THE OECD ENV-GROWTH MODELLING FRAMEWORK

Projecting long-term economic growth

Background

The OECD regularly produces country-specific long-term macroeconomic projections for OECD countries. These provide a reference scenario for socio-economic development against which the consequences of alternative policy settings can be projected.

The OECD’s ENV-Growth model extends the methodology used so far to produce economic growth projections for both OECD and non-OECD countries. The model explicitly considers energy and some natural resources (oil and gas) as productive inputs. The methodology provides long-term pathways of national income until 2100 for 184 countries.

Stylised representation of conditional income convergence

Elements of the framework

The ENV-Growth modelling framework for projecting future global and country-specific GDP and per capita income levels is based on a neo-classical model of exogenous growth augmented with accumulating human capital (i.e. augmented Solow growth model). Countries’ income levels converge towards their country-specific long-term frontier (“conditional convergence”), which is determined by the key drivers of economic growth.

Short- to medium-term (2012-2017) economic projections are in line with the OECD and the International Monetary Fund (IMF) forecasts.

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### Overview of the modelling framework

The OECD’s ENV-Growth model considers six drivers of long-term economic growth:

- **Total factor productivity (TFP)**, as an indicator of exogenous technical progress;
- **Physical capital**, as driven by standard capital accumulation;
- **Labour**, as driven by human capital, which depends on education, and employment, which depends on demographic trends, labour participation rates and unemployment scenarios;
- **Energy demand**, as driven by autonomous energy efficiency;
- **Natural resource revenues** stemming from extraction and processing of oil and gas.

### Potential uses of ENV-Growth

ENV-Growth provides essential inputs for the OECD’s multisectoral ENV-Linkages model, which focuses on economy-environment interactions in the coming decades. ENV-Linkages and ENV-Growth are mutually consistent. It is also used in the construction of Shared Socioeconomic Pathways (SSPs), as a basis for climate change assessment. More information on the SSP projections is available at: https://secure.iiasa.ac.at/web-apps/ene/SspDb

ENV-Growth can provide quantitative support for a variety of OECD studies, including OECD-wide analysis of new sources of economic growth. The model will also play a key role in the analysis of the long-term costs of environmental inaction and resource scarcity. As the key ENV-Growth projections are publicly available, the methodology can also serve as a basis for other quantitative assessments that involve long-term economic baselines.

### Further information:


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