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In the mid2030s, the health of the baby boomers will have deteriorated and many in these large cohorts will be in need of formal and/or informal long-term care.

This “**care wave**” will transform two generations: the baby boomers in need of care and their children who may supply care. It will have significant implications for labour supply, especially for women, saving behaviour, and therefore for productivity, economic growth and its inclusiveness.

The overarching objective of BB-Future is to understand the size and the implications of the care wave on economic and social outcomes, to appreciate the quality of this second ageing-related transformation and to develop policy recommendations for advance planning on the EU and Member State levels.

This deliverable is the first issue of the policy brief, which presents the objectives and methodology of the BB-Future project.

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Policy Brief 01/2023

The Care Wave and the Future of the Baby Boomers and their Children

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(1) The upcoming care wave

The Baby Boomer generation, commonly defined as those born between 1946-1964, is in the process of retiring. Most Baby Boomers in Europe are retiring when they are between 60 and 65 and projections show that they will live longer than any previous generation. The large size of this generation, its longer life expectancy and lower fertility rates are key factors driving the demographic change towards an older population in Europe. While pension systems receive a lot of attention when discussing the challenges stemming from an ageing population, the impact of the Baby Boomers on social security systems will not end at retirement. The large wave of retirements into the 2030s will be followed by many elderly people needing formal and/or informal long-term care (LTC). This 'care wave' will impact two generations: the Baby Boomers in need of care and their children who may supply it. Traditional models of care in Europe face several challenges, for example, a higher prevalence of childlessness that if unaddressed, could result in a significant care gap, identified as the gap between demand and supply of long-term care. The care wave will have important ramifications for labour supply, particularly for women, saving behaviour, productivity, economic growth and economic inclusiveness. Already today, LTC sectors are struggling in many countries (WHO, 2022), underlying the urgency to prepare for the increase in demand due to the coming care wave.

This policy brief is the first issue of a 'living document' that will document the policy-relevant results of the research project '*The Care Wave and the Future of the Baby Boomers and their Children (short: BB-Future)*', a European research effort to understand the size of the care wave and its ramifications for the economy and social security systems. This first issue presents the policy challenges that gave rise to this project, summarises its objectives and outlines how we will achieve them. Further issues of this policy brief will be added as results from the project become available.

The project is funded by the European Union under the Horizon Europe research and innovation programme, grant 101093849. The ultimate objective of the project is to deliver knowledge-based policy recommendations allowing policymakers in the EU to prepare for the coming care wave. The project also produces quantitative estimates of the care gap for each EU member state individually, considering the significant differences across Europe, e.g., in social security systems, population structure and longevity trends. The project employs state-of-the-art economic modelling and

empirical techniques, while also continuously involving policymakers to ensure that the right questions are analysed.

