REPUBLIC OF LATVIA

SELECTED ISSUES

July 2017

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REPUBLIC OF LATVIA

SELECTED ISSUES

June 20, 2017

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CONTENTS

POTENTIAL GROWTH: CONFRONTING CRISIS LEGACIES

Growth rates appear to have settled on a much lower path after the global financial crisis (GFC), negatively affecting the outlook for Latvia's convergence path. This SIP reassesses potential growth and its drivers for Latvia 6 years after the growth turnaround and presents projections for the medium term. As the labor force is projected to decline, implementation of policies to increase investment and support total factor productivity (TFP) growth will be essential to ensure income convergence going forward.

A. Introduction

1.   Latvia has undergone a severe boom-bust cycle with significantly lower growth rates in the aftermath of the GFC. Growth averaged 9.9 percent over 2003–07, but slowed to about 2.7 percent over 2012–16. The pre-recession years were marked by unsustainably strong domestic demand, reflected in large contributions of private consumption, gross fixed investment, and a relatively large negative trade balance. In the years after the recession, domestic demand continued to play a key role, albeit somewhat more muted, while the contribution of gross fixed investment to overall growth dropped from 3.9 percent to about 0.6 percent on average.

Latvia - Real GDP - Demand
(Contribution to y-o-y GDP growth, in %)
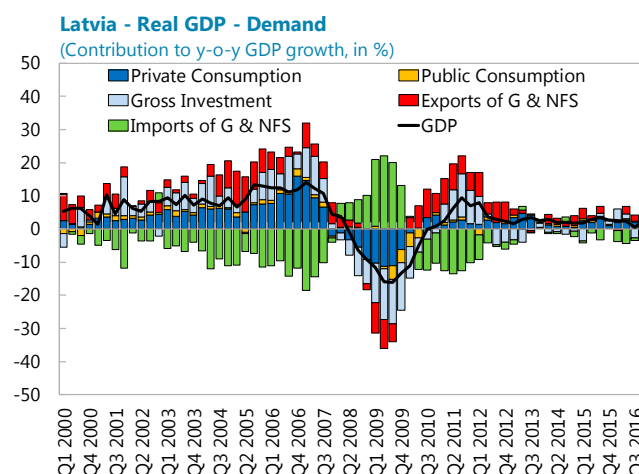
Sources: Authorities and IMF Staff calculations.

2.   The level of potential growth has direct consequences for Latvia's convergence path. Latvia's GDP per capita (in purchasing power terms) was about 62 percent of the EU-15 average in 2015. To catch up with the rest of the EU, Latvia needs higher growth rates than the countries it is lagging. Lower growth rates going forward would therefore jeopardize convergence, and require a redoubling of policy efforts to regain momentum. Therefore, a reassessment of potential output can shed light not only on whether its level and its drivers have changed as a result of the crisis, but can help identify key policy challenges to maintain convergence.

3.   A better understanding of potential output is important for policy setting. For example, an estimate of the output gap enters the fiscal reaction function through the cyclical adjustment of the fiscal balance and therefore directly influences policy makers' assessments of whether fiscal policy should respond to deviations from potential. If revenue flows can be correctly identified as temporary, spending is less likely to be increased, and fiscal buffers can be built.

4.   **The rest of this paper is organized as follows:** Section B elaborates the methodologies used to estimate potential growth; Section C outlines our results; and Section D identifies policy recommendations.

B. Methodology

5.   **Potential output is an elusive concept and can be defined in various ways**. Potential output is generally defined according to the Okun (1962) concept as the level of output consistent with stable inflation, while short-run deviations of actual from potential output, due to the slow adjustment of wages and prices to shocks, reflect the output gap—or economic slack (IMF, 2015). The related concept of *sustainable output* is the level of output, which exists in the absence of domestic or external macroeconomic imbalances (such as excessive credit growth). The two concepts do not always coincide as output can be at potential (that is, without generating inflationary or deflationary pressure), but still not be sustainable. For example, a divergence of sustainable output from potential output may indicate that a financial boom or bust is currently underway.

