

Modelling production sector emissions

Emissions from economic production are projected on the basis of an exogenous trend in emission intensities. The trend extrapolates the observed trend. The median trend, rather than the average trend, is used for robustness. In some small or clunky sectors, discrete events dominate the average, but not the median trend.

Emissions $E_{s,t}$ of sector s at time t are equal to

$$(1) \quad E_{s,t} = \varphi_{s,t} Y_{s,t}$$

where $Y_{s,t}$ is the output of sector s at time t , and $\varphi_{s,t}$ is its emission intensity. Equation (1) is an identity.

Emissions are projected on the basis of:

$$(2) \quad \varphi_{s,t} = \alpha_s \varphi_{s,t-1}$$

where

$$(3) \quad \alpha_s = \text{Median} \left(\frac{\varphi_{s,2}}{\varphi_{s,1}}, \frac{\varphi_{s,3}}{\varphi_{s,2}}, \dots, \frac{\varphi_{s,T}}{\varphi_{s,T-1}} \right)$$

where T is the most recent year of observation.