

WHEN TECHNOLOGY DESTROYS JOBS: Evidence from the adoption of electricity in the Great Depression

When firms adopt a new technology such as computers or electricity, what happens to employment? One side of the debate – the ‘technological unemployment’ view – argues that firms fire workers they no longer need because demand for products does not increase quickly enough to offset productivity gains. The other side of the debate – the ‘Luddite fallacy’ view – looks at the reverse of the coin and see innovations as productivity-enhancing, so firms can maintain employment and increase production.

Research by **Miguel Barroso Morin**, to be presented at the annual congress of the European Economic Association in Mannheim in August 2015, supports the view of technological unemployment. Examining the historical transition to electricity in the US concrete industry in the 1930s, he finds that the adoption of this labour-saving technology had a strong effect: the long-term improvement in the generation of electric power caused a 36% increase in labour productivity, a 39% increase in electric capital intensity and a 21% decrease in employment, while production stayed constant.

More...

The debate on technological unemployment started two centuries ago and revives with every new wave of technology: water power and steam power in the nineteenth century; electricity and computers in the twentieth century. The lack of evidence on either side of the debate makes this study all the more relevant.

Following the computer and automation revolution, will developed countries transform into workless economies or enjoy higher standards of living? The United States did not become a workless economy following the adoption of electricity, implying that short-term technological unemployment eventually self-corrects and delivers economic growth. Given the similarities between the two ‘general purpose technologies’, the research implies that unemployment caused by the computer revolution will eventually disappear and developed countries will be richer.

The study compares the production choices of firms in states using coal power to generate electricity, as opposed to water power, because the increasing efficiency in coal power drove down the price of electricity. The concrete industry is a dispersed industry with wide geographical coverage that warrants comparison of cheaper electricity on labour market outcomes, abstracting from other determinants such as industrial composition and sectoral reallocation.

The focus on electricity in the 1930s disentangles technology from alternative explanations for unemployment, such as offshoring and de-unionisation: in the 1930s, offshoring was infeasible and unionisation was increasing. These results imply that labour market policies should focus primarily on the recent wave of technology adoption – such as self-checkout machines in retail services.

ENDS

‘The Labor Market Consequences of Electricity Adoption: Concrete Evidence from the Great Depression’

available at: <http://www.columbia.edu/~mm3509/> and
<http://people.ds.cam.ac.uk/mabm3/>

Miguel Barroso Morin

Contact: mabm3@cam.ac.uk and +44 7795 140682