Proceedings of the 2nd International Conference on Business and Policy Studies
DOI: 10.54254/2754-1169/9/20230392

To the Economy and Workers: Challenges and Opportunity

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Abstract: The rapid development of automation and new technologies over nearly two centuries has sparked heated discussions. Programmable, repetitive jobs are being replaced by technology, leaving large numbers of middle-skilled workers unemployable, and causing employment difficulties. But at the same time, the development of automation has created new employment opportunities for another group of laborers. Similarly, the development of automation once accelerated economic growth, but as the development of automation slowed down, economic growth encountered a corresponding bottleneck as well. In this paper, it is mainly used to refer to the historical development of literature research, analyze and summarize, so that the observed specific situation can be summarized. In addition, there are also descriptive studies, which generally describe the experience of the predecessors, play a revealing role, and further analyze and demonstrate. The research questions in this paper revolve around the economic and workforce implications of advances in automation. The source of this thinking is that automation replaces labor, resulting in a large number of middle-skilled workers being unemployed and abandoned by the market because they do not have the ability to use new technologies. This group has a huge base in society, and improving this situation will help reduce poverty, break through the economic bottleneck. The conclusion of this paper is that workers need to improve their competitiveness in the market, and the government needs to adjust policies to adapt the labor force to the market, and that the market is close to meeting the employment needs of the labor force.

Keywords: automation, labor, markets, education, new economy

1. Introduction

The development of automation promotes economic progress, but the current growth rate has declined significantly. At the same time, the development of automation also restricts the possibility of workers' skills matching of jobs. The current research on economic redevelopment focuses on the development of enterprises in the new economy, ignoring the correlation between the labor force that fills the productivity of enterprises and the new economy. In fact, the development of the economy depends on people, that is, the labor force. Automation has replaced medium-skilled workers, and this part of the unemployed has the potential to promote the development of the new economy, as well as the potential to digest excess capacity, but this requires macro-control and policies to stimulate medium-skilled workers and stimulate their potential. So, this paper examines the impact of automation on the labor and the economy separately, and then combines the results of both analyses to make future forecasts. This research focuses on how workers are coping with a series of

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developments brought about by automation, and how the new economy finds a breakthrough in an age of bottlenecks. Both need to be improved, and if they learn from each other, it is possible to open new paths. I think this can provide new ideas for improving the economy, rather than just developing the economy individually, which lacks the overall picture. The manner in which middle-skilled workers find a new way out of automation implies that grassroots workers will support new economic development. Helping or stimulating middle-skilled workers to complete technology transfer will stimulate the development of a new economy. Based on the literature research and description summary, complete the article argument.

2. The Impact of Technology on Workers

2.1. Opportunities

The most direct favorable impact of technological development on employment is reflected in the employment structure. It contributes to the production and provision of new products and services. From the history of technology development from the twentieth century to the present, it can be seen that automation has greatly improved the production efficiency of factories and companies after entering the market. The most obvious feature is today's new media. We can take a look at the graph:

