



Ageing 4.0 Towards an Integrated Life-Course Approach to Population Ageing*

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This Policy Brief is an attempt to respond to current challenges of social welfare systems in the context of population ageing and technological innovation. It defines Ageing 4.0 as a concept and provides a rationale for such a new policy framework.

Keywords:
**Population ageing,
life-course,
equal opportunities**

Adapting welfare states and social security systems to the challenges of population ageing has been high on the policy agenda at least since the Second World Assembly on Ageing in April 2002. Related reforms have, in the first place, focused on pension policies by including the ‘demographic factor’ into pension formulas and by raising the pension age. The concept of ‘Active Ageing’ served as a key policy response to raise labour market participation of older workers and to extend working lives. Although featuring as important aspects of the ‘Active Ageing’ concept (WHO, 2002), investments in health and social care provisions to help prolong the period of disability-free life-expectancy, to meet growing demand for services, and to ensure a good quality of life in older age were addressed much less prominently and much less successfully. Related strategies followed in other policy areas such as life-long learning also remained restricted to specific sectors and individual initiatives. In their essence, these strategies have been yielding on individual capabilities and responsibilities, with economic incentives as the main driver for (behavioural) change, thus resulting in increasing inequities and unequal chances over the life-course.

While average life-expectancy continues to rise, new challenges are exposing prevailing policies of ageing. For instance, new technologies and the debate about ‘Work 4.0’ are challenging the traditional concept of regular work over the life-course as well as the social construction of the life-course into age-differentiated phases of education, work and family responsibilities, and

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retirement. While the life-course approach in social research has become a widely accepted and applied field of research, though mainly focusing on the meso- and micro-levels (Kohli, 2007), public policies have seemingly missed out to integrate this perspective and its potentials.

'Ageing 4.0' as a concept responding to challenges of 'Industry 4.0'

This Policy Brief therefore sets out to sketch approaches towards what could be coined as 'Ageing 4.0' as a concept that responds to new social and societal challenges that are currently debated under the headings 'Industry 4.0' or also 'Work 4.0', i.e. the ongoing fourth industrial revolution with respective consequences for qualification needs, work organisation, the quality of work and the interaction between technology and human beings. In particular, the Brief will discuss life-course-oriented policies that are able to respond to these new challenges and to seize the opportunities of increasing longevity for individuals and society. This entails, first, a short overview of previous stages of views on ageing in societies and related social policies over the past century. Second, the Policy Brief includes a critical review of concepts that continue to uphold the traditional division of the life-course into pre-defined stages of education, work and pension. Based on this analysis it is argued in the final part that a more integrated life-course perspective is needed to adapt and to modernise social security systems in a direction that is appropriate to underpin the future construction of 'Ageing 4.0'.

The social construction of ageing

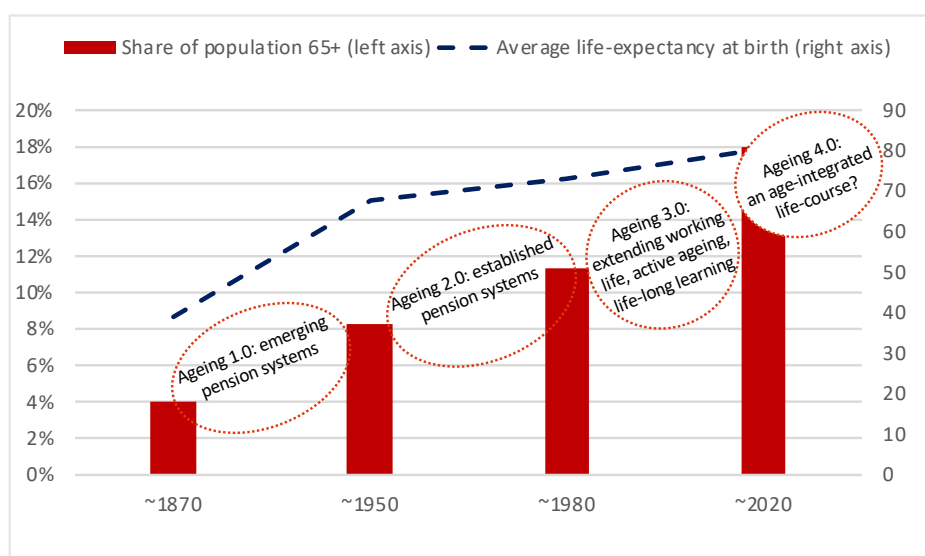
While sociology and social gerontology have explicated the social construction of old age, they also indicated that, in the light of increasing longevity, the sequential life-course model and its age boundaries based on chronological age may no longer be fit for purpose. Quite on the contrary, these are key factors contributing to age-based stereotypes (White Riley & Riley, 2000), to various types of ageism (Ayalon & Tesch-Römer, 2018), and even to an alarmist discourse on alleged intergenerational cleavages that has developed over the past decades under various headlines such as, for instance, the 'silver tsunami' or the 'generational war', thus creating ageist perceptions in particular through media coverage (Charise, 2012). However, the construction of a three-tiered life-course with pre-defined stages of education, work and pension as well as respective generational patterns have been deeply embedded in individual and collective value systems and life plans. Their caveats and malign consequences are now likely to become more evident due to changing family structures, the more common and concurrent presence of several generations and the fast-paced technological change.