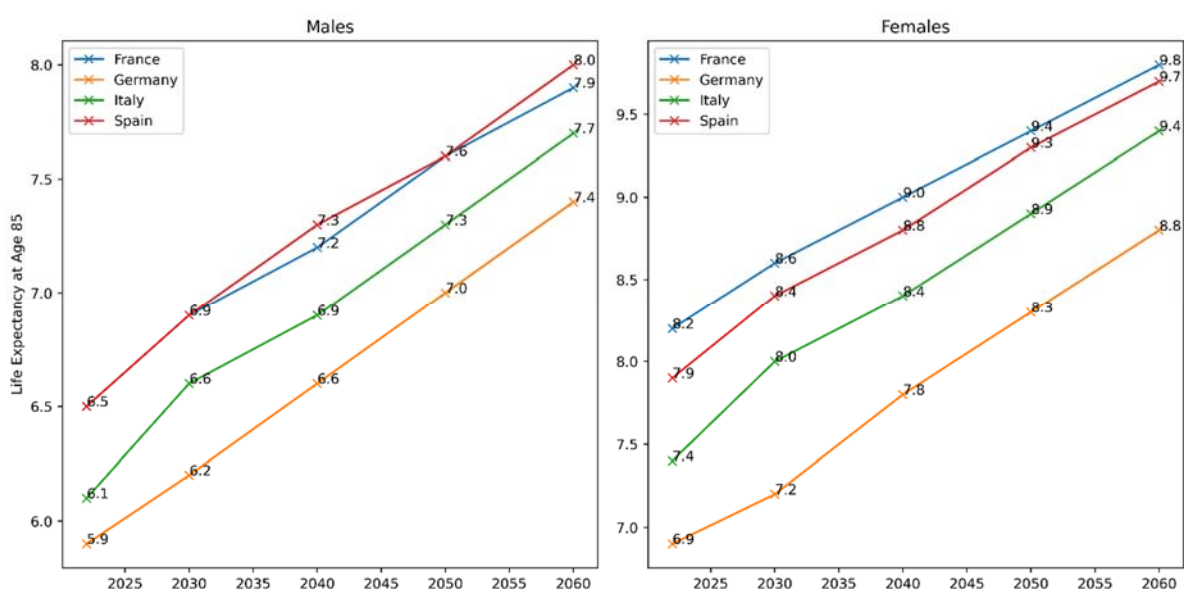
We will first explain the policy challenges faced by care systems in the EU and then present the BB-Future project and its objectives. An important part of this brief is how we will evaluate different policy solutions. As this will be solidly based on science, the last section of this policy brief gives a short overview of our methodology.

(2) Policy challenges for European long-term care sectors

Policy challenge #1: Increasing longevity, stagnating health

The first policy challenge is related to people living longer, but not necessarily living all years in good health. Life expectancy in old age is still increasing. Figure 1 shows that the life expectancy at age 85 is projected to continue to increase significantly for both males and females in France, Germany, Italy and Spain. Furthermore, while life expectancy for the very old is projected to increase in all four countries, there are substantial differences between countries.

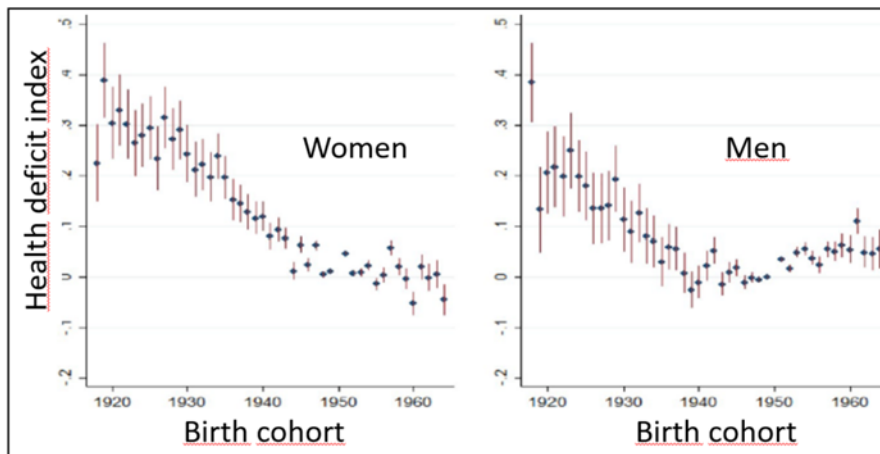
Figure 1: Life expectancy at age 85



Source: Source: Eurostat (proj_23np), accessed 18/05/2023.

While longevity continues to increase, health does not seem to improve at the same pace it has in the past. The long-run trend towards better health seems to be stalling and significant differences exist across European countries (Börsch-Supan *et al*, 2021). Figure 2 shows values of a health deficit index by year of birth constructed from the *Survey of Health, Aging and Retirement in Europe* (SHARE). As can be seen, while health deficits are decreasing for earlier cohorts, this clear downward trend disappears with the baby boomer generation. A stagnation of healthy life expectancy coupled with an increase in life expectancy could increase care needs considerably.

