

Analysis of Low Fertility Rates in Advanced Economies

LI Chenkai

Nanjing Dongshan Foreign Language School, Nanjing, China

In economics, opportunity cost means the maximum value of choosing one behavior over others in the situation where resources are limited (Parkin, 2016). In the process of making reproductive decision, opportunity cost reveals the trade-off between time, resources, and economic benefits that individuals face when choosing to have children or not. During this process, the technological changes make the paths of career development diverse and rapidly changing, remarkably increasing the opportunity cost of childbirth and parenting. This leads to individuals more inclined to postpone or reduce childbirth when balancing their careers and families, thereby resulting in low fertility rates in developed economies.

Keywords: low fertility, advanced economies, technological changes

Part One: Reasons for Low Fertility Rate Caused by Technological Changes

According to data issued by the United Nations Population Fund, the global average fertility rate is 2.3, while that in the developed regions is only 1.5, far below the rate 3.8 in the least developed regions (UNFPA, 2024). This obvious difference shows that the technological changes in the developed economies has promoted the requirements for skills and the labor market towards high specialization, which makes the conflict between fertility decision and career development more prominent. It not merely exacerbates occupational instability and dynamic changes in the job market, but increases individual uncertainty and risk to make fertility decisions. Their labor force needs to constantly adapt to the changing labor market brought by technological progress, undertaking professional transformation and retraining to keep competitiveness. These pressures largely affect the occupational choices and fertility decisions of individuals in the developed economies, which causes their fertility rate far below that in the world and the least developed regions.

Technological change has raised the opportunities of the high skilled labor into market and their expectations of income, which, in turn, greatly increases the opportunity cost of childbirth (Lazzari, Gray, & Chambers, 2021). The continuous advancement of technology demands for more highly skilled labor, increasing the fierce market competition. Individuals have to invest more resources in education and vocational training to gain and maintain their competitiveness in the changing environment. These investments include the economy as well as the consumption of time and energy, which are reflected in the growth of opportunity costs in making reproductive decision. At that time, they need to weigh the long-term benefits brought by high skilled occupations against the short-term and long-term costs of childbirth.

As technology advances, the paths of career development become more diverse and changeable, and highly skilled positions are typically accompanied by higher income and more opportunities of career promotion (Deming & Noray, 2018). Individuals have to postpone or reduce the number of births in order to seize these

opportunities, maximize the occupational benefits, and avoid the negative impact of career interruptions. Career interruption not merely leads to the loss of short-term income, but potentially changes the way of their career development, affecting their long-term income and prospects of career. The human capital theory suggests that career interruption results in higher opportunity costs for reproductive decisions through its influence on the accumulation and return rate of human capital (Hooley, 2021).

Part Two: The Economic Consequences of Low Fertility Rates

The impact of low fertility rates caused by technological changes on the labor market is mainly reflected in the shortage of labor with specific skills, which in turn affects the economic restructuring and technological innovation (Moreira, 2022). As the technology in developed economies advances, the demand for high skilled labor continues to increase. However, due to low fertility rates, the supply of labor, especially high skilled labor, has decreased, resulting in a situation of supply shortage in the market. This shortage then hinders the normal operation of enterprises and industries, leading to a decrease in productivity and an increase in costs. At the same time, technological change requires continuous innovation and the input of high skilled labor, but the scarcity of the labor market limits the technological research and innovation, thereby slowing down the speed of technological progress and the transformation of economic structure.

The low fertility rate caused by technological changes has exacerbated economic inequality in developed economies (Greene, 2021). High skilled and high-income individuals have obviously higher opportunity costs when facing fertility decisions than low skilled and low-income ones. Due to the career development and income expectations of high-income individuals, they tend to postpone or reduce childbirth, thereby investing more time and energy in their careers, which further consolidates their economic status and income level, and forms the effect of concentration on income and wealth. Rather, low skilled labor lacks the corresponding opportunities of career development and economic resources. Although their reproductive decisions are less affected by opportunity costs, it is also difficult for them to improve their economic situation through career development. Therefore, the technological changes have caused the low fertility rates in the developed economies, further aggravating their economic inequality and producing negative impacts on their economic and social structure.

Part Three: Measures to Address Low Fertility Rates

When facing the low fertility rate in the developed economies caused by technological changes, the plan to implement flexible working patterns is a key step. It aims to reduce the negative influence of the childbirth on career development based on the innovative technological ways, such as the flexible working hours and remote working patterns. This working mode relieves the pressures from career interruptions and opportunity costs caused by childbirth and parenting. Remote working patterns enable employees to work from home with the help of information technology, which saves their commuting time and improves the compatibility between work and family. These measures, through the application of technologies, have effectively reduced the negative influence of childbirth on the development of career, and helped high skilled labor to maintain their career development while reducing the pressure of fertility decisions, so as to alleviate the impact of low fertility rates on the economy and society.

It is one of the essential strategies to handle the low fertility rate by incorporating fertility support into the plan of career development. This targets to relieve the conflict between work and family, as well as lowering the opportunity cost of career interruption resulted from childbirth. The pressures of economy and the risks of career

interruption can be reduced by providing comprehensive support, which ensures that employees can obtain necessary economic security and vocational skills training during the childbirth period, and that they can return to the workplace and continue career development after childbirth quickly and smoothly. At the same time, the support also sends a positive signal that the family responsibilities of employees are valued, which can create a favorable environment for childbirth, alleviate the negative impact of technological changes on fertility rates, and finally propel the sustainable development of economy and society.

References

- Deming, D. J., & Noray, K. L. (2018). *STEM careers and technological change* (Vol. 24, No. 25065). Cambridge, MA: National Bureau of Economic Research.
- Greene, D. (2021). *The promise of access: Technology, inequality, and the political economy of hope*. Cambridge: MIT Press.
- Hooley, T. (2021). Career development and human capital theory: Preaching the “education gospel”. In *The Oxford handbook of career development* (pp. 48-64). Oxford: Oxford University Press.
- Lazzari, E., Gray, E., & Chambers, G. M. (2021). The contribution of assisted reproductive technology to fertility rates and parity transition. *Demographic Research*, 45, 1081-1096.
- Moreira, S. F. (2022). Inside the decline of the labor share: Technical change, market power, and structural change. *Journal of Economic Dynamics and Control*, 145, 104566.
- Parkin, M. (2016). Opportunity cost: A reply. *The Journal of Economic Education*, 47(1), 35-39.
- United Nations Population Fund. (2024). World population dashboard. Retrieved from <https://www.unfpa.org/data/world-population-dashboard>