Age boundaries based on chronological age are no longer fit for purpose

The three-tiered life-course model is closely linked to the modern welfare state

The spread and the institutionalisation of the three-tiered life-course model are closely linked to the development of modern welfare states after the Second World War, but its preceding steps can also be associated with the expansion of social security systems (Kohli, 2007). Before the middle of the 19th century old-age had hardly been considered as a ‘social problem’. The following period from 1875 to 1945, during which the average life-expectancy at birth increased from approximately near 40 to near 60, was marked by a growing political and legal acknowledgement of old-age as a social risk and could be labelled ‘Ageing 1.0’. Related policies resulted in the introduction of the first statutory pension schemes, albeit with rather restricted coverage. When comprehensive pension schemes were eventually established at the onset of the ‘Golden Age’ of welfare expansion, pension age was set, still rather arbitrarily, by following the pattern of the Bismarckian pension system, at around 65 years.

Figure 1: Demographic ageing and social welfare policy responses in a long-term perspective



Source: Worldbank Open Data; author’s compilation.

Establishing pension systems after WWII offered a ‘third age’ to 8-11% of the population

Even when high-income countries marked an update to ‘Ageing 2.0’ after World War II, this threshold was well above the average life-expectancy at birth as depicted in Figure 1. The establishment of funded pension systems introduced, however, the notion of a ‘third age’ to about 8 to 11% of the population. While retirement initially used to be a rather short period of life for the majority of workers, it gained in political and individual importance due to early retirement policies, decreasing real pension ages, expanding public pension expenditures – and an unprecedented rise in life-expectancy. The third age thus developed into a much desired and extended life-stage that became characterised by opportunities for leisure and travel, for volunteering, but also by other types of unpaid work such as caring for grandchildren and/or for care of older family

members. At the same time, it became also more and more evident that advances in medicine contributed to more years spent at higher ages with chronic illness and multi-morbidity leading to higher rates of people in need of long-term care. It could also be observed that the average period of education continued to rise, thus postponing the entry of younger generations into the labour market.

'Ageing 3.0': Solicitations on age-integration by individual investment and responsibilities

'Active ageing' presented opportunities and caveats

The next update, i.e. 'Ageing 3.0', could be timed at around the 1980s (see Figure 1) and came with the introduction of policies that aimed at readjusting the work-life period to the average gains in longevity. To make pension systems sustainable, it was argued, it would be necessary to raise the pension age and/or to make people work at least until the legally set pension age. Related regulations consisted in economic sticks and carrots for individuals to prolong their working life. This policy objective was underpinned by the promotion of 'Active Ageing' policies "optimising opportunities for health, participation and security in order to enhance quality of life as people age", and to allow people "to realise their potential for wellbeing throughout their lives and to participate in society according to their needs, desires and capabilities, while providing them with adequate protection, security and care when they need assistance" (WHO, 2002: 12). While the social investment needed to reach these goals has often been disregarded by policy-makers, the thrust of initiatives and legal interventions has been in establishing new actuarial pension formulas incorporating the 'demographic factor', and in stimulating private pension systems.

