

Essays on technology adoption and the labor market

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Impact Paragraph

The impact paragraph of this doctoral dissertation is added in compliance with article 22.5 of the “Regulations for obtaining the doctoral degree at Maastricht University” decreed by resolution of the board of deans, dated 1 October 2020.

This dissertation explores the multifaceted aspects of technology adoption, encompassing its drivers, labor market ramifications, and the pivotal role of skills in enhancing workers’ resilience to technological change. In particular, I focus on developing and emerging economies and build on recent findings indicating that technological advancements threaten to displace workers in certain occupations and exacerbate inequality. The importance of comprehending the labor market repercussions of technological change is particularly pronounced in emerging and developing economies, where inequality and unemployment are already exceptionally high. Additionally, these economies grapple with frail social protection systems and educational structures that lack the capacity and agility to respond to shifts in the nature of work.

Hence, this dissertation emphasizes the importance of policymakers' broad and coordinated approach to promoting shared prosperity and addressing the intricate relationship between technology and employment and inequality in the context of developing and emerging economies. In Chapter 2, I study the extent of job polarization in developing and emerging economies. Through an extended literature review, I highlight several gaps in the empirical literature and emphasize the importance of systematically and frequently collecting micro-level data to comprehend occupation-specific task content and technology adoption patterns at the firm level. This data would not only shed light on the obstacles hindering technology adoption but also lay the groundwork for tailored policy interventions specifically designed to address the unique challenges developing and emerging economies face. Furthermore, this data would enable a deeper understanding of the intricate connections between adopting particular technologies and their impacts on the demand for specific skill sets.

Chapter 3 provides evidence that recent technological advancements affect workers in routine-intensive occupations, leading to prolonged unemployment and reducing wages upon reemployment. These findings show the necessity to implement policies focusing on upskilling the workforce, particularly those in routine-intensive occupations. These policies should prioritize assisting these workers through lifelong learning initiatives and re-training programs to mitigate the adverse consequences of job displacement. Furthermore, a nuanced comprehension of the specific tasks undertaken by these groups is essential, particularly recognizing the significance of soft skills that facilitate smoother transitions between jobs.

Chapter 4 presents evidence that the commonality of workers' skills is pivotal in facilitating their reentry into the labor market following a layoff. The findings emphasize the crucial roles played by both public and private employment agencies in expediting job placement and enhancing the prospects of job-seekers finding positions that align more closely with their skill sets. For workers in occupations with higher

commonality, intermediation services can advise them to broaden their search. In contrast, for workers in low-commonality occupations, the results also underscore the necessity of reskilling, ensuring they remain competitive and adaptable in a rapidly evolving job market.

Lastly, Chapter 5 examines the drivers of technology adoption at the firm level, mainly focusing on the impact of international trade engagement on firms' decisions to adopt advanced technologies. Notably, the study finds that initiating exports enhances the likelihood of firms adopting sophisticated technologies. These findings shed light on the connection between trade activities and productivity growth, with the adoption of sophisticated technologies playing an important role in this dynamic. Moreover, the results underline the significance of policies that combine export promotion with initiatives to mitigate barriers to technology adoption.

In conclusion, from the importance of upskilling and lifelong learning to the role of trade in spurring technology adoption, the insights from this dissertation provide valuable direction for public policies promoting technology adoption while mitigating its adverse effects on the labor market. The hope is that the findings from this dissertation will contribute to the development of well-crafted programs and effective policies, aiding policymakers in making informed and prudent choices.