

Intergenerational fairness from an economic perspective: Overview of some theoretical and methodological issues

Filip Chybalski

Faculty of Management and Production Engineering, Lodz University of Technology, Republic of Poland

corresponding e-mail: [filip\(dot\)chybalski\[at\]p\(dot\)lodz{dot}pl](mailto:filip(dot)chybalski[at]p(dot)lodz{dot}pl)

address: Piotrkowska Str. 266, 90-924 Lodz, Poland

Abstract: This paper seeks to conceptualize the term of intergenerational fairness with particular attention paid to possible comparative cross-country studies in this field that would aim at searching for the most efficient welfare policies serving for long-term equilibrium between generations in terms of well-being. According to the concept proposed, intergenerational fairness means such relations between different age groups which, in the context of given economic, political and demographic conditions, do not discriminate against any age group in terms of its present and future living situation. This includes present transfers (today) and their impact on prospects (future). Thus, intergenerational fairness cannot be measured only with reference to the contemporary situation, it must also account for the future.

JEL Classifications: J10, D63, D60

Keywords: Population, ageing, generation, intergenerational fairness, welfare, efficiency

Citation: Chybalski, F. (2018). Intergenerational fairness from an economic perspective: Overview of some theoretical and methodological issues. *Business and Economic Horizons*, 14(2), 268-281. <http://dx.doi.org/10.15208/beh.2018.21>

1. Introduction

Demographics all over the world have been changing. However, in the case of North or Latin America as well as Oceania, the share of the elderly in the global population is relatively stable as opposed to Europe and Africa. In the case of the former, the share in the population of the world has been decreasing significantly, in the case of the latter has been increasing (Lutz & Skirbekk, 2008). The ageing population of European countries is said to be one of the crucial, if not the most important, socio-economic problems faced by this continent in the 21st century. A significant change in the age structure of the population, including the proportion between pensioners and people of working age, drives a substantial question about how the welfare is divided between generations and what the main causes or determinants of such a division are. That is why research in the field of intergenerational relations has been developing for over a few decades. Since the 1970s, many European countries have pursued the full-employment policy aiming especially at reducing unemployment rates among young people. The main remedy applied was early retirement which, however, turned out to be an ineffective policy (Chybalski & Marcinkiewicz, 2014; Gruber, Milligan, & Wise, 2009; Jousten, Lefèbvre, Perelman, & Pestieau, 2010; Kalwij, Kapteyn, & de Vos, 2010). In the 21st century, the generation of post-World War II Baby Boomers started retiring, which significantly disturbed the relation between the population of pensioners and population of workers. That was and still remains the cost of the early retirement policy applied 30-40 years earlier. People grow accustomed to retiring at age 60-65 (with a few exceptions like e.g. in Iceland or Norway). Therefore, the social resistance to the increase in effective retirement age, inter alia

through increasing the pensionable age, is huge. Politicians try to use this resistance as one of the drivers of electoral support, although acting in this manner is contrary to economic and demographic rationale.

The early retirement policy implemented in the 1970s and 1980s turned actually out to be as a "gravity wave" mechanism, since serious consequences of the early retirement strategy as a full-employment policy still affect us today. The contemporary relations between generations have become a serious problem that has been growing stronger. However, the history of the debate on intergenerational equity has its modern roots in the 1970s and 1980s in the United States and was driven by the concern that the future ageing population would not be able to defray the cost of their parents' pension benefits (Piachaud, Macnicol, & Lewis, 2009). Pensions are the main field that is investigated in terms of intergenerational fairness, which is determined by the ageing of declining populations in European countries. Taking the definition of a pension system in a macro scale into account, one can perceive a broader context of this intergenerational relationship. With reference to the whole national economy, to simplify, a pension system is a tool for dividing the current GDP between the working generation and the generation of pensioners (Góra, 2008). Future GDP is crucial in a pension system, since the consumption of future pensioners will be determined by what will be produced in the future, mainly by the generation of their children (Barr & Diamond, 2006). This way, in the future, the generation of parents (already pensioners then) and the generation of their children (already of productive age then) will share GDP between each other. A pension system, as a tool of income distribution between generations, determines its rules in a more or less fair and efficient manner, since this distribution has a major impact on economic development and, at the same time, on the future GDP to be divided between the respective generations. Therefore, the division of GDP between the generations of workers and pensioners is actually very convergent with the division between remuneration of production factors (including the work of the economically active generation) and consumption of the population of pensioners. The development of this simplified model includes the third generation of children and youth. The part of GDP spent on this generation is in fact an investment in human capital through the process of education. Additionally, the generation of workers accumulates wealth for its retirement period to smooth consumption, whereas the generation of pensioners decumulates wealth to finance consumption. The former generation has positive savings, the latter negative ones. Savings affect GDP growth, and as a result, the GDP that will be divided between generations in the future. Therefore, the mentioned intergenerational fairness refers mainly (but not only) to the fair division of current GDP. This fairness may be perceived in different ways; however, regardless of how it is defined by authors, in the economic perspective it always refers to the intergenerational proportion of income distribution, within a family or through social transfers. These incomes are distributed between generations not only through a pension system, but also through education, healthcare, investments in infrastructure, and labour market policy. Since population is very dynamic and we have experienced an unprecedented ageing process, many questions referring to income or GDP distribution between generations arises. They are e.g. (1) What does the term "intergenerational" actually mean and what does it refer to? (2) What is intergenerational fairness from an economic perspective? (3) What is the feedback between intergenerational fairness and economic efficiency?