The concept of 'Active Ageing' with its focus on extending working lives basically leaves the age-differentiated concept of the life-course, including its arbitrary chronological age limits, unchallenged. One caveat of extending working lives based on average demographic developments, i.e. average gains in life-expectancy, lies however with the fact that it creates a range of unequal chances and inequities due to cumulated disadvantages over the life-course (Ferraro & Shippee, 2009; Ilinca et al., 2016).

The unkept promises of 'life-long learning'

For instance, raising pension ages for social groups that started their working lives well below the age of 20, often in physically demanding work, will lead to further inequalities and social marginalisation, in particular considering the empirically lower life-expectancy of the very same professional and social groups (Bennett et al., 2015). Active Ageing in this context may become a

normative threat to those who, for instance due to health restrictions, are not able to successfully comply with the requirement of working up to and beyond pension age.

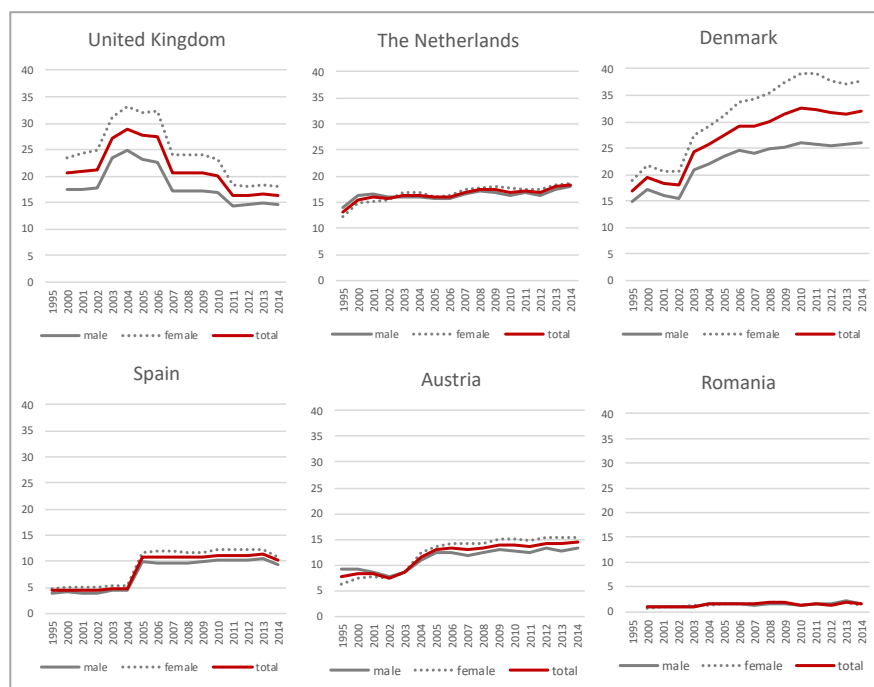
Only very few countries report increasing participation rates in life-long education and training

One remedy that has been proposed and established to readjust these inequities has been the concept of 'life-long learning', including programmes for people returning to work after a care leave or longer-term unemployment. Indeed, related concepts have started to unravel the traditional three-tiered life-course model by promoting additional (vocational) training and learning phases during adult life. However, take-up depends to a large degree on basic education, on opportunities offered by employers or public programmes in the framework of active labour market policies. Life-changing periods to meaningfully raise the individual education level typically remain based on personal efforts and risks but cannot be afforded by the majority of workers. As a result, the expected readjustment of life-chances and the reduction of inequalities between classes and between men and women has been restricted, in particular to those countries that were able to make a serious effort in promoting life-long learning programmes. In this context it is alarming to observe that in most countries the share of employees in regular vocational training has increased only slowly and marginally. In very few countries in the EU the proportions of people aged 25 to 64 who participated in education or training are exceeding 15%.¹ In countries such as the UK the related trend is even decreasing, while Denmark, for instance, continues to widely exceed the above benchmark, and other countries stagnate on low (Spain and Austria) or very low (Romania) levels of investment (see Figure 2). Analyses show that the highest participation rates are reported by those with a tertiary level education, while those having completed no more than lower secondary education were the least likely to have participated, and participation of younger people is nearly twice as high as that of older workers (Eurostat, 2017). This development will further expand inequalities between people with tertiary degrees, who continue to benefit from the (vocational) education systems throughout their lives (Tucket, 2017), and those with lower education levels as well as between younger and older workers.

