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JOBS LOSSES, AUTOMATION AND ARTIFICIAL INTELLIGENCE IN THE USA

Abstract:

This paper studies the multivariate association between the average automation potential and Susceptibility of jobs to automation with over 70 independent variables within the 50 states of the United States. This research develops a predictive multivariate canonical correlation and regression model for automation jobs losses. The model shows that positive and negative influences of educational, political and competitive variables exert on automation jobs gain and losses.

There have been regular concerns about the effect of automation since the Industrial Revolution. The 19th-century rebellion against automation, in 1811, where the “Luddites” emerged as a violent force against the modernization in the textile industry. They were the first organized group opposed to new technology or ways of working.

The worry of Artificial Intelligence (AI) assuming control over everybody's occupations is increasing. Automation is a topic of research and conversation in different countries and the forecast is that automation will bring further technological advances and create possible social upheavals. Many studies find that nearly half of jobs are vulnerable to automation and there is large variation across countries. In general, workers in rich countries appear less at risk than those in middle-income ones; the same conclusion appears in the states of the United States.

This paper creates a multivariate approach to jobs losses due to automation, using first, a canonical correlation model between variables that signify automation jobs losses (vector Y) and business, economics and competitiveness variables (vector X). Canonical correlation analysis attempts to answer: “which directions account for much of the covariance (correlation) between two data sets?” A Multivariate regression model is developed to quantify the influence of independent on dependent variables

More specifically, vector Y’s considers variables such as Y1, a measure of future automation, Y1= (Brookings Average automation potential, Oxford-Susceptibility of jobs to automation) and Y2= Job share by automation risk ,Y2= ("Low risk" job share, "Medium risk" job share, "High risk" job share:). The explanatory variables, vector X, consider over 70 business, economics, public policy, politics and competitiveness variables.

For example, the multivariate models show that variables such as Research and Development Inputs, Human Capital Investment, Technology and Science Workforce, Risk Capital and Entrepreneurial Infrastructure, Technology Concentration and Dynamism, GDP per capita, urbanization and teachers’ salary are significant to explain jobs losses and automation.

Keywords:

multivariate regression, canonical correlation, jobs losses, automation, artificial intelligence, competitiveness, unemployment, education, policy

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