

Technological Progress and Income Inequality in the British Cotton Industry During the Industrial Revolution: Evidence on the Wage Records of Strutt's Belper Mill

Abstract

This study examines how technological change reshaped wages and inequality in the British cotton industry during the Industrial Revolution. Using 4,780 individual wage observations from Strutt's Belper Mill in 1805, 1827-1828, and 1834-1835, it compares wage levels and distributions across the water-frame, spinning-mule, and power-assisted-mule stages. Combining descriptive distributional evidence with OLS and quantile regressions, the study shows that neither transition followed a simple deskilling pattern. The transition to the spinning mule raised returns at the top of the wage distribution while depressing or leaving behind middle- and low-income workers, and its evolution closely matches the displacement and reinstatement model: older water-frame tasks were displaced while new mule-spinning and auxiliary tasks were created. The later transition to the power-assisted mule, by contrast, followed a more classic skill-biased technological change path, strengthening the wage premium for upper-middle and high earners without broadly raising wages at the middle and bottom. Gender shaped access to these gains. A small group of male workers captured the largest rewards, whereas women remained largely excluded from the highest-paid positions and concentrated in middle- and lower-income work. The study therefore provides micro-level evidence that early industrial mechanisation produced a new inequality regime jointly organised by skill and gender.