6.   **Potential output is not observable, and results vary according to the estimation methodologies used.** Since potential output does not have an empirically observable counterpart, it needs to be estimated. Moreover, output rarely operates at capacity as it is continuously subject to multiple coinciding shocks, which complicates attributing changes in output to cyclical movements, changes in capacity or simply statistical noise. Each methodology approaches the problem from a different angle and hence emphasizes different issues. To address, to a certain degree, model uncertainty, this SIP uses several approaches to capture variants of these concepts to better gauge the level of slack in the economy.

7.   **Following Podpiera et al (2016), four approaches are used to estimate potential output:**

(i)   The **Hodrick-Prescott (HP) Filter** is a univariate filter, which minimizes the distance of the actual GDP series from its trend while penalizing changes in the trend growth rate. The output of the filter is a smoothed GDP series, which is interpreted as potential GDP. The HP filter hence implicitly assumes that, on average, the economy is in a state of full capacity and therefore equates potential with trend output. It is easy to use and requires only the specification of a smoothing parameter λ, for which standard choices exist.

(ii)   The **Production Function (PF) Approach** takes a supply-side point of view by employing the Cobb-Douglas production function with factor intensities to decompose aggregate output into its components:

$$Y_t = A_t (K_t CU_t)^{(1-\alpha)} (L_t AHW_t)^{\alpha}$$

   K denotes the capital stock, which is derived using the perpetual inventory method as $K_t = (1-\rho)K_{t-1} + I_t$, ρ is the depreciation rate calibrated using the historical average and *I* is

investment. The capital stock of the initial year is taken from the Penn World Tables.[1] *CU* is a survey-based measure of capacity utilization from the European Commission. *L* and *AHW* are the number of employed persons, and the average hours worked using the national accounts concept. *α* stands for the labor share in the production function, which is calculated as the ratio of compensation of employees to gross value added. By smoothing the imputed TFP series, and specifying a process for potential employment, one arrives at an estimate for potential output by combining these trends with the estimate of the capital stock.[2]

(iii)   The **multivariate filter (MVF)** (Benes et al., 2010; Blagrave, et al., 2015) estimates potential output in a state-space set-up. In particular, it employs a Phillips curve relationship

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

as well as Okun's law

$$u_t = \tau_1 u_{t-1} + \tau_2 y_t + \varepsilon_t^u$$

as a means of imposing economic structure to make estimates of the output gap consistent with the Okun (1962) concept of potential output. Here π is inflation, y is the output gap and u is the deviation of unemployment from the NAIRU. The structure of the filter hence relates the output gap to slack in the labor market and changes in inflation. Data requirements are limited to small number of variables. In addition, the filter can be augmented with medium-term growth and inflation forecasts to improve its estimation accuracy to alleviate the end-of-sample problem.

(iv)   **The multivariate filter with financial variables (MVF-FIN)** explicitly factors in the long-recognized impact financial cycles may have on the real economy (e.g. Aikman et al, 2011; Claessens et al, 2011). If swings in output coincide with swings in credit growth, when inflation and inflation expectations are aligned, the filter will attribute this to the cyclical component and thus produces a more stable "finance-neutral" level of sustainable output.[3] However, if credit provides little additional information, the model will produce results in line with conventional approaches. It thus avoids the pitfall of identifying potential output as being sustainable, while indeed it may be on an unsustainable path. The approach is purely empirical in nature and does not impose any theoretical structure. It provides the ability to include many explanatory variables without making strong a priori assumptions while staying in a parsimonious specification (Borio et al., 2014). In addition to inflation and the unemployment rate, the specification includes capacity utilization, non-financial credit growth, and residential property prices as explanatory variables.

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[1] We test the sensitivity of the results by replacing the starting value of the perpetual inventory method with a capital-output ratio of 2 in 1995 as in the AMECO database. This leaves the overall growth path unchanged, but lowers/increases the contributions of TFP/capital by about 0.9 percentage points over the whole estimation period and about 0.2 percentage points in the last three projection years on average.