Figure 2: Cohort trends in health deficits by gender



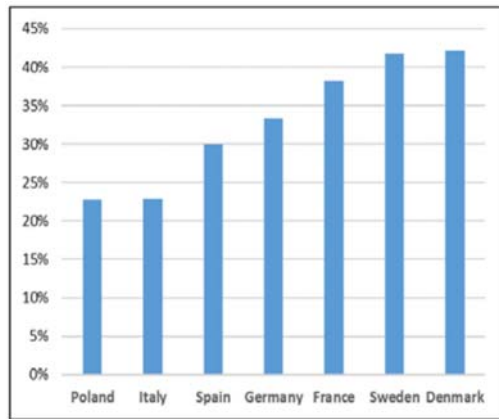
Source: Börsch-Supan et al (2021). Notes: Bars denote 95% confidence bands.

Policy Challenge #2: Significant unmet care needs already today

The second policy challenge underlines the urgency for policymakers to act. Long-term care systems are already struggling in many countries today (WHO, 2022). In fact, the Covid-19 pandemic has highlighted shortfalls in the long-term care sector (OECD, 2021). The pandemic has had severe negative impacts on elderly people in poor health (Modi *et al*, 2021), including those living in nursing homes (Morciano *et al*, 2021). On the demand side of care, recent data from SHARE show that an alarming share of elderly people do not receive adequate care (Figure 3); 32% of people with limitations in daily activities reported unmet care needs. Among those living alone, the share was significantly higher at 43%. On the supply side, many European countries already face shortages of health- and care workers that were worsened by the COVID-19 pandemic (WHO, 2022). The pandemic particularly highlighted shortfalls in the LTC sector (OECD, 2021). Poor employment conditions make recruitment difficult while more and more workers retire or exit the sector. Meanwhile, data on informal caregivers remains extremely scarce, although they make a significant contribution to society (WHO, 2022).

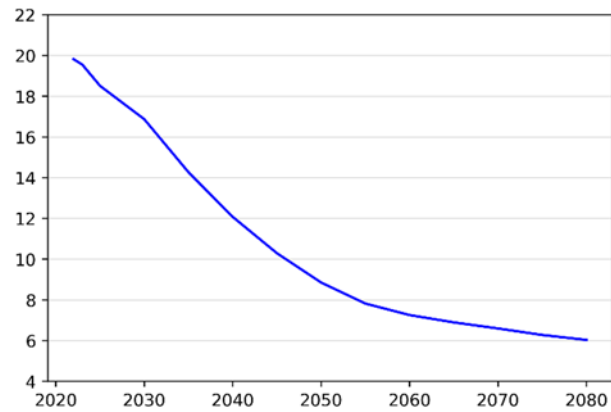
BB Future will explore the potential of migration, including integrating refugees into the care workforce, to address labour shortages in the sector. From a financial perspective, public and private LTC insurance is only slowly emerging, with large heterogeneity across Europe (European Commission, 2018). A majority of individuals in Europe do not have LTC insurance or enough savings to cover LTC needs (Costa-Font & Courbage, 2015) and rates of private LTC insurance are very low in Europe and the United States (Barczyk & Kredler, 2019).

Figure 3: Unmet needs among people with limitations in activities of daily living



Source: SHARE Wave 6.

Figure 4: Ratio of population aged 20-64 to population aged 85+, EU27



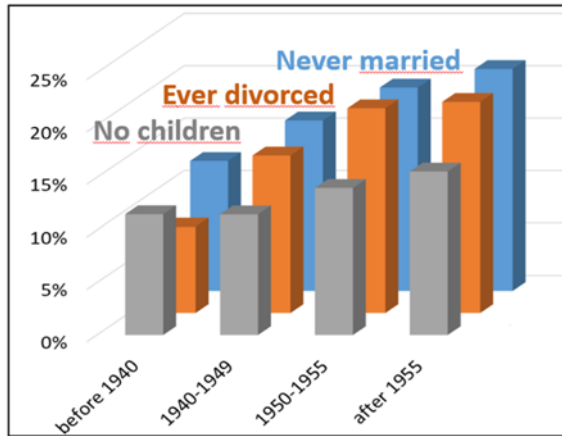
Source: Eurostat (proj_23np), accessed 18/05/2023.