The subsequent sections of this paper attempts to answer the questions posed above. First, the term "intergenerational" with particular attention to fair relations between generations is discussed. Second, the concept of intergenerational fairness is considered

with particular reference to intergenerational justice and equity. Third, the trade-off between intergenerational fairness and economic efficiency is studied.

The paper contributes to the discussion of the overall conception of how to perceive and study intergenerational fairness. However, by defining and conceptualizing intergenerational fairness, special attention is paid towards the possibility to investigate this topic in a cross-country perspective as to seek for better and worse welfare state policies in terms of supporting intergenerational fairness. In the era of ageing populations, it is fully justified and useful for policy makers to develop concepts that help in finding policy tools that minimize economic distortions between generations when the subsequent generation is less numerous than the previous one.

2. How to perceive the term 'intergenerational'?

The notion "intergenerational" is quite ambiguous because the term "generation" can be defined in many ways. The concept of generation is much more complex and difficult than the concept of family. Within the family, a generation is very precisely perceived since it includes people being a member of different groups: children, parents, grandparents etc. (Papworth & Corlett, 2014). With regard to the whole population in a given country or on a global scale, it is more difficult to distinguish between children, parents and grandparents. One reason is the fact that some people do not have children. Another reason is that if people have children, they have them at different ages. Does this mean that "society does not have generations" as Papworth and Corlett (2014) claim? Not necessarily. They justify such a view using the argument that the notion of a generation is imprecise in the context of the whole society and give the example of the Baby Boomers as the case. This term refers to people born in the United States between 1945 and 1964, and in the case of the United Kingdom, this is period from 1945 to 1950 (since after 1950, fertility rates decreased). Additionally, there is also no reason to assume that a person born in the early 1960s shares the cultural values or references of a person born in the 1940s, but not with somebody born in the late 1960s. So, generations are very often defined by researchers according to their rhetorical needs instead of on the basis of meaningful sociological descriptors (Papworth & Corlett, 2014). The ambiguity of the term "generation" is also emphasized by Tremmel (2014). He distinguishes between family generations, societal generations and chronological generations. On the family scale, as previously noted, generation refers to family relationships (children, parents, grandparents etc.) and actually means genealogical relations. On the scale of a society, generation "refers to a group of people whose beliefs, attitudes or problems are homogenous". This approach is quite consistent with a cultural view of generations. The third definition of a generation refers to chronological terms and distinguishes between temporal and intertemporal perspectives. Chronological-temporal refers to different age groups which are very often perceived as different social groups (young generation, working generation and generation of pensioners). In such an approach, the selected generations live at the same time. The chronological-intertemporal view of generations can refer to everyone alive today. Then, a generation includes all the people living in a given period of time and consists of different ages or social groups (Tremmel, 2014).