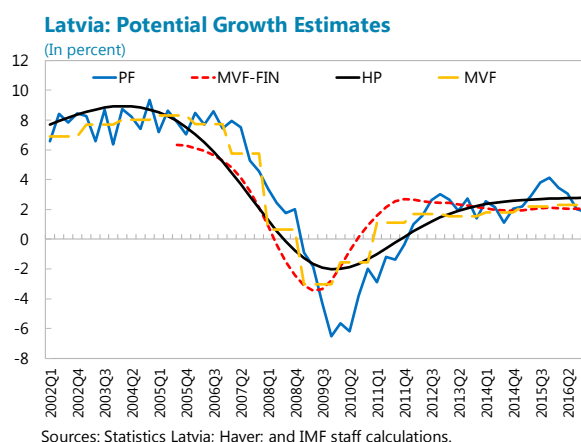[2] To address the end-point problem, IMF staff projections are used to extend the underlying series.

[3] In turn, this means that the MVF-FIN is expected to produce wider output gaps in both, bust and boom periods for countries that experienced a financial cycle. However, this rests on the assumption that the permanent component of credit growth, which is explained by financial deepening, is not attributed to the cyclical component of output.

8.   All approaches have their own benefits and limitations making no single approach superior. While the HP filter's appeal lies in its ease of use and intuitive results, it does not incorporate information from other variables such as inflation or unemployment and is not based on economic theory. Moreover, it is particularly prone to the end-of-sample bias. The structural MVF imposes economic relationships and thus also often provides estimates, which are intuitively plausible. However, biases can arise if the relationships do not fit the data well, as is often observed with e.g. Phillips curve relationships (Borio et al, 2013). The PF approach allows for a detailed investigation of the drivers of potential output, but its implementation requires the input of smoothed series and thus potentially reintroduces the same problems that plague the HP filter. In addition, it estimates TFP as a residual, making its interpretation difficult. The MVF-FIN can yield more robust real-time estimates as it tends to keep the number of parameters relatively low, but is susceptible to specification issues.
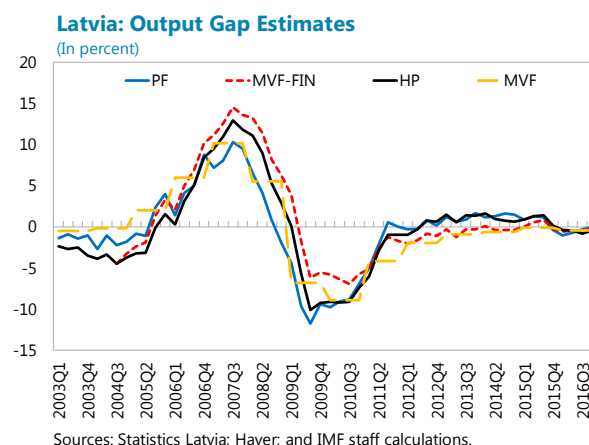
C. Results

9.   All methodologies suggest that potential growth is significantly lower in the post-crisis period. While estimation uncertainty is large, all methods yield fairly similar results. Average potential growth across all methods was 6.9 percent in 2003–07 and 2.2 percent in 2012–16. This presents a significant post-crisis downward shift in potential growth. It also supports the view of crisis legacies having undermined a significant part of the economy's productive capacity. Potential growth in 2016 is estimated to be around 2.5 percent on average with the HP filter providing the upper bound with 2.8 percent and the MVF-FIN the lower bound with 2.1 percent. Real GDP growth in 2016 was 2 percent, which indicates that economic growth is close to its potential.