While the number of elderly people who may need care will increase significantly, the number of those able to supply that care will not follow suit. Demographic trends will result in a sharp increase in the share of people aged 85 and over in the European Union. As represented in Figure 4, the ratio of people aged 20-64 years old to the ratio of people aged 85+ in the EU 27 will decrease from close to 20 in 2022 to just over 14 in 2035. The ratio will almost halve by 2045, meaning that there will only be 10 people of working age per individual aged 85 or more in Europe by 2045.

Policy challenge #3: A changing family care landscape

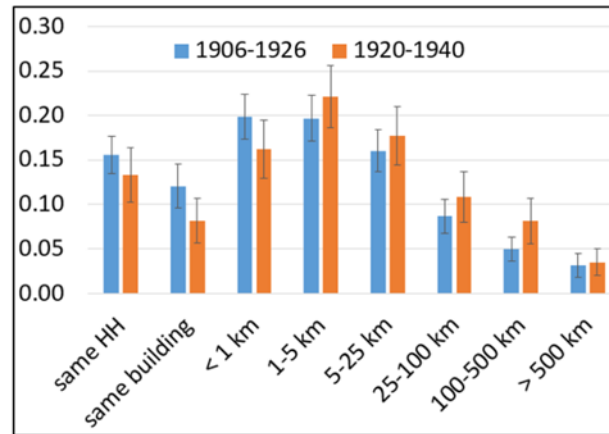
The third policy challenge relates to an important source of caregiving in the past: the family. First, substantial changes in the structure of modern families may have important implications for informal caregiving. Divorce, patchwork families and childlessness are much more prevalent for the Baby Boomer generation than for past generations in Europe. Figure 5 illustrates this based on SHARELIFE data. These changes in family patterns have implications for caregiving. Divorced and stepfamilies show lower intergenerational solidarity (Clawson & Ganong, 2002; Ginther & Pollak, 2004; Stein *et al*, 1998), including lower levels of caregiving (Pezzin *et al*, 2008). Divorced fathers receive less support from their children in old age than divorced mothers and fathers in intact families (Glaser *et al*, 2008; Kalmijn, 2007; Kaufman & Uhlenberg, 1998; Lin, 2008). Parent-stepchild relationships are generally more fragile than relationships between biological parents and children (Kalmijn, 2007; Noël-Miller, 2013). Furthermore, the emergence of half and stepsiblings complicates the intra- and intergenerational bargaining processes within the family governing who cares for whom (Pezzin *et al*, 2008). These factors may also impact economic behaviours, for example, a higher savings rate to build a capital buffer for care needs in old age. BB-Future aims to understand how these changing family patterns will impact people who will encounter unmet care needs and who will supply care.

Figure 5: Cohort trends in family forms in the European 50+ population



Source: SHARELIFE.