Another aspect needs to be particularly underlined: Even though women are participating at slightly higher shares in further education and training (Figure 2), this does not, however, compensate for the gender inequalities produced by social security systems based on a three-tiered life-course concept that does not sufficiently consider 'unpaid work' in pension formulas and related eligibility criteria.

¹ This would be the benchmark to be achieved by 2020 according to the Strategic Framework for European Cooperation in Education and Training (http://ec.europa.eu/education/policy/strategic-framework_en).

Figure 2: Percentage of labour force in education and training by sex, country and year (1995-2014), selected countries



Source: UNECE Database; author's compilation.

Unpaid work, mainly carried out by women, as a 'lucky finding' of the political economy

During the periods of 'Ageing 2.0' and 'Ageing 3.0', this most crucial cornerstone and 'lucky finding' of capitalism became partly rearranged: unpaid work for education, child care and other types of household and care work, mainly accomplished by women, became partly professionalised, partly reshuffled within families or even 'globalised' (Widding Isaksen, 2010; Yeates, 2009). An important option of life-course patterns for women as housewives has rather withered away in most European countries with the decline of the male breadwinner model (Lewis, 2001) and judicious policies striving to increase women's participation in paid labour. While being rather successful, hitherto unpaid work remained to be done and continued to be the bulk of activities carried out by women – undervalued and not remunerated. As a result, the difficulty to balance leisure, unpaid work (e.g. care of children and older family members) and employment is now challenging both women and men, though at still significantly diverse levels for it is still mainly women who are working part-time and with lower wages. While social pressures and responsibilities for care remain with the individual and his/her family, the preconditions for facilitating various types of unpaid work, including volunteering, remain precarious. Despite some scarcely scattered regulations for 'care leaves' (Schmidt et al., 2016), unpaid work remains one of the most unequally distributed activities, in particular between men and women, and contributes to cumulative inequalities (Sayer, 2005).

Against this backdrop, the implementation of concepts such as active ageing, life-long learning, and extending working lives will continue to be most relevant. However, they need to be underpinned and complemented by societal and social policies that enable people to gain equitable control over their lives and to enable individuals to shape transitions between learning, working, caring, and procrastinating in an independent manner over the life-course.

The standard life-course is marked by age limits based on chronological age

The current distribution between periods spent in education, work and pension is clearly marked by age limits based on chronological age. Although or also because these limits have been constantly shifting – upwards in the case of education, mostly downwards in relation to pension age – individual and social challenges can be observed regarding particularly the transitions between these periods of education, work and pension. In addition, new and multiple types of transitions for both sexes have emerged due to more diverse job careers, additional periods of unemployment, but also times spent with child care or care for an older family member. For instance, the average number of individual job changes, but also the quantity of complete career changes as well as related contractual conditions and geographical assignments continue to grow. Other examples would be ‘sandwich generations’ that need to care for both children and older parents, with related transitions between care work, training and employment. Coping with these transitions and related human capital investments is only sporadically supported by public policies or employers and are considered as an individual responsibility, rather than a social risk. Employees are and will therefore remain burdened, often overstrained, to balance employment, (re-)learning and family work under conditions of ‘Work 4.0’ with neo-liberal governance that further promotes individual responsibilities, competition and market-orientation. This will contribute to further differentiations of the traditional ‘standard life course’ as well as to additional and new types of inequalities among workers, between gender and socio-economic groups, and between generations – in particular when accounting for both paid and unpaid (care) activities over the life-course (World Bank, 2015: 226; Ilinca et al., 2016). European welfare states, however, continue to be characterised on the one hand by not accounting for unpaid work and, on the other hand, by a pro-elderly orientation in terms of public transfers, i.e. by higher public transfers per capita for the older generation than for children. In contrast, older people are net providers of both time and private transfers, at least in the upper- and remaining middle-classes of high-income countries (Gál et al., 2018).