Latvia: Potential Growth Estimates
(In percent)

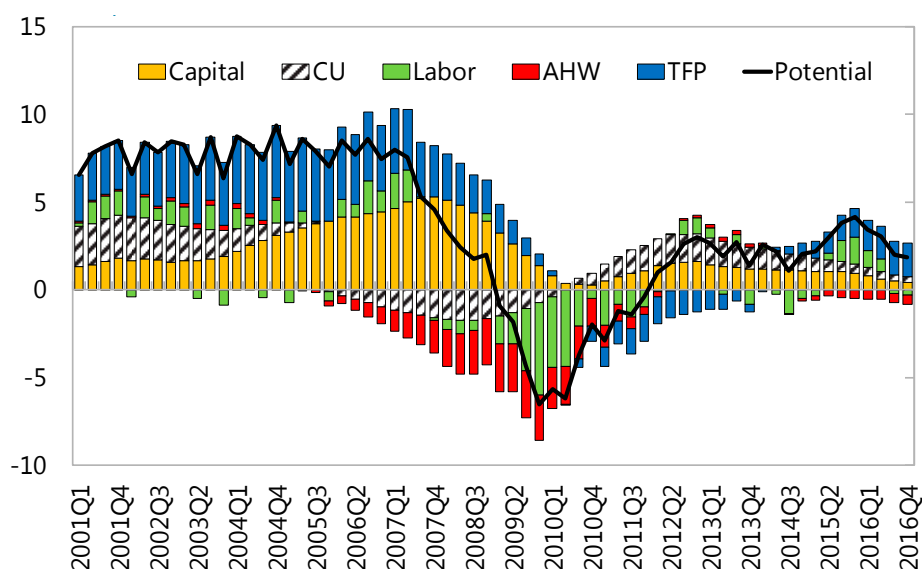Sources: Statistics Latvia; Haver; and IMF staff calculations.

10.   The output gap is estimated to have been around -0.5 percent in 2016. While in earlier periods of the sample output gap estimates vary more strongly, they have become more aligned recently. The boom-bust cycle is clearly visible with a high degree of overheating in the run up to the crisis being reflected in a positive output gap of up to 14.6 percent (MVF-FIN), and the bust in a negative output gap of up to -11.8 percent (PF). The average output gap across models in 2016 was around -0.5 percent, which reconfirms the finding that the economy is operating close to its potential.

Latvia: Output Gap Estimates
(In percent)

Sources: Statistics Latvia; Haver; and IMF staff calculations.

11.   The MVF-FIN results point to the financial cycle as being one driver of the output gap in the run-up to the crisis. In line with the theoretical predictions of this approach, the finance-neutral output gap is larger in the boom phase since the temporary increase in credit beyond "normal" also boosted output temporarily. The filter attributes this to the cyclical component instead of sustainable output, and hence produces a larger gap than the other approaches. However, the converse argument does not hold in the bust phase as the output gap produced by the MVF-FIN is smaller.[4] One explanation for this puzzling result could be that the element of financial deepening contained in the financial variables in the boom phase was more limited than in the bust phase (see footnote 3).

12.   The PF approach suggests that capital accumulation has always been a main driver of potential growth, while the role of TFP has declined significantly. Capital accumulation contributed about 48 percent in 2003–07 and about 54 percent in 2012–16 to overall potential growth. The contribution of TFP has decreased form 50 percent to about 3 percent over the two periods respectively. This "TFP hysteresis"—a persistent TFP loss from a large and seemingly temporary shock—is a common theme after the GFC among many countries (IMF, 2017a). Recently this trend seems to have reversed somewhat for Latvia. The contribution of labor has always been limited, which can mostly be attributed to the negative demographic trends Latvia faces, which were exacerbated during the crisis. Capacity utilization played an important role in the beginning of the sample as well as in the aftermath of the crisis, but its relative contribution has been diminishing in the recent past.

Latvia: Contributions to Potential Growth

Sources: Statistics Latvia; Haver; and IMF staff calculations.

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[4] The very strong contraction in credit during recession years, in principle, should have temporarily restrained economic activity below normal levels, which means that sustainable output should be higher than suggested by the other models, hence making the output gap larger.

