Award: ESRC Centre for Climate Change Economics and Policy
Project: Adaptation and climate-resilient development (CCCEP Phase 1)
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Overview of project aims

This CCCEP project explored, from an economics angle, policy challenges related to climate-resilient development and adaptation to climate change. There were three main lines of enquiry. A first set of papers analysed the link between economic development, income growth and vulnerability to climate change (Millner and Dietz 2015; Fankhauser and McDermott 2014, 2016). They explored to what extent economic development might increase or decrease the climate change risks faced by developing countries. A second set of papers analysed what the extra costs might be of climate-proofing economic development paths, in other words, what the costs of adaptation could be (Fankhauser 2010, Fankhauser and Schmidt-Traub 2011). The third strand of work was normative and developed recommendations for adaptation planning and the allocation of adaptation finance (Barr et al. 2010; Fankhauser and Burton 2011; Fankhauser and Soare 2013).

Overview of data

The main empirical paper for which data can be deposited is Fankhauser and McDermott (2014). Most other papers under the project are theoretical or conceptual in nature and did not produce any data. Barr et al (2010) and Fankhauser and Schmidt-Traub (2011) contain data from the World Bank and other sources, which are fully in the public domain.

Fankhauser and McDermott use panel data on natural disasters at the country-year level to estimate the degree of adaptation to disaster risks observed in countries with different income levels. This information is then used to explain the origin and nature of the so-called adaptation gap: the observation that low-income countries tend to have lower levels of adaptation than high-income countries.

The paper relied on the following data:

- Natural disaster data from the Munich Re NatCat database. The proprietary NatCat database records all natural hazard events worldwide that result in property damage or personal injury. The paper used data for two disaster types over the period 1980 to 2008, floods and tropical cyclones. The disaster data were converted into 2,274 country-year observations that formed the dependent variable.

- The control variables include economic data (GDP, GDP per capita, and government spending) from the World Bank's World Development Indicators (available here) and estimates of country size (area in km2) from the Portland State University Country Geography data set (available here).

The Munich Re data are proprietary and cannot be deposited. The economic and geographical controls are publicly available under the links given above. In this deposition we provide the computer code (STATA do file) that was used to manipulate the data.

Links to other projects

This project is part of the first phase of research by the Centre for Climate Change Economics and Policy (CCCCEP 1). Research in CCCEP 1 was structured into four interrelated research themes. Theme 3, under which this submission falls, was concerned with "Adaptation and Human Development", and also featured projects on (i) food security, (ii) temperature extremes and human health (an Indian case study) and (iii) the link between adaptation, mitigation and development. See www.cccep.ac.uk for details.

Relevant CCCEP publications

Barr, R., Fankhauser, S. and Hamilton, K., 2010. Adaptation investments: a resource allocation framework. *Mitigation and Adaptation Strategies for Global Change*, 15(8), pp.843-858.

Fankhauser, S., 2010. The costs of adaptation. *Wiley interdisciplinary reviews: climate change*, 1(1), pp.23-30.

Fankhauser, S. and Burton, I., 2011. Spending adaptation money wisely. *Climate Policy*, 11(3), pp.1037-1049.

Fankhauser, S. and T. McDermott, eds. 2016. *The Economics of Climate-Resilient Development*. Cheltenham: Edward Elgar.

Fankhauser, S. and McDermott, T.K., 2014. Understanding the adaptation deficit: why are poor countries more vulnerable to climate events than rich countries?. *Global Environmental Change*, 27, pp.9-18.

Fankhauser, S. and Schmidt-Traub, G., 2011. From adaptation to climate-resilient development: the costs of climate-proofing the Millennium Development Goals in Africa. *Climate and development*, 3(2), pp.94-113.

Fankhauser, S. and Soare, R., 2013. An economic approach to adaptation: illustrations from Europe. *Climatic Change*, 118(2), pp.367-379.

Millner, A. and Dietz, S., 2015. Adaptation to climate change and economic growth in developing countries. *Environment and Development Economics*, 20(3), pp.380-406.