Investment and The Medium-Term Growth Outlook

1. Growth in Portugal has been moderate in the past two decades— the average growth rate of real GDP from 1996 to 2016 was 1.2 percent. In particular, the low level of investment—compared with euro area peers—stands out as one of the key factors that contributed to these growth rates. The average growth rate of investment in the past 20 years was −0.3 percent, and investment as a share of GDP has been declining since 2000. Moreover, the cumulative contribution of investment to real GDP growth (from 1996 onward) turned negative in 2012.

2. This note derives the average investment growth needed for Portugal to achieve the 2-percent and 2.5-percent real GDP growth in the medium term (from 2017 to 2022). To this end, a standard Cobb-Douglas production function is utilized:

\[ Y = A K^\alpha H^{1-\alpha} \]

where \( Y \) is output, \( A \) is total factor productivity (TFP), \( K \) is the stock of capital, \( H \) is the stock of labor augmented by the level of human capital, and \( \alpha \) is the elasticity of output with respect to labor (which also represents the share of labor income in output).

- Net capital stock is defined as capital stock in the previous year plus this year’s investment, adjusting for depreciation and changes in capacity utilization. From 2017 to 2022, the depreciation rate is set to be constant and equal to the 2012-16 average, while the capacity utilization rate is assumed to increase steadily to reach the historical high of 84.6 percent by 2022.
- Human capital-augmented labor is the product of full-time employment and human capital per worker. Full-time employment from 2017 to 2022 is projected based on historical ratios of full-time equivalent employment to total employment, obtained from Banco de Portugal, and IMF staff medium-term projections of
Following Hall and Jones (1999), human capital per worker $h$ is given by an exponential function

$$ f(s) = \exp \left( \alpha s \right) $$

where $f(s)$—a piecewise-linear function of average years of total schooling $s$—denotes total returns to schooling. Average years of total schooling for population aged 15 or above in Portugal are obtained from Barro and Lee (2013), which estimates several dimensions of educational attainment for 146 countries. The data on years of schooling are available quinquennially from 1950 to 2010 and are converted into the annual data by linear interpolation. Estimates of years of schooling for 2011 to 2022 are obtained from Barro and Lee (2015), and are similarly interpolated. The rate of return to one additional year of schooling is assumed to be 13.4 percent for the first four years of education, 10.1 percent for the next four years and 6.8 percent beyond the eighth year, consistent with the Mincerian rates of return to schooling in Psacharopoulos (1994).

- The annual growth rate of total factor productivity from 2017 to 2022 is assumed to vary between −0.4 and 1 percent.

**3. Figure 1 summarizes the results of the growth simulation.** It shows the annual average estimates of growth rates of investment during 2017-22 that are needed to achieve the growth path envisaged in the 2017 Stability Program (1.8 percent in 2017, subsequently increasing by 0.1 percentage point each year to reach 2.2 percent in 2021), as well as the average GDP growth rates of 2 and 2.5 percent during that period under varying assumptions of annual TFP growth. Based on these estimates, if, for instance, the annual TFP growth is 0.4 percent, then investment must grow at about 8 percent per year to sustain the average GDP growth rate of 2.5 percent. The average annual growth rate of investment in the Stability Program is 4.9 percent, which implies that the TFP should grow at about 0.2 percent per year.

![Figure 1: Required Average Investment Growth Given TFP Growth](image)

Sources: Haver Analytics, Banco de Portugal and IMF staff calculations.

**4. Staff estimates, however, show that the average TFP growth in the past two decades was only −0.26 percent.** This result is in line with Amador and Coimbra (2007), who conclude that Portugal’s economic growth during the pre-crisis boom could largely be attributed to factor accumulation rather than productivity growth. In contrast, the European Commission (EC) estimates that the annual TFP growth between 1996 and 2016 was 0.34 percent. That estimate, however, uses a reduced-form Cobb-Douglas production function. Such a function does not adjust the capital stock for changes in capacity utilization, nor does it adjust the labor for changes in human capital. Accordingly, EC’s estimate of the TFP growth would naturally be higher compared with staff’s (Figure 2).

![Figure 2: Total Factor Productivity Growth](image)

Sources: Haver Analytics and IMF staff calculations.

**5. In conclusion, it is likely that the growth rate of investment must significantly exceed the projected 4.9 percent in order to achieve the GDP growth path envisaged in the 2017 Stability Program.** Specifically, per staff estimates, investment needs to grow at around 8.5 percent per year in case the TFP growth remains at −0.26 percent. On the other hand, if the annual TFP growth could accelerate to 0.34 percent—the EC’s estimate—then a 4-percent growth rate of investment would suffice. This suggests that policies aimed at raising investment should be introduced in tandem with policies aimed at raising productivity. In addition to the ongoing efforts to foster human capital accumulation, other policies including increasing labor market flexibility, improving judicial sector efficiency, reducing corporate debt overhang, enhancing public sector payments discipline, and reducing energy costs should also be implemented.

References


about 30 percent while the old-age dependency ratio is expected to more than double, driven mostly by low fertility, higher longevity, and migration outflows.

Portugal is among the countries in the euro area that is expected to be most hurt by demographic developments. During 2015–2100, its population is expected to shrink by

estimates the fiscal impact of demographic changes in Portugal and the euro area over the period 2015–2100. Under the baseline projections of the United Nations,

Portuguese banking system is for heightened competition from abroad. The paper also draws policy lessons from its approach to reform. This Selected Issues paper

Abstract: This Selected Issues paper and Statistical Appendix on Portugal attempts to "feel the pulse" of Portugal's banking system on the eve of European Monetary

Union. It surveys the reforms of the financial sector, explores whether prudential concerns have arisen in the process of liberalization, and gauges how well prepared the

Motivation and Strategy

Staiger

DICKENS (2009)

and


Are Fundamentals Behind the Rise of China?

The internationalized banking sector has added another function to the traditional one of intermediating between savers and borrowers. New facets of the internationalized banking sector have implications for the evolution of the economy. The internationalized banking sector is characterized by a high degree of internationalization of financial transactions and the presence of foreign banks in the domestic market. This Selected Issues paper examines the implications of the internationalized banking sector for the economy, with a focus on the role of foreign banks. The paper analyzes the impact of foreign banks on the domestic banking sector, the implications for monetary policy, and the macroeconomic effects of the internationalized banking sector. The analysis shows that the internationalized banking sector has important implications for the economy, with implications for the evolution of the economy. The paper recommends policies to address these issues, including enhanced regulation of foreign banks and policies to promote the development of domestic financial markets. The paper also recommends policies to promote the development of domestic financial markets, including policies to promote the development of domestic financial markets and the provision of financial education. The paper concludes with a discussion of the implications of the internationalized banking sector for the future of the economy.