Figure 6: Geographical distance between children and parents, by cohort



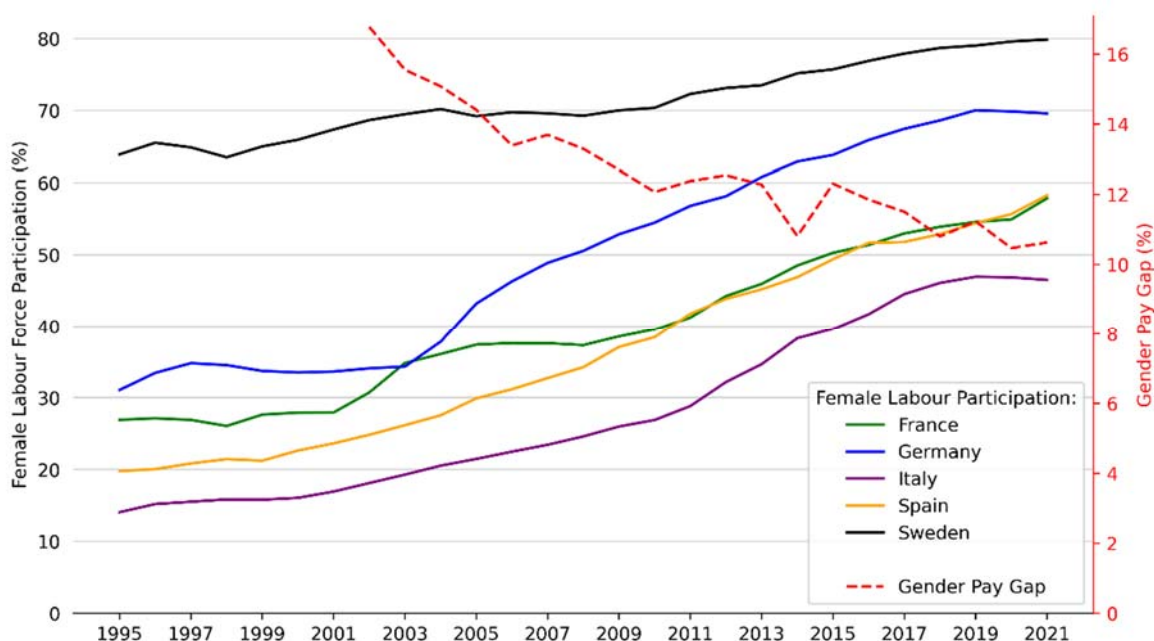
Source: SHARE W1 and W8.

Second, while the share of parents with children nearby remains high, the geographical distance between parents and children has been increasing (Pettersson & Malmberg, 2009; Steinbach *et al*, 2020), as shown in Figure 6. Although almost 60% of parents born between 1920 and 1940 still have children within 5 kilometres of their residence, there is a trend towards increased distance between parent and child. One explanation is that higher education has increased regional mobility (Machin *et al*, 2012). A greater distance between parents and child will have important implications for caregiving inside the family, as a greater distance increases the opportunity cost for the children to give care to their parents. The relationship between proximity of children and parents and caregiving is widely acknowledged (Brandt *et al*, 2009; Leopold *et al*, 2014; Pillemer & Sutor, 2014). The need to care for parents will also likely impact the location decisions of children and their labour supply decisions. Furthermore, parent-child distance is heterogenous across Europe, with some evidence of a North-South gradient (Bordone, 2009; Hank, 2007; Isengard & Szydlik, 2012) that may have increased over time (Grundy, 2000; Steinbach *et al*, 2020).

Policy Challenge #4: Gender inequality in care provision

Female labour supply is still increasing in many countries. The gender pay gap, in turn, is still decreasing in the EU, although at a somewhat slower pace in recent years (Figure 8). In the ten years from 2002-12, the gender pay gap in the EU 27 decreased by 25.2%. From 2012 to 2021, on the other hand, it only decreased by 15.3%. Neglecting to prepare for the approaching care wave could endanger the progress made on both the pay gap and female labour participation since daughters are more likely than sons to provide care for their parents (Haberker *et al*, 2015). Women are also still much more likely to engage in part-time work (OECD, 2021), a situation that could be reinforced if they are disproportionately left with responsibilities for informal care. Therefore, BB-Future lays particular focus on understanding how female labour supply will react to the care wave and how different policy programmes impact this relationship.

Figure 7: Female labour supply and gender pay gap in Europe



Source: OECD Labour Force Statistics, accessed 5/06/2023. Notes: gender pay gap refers to the unadjusted gender pay gap at the median. For details see OECD Employment Database.

Given the weight of these challenges for the wellbeing of European citizens, it is crucial for policymakers to prepare for the care wave. In order to design efficient policies, we need to understand how the care wave will impact households, social security systems and the economy at large. The BB-Future project aims at supporting policymakers with evidence-based policy recommendations.

