With the advancement of A.I. and automation, how should society prevent widespread poverty?

Tommy White

Table of Contents

Introduction

This report discusses which economic changes are necessary to prevent widespread poverty in an ever-changing technological world. It describes and recommends, possible alternatives to the existing capitalist system, whereby widespread poverty can be managed.

Artificial intelligence (A.I.) and the automation of the human workforce presents a problem not yet encountered by humanity. In the past, automation, and industrialization presented opportunities to expand capacity, adjust the global workforce, and reach new markets. Currently, humanity has developed methods of eliminating human employment with no foreseeable alternatives for a wide range of low and high-skilled workers in routine jobs.

As of right now only limited formal research has been performed on the effects of automation. Thus, alternative economic systems are hypothetical and untested. Additionally, universal basic income is still being defined, as such many sources referenced in this report are speculative and commentary of its capabilities.

This report examines possible solutions to a potential problem in the future. Therefore, alternative realities in which this problem does not occur are not discussed. Only solutions that consider a more technologically advanced society, with similar economic structure to today's systems are considered.

Universal basic income, though untested, could provide a simple solution to a complicated problem. Several options are weighed in this report; overall, universal basic income produces compelling points in adoptability, efficiency, and social benefits.

This report identifies several criteria for any solution and ranks each. Then each possible solution is examined individually without regard to possible overlap. Finally, each solution is evaluated to determine a best fit for the proposed criteria.

Some key definitions include:

A.I. – Artificial Intelligence, the advancement of computer systems to the point where they begin to mimic human actions.

Universal Basic Income – sometimes called a 'Reverse Tax', or 'Minimum Income' – A proposition in which a governing body provides a payment to each citizen regardless of any criteria. This distribution can be of many forms, including, but not limited to, a payment of currency, or 'in-kind' as a bundle of necessary goods and services.

Methods

Overview of Research

'Automation and Anxiety: Will Smarter Machines Cause Mass Unemployment?'

This article discusses the possible impacts of automation and provides historical, economic, and technological perspectives.

'The Future of Employment: How Susceptible are Jobs to Computerisation?'

This study performed in 2013, is the basis for which jobs are most at risk for unemployment. It will be the foundation for job-based coping with the proposed problem.

'The Role of Public Works Infrastructure in Economic Recovery'

This report published by the federal government examines the debate between public works projects and other stimulus packages in a recessing economy. This will be the groundwork for determining if government can step into the situation and assume a role in this problem.

'What Would Happen If We Just Gave People Money?'

In this article, Andrew Flowers describes the effects of universal basic income. He provides examples of known tests and defines key requirements for new tests.

'Basic Income Earth Network'

This page describes the definition of universal basic income, and proposes options for its delivery.

Isolating the problem

Causes

Humanity has always pushed advancements in its technology. From simple stone tools to industrialization and beyond. Humans have created tools to grow capacity of output, increase efficiency, or offset work so that they can spend time on more intricate tasks. "In previous waves of automation, workers had the option of moving from routine jobs in one industry to routine jobs in another" ("Automation and Anxiety"). However, now techniques from specialist industries are being applied to mass groups of jobs. This series of events are happening on a more massive scale than ever before, and will likely have a cascading effect.

Proposed Effect

As industries move towards full automation, capacity will greatly exceed consumption. Eventually, unemployment of low skill sectors such as fast-food, logistics, and low-skill material fabrication will reach a critical level. These people will need to find alternative work, or face poverty. When the quantity of low-skill labor exceeds an undetermined threshold, wages will naturally diminish as a result through well understood market forces. Change will be necessary to counter an economic downward spiral of depression on the lower class. Similarly, any routine high-skill job is at risk for replacement, for example: "E-Discovery software can search mountains of legal documents much more quickly than human clerks or paralegals can" ("Automation and Anxiety"). This process is expected to take just a few decades, and affect multiple industries simultaneously, which has not happened in any previous automation wave.

Definition of the Problem

Technological advancements, and capitalism forces move towards ever increasing capacity and efficiency. Eventually, low-skilled workers will be more costly than a complement of automation tools. High-skilled, routine workers will be replaced by similar systems. The required workforce to maintain the tools will need more refined skills, and fewer people. Societies need to adapt to this possibility.

Determining Applicable Research Information

This report includes research applicable to proving an unemployment issue is possible, articles on proposed and tested universal basic income scenarios, and information on advancement on educational and governmental work programs. In an effort to provide unbiased recommendations, this report gives thorough consideration to each solution.

Identifying Criteria for a Solution

Several possibilities exist for the proposed problem. Therefore, criteria were created to isolate and aid in determining which solution is the best. To do so, economic factors inherent to the problem and considerations to feasibility of implementation in democracies are considered.

