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Automation and Welfare: The Role of Bequests and Education

Prepared by Manuk Ghazanchyan, Alexei Goumilevski,
and Alex Mourmouras

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WORKING PAPER

Automation and Welfare: The Role of Bequests and Education*

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ABSTRACT: This paper examines the welfare effects of automation in neoclassical growth models with and without intergenerational transfers. In a standard overlapping generations model without such transfers, improvements in automation technologies that would lower welfare can be mitigated by shifts in labor supply related to demographics or pandemics. With perfect intergenerational transfers based on altruism, automation could raise the well-being of all generations. With imperfect altruism, fiscal transfers (universal basic income) and public policies to expand access to education opportunities can alleviate much of the negative effect of automation.

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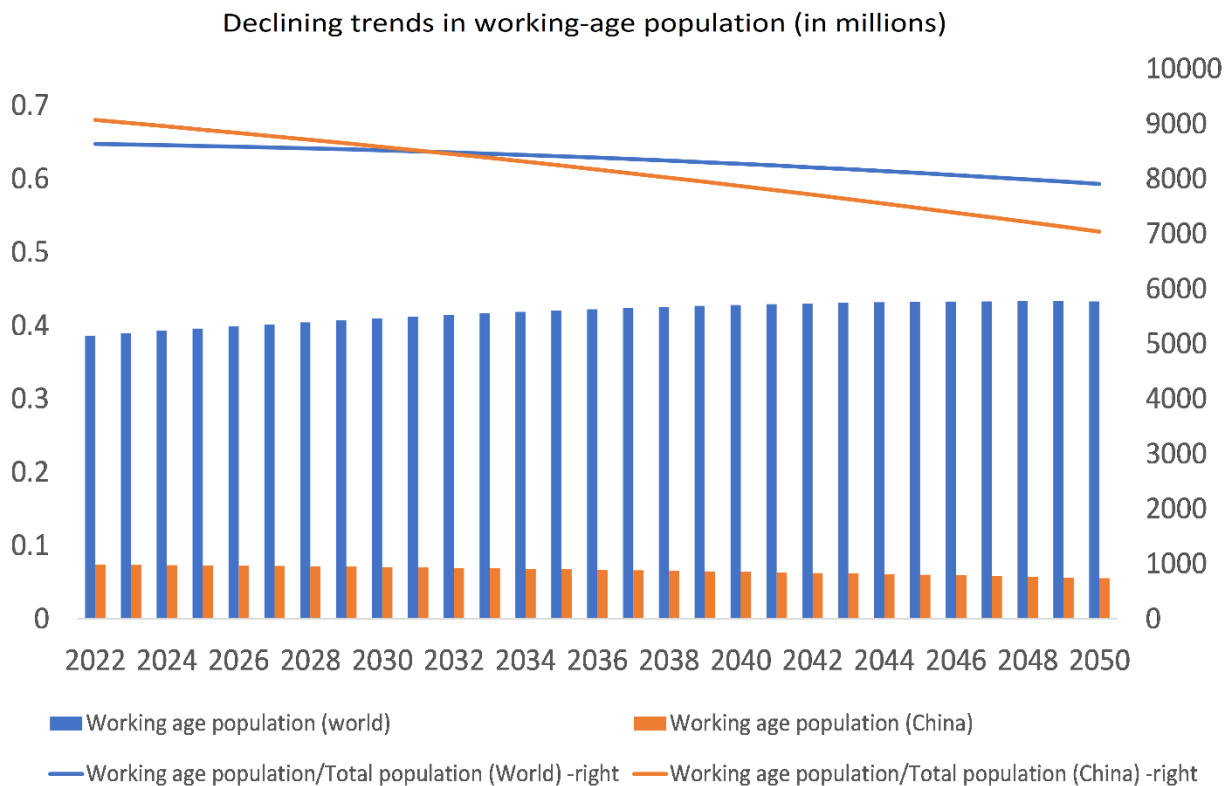
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I. Introduction

Automation has accelerated in recent decades, driven by ongoing improvements in computing and information technologies and associated cost reductions. Machines in a widening range of industries perform increasingly complex tasks, powered by sophisticated, networked software. The acceleration in automation and its economy-wide diffusion in blue- and white-collar occupations alike is creating new employment categories but is also contributing to widening inequality and fueling demand for government policies to reverse long-term income losses of labor. This long-standing promise and concerns are vividly illustrated by the latest breakthrough in Artificial Intelligence involving generative, pretrained transformers.

Looking ahead, while the pace of automation is likely to continue, its effects may be mitigated by offsetting forces. Populations are aging almost everywhere. In the advanced economies, the working-age population has started shrinking for the first time since World War II (Spence, 2022). Globally, the population of working age is expected to continue to grow until about 2040, but the ratio of the working age population to the total is already declining globally (Chart). In the case of China, for example, the working-age population is expected to shrink by a fifth over the next 30 years. As Goodhart and Pradhan stress, our age is one of demographic reversal in which the “long glut of inexpensive labor that had kept prices and wages down for decades, is giving way to an era of worker shortages, and hence higher prices”.



Source: United Nations, World Bank, and staff calculations

Recurring global pandemics also adversely affect labor supply, either by depressing growth in the labor force directly (AIDS pandemic), or indirectly by reducing the participation of older workers and others in contact-intensive occupations (pandemic related to Covid-19). In the absence of mass south-north

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