

Productivity Developments in the Baltics

Productivity is the main determinant of national living standards over the long run—or at least the determinant over which policymakers in most countries have indirect leverage.¹⁸ It refers to how well an economy uses the resources it has available by relating the quantity (and ideally quality) of inputs to outputs. It is generally accepted that productivity growth rates are strongly influenced by a country's position relative to the global production frontier—that is, the potential for “catch-up” or “convergence.” That said, there is also ample evidence that there is much more to relative productivity performance than simply lags in the diffusion of a common set of technologies, including the establishment of macroeconomic stability and the timeliness and intensity of structural reform efforts.¹⁹ This section considers the recent productivity performance of the Baltics.

A. Labor Productivity

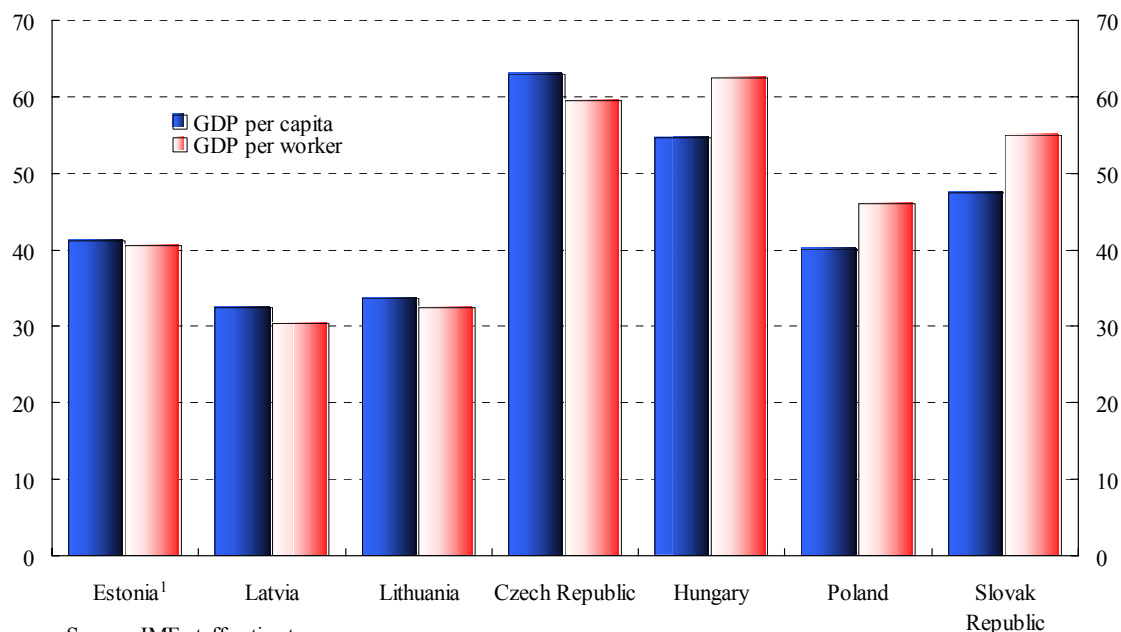
Among the most simple and widely cited measures of a country's productivity performance is income or output per capita, typically measured by GDP.²⁰ This measure also has the most direct bearing on average standards of living. Income

¹⁸For smaller, more open economies, changes in the terms of trade also have a significant impact on living standards. For the Baltic economies, however, the terms of trade are essentially determined externally.

¹⁹For a review of recent evidence on convergence and growth, see Temple (1999). Relative growth performance in transition economies is discussed in Fischer and Sahay (2000).

²⁰GDP in Estonia is inflated by profits made by foreign companies. The gap between GDP and GNP is relatively large (over 5 percent) and has been increasing in recent years. For cross-country comparisons, therefore, GNP rather than GDP is used for Estonia.

Figure 10. Income and Productivity Levels
(2002, Euro area = 100)



