

Seek Project 2010:

Induced Climate-Related Innovations, Crowding Out, and Their Impacts on Competitiveness

Motivation

- ▶ Rising environmental concerns on the problem of anthropogenic climate change have forced policy makers to act to mitigate future damage.
- ▶ Nevertheless, national governments are also concerned not to limit economic growth and competitiveness by means of strict regulations.
- ▶ Investments in research and development to find “cleaner” technologies are considered the only option to mitigate the climate change problem and at the same time maintaining competitiveness and economic growth. The role of policymakers is to ensure that climate related innovations can happen.

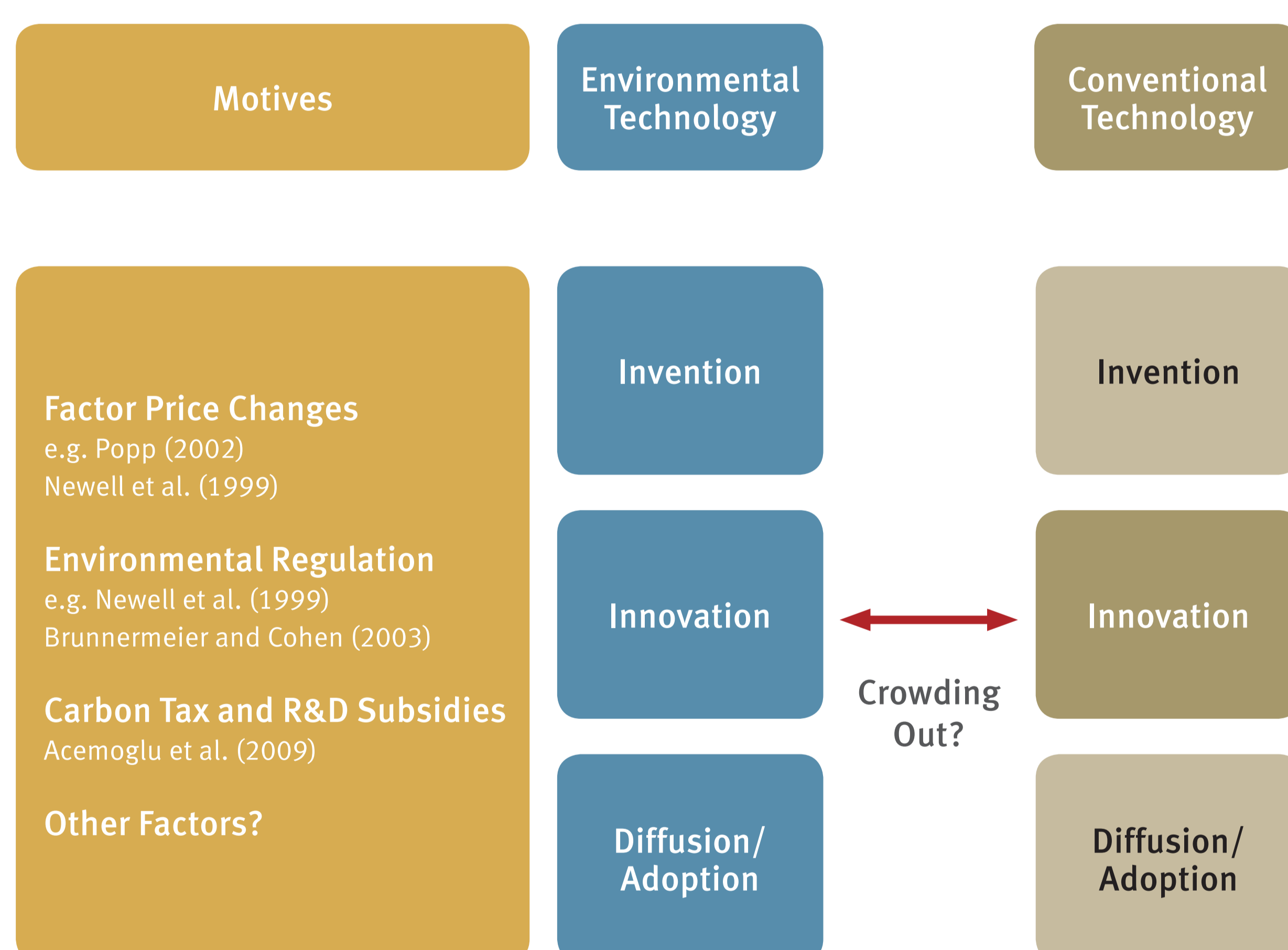
Research Questions

- ▶ What are the driving forces of climate related innovations?
- ▶ Maybe even more important: What are the driving forces of adopting such technologies?
- ▶ For these two questions especially the role of environmental policy for promoting innovation and diffusion is of large interest.
- ▶ What are the effects of climate related research and development on conventionally inventive efforts? In other words: Are climate related innovations complementary to other productive innovations, especially in the case where innovations are induced by climate policy?
- ▶ If not, this would be a large barrier to competitiveness!

Research Team

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Project Description



Relevance of the Aimed Research

- ▶ Environmental economists’ conventional wisdom on how to approach climate change is described in an oversimplified way as follows: emission taxes spur abatement technologies in dirty industries while discounting future utility declares emission-free innovations as a task for future generations, i.e. innovations are widely seen to emerge exogenously.
- ▶ The importance of (endogenous) technological change is largely neglected by standard environmental economics models (mostly CGE and simulation models)
- ▶ But the climate friendly technology of tomorrow is today’s investment into research and development. Acemoglu et al. (2009) showed that the sooner a policy intervention directs technological change towards clean technologies, the smaller the losses in economic growth are.
- ▶ This project will deepen the understanding of the driving forces of both the generation of environmentally related innovations and the adoption of such innovations.
- ▶ Only little empirical research is done in this area.

Data: The Community Innovation Survey (CIS)

- ▶ Belgian and German CIS will be used.
- ▶ The CIS is a representative survey for the Belgian and German economy.
- ▶ Climate change mitigation innovation/adoption is included in the 2009 version for the first time. These data allows investigating the driving forces of clean technology adoption.
- ▶ Patent data from the United States Patent and Trademark Office (USPTO) and European Patent Office (EPO) will be merged with CIS data. The additional patent data allows investigating the factors that induce climate related innovations.

Methods

- ▶ Only little research has been done on related topics, especially firm-level evidence is scarce.
- ▶ For this reason, micro-econometric approaches based on firm-level data from the CIS and patent data will be used.
- ▶ The dependent variable for answering the question on driving forces of environmental innovations will be the number of patent applications for climate related technologies by firms. For most firms, we expect to find only few patents in this area. The (conditional) Poisson model or the Propensity Score Matching Method may be appropriate methods for this data structure.
- ▶ The CIS offers firms’ response in binary or ordinary scale for the question regarding the adoption of climate related technologies. Thus, discrete choice methods like logit or probit models are our preferred choice.