Putting people back into the picture: Some studies in demographic economics

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1 Introduction and Background

From a demographic perspective, the last decades have been characterized by strongly declining fertility and increasing longevity. According to the United Nations (2019), the global total fertility rate (TFR) fell from about 5 children per woman in 1950 to 2.5 in 2020. Over the same time period, life expectancy at birth (LEXP) has increased from 47 years to more than 72 years, i.e., a rise by 25 years. One of the consequences of declining fertility and—to a lesser extent—of increasing life expectancy is population aging.[1] Particularly in high-income countries, where life expectancy rises because of decreasing mortality at old ages, the mean age of the population is increasing substantially. Thus, over the period 1950 to 2020, the dependency ratio (the population aged 65 and over divided by the population aged 15-64) has increased from 12 percent to more than 28 percent.

One of the most important economic questions is whether these demographic changes will strangle future prosperity. For example, it is often argued that population aging

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[1]Other forces that affect aging but which are of second-order importance, are changing migration patterns and a changing size of the cohort of women at fecund ages over time.

will slow down or even reverse the increases in living standards that we were able to enjoy over the last century (World Economic Forum, 2004) or that the financial burden of demographic changes will dwarf even the costs of the global financial crisis (The Economist, 2009, 2011). Some commentators go thus far as Peterson (1999) and describe aging as a "threat more grave and certain than those posed by chemical weapons, nuclear proliferation, or ethnic strife".

Economists have investigated this question from different perspectives. The potential effects of increasing dependency ratios on economic growth are addressed, for example, by Gruescu (2007), Bloom et al. (2010), and Lee and Mason (2010); the sustainability of social security and pension systems in the wake of demographic change is at the focus of Gruber and Wise (1998), Heijdra and Romp (2009), Heijdra and Mierau (2011), and İmrohoroğlu and Kitao (2012); the changing savings behavior of individuals as they face longer life spans are analyzed by Bloom et al. (2007), d'Albis (2007), Krueger and Ludwig (2007), and Heijdra and Romp (2008); and the various effects by which demographic changes impact upon innovation-driven growth are the focus of Strulik et al. (2013), Prettner and Trimborn (2017), and Gehringer and Prettner (2019).

Altogether, the bottom line can be summarized in the statement that demography is *not* destiny. First, there are important behavioral responses to demographic change at the microeconomic level that compensate for parts of the negative effects of demographic changes at the macroeconomic level. For example, if the number of children decreases, labor force participation rates rise (particularly of women) and parents invest more in the education of their children such that productivity growth rises (Bloom et al., 2009; Prettner et al., 2013). In addition, if people live longer and healthier lives, they tend to save more for retirement, which boosts physical capital accumulation and they tend to choose to retire later, which raises labor force participation (Bloom et al., 2010, 2007; Prettner and Canning, 2014).[2] Finally, aging societies tend to invest more in automation and other productivity-increasing innovations (Prettner, 2013; Irmen and Litina, 2016; Abeliansky and Prettner, 2017; Acemoglu and Restrepo, 2017, 2018). Second, economic policy has scope to address many of the challenges that aging societies face by acting early and decisively so as to reform social security systems and pension schemes to prepare them for an aging population and to invest in the health and training of older workers to enable them to work productively to older ages (Bloom et al., 2011, 2014, 2020a; Sanchez-Romero et al., 2013; Cervellati and Sunde, 2013; Strulik and Werner, 2016; Chen et al., 2018).

In this special issue we focus on some important aspects of demographic economics that have so far not received the attention they deserve. These are i) the effects of declining population growth on youth unemployment in the Middle East and North Africa, ii) the interrelations between migration, innovation-driven economic growth, and

[2]This theoretical effect is not inconsistent with the evidence that the retirement age has decreased in the past because the effect of rising life expectancy on optimal retirement decisions might be offset by incentives for early retirement in pension systems and because the generally rising wages over the last decades could have led to a rising demand for leisure, which is usually conceived to be a normal good (Bloom et al., 2007, 2014; Prettner and Canning, 2014).

urbanization in aging societies, iii) the effects of pension reforms on the incentives to invest in education and on life-time inequality, iv) the effect of medical progress on the demand of healthcare and on per capita income in aging societies, and v) an assessment of the full economic contribution of older adults in Europe and the US. In the following, we discuss the main insights from the papers in this special issue in more detail.