Results

Criteria

The below criteria are broken into two categories instead of ranking. Individual preferences play too great of a role in each to allow for formalized ranking.

Necessary

Any policy change needs to be applicable to large groups of people, both skilled and unskilled. "47 percent of total US employment is in the high risk category" (Frey Osborne 38). With this many at-risk jobs, the lines of who needs support become very vague. Entire industries and years of training for their workforce may be obsolete.

The poverty line must be obtainable, or exceeded by such a change. Large scale unemployment ultimately leads to widespread poverty. As evidenced during the Great Depression, when poverty became prevalent, recovery of the economy became more difficult. Masses of people did not have adequate disposable income to feed back into the system. This situation must be avoided.

Desirable

Ideally, any system would rearrange government social expenditures, not expand them. As traditional capital resources become more segregated, any governing body could have difficulty securing the necessary resources to provide the proposed system. "Critics of the idea [basic income] say it's too expensive, would encourage people to stop working and possibly tank a country's economy" (Flowers). In a situation where income tax revenues would decrease through job loss, the expense concern becomes more apparent.

Such a system should be simple in its delivery and implementation. Just as the nature of capitalist forces move towards efficiency, so should the implementation of any system that is meant to complement it. While no system could be made such that every governing body could implement an exact copy of it, the system should be simple enough that it can be adapted easily to a variety of countries.

Options

Possible options include things like: allowing the free market to continue to control the events as it has in the past, the do-nothing approach, expansion of public works projects that have worked in other recessions, retraining and educating of the workforce to fill remaining and new jobs, and a universal basic income to everyone.

Free Market Control – Do nothing

In this option, market forces continue to drive towards optimization, and no governmental assistance steps in with meaningful actions. "Yet in the past technology has always ended up creating more jobs than it destroys" ("Automation and Anxiety"). Market forces have shown themselves to be strong equalizers in many industries. Even though this problem hasn't happened in the past at this scale, the existing market forces may prove themselves able to deliver a solution to the problem on their own.

Expansion of Public Works

Often in history, as unemployment rose, governing bodies would step in and employ people in work projects to stimulate their economies. Possibly, such methods could work and use the displaced workforce in projects that require such a scale that

machines still need significant human assistance. "Government spending in a severe and lingering economic slowdown affects resources and labor that are idle, and it does not fully displace private investment" (Copeland Levine Mallet 14). Such projects, as always, are undertaken at a loss, and not by private entities.

Educate to Create Skilled Non-Routine Labor

A governing body could intervene by creating policies that encourage retraining of the displaced workforce into positions that are less likely to be automated. In this option, education would need subsidies to such an extent that people in poverty could attend institutions and learn very specific roles. An attribute of this option is a need to identify which jobs are nearly incapable of automation, otherwise reinvestment in the same individual would occur.

Universal Basic Income

In this option, every individual would receive a payment of some kind that can be used however the individual sees fit. "A basic income is an income unconditionally granted to all on an individual basis, without means test or work requirement" ("About Basic Income"). This policy can be very flexible, as a payment can be increased or decreased regionally. It has capacity to eliminate or replace competing social programs. Additionally, it frees individuals to pursue expansion and exploration of their talents. Individuals free to do as they will without concern for survival could be a breeding ground for further innovations. "This arrangement would provide a path toward a new way of living: If people no longer had to worry about making ends meet, they could pursue the lives they want to live" (Flowers).

Conclusions

Implications for each Option

Here each option is analyzed independently, commentated on, and compared to the criteria.

Free Market Control – Do nothing

This option seems risky, because it relies on new jobs to be created as old ones are automated. Additionally, it requires an accelerated pace of historical events in automation recovery. This may not be possible.

According to the criteria, this option does successfully apply to large groups of people, would not expand social expenditures, and is very easy to implement. However, it misses securing a necessary criteria of meeting or exceeding the poverty line. Even with optimistic expectations, many individuals who are at work now, will not be able to be re-trained into high-skill non-routine jobs through traditional methods. Therefore, unemployment will rise by some degree and poverty will grow, thus fail the criteria.

Expansion of Public Works

Public works projects often put people to work for long periods of time. "Projects that involve substantial new construction are slower to complete and to impact jobs" (Copeland Levine Mallet 14). However, not all projects are run this way. Facing large scale unemployment, another alternative project type frequently occurs, "some types of public jobs programs support jobs that have little long-term impact, such as hiring workers to sweep streets or rake leaves" (Copeland Levine Mallet 14). The best way for this option to work would be for only long-term projects to be created. Unfortunately, such projects usually use several private contractors, who would be interested in efficiency. Therefore, their workforce would have also been impacted by automation.

