Automation and Employment

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Over the last few months, there has appeared a rash of new concern expressed in the media that automation is a threat to jobs. Lehmacher (2016) for example, writing in Fortune Magazine suggests that in manufacturing facilities, automation in the form of industrial robots means that fewer people are required to produce the same (and possibly more) output than in the past. A little over a month later, in the New York Times, Miller (2016) expresses the same sentiment, that automation, not outsourcing or trade is likely to be a long-term job-killer.

The debate over automation and jobs is not new – but one that has gone on for over a century. Autor (2015) cites the Luddite movement against the automation of the textile industry in England at the dawn of the industrial revolution as an early precursor to the concerns of today. Over the course of the nineteenth and twentieth centuries, technology and automation has transformed most industries, leading to an increase in overall goods and services, very often at higher quality levels than in the past.

Between 1910 and 2000, professional and technical employment grew from approximately five percent of total employment to almost twenty-five percent. During that same period, the share of workers engaged in agriculture decreased from over thirty percent to less than two percent while agricultural output grew exponentially (see Wyatt and Hecker, 2006).

The real question in the economy is what is the future of employment? Is it as Morgenstern writing in The Economist (2016) suggests, the possibility of a dichotomous world of high wage specialized and skilled positions and poorly paid low skilled jobs. That is really the ongoing concern. Standardized production processes allowed firms to move manufacturing and production processes across the country and even outside the country to take advantage of lower wages and other costs.

The Rust-belt states, New York included, are still feeling some of the results of this process. But manufacturing has changed too over the last thirty years. Computerization, robotics and automation has created an opening for new industrial production even in higher cost states. The key to making these processes is profitable lies in the skilled labor to operate these machines. The return of advanced manufacturing though is not going to bring back all of those old jobs, as we can produce more and higher quality output with less labor.

A new concern with the continued automation of jobs is that it is encroaching into many other areas, some specialized and others a little less so. Within the next decade, self-driving cars and trucks are forecast to be a reality. If that occurs, what happens to all of those employed as taxi, Uber, or truck drivers? Just as with the current testing of self-driving cars, something similar is happening in medicine in the field of radiology. New software systems are being developed to read and interpret x-rays and CT scans. While these packages will not in the future eliminate the need of a physician to review the computer's analysis, they will likely speed up the review of these procedures and possibly allow a hospital to reduce the number of staff employed in this function.

The real issue is not whether there will be jobs in the future – but more, what type of jobs will there be. Autor (2015) points out that while automation has impacted employment and resulted in the elimination of some jobs, it has resulted in an increase in other jobs – usually jobs that require different skill sets than the previous jobs. ATM machines for example did not eliminate the bank teller, it just reduced the number of tellers required. At the same time, the number of bank branches increased and banks hired more people to move from the routine teller functions to more skilled and modern relationship banking functions (Autor, p. 7). Overall employment increased, it just required a different set of job skills than before.

Automation is finding its way into many mid-skill level positions and even some higher skilled positions. It is also creating opportunities for new career paths (for example the rise of the IT department in many firms over the last thirty years). For most people, staying ahead of the job market means maintaining and

even obtaining new skills. Educational institutions likewise will need to pay close attention to the new and emerging fields within the economy in order to be prepared to offer the appropriate training.

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