Appropriate measures are needed to address the challenges of ‘Industry 4.0’

Reorganising the distribution between periods spent in education, work and pension would not hamper economic development and growth as already to date there is no evidence of a negative relationship between ageing and GDP per capita (Acemoglu & Restrepo, 2017; Eisler, 2007). Again, adaptive measures

are needed to respond to the challenges of 'Industry 4.0' and the respective skills improvements (Eurofound, 2013), while policies promoting the extension of working-lives need to consider individual employment histories and interventions over the life-course (Kvist, 2015). However, it is likely that disadvantages for those older workers with lower qualifications will persist also in this case as they will find it harder to negotiate appropriate mitigating measures (George et al., 2015). A major caveat for 'Ageing 3.0' policies thus remains the ongoing formal exclusion and discrimination not only based on age and age limits, but on inequalities and unequal opportunities that continue to expand across the life-course (Round, 2017; Huggett et al., 2011).

Towards 'Ageing 4.0'

A clearly persuasive and most exciting potential of individual longevity and demographic ageing consists in the opportunity to reconsider and reorganise individual life-courses and societal approaches to reconfigure the balance of paid and unpaid work, and the distribution of learning, working, caring and leisure-time periods across the life-course, at best in an age-integrated way.

Reconsidering the traditional, differentiated life-course model

Pondering the continuous disintegration of traditional life-course patterns described above, it is timely to reconsider the traditional, differentiated life-course model in which societal tasks and activities have been assigned to defined age brackets. Matilda White Riley and John Riley have already proposed such considerations decades ago (apart from earlier work see, for instance, White Riley & Riley, 2000) by promoting an age-integrated model that conceives of activities (education, work and leisure) as taking place simultaneously, rather than subsequently, over the entire life-span. Breaking down structural age barriers by facilitating work, education and leisure opportunities to people of all ages and bringing together people who differ in age in all activities is an important step to overcome traditional life-course concepts. Such an approach falls, however, short of considering the pace of technological innovation, current cleavages in labour relations as well as gender relations and related challenges for society and individuals. It calls in any case for the implementation of age integration at macro level (e.g. social policies granting educational and/or care leaves with income security, active labour market policies at transitions over the life-course), meso level (e.g. company practices), and micro level (e.g. individual planning).

The aim of such policy approaches must be to facilitate transitions in individual life-courses (between paid/unpaid work, between education/training, and between family obligations and work/leisure) in a solidaristic way. For instance,

by boosting incentives for ‘re-training’, by offering preventive ‘upgrading courses’ and care leaves as well as by enhancing intergenerational equity (see also OECD, 2018). With a view to active labour market policies, a number of ‘good practice’ examples can already be retrieved across Europe, though not always mainstreamed, and often restricted to specific age groups (UNECE WGA, 2017). The second set of interventions can be found in a number of countries, too, though not often based on flawless rights and obligations. This is why, for instance, the European Pillar of Social Rights is seeking to amend the existing Parental Leave Directive and to promote a better work-life balance.

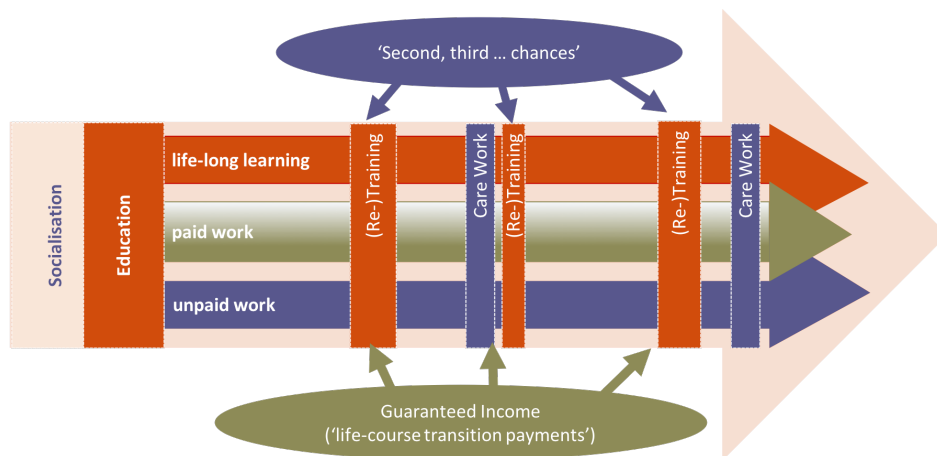
To improve intergenerational equity under conditions of a rising number of generations living contemporaneously, a new type of integrated and solidaristic life-course model needs to be considered. Rather than overburdening the individual, societal opportunities need to be created by appropriate policies to provide ‘second (and third ...) chances’ over the entire life-course on the labour market, to create ‘time for adaptation’ and ‘time for reproduction’ in a broad understanding, including the ‘reproduction’ of the labour force. Only if life-years gained in terms of average life-expectancy will be distributed as ‘sabbatical years’ over the life-course will it be legitimate to abandon defined pension ages and to promote longer working-lives.