The economic perspective in studies on intergenerational relations does not require direct cultural or sociological references. In the case of economic analysis, the distinction between generations, regardless of what criterion it is based on, is more technical, with reference to age, year (or period) of birth or the active role played in society. Therefore,

economists perceive generations from two main perspectives: (1) a generation as a cohort or set of the subsequent cohorts, (2) a generation as an age group which is actually the concept of a generation as a social group: young, adult and old (this approach is consistent with the chronological-temporal one). A generation defined through the prism of the cohort means a set of people or subset of population born in the same year or in the same period (interval of years). Analysis based on such a perception of the generation concept seems intuitively to be based on longitudinal data that "captures" a given generation in different phases of its life cycle. From an economic perspective, such an approach refers directly to the concept of the life cycle, e.g. the intertemporal choice model (Fisher, 1930), the life cycle hypothesis (Ando & Modigliani, 1963; Modigliani & Brumberg, 1954) or the permanent income hypothesis (Friedman, 1957). A given agent passes through subsequent phases of their life cycle, starting with education and finishing at retirement. The life cycles of all the agents born in the same year aggregate to a given generation at macro level. A generation perceived as a specified age group is a quite different concept. In this case, agents born in the same year "travel" over their life cycle and become members of different generations. First, they represent the generation of children and youth and are being educated. They then move to the productive-age generation or working generation. The final stage of their lives is retirement, when they become the members of pensioners' generation. So, they represent three main social groups which, from economic perspective, take part in the division of current GDP, however only the generation of workers is involved in the creation of income. Such an approach is consistent with the concept of overlapping generations (OLG models). OLG models are said to be the cornerstone of modern macroeconomics (Blake 2006). Proposed by (Samuelson, 1958) and (Diamond, 1965) were then developed by e.g. (Blanchard, 1985) and (Yaari, 1965) and used by many researchers to simulate the economy in which the population usually consists of two or three overlapping generations. In such an approach, the whole cohorts (macro perspective) are captured and classified as young, workers and pensioners, the three main social groups analyzed from the perspective of public transfers, labour market, the impact on growth etc.

Both approaches - generations as cohorts and generations as age or social groups - can be correct, precise and useful for intergenerational economic analyses taking different goals and perspectives into account. When the investigation focuses on the life cycle perspective on the scale of agents or households, the cohort concept of a generation seems to be appropriate one. However, such studies usually cover data for one country. In the case of investigation focused on the relations between generations in the short, medium or long term, the age-group or social-group concept of generation seems to be justified. Such macroeconomic studies can be based on two different approaches. The first one, in which e.g. OLG models or generational accounting are employed, usually requires simulations to study intergenerational transfers (see e.g. McCarthy et al. 2011; Makarski et al. 2016; Hagemeyer et al. 2015; Balestra & Dottori 2012; Kotlikoff 2004; Sánchez-Romero 2013; Wrede 1999; Boldrin & Montes 2009). In this case, the one-country approach dominates. Another approach is based on empirical data (observed, not simulated) and includes statistical or econometrical analysis of what is actually observed in one or more countries during one or more periods of time. In such a case, cross-section, time series, or cross-section time series data can be used, depending on the number of countries and periods of time studied. This approach is of central interest in this paper, since we focus on the cross-section perspective in the investigation of intergenerational fairness. In this case, usually three different generations perceived as social (age) groups are studied (young, adult of working age, and old, after retirement). The public transfers, or more generally,

income distributions among these generations are under investigation in a given period of time. This allows finding results from a static perspective (only one period is studied). However, if more periods of time are analyzed, then some dynamic view can be developed. Such a perception of generations "captured" at given period or in many periods is based on the assumption that the distinction between different social groups (generations) is based on the criteria referring to their specific needs or rights (Rydell, 2005). Young people need to be educated, adults need to work, consume, save, and have a place to live, whereas the old need incomes, although they do not work. However, only the middle generation produces and generates income.

The above-mentioned perception of a generation as a social group differentiated by the age criterion in a specified moment of time has its obvious consequences. In a given period of time (in a static approach), a given person may be a member only of one generation. However, in a dynamic approach, in which different periods of time are compared, a person (e.g. at age 62) in a specific period of time (2010) may belong to the working generation, however in another (later) period of time (2015) the same person may belong to the generation of pensioners (e.g. at age 67). This means that in a dynamic view, people change the generation they belong to. Over the whole life cycle, they move from the generation of youth, through the working generation, to the generation of pensioners.

To summarize the concept of generation as a social group in economic terms, it seems to be fully justified, both from a theoretical as well as an empirical perspective. The first one is embedded in OLG models, the other one arises usually from the availability of data. To conduct a cross-sectional study and develop an empirical (based on observed data, not simulated) analysis, internationally comparable data is required. Such data, if available, rather does not have a longitudinal character, but constitutes a macro cross-section time series. Moreover, economic analysis, although it does touch on some cultural or historical aspects of intergenerational relations, it does not need to define generations with a strict reference to the cultural identity of agents born in the same year or period of time.