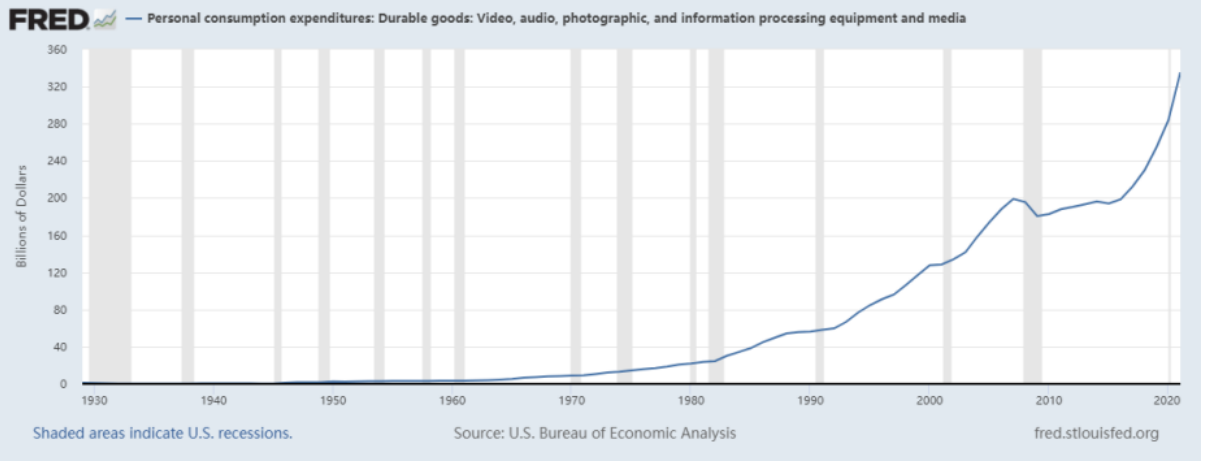

Figure 1: Personal consumption expenditures: Durable goods: Video, audio, photographic, and information processing equipment and media.

We can see from the chart that since the 21st century, the consumption of electronic products by individuals has shown a clear upward trend, which proves that the production and sales of electronic products should also be on the rise. Electronic products, as technical guidance products, will increase the demand for skilled workers in their companies. At the same time, we noticed that the update rate of electronic products is extremely fast. Therefore, the corresponding companies need more skilled workers. In the labor market, the demand for skilled jobs has increased. In addition, other industries related to new media also need labor, but not necessarily skilled workers, but ordinary labor, providing new employment opportunities in the labor market. The increasingly popular live broadcasts have created jobs such as more non-technical but more experienced jobs, such as streamers, in addition to the corresponding jobs for software technicians and anchors. The development of the Internet has made some jobs more common.

In addition to this, the reduction in the supply of jobs for workers due to technology will be mentioned below. However, "Generally, the employers' focus has shifted towards the so-called soft, purely human, skills. One of the reasons behind that is that those skills cannot be replaced with robots"[1]. Technology represents a mechanical program, and machines can always only work

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according to prescribed procedures, but they can never replace human brain thinking and complete human thinking patterns and moral concepts. So human beings are required to complete tasks that rely on these abilities.

2.2. Challenges

Technological developments have also had negative impacts on workers. Ricardo proposed the "wage fund", which theoretically explained the relationship between workers' wage growth and labor productivity, arguing that the level of workers' wages depends on the supply of labor in the unit. “However, because of his “wage-fund” theory in which capital spent on machinery was taken out of the funds available to pay for workers, employment might be reduced as a result of investment in machinery. Ricardo felt that this case was a rather restrictive one, and that in the long run higher productivity would lead to higher saving and eventually rising demand for labor” [2]. But in the short run, the increased investment in automation will affect the demand for labor. In such a short-term period of the economy, it is certain that the development of technology has the negative effect of reducing employment for workers. In addition, the increase in automation investment requires workers with technical skills, and workers who can only sell their physical strength will be eliminated in such a labor market, and they will lose their competitiveness. That is, the market competitiveness of manual workers is greatly weakened by automation. At the same time, the introduction of new technologies could make factories more efficient than consumer demand in the short term, causing excess supply that could eventually lead to layoffs to reduce wage costs.

Technology is moving forward, and workers need to meet the needs of the times by upgrading their education to obtain technology-oriented jobs. But in fact, "Young people just coming onto the job market are also struggling"—and by many measures, they have been for years. Six years into the recovery, the share of recent college grads who are "underemployed" (in jobs that historically haven't required a degree) is still higher than it was in 2007—or, for that matter, 2000"[3]. That is, even though a position may not have specific technical requirements, there is still a preference for more educated workers. We can see from this that employers want to be able to recruit workers with abilities higher than the requirements of the position at the minimum recruitment cost provided by the position, so as to maximize the benefits of the employer's production.

3. The Impact of Technology on the Economy

3.1. Opportunities

Beginning in the late nineteenth century, more technology was put into economic production, driving economic development. Take electronic products as an example, which is a typical technology-based economic product. We can see from figure 1 above that consumer investment in electronic products has maintained a steady upward trend. At the same time, it is precisely because of the continuous development of such technologies that the trend of globalization is becoming more and more distinct.

