

Robots and Macro Stability

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I just read a provocative paper, “Technology at Work: The Future of Innovation and Employment” (Oxford Martin School, University of Oxford, 2015) by Carl Frey and Michael Osborne. The authors conclusion is eye-catching: Within a decade or two, roughly half of all the occupations in the U.S. are “potentially automatable”.

The timing is a reach, but the basic argument itself makes sense. In his *Rise of Robots: Technology and the Threat of a Jobless Future* (Basic Books), Martin Ford maps out which jobs are vulnerable to being done by clever algorithms. Computers can likely do work tasks that another person could do if they studied a detailed record of the relevant behavior on the job. In other words, “could someone become proficient by repeating the tasks you’ve already completed, in the way a student might take practice tests to prepare for an exam? If so, there’s a good chance that an algorithm may someday be able to learn to do much, or all, of your job.”

One of the interesting unexplored issues in the GEM Project is the effect that computerization of work tasks will have on macroeconomic stability. In particular, will large-scale substitution of algorithms for humans in performing work tasks make demand fluctuations less capable of generating layoffs. The central innovation of the Project has been the derivation of rational MWR in workplace circumstances of costly, asymmetric information and routinized jobs. Given MWR, adverse demand disturbances rationally induce involuntary job loss. For example, forced layoffs totaled six million in the 2007-09 Great Recession, accounting for a sizable chunk of the huge loss in welfare. It is not possible to model the Great Recession or any other cyclical downturn without first modeling MWR.

It is, of course, the routinized-job condition of the GEM Project’s derivation of MWR that robots interesting in macro stabilization theory. In that context, rereading the formal analysis of routinized and routinized jobs is especially interesting. (See Chapter 2 in the website’s manuscript.) The formal definition of routinized jobs provides substantial latitude for tasks not amenable to computerization. Algorithms, perhaps sadly but probably not, won’t replace humans in all routinized jobs.

The GEM Project specifies relevant characteristics of highly specialized workplaces and their rational pricing. Jobs in which routinized tasks are a substantial share of total tasks, are more numerous than generally thought. Most critically, profit-seeking firms in the large establishment venue will rationally choose not to cede control of labor pricing to the labor market even as more and more routinized tasks are computerized and, absent sufficiently off-setting job growth, employment contracts. Large, highly specialized firms will continue to rationally pay wages that are meaningfully downward rigid over the stationary business cycle

The effect of robots on macro stability and involuntary job-loss will depend, as it does today, on the share of such employment that occurs in the large-establishment venue. For the foreseeable future, the behavior of aggregate nominal demand will retain a potent capacity to induce opposite-direction movement in layoffs and unemployment as well as same-direction movement in output, employment, and pure profit. Stabilization authorities will remain crucially concerned with the management of demand disturbances.

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