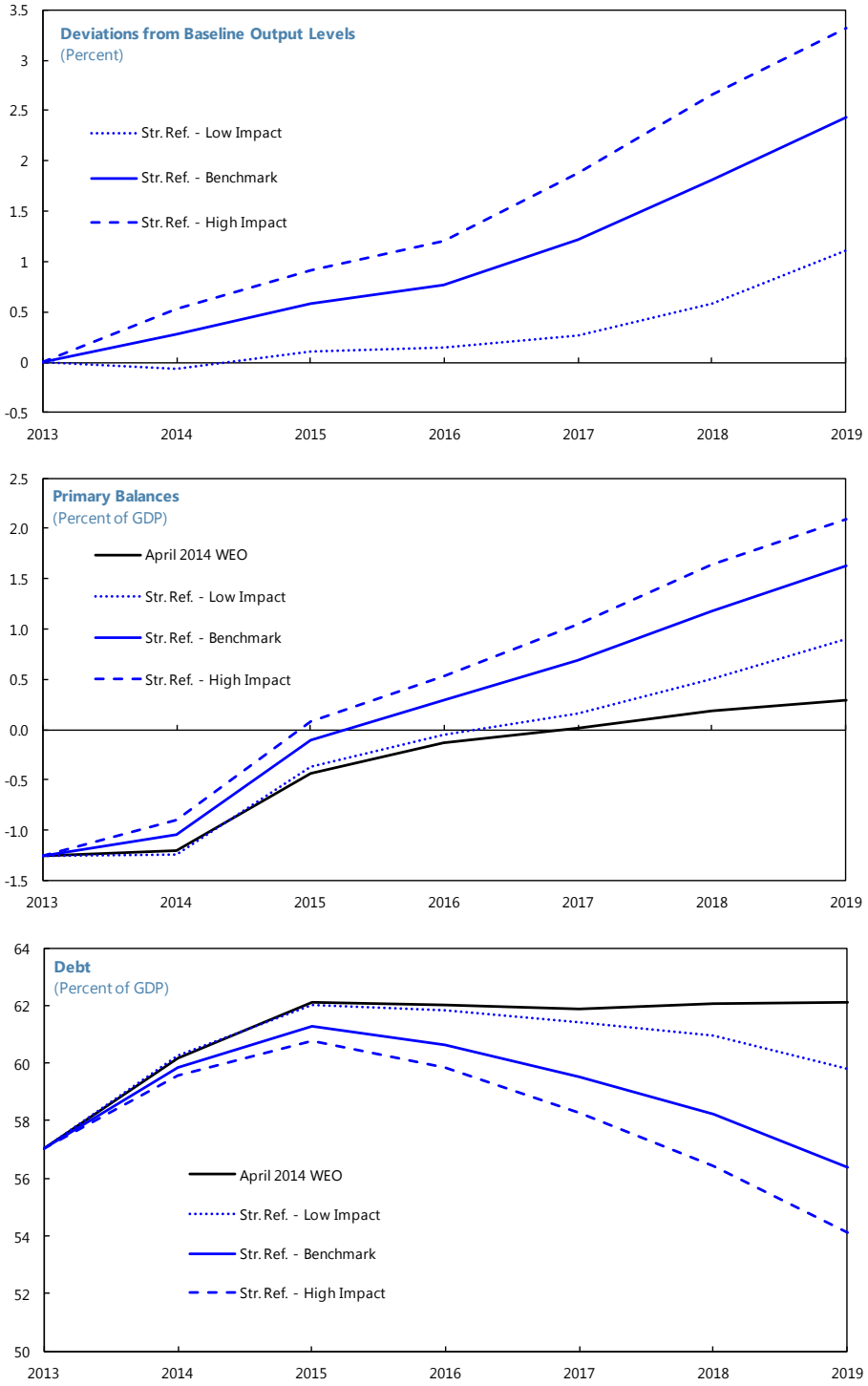



Sources: Abbas and others (2013) and Fund staff calculations.

Notes: The panels show the deviation of output from the "Baseline – WEO" forecast, the primary balance, and the public debt ratio, along with their respective "Baseline – WEO" forecasts, under six adjustment scenarios. The frontloaded adjustment path (red) is simulated with high, medium, or low fiscal multipliers. Similarly, the phased-in adjustment path (blue) is simulated for the three different multipliers.