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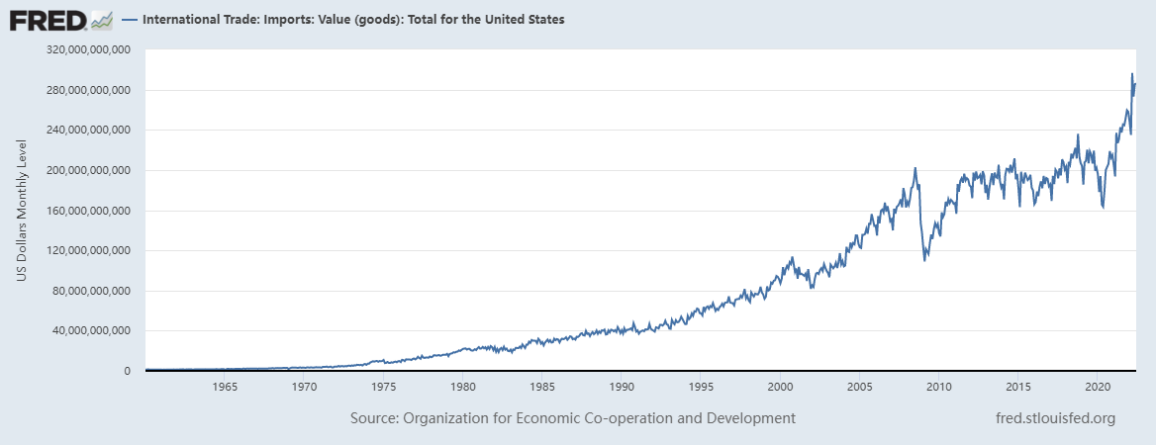

Figure 2: International trade: Imports: Value (goods): Total for the United States.

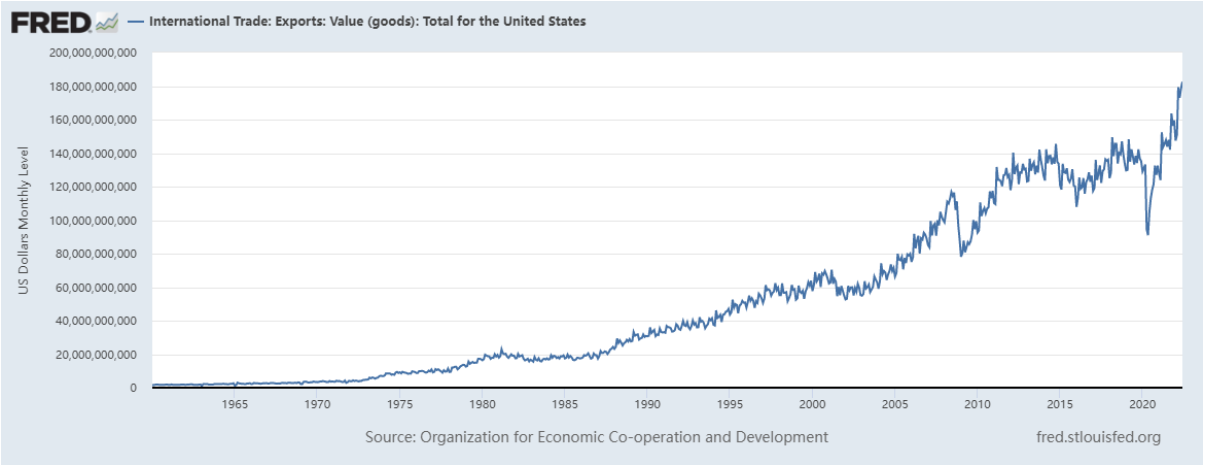

Figure 3: International trade: Exports.

From the figures above, we can clearly see that both the export value and import value of the United States are on the rise every month. The end of the twentieth century is the era of vigorous technological development, and this is the moment when European and American countries almost monopolize the world market. So far, all countries have been working hard to integrate into the world economy. Although there is no complete integration, it is an indisputable fact that international trade accounts for an increasing proportion of economic activities. We go back again to the end of the nineteenth century, "The adoption of the steamengine reduced shipping times in a disproportionate manner across countries and trade routes" [4]. To improve the transportation system, the international economic activities influenced by the convenient transportation system have been stimulated to the maximum extent. The more complete and internationalized transportation system promotes economic globalization and more possibilities for global economic development.

