Embodied and induced technological change and the price of carbon

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The aim of this paper is the analysis of driving forces for technological change that increases energy efficiency and reduces carbon emissions in production. This analysis is based on dynamic factor demand models with K,L,E,M inputs in production. From the solution of the dynamic optimization model we derive an investment function that depends on factor prices and on policy conditions. The model is estimated based on WIOD and EUKLEMS data for different industries across EU countries.

The modelling framework allows for different sources of technological change: factor bias, embodied and induced technical change. In the case of emission mitigation policies in terms of a price for carbon, we derive the energy demand reaction from substitution effects as well as from different sources of technological change.