13.   Investment growth has been slowing and capacity utilization is near its pre-crisis level. Investment experienced double-digit growth rates peaking at around 30 percent in the run-up to the crisis, largely financed by foreign capital inflows. Similarly, a spurt in the absorption of EU structural funds in the latter part of the 2007–13 programming period contributed to the growth of the capital stock. This period was also supported by a strong increase in capacity utilization, which has flattened out lately as utilization levels have almost reached pre-crisis levels. Investment growth after 2013, however, was negative, averaging -4.5 percent

Investment and Capital Stock
(In percent, yoy)

Capacity Utilization
(In percent)
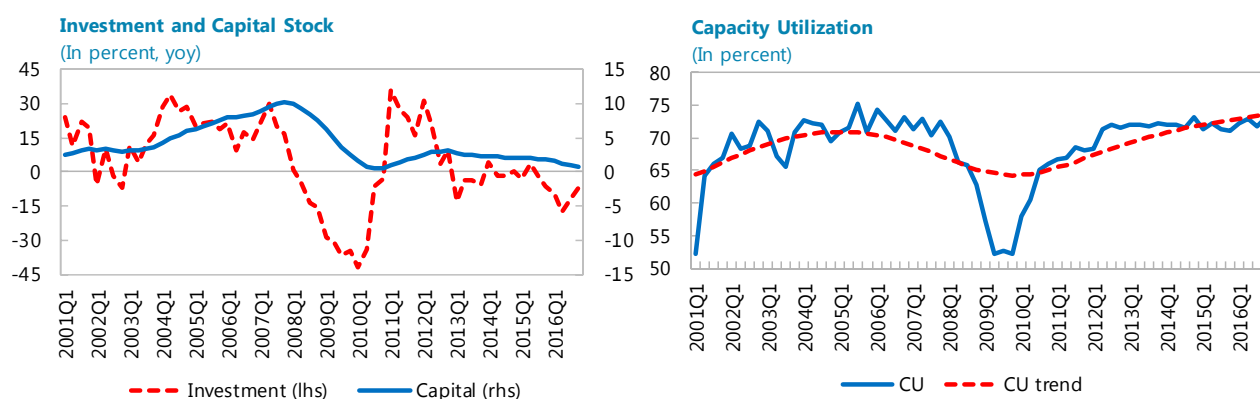
Sources: Statistics Latvia; Haver; and IMF staff calculations.

14.   Employment and average hours worked have not recovered after the crisis.
Employment reached record highs in excess of 1 million people during the boom, but contracted significantly to below 850 million at the peak of the crisis. Since then, employment has recovered only moderately, failing to reach 900 million. The slow recovery in employment is likely due to the emigration of labor, which took place during the crisis, and which has not yet been reversed, as well as "unemployment hysteresis"—a transformation of cyclical into structural unemployment as skills of the long-term unemployed depreciate. The trend for average hours worked displays a similarly sharp decrease during the crisis, followed by a hump-shaped recovery.

Employment
(In Thousand Persons)

**Average Hours Worked**
(Index, 2010=100)
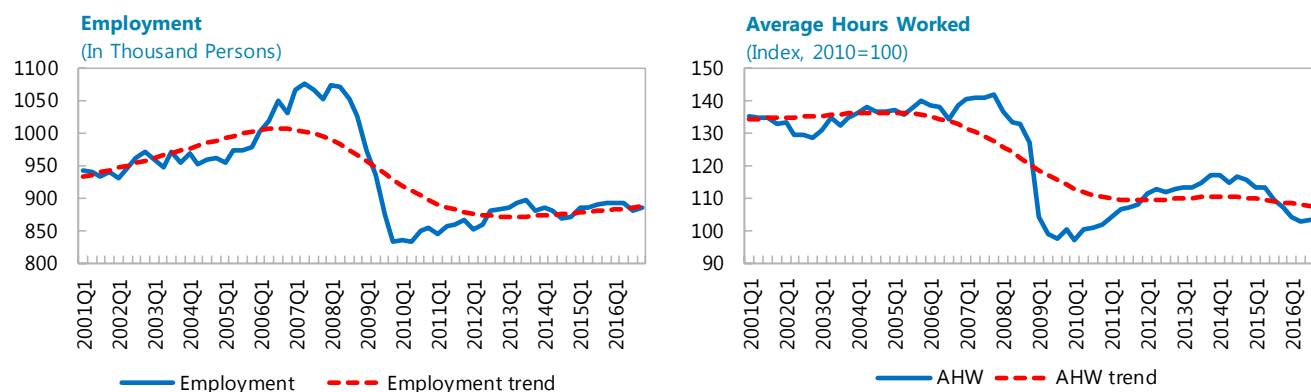
Sources: Statistics Latvia; Haver; and IMF staff calculations.