(3) Objectives of the BB-Future project

The challenges and data explained above show that policy aims voiced by the European Commission and national governments, such as reducing the gender care gap, higher labour participation of women, fewer unmet health needs and sustainable social insurance, have not yet been achieved. The care wave will add to the already substantial challenges in reaching these goals and might even undermine some of the progress made to date. The challenges stemming from the care wave in the 2030s have so far been underestimated because they appear to only affect a small part of social security systems. However, the care wave will have important implications for healthcare systems, labour supply, productivity and savings across generations in all European countries. The care wave will affect the social fabric of EU societies and have significant effects on economic growth and its inclusiveness.

In light of the challenges outlined above, BB Future is a comprehensive project that aims to

- 1) quantify the size of the care wave,
- 2) understand its implications on economic and social outcomes, and
- 3) develop policy recommendations to prepare for the care wave at the EU and national levels.

First and foremost, accurate and specific projections are needed for sound policy planning. Therefore, the first objective of the project is to provide projections of the care gap, for all EU countries. Given

significant heterogeneity in health trends (Börsch-Supan *et al*, 2021) and institutional settings across EU Member States, it is necessary to construct country-specific forecasts. To achieve this, the project leverages detailed and comparable household data for all European countries from the SHARE project.

As for the impact on economic and social outcomes, the project analyses the interaction between labour supply and caregiving, particularly for women and the implications of the care wave for the gender pay gap. The models predict who in the family will be designated as caregivers and how this impacts individuals' locational choice, savings behaviour and labour productivity. Ultimately, these factors allow us to evaluate the impact of the care wave on economic growth and its inclusiveness in the EU. Importantly, we account for significant uncertainty in predictions, for example about the future old-age dependency ratio, by evaluating outcomes using different scenarios for the population-age structure.

The ultimate aim of the project is to provide a framework for knowledge-based policy recommendations related to the care wave and to derive actionable policy recommendations. To achieve this, we develop different policy scenarios to investigate the interplay and outcomes of the different models. For example, we analyse the impact of different LTC insurance schemes on the financial status of parents and children, among other things. LTC policymakers and experts will be consulted in the design of such policy scenarios at the beginning of the project and will also be continuously involved in a feedback mechanism to refine the analytical framework. This is to make sure that the project answers relevant policy questions. The project will hold several events to present preliminary results to policymakers and to gather feedback, as well as raise awareness about the importance of LTC planning in Europe.

In particular, the project will:

- Produce quantitative estimates of the care gap for the EU and each member state.
- Develop clear knowledge-based policy recommendations on how the EU can prepare for the care wave.
- Build internally consistent models that can be fitted to each member state's specific environment: demographics, policy institutions and family patterns.
- Estimate the impact of the care wave on economic growth, labour supply, productivity, inequality and the sustainability social security systems.
- Put particular focus on the role of female-labour supply and the potential of integrating refugees into the care workforce.
- Investigate the impact of uncertainty in projections by analysing different scenarios.

(4) Developing effective policy recommendations

While policy recommendations are part of the key deliverables of BB-Future, the involvement of policymakers and LTC policy experts is vital throughout the project life to ensure that we answer relevant policy questions.

Early in the project, we develop different policy scenarios each featuring a baseline and alternative situations. For example, how will a higher retirement age impact the size of the care gap? Running the models under different conditions will inform us about the impact of different policies on outcomes such as the size of the care gap or female labour supply. We will not only evaluate different policy scenarios, but also account for uncertainty in projects and heterogeneity across countries. For example, a crucial underlying assumption in many of our analyses is the evolution of life expectancy in the future. The project will analyse how sensitive the results and policy recommendations are to changes in such projections, providing policymakers with recommendations for different situations.

As shown by the figures in Section I, substantial differences in life expectancy and female labour participation exist across EU Member States. Detailed data on households (SHARE) and institutions (SPLASH) will allow us to adapt the analyses to the country-specific conditions and therefore extract relevant policy recommendations.

