MODELING THE LINKS BETWEEN BIODIVERSITY, ECOSYSTEM SERVICES AND HUMAN WELLBEING IN THE CONTEXT OF CLIMATE CHANGE: RESULTS OF AN ECONOMETRIC EXERCISE TO THE EUROPEAN FORESTS

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The paper conducts an empirical investigation on the complex relationship between biodiversity and the values of ecosystem goods and services that are supported by biodiversity and ecosystem functioning, aiming to produce an econometric quantification of the magnitudes involved. Furthermore, we operate this study at a in the context of global climate change, which is considered one of the major drivers today that alter the pattern of biodiversity distribution, affect the ecosystem functioning and change the flows of ecosystem goods and services to be provided by a healthy ecosystem. In the paper, we first built a composite biodiversity indicator on the concept of Natural Capital Index so as to integrate information regarding the quantitative and qualitative changes of ecosystems driven by warming climate conditions. Furthermore, the composite indicator is integrated into the econometric specification so as to capture the marginal impacts of changes in biodiversity on the value of ecosystem goods and services due to climate change. The econometric problem is solved in a structural simultaneous system using three-stage-least-squares (3SLS) to analyze climate change impacts on forest ecosystems and the respective ecosystem service values across 17 European countries.