2 Contributions to this Issue

Bloom et al. (2020b) assess the economic contribution of older adults (aged 60 and over) in terms of the value generated by market activities and productive non-market activities. The activities by which older adults contribute economically include i) formal employment—although the labor force participation rate is smaller than for younger age groups, ii) volunteering, iii) taking care for grandchildren, iv) providing support for other household members, and v) providing support for others outside of the household. Bloom et al. (2020b) find that, on average, older adults contribute 9,700 Euro in the studied European economies, whereas they contribute 17,200 Euro in the US. According to the authors, the main part of the economic contribution of older adults are monetized productive non-market activities. As a consequence, while raising the retirement age would likely lead to a higher contribution of older adults in terms of market activities, this could be offset to a considerable extent by a corresponding reduction in productive non-market activities. Finally, Bloom et al. (2020b) decompose the reduction of the economic contribution of older adults that come with a negative health shock. They find that such a shock leads to a greater reduction in market activities for men than for women but to a greater reduction in productive non-market activities for women than for man.

Forouheshfar et al. (2020) develop a dynamic general equilibrium framework of economic growth with overlapping generations, capital mobilization costs, and search-and-matching frictions on the labor market. Applying their model to the Middle East and North African countries Egypt, Iran, and Morocco, Forouheshfar et al. (2020) show that i) a more efficient financial sector in terms of a 50 percent reduction in investment costs leads to higher output and a reduction of unemployment by three percentage points, and ii) that the demographic changes that these countries face will reduce unemployment by 10–16 percentage points. The effects of these developments are more pronounced for the youth such that their unemployment rates decrease by more than unemployment amongst other age groups. Overall, the results show that reducing inefficiencies in the financial sector can be a potent lever to foster growth and fight unemployment.

Frankovic et al. (2020) analyze the effects of medical innovation on the demand for healthcare, consumption, the value of life, and economic growth. At the individual level, medical innovation boosts the demand for health care substantially. However, the effect is reduced by more than half in general equilibrium. The increase in healthcare utilization is the main driver of the increase in healthcare spending at the macroeconomic level. Medical innovation increases the share of expenditures on health in GDP and reduces

the employment rate because additional health expenditures and more efficient healthcare raise the survival of the retired population by more than of the active population. However, the overall level of GDP per capita remains unaffected because the drop in the employment rate is overcompensated by an increase in labor productivity. The increase in labor productivity is due to capital deepening as induced by the increase in longevity (individuals save more) and the prospect for individuals to purchase higher quality health care when they are old. Overall, Frankovic et al. (2020) explain that medical price inflation results from medical progress predominantly coming the terms of product innovation rather than process innovation.

Grafeneder-Weissteiner et al. (2020) depart from the observation that urbanization, life expectancy, and per capita GDP have all increased substantially over the past six decades in rich countries. They argue that while these aspects are usually analyzed separately from each other, important insights might be gained by designing a model featuring a demographic structure of overlapping generations, endogenous migration decisions of individuals, and endogenously determined research and development (R&D) efforts that drive per capita GDP growth. Grafeneder-Weissteiner et al. (2020) show that the anti-agglomeration forces of migration costs and the turnover of generations are insufficiently small to compensate for the strong agglomeration force of increasing returns to scale. This implies a natural tendency for cities to emerge and to grow larger. This finding has the potential to explain why we do not observe a leveling off (not to mention a reversal) of urbanization in rich countries.

Sanchez-Romero and Prskawetz (2020) assess the redistributive effects of different pension systems and of pension reforms that reduce the replacement rate. To this end, the authors develop an overlapping generations model with endogenous schooling, individual heterogeneity in terms of life expectancy, and a general pay-as-you-go pension system that allows for any combination between a fully Beveridgean pension system (with a replacement rat that falls with labor income) and a fully Bismarckian pension system (with a replacement rate that does not depend on labor income). Sanchez-Romero and Prskawetz (2020) employ the realistic assumption of a positive correlation between the length of schooling and the survival probability and show that a pension system with a flat replacement rate redistributes resources from unskilled (low-income) workers with short lives to skilled (high-income) workers with long lives. Within this setting, reducing the generosity of the pension system by means of a reduction in the replacement rate reduces inequality but also investments in education in a Bismarckian system. By contrast, in a Beveridgian system that is sufficiently progressive, a reduction in the pension replacement rate may increase the proportion of skilled workers and reduce inequality.

3 Conclusions

This special issue sheds light on aspects in demographic economics that are often overlooked or, at least, do not get the attention they deserve. Overall, the contributions in the special issue show that demography plays a crucial and important role in many

different economic processes. Ignoring demography by focusing solely on representative agent settings is therefore not an innocuous modeling choice and often has the potential to lead to serious errors in the analysis or to imprecise predictions of the effects of policy measures designed in response to demographic changes. With this special issue we hope to contribute to a deeper understanding of the impact of demographic changes on economic outcomes and of the many (often subtle) pathways by which these effects unfold.

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