Using the criteria to analyze this option, it does not fit well with any necessary or desirable criteria. It does not apply to large groups of people, because public works are often construction oriented and many other industries would be left out. Furthermore, the limited people positively impacted by any project would be reduced by automation in private firms. It does not help to meet or exceed the poverty line for these same reasons. It greatly expands government social expenditures, and all public works projects must go through extensive reviews and therefore are difficult to implement.

Educate to Create Skilled Labor

This option attempts to stay ahead of the waves of automation by re-training the displaced workforce as it occurs. Inevitably, this reaction-only approach is unsustainable. Technological advances are not expected to halt, and with the exception of short term plateaus it will continue to displace the workforce at an ever increasing rate. Therefore, eventually society may reach a point where an individual must be re-trained to a new discipline several times in their lifetime. Unless some unforeseen opportunity presents itself to reduce training time and cost, this option is not viable long-term. Though considering only the short-term, the option can be analyzed against the criteria more effectively.

Education roughly satisfies the need to apply to large groups of people, and exceeding the poverty line. Through intervention, costs for education could be low enough to support large scale reeducation, and with the new training unemployment could stay roughly steady. However, many people lack the fundamental education from an early age to build upon for these types of jobs. Not everyone displaced, and likely a great number of people, could be re-trained to fill the potential new roles before the next wave of automation. Therefore, it may or may not satisfy the poverty requirement. This policy also greatly expands social expenditures, but could be easy to implement depending on the existing institutional structure.

Universal Basic Income

Universal basic income could provide a means to allow individuals to perform an internal market forces type effect on their lives. When capacity and scarcity become rarer, prices will drop, as determined by market forces. Then the individuals would be free to pursue advancements in the arts, sciences, and businesses they see fit. This does not interfere with a person's potential to grow, as people with strong dominance motivators will still explore options that expand wealth and power.

When analyzed using the criteria, this proposal applies to large groups of people, and would meet or exceed the poverty line. It is very simple in its delivery, and can be implemented in a variety of ways depending on culture, region, and country. However, it may expand government social expenditures. One proposal, would be replacement of

viii

existing programs with basic income. This would increase its difficulty in implementation though.

Recommendations

Overview

The public works option is quickly eliminated by these criteria, and both the market forces and reeducation options present several draw backs. Only universal basic income satisfies strongly the majority of criteria. Therefore, this report recommends implementation of a universal basic income as a means of coping with automation, job loss and the resulting poverty.

Further Explanation of Benefits

Universal income applies to everyone, those who have wealth through other means would still receive a payment, but would likely be inconsequential to them. Those who are unemployed would be able to use the money to maintain a simple and basic life. Governments would be able to implement similar systems in a variety of ways including individual checks, rebates on tax returns (reverse taxes), or bundling goods and services in combination with a free-to-use check. Ideally, such a system would be implemented as a replacement for many existing social programs and due to its ease, could reduce bureaucracies and associated expenses. It can be extremely efficient and reduce welfare cliffs. "Because eligibility for most social assistance is based on income (or is 'means-tested'), recipients lose their benefits as they earn more income – this is often labeled the 'welfare trap' or 'poverty trap' "(Flowers). Implementation of universal basic income should be done in a series of stages, to ensure each part is working correctly, then as it is tested other social programs are removed. Additionally, research is being done to ensure that the system works on microeconomic scales prior to macroeconomic applications. The results of this research may refine the method of creating such a system.

Bibliography

Flowers, A. (2016, April 26). "What Would Happen If We Just Gave People Money?" Retrieved November 7, 2016 from http://fivethirtyeight.com/features/universal-basic-income/

"About Basic Income." (2008). Retrieved November 14, 2016, from https://web.archive.org/web/20080621140909/http://www.basicincome.org/bien/aboutbasicincome.html

"Automation and Anxiety: Will Smarter Machines Cause Mass Unemployment?" *The Economist.* The Economist Newspaper, 25 June 2016. Web. 07 November 2016 from http://www.economist.com/news/special-report/21700758-will -smarter-machines-cause-mass-unemployment-automation-and-anxiety

Frey, Carl Benedikt, and Michael A. Osborne. "The Future of Employment: How Susceptible Are Jobs to Computerisation?" (2013) 1-72. *Oxford Martin School.* Oxford. Web 07 November 2016 from http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

Copeland, Claudia, Linda Levine and William J. Mallet. "The Role of Public Works Infrastructure in Economic Recovery." Congressional Research Service Report No. R42018. 2013 FAS. Web 07 November 2016