Infection Risk at Work, Automatability, and Employment

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Abstract

We propose a model of production featuring the trade-off between employing workers versus employing robots and analyze the extent to which this trade-off is altered by the emergence of a highly transmissible infectious disease. Since workers are — in contrast to robots — susceptible to pathogens and also spread them at the workplace, the emergence of a new infectious disease should reduce demand for human labor. According to the model, the reduction in labor demand concerns automatable occupations and increases with the viral transmission risk. We test the model's predictions using Austrian employment data over the period 2015-2021, during which the COVID-19 pandemic increased the infection risk at the workplace substantially. We find a negative effect on occupation-level employment emanating from the higher viral transmission risk in the COVID years. As predicted by the model, a reduction in employment prevails for automatable occupations but not for non-automatable occupations.

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