Policymakers and experts are consulted in the initial formulation of these policy scenarios. Therefore, the project is oriented towards analysing situations and answering questions that are useful for future policymaking. We also seek to continuously involve stakeholders from the policy side by gathering feedback and reactions to the work. We will organise three Policy Dialogue meetings with relevant policymakers and other key stakeholders from the policy sphere to present and discuss preliminary results of the project, as well as policy recommendations. The results of these consultations, in the form of new policy scenarios or novel questions to investigate, will feedback in the analysis. In doing so, we ensure that BB-Future yields relevant policy recommendations.

The initial policy scenarios are centred around three key pillars. The following provides some examples of policies in each pillar.

Policy Pillar #1: Demographic conditions and health policies

European societies will age, but it is uncertain by how much. Therefore, it is necessary to test different scenarios before making policy recommendations. We define a baseline scenario based on Eurostat and national demographic projections and two alternative scenarios with a significantly older or younger population. Another aspect of this pillar relates to epidemiological projections or the probability to develop health conditions needing care. We base these projections on the rich life-course SHARE health data. Lastly, we evaluate the impact of different strategies for disease prevention, such as information campaigns.

Policy Pillar #2: Labour market conditions and labour market reform

Labour force participation in our models depends on 'enabling policies'. We will explore the impact of the latter in this policy pillar. First, we investigate the effects of the provision of day care facilities on female labour participation and the gender split among caregivers. Further, we will study different scenarios for the integration of refugees into the care workforce. Indeed there is already an acute lack of care workers in many countries (WHO, 2022). Given the demographic trends described at the beginning of this paper, the demand for such workers is set to increase significantly in the future. Other types of reforms that we intend to investigate are a reduction in the number of working hours per week or a European minimum wage. BB-Future will also investigate the impact of such policies not only on care supply and demand, but also on European and regional productivity.

Policy Pillar #3: Social policies and social insurance reform

This last policy pillar focuses on different reforms to social insurance systems. Coherent with recent pension reform proposals in Europe, such as in Germany in 2020 or in France in 2021, the project will investigate potential new pension reforms and how changes in key parameters such as the replacement rate adjustments or pension eligibility age will affect old-age labour supply. By leveraging data from all EU Member States, we will also analyse if there is a case for a pan-European pension system or unified pension rules and identify best practices among EU countries to achieve high coverage and reduce poverty among the elderly population. Another interesting question is if heterogeneity in life expectancy across different groups in society (male/female, high/low income, etc.) warrants the introduction of differential retirement ages, and what the impact on aggregate welfare would be. Lastly, different healthcare reforms and LTC reform proposals, such as subsidising nursing homes, will be explored.

(5) Methodology

BB-Future draws on a diverse and international team of experts in the research of an ageing society including researchers from the Max Planck Society, the Munich Research Institute for the Economics of Aging and SHARE Analyses from Germany, the University Paris Dauphine in France, McGill University in Canada, the University Carlos III in Madrid and finally the policy think tank Bruegel in Brussels.

The project methodology is based on a set of economic models that will be fitted to the internationally comparable SHARE data. First, we will develop three interacting models for life-course household decisions, sustainability of the social insurance systems and macroeconomic growth and productivity. Second, we will leverage high-quality internationally comparable data from the SHARE research infrastructure to fit the models and develop policy recommendations.

We will develop three different economic models using state-of-the-art research techniques: a micro model of life-course household decisions, a social insurance model and a macro model. The three models each encompass important features, but none is complete in itself. For example, the micro model describes a large set of household decisions and the social insurance model accounts for detailed social insurance rules. However, both models ignore the effects of policy changes on wages and returns to capital, while the macro model will exactly do this but at the expense of all the details that make household behaviour and social insurance so complex. Therefore, no single model allows us to answer all relevant questions, but the combination and interaction of the three models will in two ways. First, we cross-feed the outputs from one model to another, e.g., the female labour supply produced by the micro model into the macro model, or wages from the macro model into the micro model. Second, the policy scenarios serve as a consistent input across all models.