Ageing 4.0: A more equal distribution of life-chances, income and work?

Ageing 4.0 as an integrated and solidaristic life-course model

We propose to further discuss a new type of integrated and solidaristic life-course model, depicted in Figure 3, under the term ‘Ageing 4.0’ to complement the widely-discussed developments of ‘Industry 4.0’ and ‘Work 4.0’ (Federal Ministry of Labour and Social Affairs, 2017). This is important as digitalisation processes need not serve exclusively to produce growth and industrial development but ‘big data’ and digital innovations should contribute to a more equal distribution of time, income, life-chances and social cohesion. This aim is calling for policies that are able to steer this process, rather than leaving these developments to crude market mechanisms.

Figure 3: Ageing 4.0 to facilitate a new life-course perspective in a solidaristic society



Source: Leichsenring & Schmidt, 2016.

The concept of 'Ageing 4.0' addresses the new social risks in transitions over the life-course that will further proliferate through the digital revolution in the context of 'Industry 4.0'. Against the currently individualised risk inequality, we propose a more solidaristic risk distribution that needs to be underpinned by new policy approaches and a new design of contractual arrangements beyond the individual employment contract:

Addressing technology-induced challenges

- Firstly, an adaptation of policies is necessary to address the technology-induced challenges concerning skills development and increased productivity. Indeed, the foreseeable reduction of jobs in specific economic sectors will only partly be compensated by new jobs in emerging sectors. Presumably, these new jobs will require skills the quality of which we might not even know, and skills might get outdated even quicker so that workers will change jobs more often over the life-time. Education, employment and social security systems will therefore need to cater for regular retraining periods, e.g. every 10 to 15 years. Following such employment periods, people need to get the chance to either update their special knowledge in the area in which they are already employed or second and third chances to reorient their skills and related employment opportunities. During such 'life-course transitions' basic income and/or payments based on individual 'education and training accounts' should guarantee individual income security with the aim to promote social mobility (OECD, 2018). Some experiences from pension accounts (Holzmann, 2006) could be a starting point for further debates on the design of such 'life-course accounting mechanisms' in terms of education, income security and unpaid (care) work.
- Secondly, the heavily gendered life-course perspectives that fall short from acknowledging unpaid household and care work need to become adapted.



**Acknowledging
unpaid work to address
the heavily gendered
life-course perspectives**

This can be realized in an integrated life-course model by incentivising periods of care over the life-course through ‘paid care leaves’ for all citizens. While some countries have already catered for this opportunity for employees (Schmidt et al., 2016), cash benefits paid for these periods are often detrimental for earners of higher wages so that women continue to represent the majority of beneficiaries. A generalised regulation for all citizens caring for children or older people would contribute to mainstreaming and a more equal distribution of hitherto unpaid care. This does not, however, liberate policy-makers and employers from providing opportunities for combining paid and unpaid work, e.g. by part-time arrangements.

**A more equally
distributed labour-
market participation
rate over the entire
life-course**

- Thirdly, transitions between work and (re)training as well as between care periods and employment need to be organised better, at best at the local level and supported by ‘skills databases’ to match supply and demand via digital platforms. Within the integrated life-course model this will be facilitated, because supply and demand of labour has become and will be more fluent, which is already visible, for instance, in the (still underregulated) platform economy or opportunities of tele-working and new types of professionals. These new ways of working can contribute to a more equally distributed rate of participation in the labour market across the life-course, and between men and women. As these transitions (training to work, care to work, work to training etc.) are happening more often and at a much faster pace they could implicitly establish an adjusted generational contract within and between ‘generations’ that needs to be widely debated and designed by appropriate policies.