## Figure 2. Structural Reform Simulations

(Percent and percent of GDP, respectively)

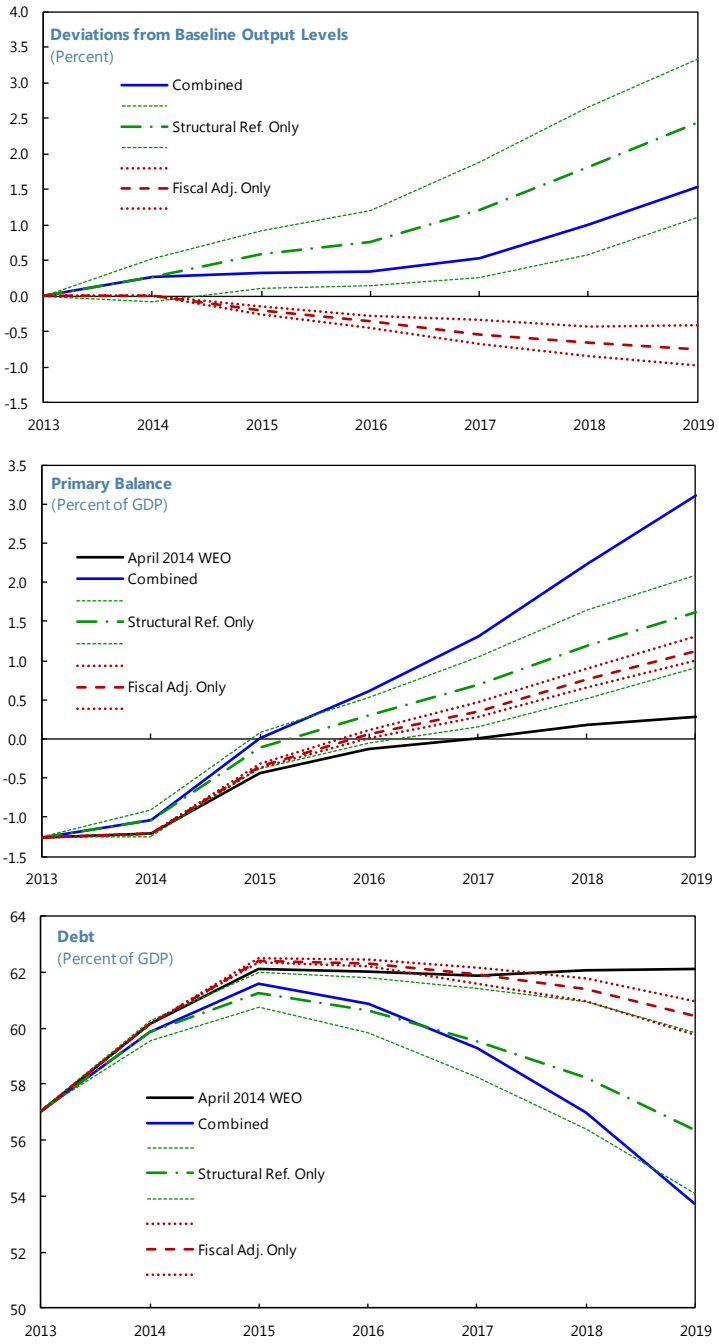



Sources: Abbas and others (2013) and Fund staff calculations.

Notes: The panels show the deviation of output from the "Baseline – WEO" forecast, the primary balance, and the public debt ratio, along with their respective "Baseline – WEO" forecasts for the bench mark and high and low impact scenarios for structural reforms.

## Figure 3. Simulations for Combined Fiscal Adjustment and Structural Reform Scenario

(Percent and percent of GDP, respectively)




Sources: Abbas and others (2013) and Fund staff calculations.

Notes: The panels show the deviation of output from the "April 2014 WEO" forecast, the primary balance, and the public debt ratio, along with their respective "April 2014 WEO" forecasts, under scenarios illustrating fiscal adjustment only, structural reform only, and a "combined" scenario with simultaneous fiscal adjustment and structural reforms. "Fiscal adjustment only" (red) is the phased-in path from Figure 1 simulated with high, medium, or low fiscal multipliers. "Structural reform only" (green) is the results from Figure 2. The "combined" scenario uses the structural reforms impact simulated in the benchmark scenario in Figure 2 and applies the phased-in fiscal adjustment path with the medium sized multiplier.

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