3. Intergenerational fairness: A conceptualization

When analyzing intergenerational relations, such categories as equity, justice, or fairness are used. Fairness is usually identified with justice and both are relatively broad concepts. However, a precise definition of intergenerational fairness requires distinguishing between two different approaches of its measurement: a static (snap-shot) view and an end-result perspective (Papworth & Corlett, 2014). A static perspective accounts for the intergenerational distributions in a given time period, not dynamically. This may result in some important distortions in the evaluation of intergenerational fairness, since the measurement of distribution in a given social group in a given period of time can be totally unlinked to the overall distribution over the whole lifecycle. Thus, in a particular period, a given person or generation can be a beneficiary of distribution, whereas in the whole life cycle the same person or generation may be a contributor, and vice versa. The end-result perspective is based on the ignorance of how the distribution comes about but focuses on its final results. The end-result perspective does not take an individual's productivity or voluntary actions into account and, therefore, is biased by the risk of undermining e.g. incentives to produce. It also ignores that voluntary exchange between two sides requires mutual benefits according to Pareto efficiency. If a voluntary exchange is in line with the Pareto optimum, such a distribution cannot be unfair. The application of static measures of intergenerational fairness gives a "single-moment" picture of the

distribution between generations and may e.g. suggest that the transfer from one generation to another is unfair. A dynamic view can give a quite different picture, since a given generation is in some stages of its life cycle a beneficiary and in other stages a contributor. So, as long as each generation has its turn to pay or to be paid, the intergenerational exchange is fair. To compare these two perspectives in terms of its applicability to intergenerational fairness, more important is the mechanism of the transfers between generations rather than its direction, scale or result. Finally, (Papworth & Corlett, 2014) follow the approach by Foley (1967) and define intergenerational fairness as "behaving in a manner that does not engender a feeling of envy between cohorts".

Is it really sufficient to employ the criterion of the feeling of envy to evaluate if the relation between generations is fair in terms of transfers? Transfer can run between generations and within them. Agents are aware especially of intragenerational inequalities, less so of intergenerational ones. A young agent compares his or her own living standard usually with the standard of other representatives of his or her age group. The comparison to the living standard of pensioners is much less likely. Thus, the feeling of envy is more probable towards the same or a very similar age group, less towards significantly younger or older people. This fact undermines the perception of intergenerational fairness through the prism of envy. Moreover, the direction and scale of transfer matters, even if a given generation is not aware of being a net contributor in the distribution process. This is also important, since the situation of a given generation (e.g. young) in the future can be determined by contemporary conditioning. For instance, lower spending on education of young people impacts their future skills and productivity, and as a result, incomes. Less educated young people in a given country can lose the competitiveness game on the local labour market with immigrants or be less competitive on foreign labour markets. The envy between age groups, cohorts or generations does not matter in this case. Envy is feeling, and in the same situation one may feel it and another may not. Envy is subjective, whereas objectivity is more suitable for the evaluation of intergenerational fairness.

Is intergenerational fairness more an equity or an equality concept? Equity refers to the needs required to enjoy full, healthy lives. Equality is a quite different notion and refers to giving people the same things they need to enjoy full, healthy lives. "The equality of a distribution of income or wealth is basically a matter of fact and is, therefore, basically objective. The equity of the same distribution is basically a matter of ethical judgment and is, therefore, basically subjective" (Bronfenbrenner, 1973). Social equity means fair availability of livelihood, education, resources, full participation in the political, cultural and societal life as well as self-determination in meeting fundamental needs. In economic terms, equity or justice is the concept of fairness in economics and it refers mainly to taxation and welfare policy (Summers & Smith, 2014). In this context, Piachaud et al. (2009) distinguish between equity, private and public transfers in terms of intergenerational relations. Equity between different contemporary generations (living today) includes equal respect, opportunities and comparable living standards of different generations. Additionally, in a broader perspective, equity may refer not only to contemporary but also to future generations. In this case, equity involves the situation of the future generations including the state of Earth as well as comparative burdens on present and future generations. Private transfers between generations are of an internal family character and refer to burdens of caring for young and older people, support affecting life prospects, financial transfers and bequests (including not only assets but also liabilities) left for other generations. Public transfers include public debt inherited by younger generations and taxes and pensions to be paid by different generations (Piachaud et al., 2009). In this view, equity refers to the prospects for the future and is difficult to

measure, whereas transfers are more tangible and can be measured or at least estimated. Equity has a more qualitative character, whereas transfers are quantitative magnitudes.

