

# ICT Skills and Labor Market Outcomes in India: Evidence from Cell Tower Expansion

Mehtabul Azam, Oklahoma State University

M. Shahe Emran, IPD, Columbia University

Forhad Shilpi, DECRG, The World Bank

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## ABSTRACT

Using a nationally representative large-scale survey of individual ICT skills in India (Multiple Indicators Survey, 2020), we provide evidence on the effects of ICT skills on labor market outcomes and household welfare as measured by per capita expenditure. We study the effects both at the extensive and intensive margins of labor market. To tackle the challenges in identification arising from unobserved individual heterogeneity in the acquisition of ICT skills, we develop an instrumental variables (IV) strategy. The IV approach exploits the dramatic expansion of cell towers in India as a source of supply-side variation, and relies on an institutional feature of the telecom market, the “telecom circles”, to construct a leave-own-out instrumental variable. The evidence suggests no significant effects at the extensive margin (null effect on both labor force participation and employment). In contrast, there are important effects at the intensive margin: a 10 percentile higher ICT skills index increases the probability of salaried employment by 6.5 percentage points, and leads to a 9.5 percent higher per capita expenditure. Employment transitions happen from daily wage employment and self-employment to salaried employment. The effects vary substantially across gender: women face a penalty in the form of a lower impact on salaried employment, but the impact on per capita expenditure is larger for households with ICT-skilled women. The higher impact on women reflects the fact that the family stock of ICT skills is much larger in households with ICT-skilled women. Contrary to conventional wisdom, the lower caste individuals enjoy a larger positive effect on salaried employment, despite their unfavorable labor market network, possibly due to the employment quotas in public sector employment. The impacts on salaried employment and per capita expenditure for Muslims are comparable to the other social groups. We find no significant rural-urban differences.