The institutionalisation of sharp transitions based on chronological age has been a major result of established welfare state development, together with general schooling and vocational training preparing for an anticipated life-spanning occupation. A paradigm change would thus need to alter a pattern of life-course that has been created by these very same social security systems, yet with a view to safeguarding their basic values, including intergenerational and social solidarity as well as the creation of equal chances for all citizens:

**Working and
learning at all ages**

- *To facilitate work at all ages and life-long learning* individual education and pension accounts would be needed that are not dependent on chronological age but can be consumed at all ages. This precondition would provide second and third chances across the life-course, rather than accumulating inequalities, but would need to be designed in a smart way to avoid wrong incentives. Only then working beyond the age of 65 will be possible for future generations: if they will be able to alternate learning, caring or volunteering, and work over the entire life-course.

**Productivity gains
by facilitating second
and third chances**

- *To gain in productivity in the context of 'Industry 4.0' a more appropriately skilled workforce is needed. As it will become increasingly difficult to adapt curricula of mainstream education to the needs of industries and the labour market, the infrastructure, including social welfare systems, of 'knowledge societies' must be adapted to life-long learning, intergenerational learning and learning at all ages. At the same time, however, it will be necessary to ensure social inclusion of the most vulnerable, including the 'non-digitals'.*
- *Second, third, and more chances to change individual life-courses at various stages under conditions of self-determination and income security have the potential to enhance gender equality and opportunities for changing one's socio-economic status more proactively. Moreover, intergenerational equity would be enhanced as younger generations would receive more solidaristic support. Active and preventive labour-market policies (training, mentoring) will increase individuals' life-chances in earlier stages and at crucial interfaces and life-cycle events.*

Certainly, such a paradigm change is challenging a wide range of political, socio-economic, cultural and personal beliefs and habits. The trade-off between individual and social openness for change and potential gains throughout careers by a better qualification and work-life balance would need further consideration. Companies, some of which have shown that family-friendly or, better, integrated life-course-friendly policies increase productivity, job satisfaction and motivation, and reduce absenteeism (Eurofound, 2013; Stutzer & Frey, 2012; Brandon & Temple, 2007), would need to develop programmes for more flexible solutions, e.g. in the case of (planned) absences for leaves of individual workers, be it for reasons of care, training or recreation. In particular, small and medium-sized companies will therefore have to learn from good practices regarding appropriate managerial, social and technical solutions.

**Social investment
and further research
are needed**

At the societal level, 'Ageing 4.0' would certainly need social investments to provide income security and support during (educational) leaves and periods of what is currently known as 'unpaid work', but this would be compensated by low unemployment, increasing productivity, the facilitation of productive work also at higher ages, equally distributed labour market participation between sexes, and the reduction of poverty in old age. As always when it comes to reforms in the area of demographic change, reforms cannot be introduced from one day to the other, but the earlier we start, the better we shall be prepared for continuously 'ageing' societies.

Further Research

The proposed paradigm change calls for interdisciplinary research efforts to underpin some of its assumptions by further evidence and to implement the envisaged transformation by appropriate strategies, models and policy instruments.

Many scholars have already started to gain a better understanding of the ageing process by merging knowledge and expertise from demographics, economics and life-course perspectives on ageing (see, for instance, Komp & Johansson, 2015; www.factage.eu; Sanderson & Scherbov, 2015; Kuhn et al., 2015). The potential impact of a more age-integrated life-course on gender roles and inequalities, i.e. gains in terms of equity and more equal life-chances, would need special attention, starting from more and more well-documented inequalities regarding health, labour-market participation and care obligations (WHO, 2015; Bennett et al., 2015; Eurofound, 2014; www.extendjpimybl.eu; Berghammer & Riederer, 2018).

Furthermore, new developments on the labour market such as cyber working, precarious employment and cross-border issues of employment and social security need to be considered, i.e. the multi-level governance of European labour markets and social security systems under conditions of workforce mobility over the life-cycle.

Another area for intensive research will need to address the geographical and temporal differences of ageing societies across the UNECE Region, namely the prevailing differences in (healthy) life expectancy between East and West, but also within individual countries: In how far is 'Ageing 4.0' a concept to be applied in countries with lower life-expectancy? What adaptations would be needed to react to 'rapid ageing' in selected countries? And finally, will the strengthening of individual life-chances – e.g. individual education accounts, second and third chances etc. – be conducive to shaping new types of solidarity within and between generations and social classes?

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