15.   TFP has increased steadily since the crisis, but its growth rate seems unlikely to reach pre-crisis levels in the near term. TFP grew by 5.2 percent on average in 2003–07, but by only 1.2 percent in 2012–16, which explains the large drop in the contribution of TFP to overall potential growth. The persistence of the downward-shift is likely driven by legacies of the GFC. Three interrelated factors appear to be behind this pattern (IMF, 2017a):

- Weak corporate balance sheets, combined with tight credit conditions, have likely constrained investment in intangible assets in distressed firms. The boom-bust financial cycle and its corollary of weak corporates and banks has also increased misallocation of capital within and across sectors.

- An adverse feedback loop of weak aggregate demand, investment, and capital-embodied technological change.

- Elevated economic and policy uncertainty may have further weakened TFP growth, partly by tilting investment away from higher-risk, higher-return projects.

Although these crisis legacies are gradually waning, they will likely remain a significant drag on productivity growth.

Total Factor Productivity
(Index, 2010=100)

Total Factor Productivity
(Year-on-year percent change)
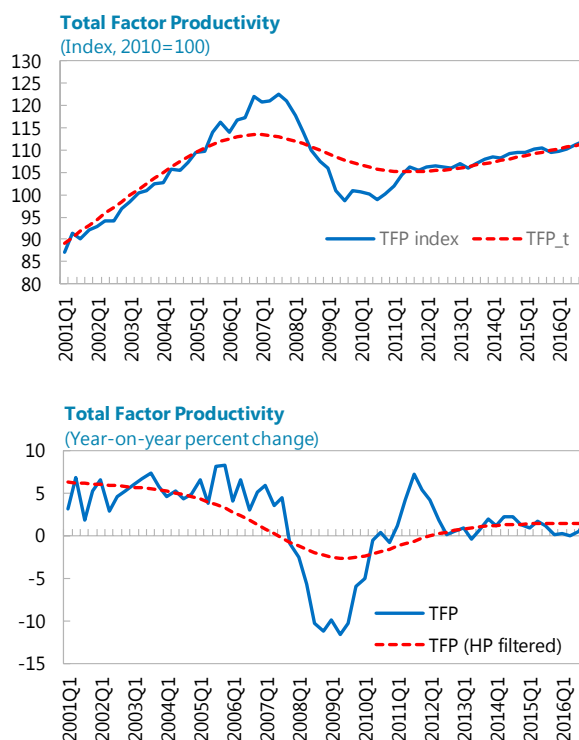
Source: IMF staff calculations.

16.   Potential growth is estimated to be around 3 percent over the medium term, with the output gap closing by 2018. Projecting the components of the production function forward yields an estimate of medium-term potential growth. The two main drivers of potential growth in the medium term are capital and TFP as adverse demographics limit the contribution of labor. Capital is projected to increase its contribution to potential growth from currently very low levels as EU structural funds will come on stream and private investment increases on the back of a positive economic outlook and a pick-up in credit growth (see table 2 of the 2017 Article IV staff report for the growth projections for gross fixed capital formation). TFP growth,

Latvia: Contributions to Potential Growth
(In percent)

Sources: Statistics Latvia; Haver; and IMF staff calculations.

