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Policy Perspectives on Mitigating the Impact of AI on the Labor Market

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Abstract: AI, a novel form of workforce, functions akin to traditional employees, with labor needs stemming from it. Labor is a crucial production element, with test products as primary raw materials. Yet, the worth of labor lies not in its wages but in what it produces. AI tends to substitute and enhance work, significantly affecting past and future labor markets. In previous labor markets, AI has replaced some jobs, decreasing certain types of employment. Jobs that can be easily substituted by artificial intelligence usually involve highly repetitive tasks, such as basic tasks performed on assembly lines. They can be easily substituted with automated machinery, as they do not include intricate thinking and decision-making processes, thus allowing for efficient and fatigue-free operations. This paper analyses the policy perspective on mitigating the impact of AI on the labor market, including the adaption and transformation of the labor markets, changes in educational needs, and workplace environments. In addition, we introduce the short-run effects and long-run effects brought by AI, such as job displacement, skill mismatch, and income inequality. Some recommendations are put forward to solve these problems. We hope that this paper will provide some references for the relevant research.

Keywords: AI, Labor market, Solow Growth Model, AK Model

1. Introduction

AI has a trend of replacing and increasing labor, which has a huge impact on both the past and future labor markets. In the past labor market, AI has partially replaced labor, resulting in a reduction in some job types. On January 15th, Kristalina Georgieva, President of the International Monetary Fund (IMF), stated in an article that artificial intelligence will affect approximately 40% of global employment.

Jobs that are easily replaced by AI typically have the following characteristics: high repeatability, such as simple operations on production lines. These tasks do not require complex thinking and decision-making, so they are easily replaced by efficient and fatigue free automated machinery. There are also low skilled professions such as cleaners, where automatic sweeping functions completely

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replace these workers. At the same time, there are still many shortcomings in the ability of accountants, data analysts, and AI to process and analyze data.

AI can also work with people to improve productivity, enhance decision-making quality, assist in risk assessment, and optimize resource allocation. In the medical field, AI can assist doctors in analyzing medical images and data, helping to determine the condition, and providing professional advice. With the help of these data, doctors can use their rich experience to make the next decision. Becker's theory illuminates the imperative for educational systems to pivot from rote learning models to curricula that prioritize critical thinking, complex problem-solving, and adaptability. Thus, Becker's perspective on human capital investment underscores the urgent need for strategic education and training programs that can bridge the skills gap in an AI-intensified job market. So, according to his theory, we need to make some changes to cope with the rapid development of AI, such as increasing the drive for economic growth and innovation, and constantly updating skill demands.

At the same time, the government needs to make some changes to adapt to the changes in the labor market brought about by AI. Firstly, the government needs to provide education and training on AI to enhance the proficiency of the workforce in using AI, which can improve work efficiency and productivity.

2. The Impact of Labour Market by AI development

It is also possible to encourage workers who have been replaced by AI to learn other skills and obtain new job opportunities by issuing reception development grants, which can also alleviate the pressure of layoffs faced by workers in new jobs. In addition, the government can also encourage innovation through subsidies, which can provide funding for AI technology research and development, reducing costs for individuals and businesses.

In addressing the challenges and disruptions brought about by the integration of artificial intelligence into the workforce, Joseph Stiglitz's theory of information asymmetry offers critical insights into how governments can play a proactive role in mitigating the negative impacts [1]. Such as develop comprehensive information portals, subsidize and promote training programs, enhance transparency in AI applications, foster partnerships between educational institutions and industry, implement public awareness campaigns.

At the same time, the government needs to collaborate with various universities to help everyone better understand AI and know the knowledge needed to learn a certain aspect. For example, when using AI for space separation surgery, students not only need to learn about AI operation techniques, medical knowledge, surgical skills, but also need to know remote communication technology, which is indispensable. The government also needs to enhance people's awareness of AI laws and regulations,people cannot use AI to engage in illegal activities. If AI brings about market failures and other problems, the government also needs to take measures to correct them in a timely manner.

So our group's viewpoint is to support the development of AI, and the government needs to provide some assistance, but it is not necessary to suppress the development of AI, so that AI can better integrate into our lives and bring us a better life experience.

3. Analysis 1

3.1. Adaptation and Transformation of the Labor Markets

While AI can sometimes hamper the labor market, and governments can take measures to hinder its development to some extent. However, governments ought to encourage it to grow in the vast majority of these situations.

The Solow Growth Model is in support of investing in capital for technology. The Harrod-Domar model was enhanced by Solow (1956), who additionally emphasized the contribution of technological

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advancement to economic growth. He believed that capital stock, labor input, and technological level were the primary determinants of economic growth, based on the prior generalization of the key elements influencing economic growth. Based on the figure 1, the production function typically takes the following form: For Y=F (K, AL), where Y=Real GDP, K=Capital, L=Labor, and A=Technology. According to the Solow Model, capital accumulation is essential for promoting economic growth. As of November 24, 2023, China's AI investment events reached 531, and the investment amount reached 66.048 billion yuan. This demonstrates the significance that the entire country puts on technological investment. Technological advances requiring capital expenditure can increase productivity by automating operations and streamlining processes. Technology tends to shorten working hours over time as it gets more integrated and efficient, substituting automation for manual labor and allowing for more flexible work schedules. Technological advancement generally promotes productivity increases and makes it easier for people to work fewer and more flexible hours.