Rydell (2005) indicates four different norms of generational equity: (1) the allocation of social expenditures at any given moment of time between different generations; (2) the just treatment of successive cohorts so as they have ensured equivalent treatment by other cohorts, e.g. a given generation can expect pension benefits not lower than those of previous generations; (3) equal sharing of costs of the welfare state; (4) actuarial fairness, which means just returns on contributions made over the lifecycle. This approach to equity, as opposed to the previous one, is first of all a quantitative one since it refers directly or indirectly to intergenerational transfers and seems to disregard chances and prospects which are perceived as the core point of equity in Piachaud's et al. (2009) view. However, transfers determine chances and prospects. Thus, to distinguish between transfers and equity in the context of intergenerational fairness is a bit artificial or even false. Moreover, transfers may be treated as a proxy for chances or prospects (e.g. spending on education mentioned before are funded by working generation, thus, it is a transfer between generations that determines the educational level and skills which are the drivers of productivity and income level). In such a view, distribution between generations determines the prospects of some of them. Simultaneously, it affects the present situation of the generations which defrays the cost of transfers.

How to define intergenerational fairness taking both the qualitative and quantitative approach into account? The literature study supports the view that fairness means equity in social terms. The same refers to intergenerational relations, which are also of a social nature. Equality is a concept that is hard to involve in the context of relations between generations. To ensure equality for different cohorts over the longer life span seems actually to be impossible. This results from the fact that intergenerational relations in different periods of time are determined by quite different conditions (economy, demography, political stability, on a global and regional scale). It is also difficult to justify envy as an important element or pattern of intergenerational fairness, since to use the concept of intergenerational fairness in searching for better policies supporting sustainable development requires objective measurements to find more effective policy tools. Therefore, intergenerational fairness needs to be defined in the context of both transfers and prospects; however the later can be estimated with the use of the former. Intergenerational fairness means such relations between different age groups which, in the context of given economic, political and demographical conditions, do not discriminate against any age group in terms of its present and future living situation. This includes present transfers (today) and their impact on prospects (future). Thus, intergenerational fairness cannot be measured only with the reference to the contemporary situation, it must also account for the future. However, intergenerational relations or the situation of generations in the future can be predicted on the basis of today's data according to the principle that today's transfers determine future prospects (tomorrow's situation). Another important aspect refers to the fairness between today's age groups (contemporary generations) and future age groups (future generations). A fair distribution of incomes and resources between generations today and fair distribution of incomes and resources between generations in the future does not imply fair distribution between present and future. That is why the concept of intergenerational fairness needs to be linked to economic efficiency. The division of current GDP between generations (or between consumption and investments) determines future GDP that will be divided between future age groups (generations). Thus, not only will future generations be responsible for the product generated "tomorrow" but also today's generation plays an important role.

This fact imposes an important responsibility on today's generations in terms of intergenerational fairness. As we can see, intergenerational fairness requires two different views: cross-sectional (among age groups in a given moment of time) and longitudinal (between age groups today and age groups tomorrow). In the first case, the structure of distribution matters, in the other the scale of GDP (income) as well.

4. Intergenerational fairness, economic efficiency and the welfare state

From an economic point of view, intergenerational fairness requires some reference to efficiency. Both chronological-temporal as well as chronological-intertemporal perspectives can refer to long-term intergenerational fairness. The first one, although it is based on the age groups existing in a given period, can be easily developed into an overlapping model in which children first become adults and then adults become old. Meanwhile, their parents become old and die, new children are born as well and then become adults. Therefore, the generation of today's children can be compared to the generation of their parents, however when the latter were children (the previous generation of children). The generation of today's workers can be compared to their parents, however, when the latter were of working age (the previous generation of parents). The same refers to pensioners. In the case of the generation perceived as the whole population living in a given period of time, it can be compared to the population that lived before. The problem is data that is usually not available for long time period. However, in both cases, that of age groups as well as of the whole population, comparisons in terms of intergenerational fairness can be made "step by step", e.g. in 3-, 5- or even 10-year intervals. This can show how the relations between generations evolve and whether e.g. contemporary young generation have worse, similar or better well-being as compared to the previous young generation. Then, the question about fairness, perceived as the same chances to achieve comparable welfare, obviously adjusted to the period of time (in historic terms - e.g. living conditions in the nineteenth century were quite different than today), is very important and actually refers to efficiency. Efficiency as an economic category determines development understood through the prism of GDP growth, but also in terms of the exploitation of natural resources and what is left to future generations. In a given period, the efficiency of the economy is determined by the living generation, mainly by workers and pensioners who are permitted to vote and to affect political decisions. They can compare their own situation to that of the previous generation (already dead) to control for the intergenerational relationship. However, they are unable to change the situation of a deceased generation. So to change the relation between them and previous generation, the only thing they can do is to change their own welfare. A quite different perspective is to compare the situation of a given generation with the expected situation of a future generation. In this case, the welfare of these two parties can be affected by today's generation. First, the generation living today can care only about their own welfare, second they can behave in such a way as to ensure good prospects for the future generation in terms of welfare. The latter requires a broadly understood efficiency (GDP growth, care about the environment and natural resources) that must be ensured in the long term to maintain welfare prospects for children and grandchildren and subsequent generations. The motivation of the present generation to leave good prospects for future generations may have its roots in different justifications and is well explained by such theories as, for instance, intergenerational reciprocity: descending, ascending and double, utilitarianism, Rawlsian egalitarianism, and the Lockean