limited by crisis scars, will most likely contribute to overall growth in a more muted fashion than before the GFC. To reflect the downward shift in TFP growth, and absent any targeted measures, TFP growth is projected to continue on the growth trend implied by the model over 2014–16.
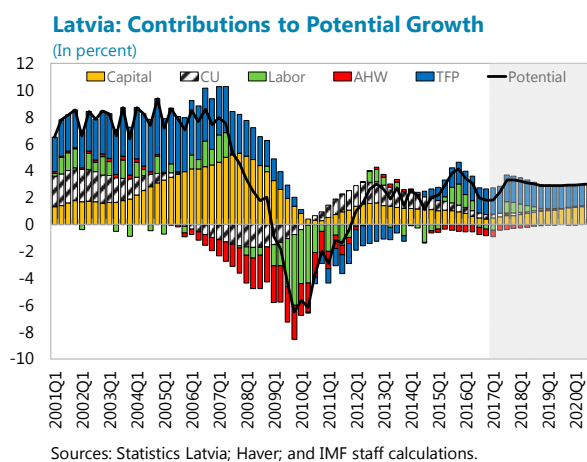
The contributions of TFP growth and capital accumulation to overall growth are 1.6 percent and 1.4 percent respectively.

D.   Policy Challenges to Increase Medium-Term Potential Growth

17.   Post-crisis potential growth has settled at a lower level, requiring a re-doubled policy effort to return to a faster convergence path. The significant downward shift of potential growth to about 3 percent, largely driven by crisis legacies suppressing TFP growth, has negative implications for Latvia's income convergence with the rest of the EU. However, greater efforts to increase productivity through structural reforms, and support for further capital deepening, coupled with active labor market policies to increase labor market participation, can lift potential growth above the baseline scenario and thus re-accelerate convergence.

18.   A simulation exercise shows that implementation of structural reforms could yield about a 1 percentage point increase in potential growth above the baseline scenario. Estimates in IMF (2016a) suggest that better property rights and upgrading the legal system could potentially improve Latvia's TFP by almost 20 percent. As implementation of structural reforms in these areas will likely require time, and to be on the conservative side, we assume that only a third of these productivity gains can be achieved by the end

Potential Efficiency Gains from Structural Reforms
(Potential improvement in TFP, percent)

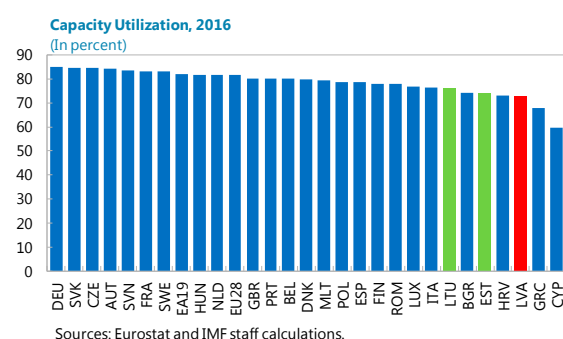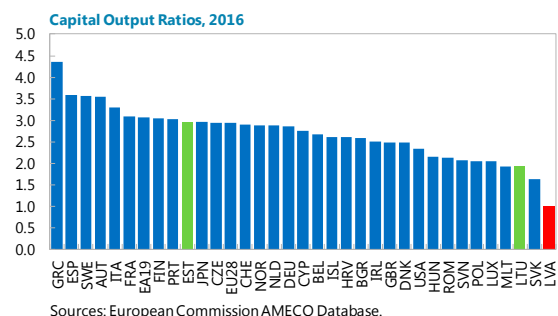Sources: Eurostat and IMF staff calculations.

