

An economic model of an optimal climate change policy and its policy implications

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Abstract

Although there are several studies on the effects of climate mitigation and adaptation, knowledge on the implication of mitigation strategies is rather scarce. This study aims to contribute to the literature by presenting an initial assessment of the relationship between mitigation and adaptation to derive a rudimentary optimal policy mix framework. The result of the one-period model show that adaptation and mitigation are substitutes in the sense that if the cost of adaptation falls, the optimal response is to do more adaptation but less mitigation. However, in the two-period model, there are both trade-offs and synergies between adaptation and mitigation. For less developed, agricultural economies, it is hypothesized that it will be optimal to invest more in proactive adaptation relative to mitigation activities and reactive adaptation. Moreover, the difference in scope and scale of the impacts of mitigation and adaptation activities implies that individual agricultural players will under-provide mitigation activities relative to what is socially optimal. The ability to adapt is also constrained by technological knowledge and income availability, which is especially true for smallholder agricultural players in less developed countries. These warrant third-party intervention to provide incentives to adopt optimal levels of mitigation and adaptation activities. A multi-level approach to addressing climate change is more appropriate due to its global, national and local aspects.