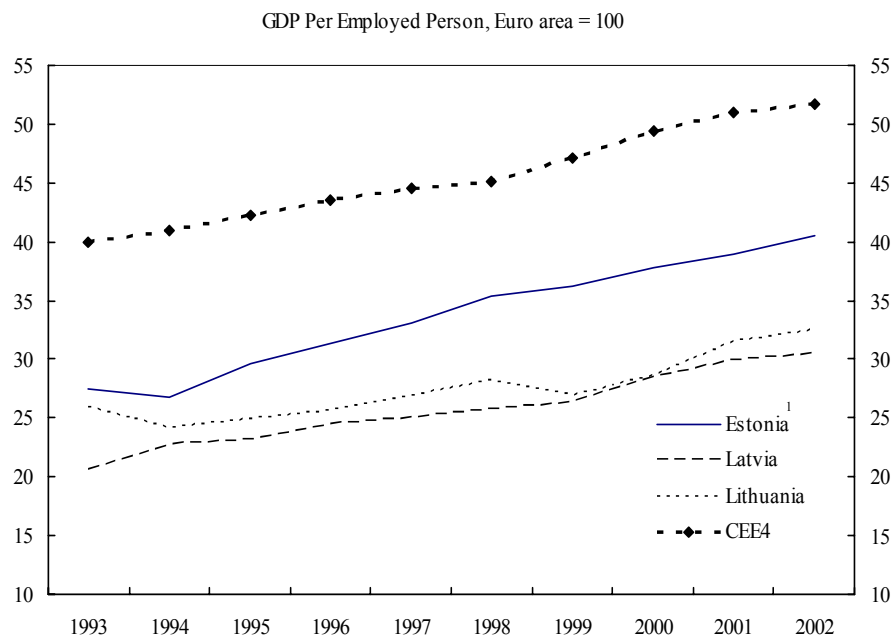
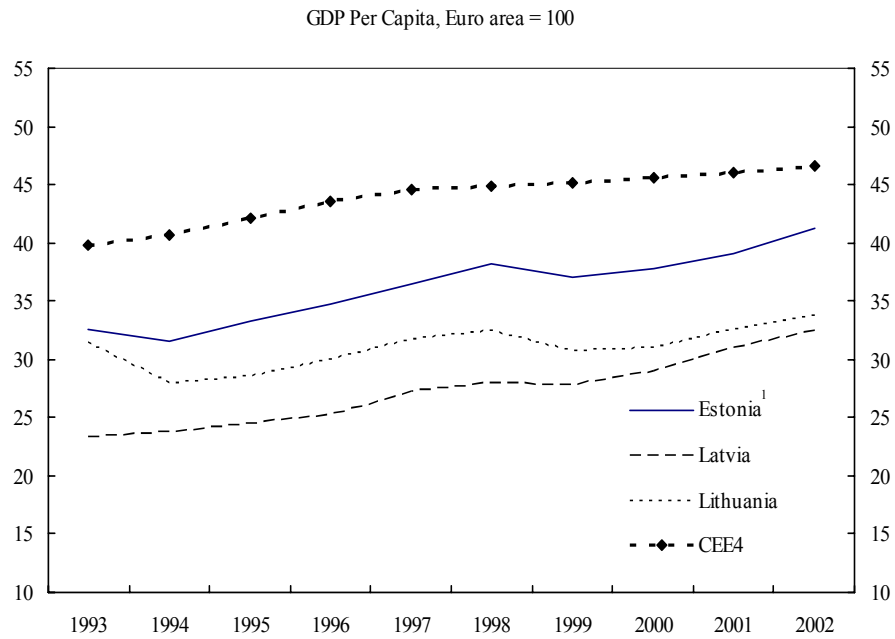
Source: IMF staff estimates.

¹Figures for Estonia based on GNP rather than GDP.

per capita is 41 percent of levels in the euro area in Estonia, and about one-third in Latvia and Lithuania (Figure 10). Income levels are also still significantly below levels in other acceding countries. Although productivity is better defined as output per unit of productive inputs, such as GDP per worker, the productivity gap between the Baltics and the euro area remains about the same size as that for per capita incomes.²¹ Differences between GDP per capita and labor productivity reflect cross-country variations in unemployment rates and labor force participation.

²¹Further refinements, such as GDP per hour worked, are possible. There is, however, considerable uncertainty regarding cross-country comparisons of annual average hours worked. For the purpose of comparing productivity levels across countries, therefore, GDP per worker is used. Comparisons of income and productivity levels are also influenced by the exchange rate used to convert to common currencies. The above comparisons use the IMF measure of purchasing power parity (PPP) exchange rates.

