

The Effects of Environmental Policy and Learning on the Diffusion of Energy-Saving Technologies in a Vintage Framework

Peter Mulder

Free University Amsterdam, the Netherlands

peter.mulder@ivm.vu.nl

This paper explores the effects of energy levies on the diffusion of energy-saving technologies in a vintage framework that is extended with an element of endogenous technological progress. Vintages differ from one another with respect to their energy efficiency. Technological change is endogenized by modeling a learning-by-using effect which allows for ex-post productivity improvement of existing vintages and the possibility of path dependency with respect to investment decisions. As a result firms do not necessarily invest in only best-practice technology. The model thus offers an explanation for the energy-efficiency paradox. The effects of the substitution elasticity between energy and capital, the strength of the learning-by-using effect and the structure of adjustment costs on price-induced technological diffusion are analysed.