

Firms in a (green) transition: The effect on workers and the role of technology

This thesis studies the effect on the economic outcomes of firms and their workers when facing a technological transition, specifically focusing on how worker demand is impacted by green technology shocks and carbon prices, as well as how firms respond to technology spillovers.

Chapter 1: Carbon taxes, emissions and labor demand: Evidence from Norway

Co-authored with Elisabeth Isaksen

The first paper studies carbon taxes, emissions and labour demand. Do higher carbon and energy prices reduce manufacturing employment? Motivated by political concerns over the labor market impacts of the green transition, we use matched employer-employee data from Norway to study the effects of carbon taxes and energy prices. We find that carbon taxes achieve their intended goal of reducing emissions, primarily through lower energy use and reduced carbon intensity, with no clear evidence of employment effects. By contrast, higher energy prices reduce both employment and revenue, especially in emission-intensive establishments, with particularly adverse effects from higher electricity prices. We also find no significant effects on wages or on the share of high-skilled workers. These findings highlight that carbon taxes and energy prices differ in their implications for emissions, employment, and firm performance, informing the design of climate and energy policies.

Chapter 2: Is green technological change skill biased?

Solo-authored

Technologies that limit greenhouse gas emissions have become a key component of modern technological change, but little is known about their impact on labour market inequality. This paper studies whether and when green technology increases the demand for workers with and without higher education. Green technologies differ from technologies previously shown to be skill biased because their main function is to improve clean relative to dirty production, rather than augment or replace types of labour. Using linked employer-employee data and a novel shift-share instrument to account for endogenous technology choices, I show that the skill-bias of green technologies is highly heterogeneous. Specifically, I find that firms in manufacturing increase their share of high-skilled workers in response to an imported green technology shock, while firms in most other sectors (such as construction) decrease their skill ratio. Compared to other technology shocks, green ones are likely less skill biased. The political feasibility of climate policies depends on the winners and losers of the green transition. My results imply that the green transition is not inherently skill-biased – instead, the labour market inequality effects vary depending on the sector where the transition occurs.

Chapter 3: Conduits of Knowledge: Imported Inputs and Firm-Level Technology Adoption

Co-authored with Esther Ann Bøler

How do innovations abroad translate into technological advancement at home? This paper studies whether global inventions lead to improved technology in firms in a small, open economy. We exploit the fact that firms' import mixes make them exposed to different subsets of foreign innovations. We show that how firms react to imported technology shocks depends on their capabilities. For firms with pre-existing R&D capacity, foreign innovation increases their R&D activity; for those without such capacity, it increases their imports. The results have implications for the design of optimal trade and innovation policy.