of 2020. Based on this assumption, potential growth calculated from the PF approach would be 4 percent. Staff estimate that the resulting increase in the growth differential against the EU-15 could accelerate the closure of the income gap by about 12 years.[5] Given the difficulties in estimating the quantitative impact of structural reforms on TFP growth, these results should be seen as indicative.
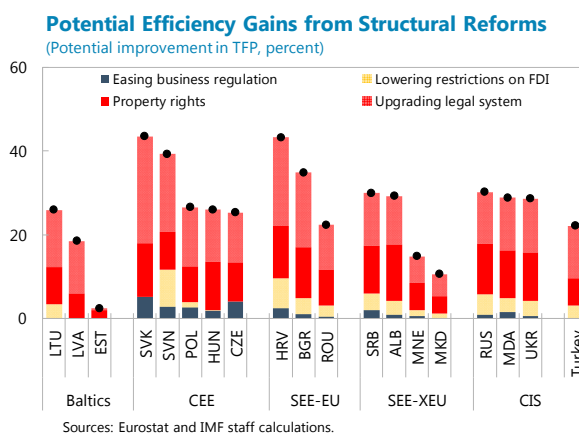
19.   Priority areas for action include: raising investment and capacity utilization to boost the capital stock and its effective use; active labor market policies to mitigate the effects of migration and demographics; and structural reforms to combat TFP-hysteresis:

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[5] This assumes that the historical relationship between real GDP growth and PPP GDP per capita income convergence remains the same going forward,

(i) **Higher investment rates and improved capacity utilization could raise potential medium-term growth.** Latvia has the lowest capital-output ratio in the EU28. Increasing the capital stock would therefore provide significant scope to lift potential growth above the baseline. Higher public investment in infrastructure, such as further improving the connectivity to the EU electric network, enhancing the quality of transport infrastructure, and promoting port efficiency, may induce greater private investment and risk-taking and improve capital allocation, provided high-return projects are undertaken and compatibility with fiscal space is ensured. This makes rapid and efficient absorption of EU structural funds all the more important. Attracting more foreign investment could also provide avenues going forward. Capacity utilization, despite having rebounded strongly since the crisis, is still lower than in most EU countries and its increase would provide further, yet limited, scope for higher medium-term growth.

Capital Output Ratios, 2016

Sources: European Commission AMECO Database.

Capacity Utilization, 2016
(In percent)

Sources: Eurostat and IMF staff calculations.

(ii) **Active labor market policies could help offset some of the negative effects of demographic changes and emigration.** Unemployment is currently above 9 percent and has historically been high in Latvia. Reducing unemployment would therefore at least partly mitigate the negative impact of an aging population and net emigration, and thus a declining labor force. Active labor market policies, along with tax and benefit reform aimed at improving incentives for work would support labor force participation and generate higher employment (e.g., in-work tax credits, improvements in tapering of benefits to reduce the high labor tax wedge especially for low-income earners). Efforts to reduce skill mismatches will also improve labor market performance (e.g., strengthening vocational education and improving links with employers, further efforts to attract high-skilled foreign workers).

(iii) **Structural reforms can help overcome the "TFP hysteresis".** Addressing structural and institutional obstacles that prevent the efficient use of available technologies, or lead to inefficient allocation of resources, will be key to reaching this goal. The largest efficiency gains are likely to come from improving the quality of institutions (such as protection of property rights, upgrading legal systems including insolvency and judicial reforms), and increasing access to financial services (especially for small, but productive firms) (IMF, 2016a; 2016b). Furthermore, reducing the regulatory burden and red tape (OECD, 2017) on businesses and further improving corporate governance of state-owned enterprises

would foster competition and efficient resource allocation, as would greater technology diffusion. Fiscal structural reforms, aimed at improving efficiency in the tax system, can also boost firm-level productivity by reducing resource misallocation (IMF 2017b).

Table 1. Data and Data Sources					
Variable	Source	HP filter	MVF	MVF-FIN	Production Function
Real GDP	World Economic Outlook, April 2016	✓	✓	✓	✓
Unemployment rate	World Economic Outlook, April 2016		✓		
Headline inflation	World Economic Outlook, April 2016		✓		
Wage inflation	Eurostat, Haver Analytics		✓		
Credit growth	Haver Analytics			✓	
House price indices	Haver Analytics			✓	
Capital stock	Haver Analytics, Penn World Tables, 8.1.				✓
Average hours worked	Haver Analytics				✓
Capacity utilization	Haver Analytics				✓
Labor force participation rate	Haver Analytics				✓
Number of employed persons	Haver Analytics				✓

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