Figure 11. Income and Productivity Convergence

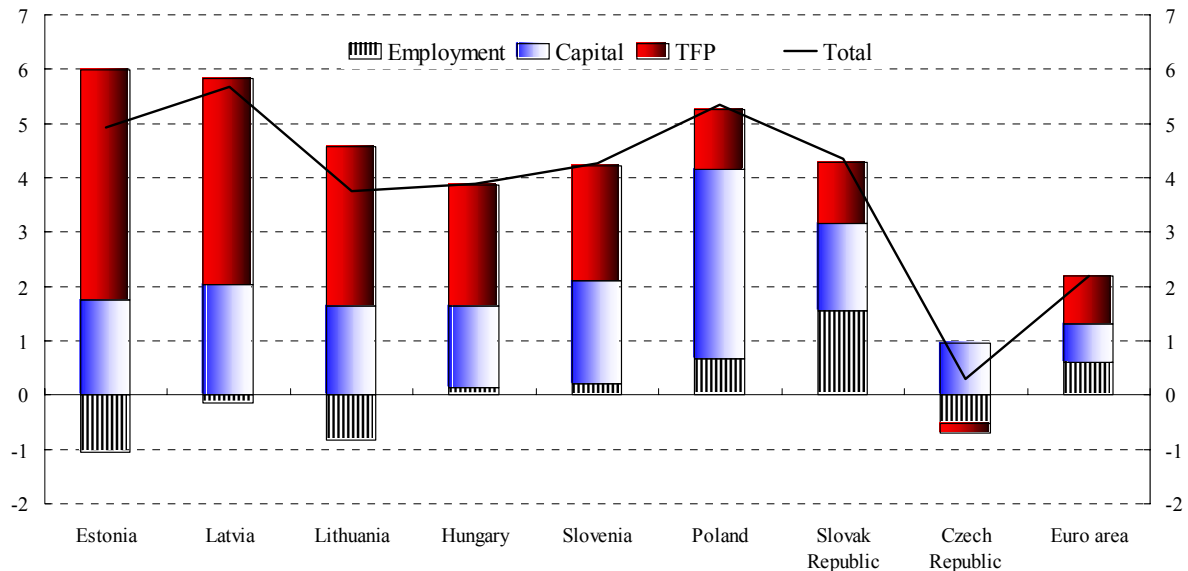


Source: IMF staff estimates.

¹Figures for Estonia based on GNP rather than GDP.

Note: CEE4 is Czech Republic, Hungary, Poland, and Slovak Republic.

Figure 12. Total Factor Productivity Growth
(Contributions to average GDP growth, 1995–2001)¹



Sources: IMF staff estimates; Doyle, Jiang, and Kuijs (2002); and Denis, McMorrow, and Röger (2002).

¹Baltics: 1995–2001; Hungary, Poland, Slovak Republic, Slovenia: 1995–2000; Czech Republic: 1995–1999; euro area: 1996–2000.

Although the gap between income and productivity levels in the Baltics and the euro area remains very large, convergence is taking place. And the convergence of productivity levels has been more rapid than convergence of income levels, as output growth has been maintained despite a decline in employment and participation rates toward average levels in the euro area (Figure 11). Convergence has generally been a little more rapid in the Baltics than in most other central and eastern European accession countries, possibly reflecting their lower starting levels. Since 1998, labor productivity growth has, on average, been close to $3\frac{3}{4}$ percentage points above productivity growth in the euro area, and about $\frac{3}{4}$ percentage point above average labor productivity growth in the Czech and Slovak Republics, Hungary, and Poland.

B. Total Factor Productivity

Measures of labor productivity, however, are influenced by the extent of capital deepening (increases in the quantity of physical capital per unit of labor input). While measures of labor productivity take into account the impact of changes in employment on output, they do not take into account the impact of changes in the capital stock. Total factor productivity (TFP) attempts to capture the

efficiency with which both labor and capital inputs are used and therefore represents a theoretically more appealing measure of productivity. TFP is difficult to measure, however, especially in transition economies, where estimates of the effective capital stock and level of labor input at the start of the transition process are subject to considerable uncertainty.²²

Approximate estimates of the capital stock, however, suggest that capital accumulation contributed about 1³/₄–2 percentage points to annual GDP growth in all three Baltic countries during 1995–2001. While this is significant, the estimates suggest that the rapid growth in output in the Baltics over this period primarily reflects TFP growth rather than capital deepening or increases in employment. Increases in TFP are estimated to have contributed 4¹/₄ percent to annual GDP growth in Estonia, 3³/₄ percent in Latvia, and 3 percent in Lithuania. These estimates are somewhat larger than similar estimates for other acceding countries, and significantly larger than estimates for the euro area (Figure 12). The relative growth of TFP may, however, be overstated as a result of the process of labor shedding, which only now appears to be coming to an end in the Baltics, as well as substantial improvements in the quality of capital and labor inputs during the transition period.²³

²²For a more detailed discussion of some of the issues involved in estimating TFP in Estonia, and a description of the methodology used to calculate the estimates of TFP reported here, see IMF (2002b), Appendix I; and Doyle, Jiang, and Kuijs (2002).

²³The fall in officially measured employment in the Baltics throughout much of the transition period partly reflects hidden unemployment and poorly allocated labor under the previous economic system. Hence, using employment levels—rather than some broader measure of the effective input of human capital—will tend to understate the real contribution of labor to growth, and overstate that of the residual TFP. Coricelli and Jazbec (2001) find that labor shedding accounts for a significant proportion of productivity growth in the Baltics relative to other central and eastern European accession countries.