3.2. Challenges

As we enter the 21st century, the development of technology and the economy have gradually entered a bottleneck period where it is difficult to break through. It is not difficult to find that in recent technological development, information technology, as the most prominent scientific and technological achievement, has continuously appeared in the public's field of vision, and is constantly being updated. But it is worth noting that, at the same time, it is difficult to make real breakthroughs

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in science and technology that can promote production efficiency. Data technology is advancing, while technological development in relation to resources and energy is almost stagnant. The stagnation of technologies related to economic production has also affected economic development, slowing its growth. In addition, the interconnectedness of the economy and technology also creates challenges for the economy. Technology promotes the supply of economic goods, but when product suppliers blindly use technology to promote the growth of product supply and lose the balance with total demand, economic sequelae will follow. Overcapacity, inflation, and further reductions in employment will eventually lead to economic recession. "With respect to the capital-intensity variables, we find that changes in the nonproduction labor share, production-worker wages, and labor productivity are positively correlated with changes in capital intensity" [5]. Capital intensity, if higher, is more likely to create higher labor productivity, but also means greater risk and higher costs. That is, as labor efficiency increases with technological development, capital intensity increases accordingly. According to the relationship between the two, capital intensity increases with the development of technology, but its risk and higher capital cost cannot be ignored. Of course, while any economic activity is not without risk, we need to be better prepared for risk.

4. Predict the Future Economic Growth and the Working Conditions of Workers

First of all, the research thinks the delay of economic growth lies in the economic cycle, which is a normal and inevitable process. When technology develops vigorously, it must enter a bottleneck period. Production efficiency will therefore remain stable for the time being, rather than trending upwards. However, the bottleneck of technology must be able to break through and lead the economy into a new era of development again at a certain period of time. Although technology is not a decisive factor in economic development, it plays an indispensable role. In the future, I think the relevant government scientific research departments can continue to accelerate the transformation of scientific and technological achievements, further stimulate the leadership role of technology in the employment rate, lead innovation, create more emerging industries, and create new jobs. In addition, the correlation between labor productivity and capital intensity, that is, the higher the capital intensity, the higher the labor success rate will be, and the increase in productivity will lead to an increase in its production risk. Therefore, in the current situation of slowing economic growth, relevant departments should also strive to improve the ability to resist risks and maintain the overall stability of the economy.

For workers, they must adapt to technological changes and increase their market competitiveness in order to obtain jobs. The emergence of emerging industries has increased employment opportunities, but it also requires applicants to improve their technical level, which can further promote the stability of emerging industries and help them develop further. In addition, workers need to consider the reality of inflated academic qualifications. As technology develops and the economy grows, so does the level of education. The highly educated workforce of the 21st century has already far surpassed that of the 20th century, and it is for this reason that workers need to adapt to technological changes and improve their abilities. In the aforementioned soft skills, in the new era of employment, workers should give full play to their strengths, improve their soft skills that cannot be replaced by machines, and stabilize their market competitiveness. I don't think automation will completely replace human labor, but I can't deny that middle-skilled jobs are being replaced by automation. In the future, this trend may not decrease.

5. Conclusion

Since the advent of the first steam engine in the nineteenth century, human economic development has been inseparable from technology. This article focuses on the dual effects of technology on

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workers and the economy. For workers, the only and best choice in the face of technological progress is to improve their market competitiveness, because automation does reduce the demand for labor on the product supply side. But it is precisely because automation has entered the market that the arrival of the new industrial era has provided innovative jobs. It's almost an internal cycle, with innovative jobs requiring workers to provide their own market competitiveness. For the economy, technology promotes economic development, but also sends economic growth into an era of slowdown. To break through this situation, more emerging industries are needed to solve the problem by transforming the growth momentum. This is also the case. The economic market needs a "visible hand" to guide and adjust policies, guide economic development, and further optimize the economic structure. The technical transfer of middle-skilled workers is actually difficult, and it cannot achieve rapid transfer as described in the paper. First of all, it is difficult for middle-skilled workers to invest money and time in education, both as the grassroots of society and considering their age. Second, what macro-control measures the government should adopt to help middle-skilled workers open up the labor market requires further quantitative analysis to predict the trend of policy implementation.

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[8] *Federal Reserve Economic Data (FRED):International Trade: Exports*