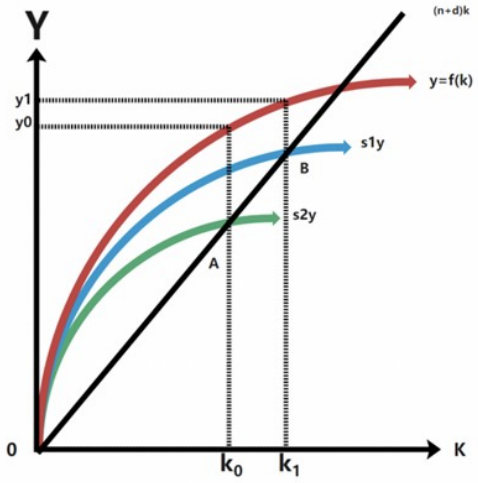

Figure 1: The Solow Growth Model

3.2. Changes in Educational Needs and Work Place Environments

At the same time, AI is bringing about many role changes in educational needs and work place environments. In finance, models can more precisely evaluate risks and offer individualized financial counseling. Given the widespread use of AI tools and the potential effects they will have, 65.8% of respondents stated they would enroll in training programs to learn how to use them. Another 47.2% stated they would pick up a new professional skill that AI cannot easily replace, and 42.9% stated they would start a new career path that AI cannot easily replace. Simultaneously, the government can act as a catalyst for the positive advancement of artificial intelligence technology, and bolstering the system for protecting unemployment benefits while maintaining job stability of AI technology [2].

4. Short-Run Effects

Job Displacement

In the short run, the labor market will soon to experience a recession as AI becomes increasingly capable of replacing many manual tasks. This shift may lead to a rise in the unemployment rate among physical workers, which can be considered a form of structural unemployment. Structural unemployment is caused by changes in the economic structure. According to the data from McKinsey, there could be 400 million workers be replaced by automation from 2016 to 2030, proving AI will definitely take some of the job opportunities away [3-4]. However, government policies can help

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mitigate structural unemployment. It is suggested that in the short term, physical workers will be affected by the application of AI, leading to an increase in the structural unemployment rate and the society instability may occur. However, structural unemployment can be addressed through government intervention [5].

5. Recommendation

AI is a technology that simulates human intelligence, using computer algorithms and models to simulate human thinking, learning, and reasoning abilities. As a new type of labor force, AI plays the same role as ordinary workers, and the demand for labor is a derivative demand, labor is one of the key factors of production, and test products are the main raw materials of production. Note, however, that the value of labor is not in its earnings, but in the output it produces. In other words, the most common way for a company to make a profit is to sell products made with Latoche, so whatever can bring a profit to the company is the labor that the company needs, and in the second market manufacturing industry, if workers are hired to do the work, they are often lazy or inefficient. In theory, human capital theory says that investment in education and training directly contributes to the productivity of the workforce. So we can adjust through the Soloswan model, and AI also has a great contribution to make on the career side, in the universal basic income, it can act as a safety net for unemployed workers, and allow them to invest time in retraining without employment, so that they can quickly jump into the next job.

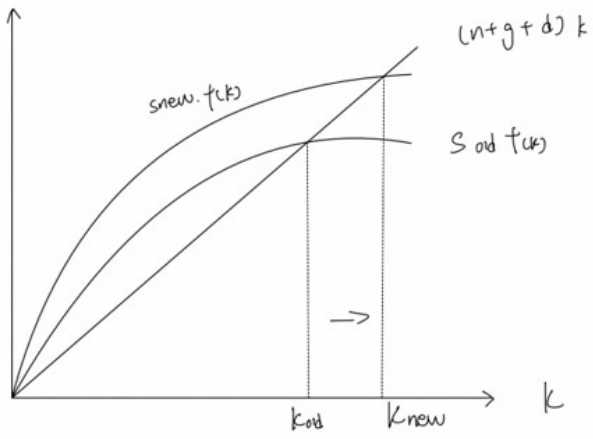

Figure 2: Soloswan model

In fact, AI can also play its role in the education industry, the theory of endogenous growth emphasizes that knowledge and innovation are important driving forces for economic growth, then the next is the effect of AI in the education industry, there are many students, but only a few teachers, in this case, the use of AI in the education industry, since AI has a huge knowledge reserve from the Internet, it can give good answers or a variety of answers. This is a long-term plan. In the future, students will benefit from the high efficiency of AI learning and thus have better achievements, which will bring different levels of income and performance to the country, compared with the original education. The use of AI will undoubtedly be a large potential long-term benefit.[6]

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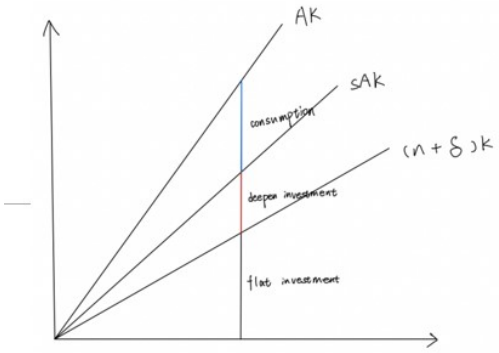

Figure 3: AK Model

6. Conclusion

In conclusion, the integration of Al into the labor market, guided by Human Capital and Endogenous Growth Theories, necessitates government intervention to support the workforce through retraining programs and education system reforms. The Solow-Swan and AK models suggest that these investments in human capital can lead to upward shifts in productivity and economic growth. Adjustments to work requirements and hours, as understood through the LaborLeisure Tradeoff, are also essential to balance the efficiency gains from Al. Graphs such as the labor market diagram and the backward-bending labor supply curve provide visual representations of these changes. Moreover, implementing a UBl program can offer stability during this transition, while PPPs can ensure that education reforms meet the needs of an Al-driven economy. The cumulative effect of these policies is anticipated to be positive in the long term, fostering an environment where Al acts as a catalyst for economic development and job creation[7].

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