Model #1: the Micro Model

The micro model describes individual behaviour over the life cycle in a multi-generational setting. Questions that this model will be able to answer include: How do women and men manage the trade-off between caring for parents and labour supply? Will children forgo productivity gains by locating close to their parents? How much will the increased pressure to provide care affect the gender pay, employment and pension gaps? How can policies generate an optimal balance between formal and informal care? What will happen in patchwork families?

The model will produce paths over time of labour supply, caregiving, unmet care needs and saving patterns. The model is driven by shocks outside the control of individuals, such as health shocks, mortality, family events (e.g., divorce) and institutional environment (e.g., pension, healthcare and LTC insurance systems). By modelling different policy scenarios or demographic trends, we can evaluate how the outputs react to different scenarios. For example, it will be possible to evaluate how labour supply develops if life expectancy increases by more than in the baseline scenario.

Model #2: The social insurance model

This model will track the number of contributors and beneficiaries in a country's social insurance system as well as the financial balances of the system. The social insurance model will answer questions such as: How should social insurance be re-designed to incentivize an optimal mix of formal and informal care that leaves sufficient room for higher labour force participation and increasing productivity? How can the interactions between the pension system, health and LTC insurance be exploited for efficient and sustainable social policies? What will be the total cost of care?

The social insurance system in this model is composed of three parts: a pension system, a health insurance system and a LTC insurance system. Such a model is needed to evaluate the financial sustainability of social insurance systems resulting from household decisions in the micro model.

Furthermore, the LTC module of the model will distinguish between formal and informal care coverage modelled after typical arrangements in the EU. We lay special focus on how social insurance systems react to changes in female labour supply and the pervasiveness of part-time work among women.

Model #3: The macro model

This model will allow us to draw conclusions on the macroeconomic effects of the care wave, i.e., the impact of caregiving on labour supply, productivity, household saving and dissaving decisions. The macro model will answer questions such as: How large are the macroeconomic implications of the care wave? How are they distributed between the older vs. the younger generation and between high vs. low-income households? How do these macroeconomic and distributional effects depend on social insurance design?

The macro model has two objectives. First, it determines wages and rates of return of capital given the household decisions generated by the micro model, such as labour supply and savings. Wages and returns to capital are then fed back into the micro model to recalculate labour supply and savings, which are then again fed into the macro model until wages and rates of return are stable, i.e., equilibrium is reached. Letting wages and capital returns react to the other factors in the models allows the analysis to be carried out in general equilibrium. Second, the macro model will produce measures of economic growth, social welfare (defined as aggregate utility), intra-generational equality and inter-generational transfers. Using the labour supply generated by the micro model, as well as the policy scenarios, the macro model will produce paths of economic growth and social welfare as well as their intra- and intergenerational distributions, as functions of the policy scenarios.

Achieving Realism by leveraging unique household data

The empirical work of BB-Future leverages the rich and internationally comparable data from the Survey of Health, Ageing and Retirement in Europe (SHARE) and the associated Social Policy Archive for SHARE (SPLASH data). These datasets allow us to characterise individuals, their family relationships and the policy environments in each country. We calibrate the micro model to this data to ensure that the predictions from our model reflect real-world conditions. Lastly, we turn the fitted structural equations into a projection model yielding quantitative estimates of, for example, the size of the care gap and the effects of the proposed policy measures.

(6) Summary and conclusion

As the large baby boomer generation is growing older, European long-term care systems are facing significant challenges. The care wave will affect not only the aging baby boomer generation itself, but also their children and grandchildren. If unprepared, the EU will face substantial welfare losses for all involved.

This policy brief presents the BB-Future research project funded by the European Union which aims to support policy makers with evidence-based policy recommendations in view of these challenges. Using state-of-the-art economic modelling techniques and econometric methods, the project will provide a better understanding of how the care wave will impact individuals and households, social security systems and the larger economy at the macroeconomic level. The project will produce projections about care needs and other important measures for each EU Member State. By analysing several policy scenarios, we will distil policy recommendations that take into account important heterogeneity in demographic trends, family structure and social insurance systems across the EU.

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