proviso (A. Gosseries, 2008; Axel Gosseries, 2009; Rawls, 1999; Steiner & Vallentyne, 2009; Thomson, 2009; Tremmel, 2014). Nevertheless, a look ahead by the present generation seems to be obvious in an economic view on intergenerational fairness and sustainable development that is necessary to pass on to posterity the prospects for social, economic or ecological equity in relation to the present generation.

The long-term goal is to keep an intergenerational contract which is deeply embedded in the idea of the welfare state. The core point of this contract are pensions as a transfer from the working generation to the generation of pensioners. Regardless of the model of a pension system (unfunded or funded, defined benefit or defined contribution), pension benefits are always financed through the division of current GDP. In the era of ageing population, to realize the very important goal of ensuring pension benefits is a real challenge. In this case, the question about restructuring the intergenerational contract as an element of the welfare state seems to be fully justified. An ageing population caused by increasing life expectancy and declining fertility has changed the quantitative relations between generations dramatically and, therefore, is a core driver of intergenerational fairness (or unfairness). This structural population change has provoked a real concern about its fiscal consequences and impact on the efficiency of economies (especially with regard to labour markets). This means another approach to social transfers, including those between age groups. Thus, the evolution of welfare state models in many countries can be expected. Nevertheless, the dynamics of the changes vary across states and depend on the ideology promoted by politicians. For instance, Britain is changing its social intergenerational contract radically in line with a neo-liberal model, whereas Germany has a quite different approach to the changes, implementing them more gradually and to a modest extent (Walker, 2003).

Are such reforms to the welfare state model in the dimension of the intergenerational contract justified by the economic efficiency criterion? Does intergenerational fairness need economic efficiency? Or vice versa? An approach based on the equity-efficiency trade-off is commonly used to study the intragenerational equity and efficiency of social policy. It includes e.g. redistribution in a pension system and labour market policy. Such analyses and the choice between Pareto efficiency, Barone compensation or Pigou's approach to social welfare actually determine the shape of a welfare state (the relation between free market and state's role in the economy). However, in a dynamic view, sustainability and welfare refer to more than one generation and the choice made today affects the conditioning for choice tomorrow. So the question is how to implement welfare policy to achieve an intergenerational fairness-efficiency trade off which means actually ensuring welfare, not only for today's, but also for future generations. Hoberg and Baumgärtner (2011) find that a sustainability policy based on a combination of temporal irreversibility and closed ignorance faces a trade-off between Pareto efficiency across generations and intergenerational equity. The temporal irreversibility mentioned means that past decisions or actions remain unchanged, whereas closed ignorance refers to the unpredictability of the future. Temporal irreversibility is an argument in favour of accelerating sustainability policy, since actions that should have been undertaken to maintain intergenerational equity (e.g. in the dimension of climate change) have actually not been undertaken, which means an important delay that has to be eliminated as soon as possible. Stavins et al. (2003) undertake a theoretical discussion on dynamic efficiency, intergenerational equity and sustainability. They seek such a conceptualization of sustainability that would be acceptable to both economists and non-economists. In such a perspective, sustainability can be perceived as a "growth path as one which is both dynamically efficient and non-decreasing over time". In such a view, the combination of

dynamic efficiency (perceived as "the choice of a feasible consumption path such that the economy is on the Pareto frontier") with appropriate intergenerational transfers can lead to more ambitious sustainability goals. Woodward (2000) also supports the thesis that it is usually possible to execute policy aiming at sustainability and long-term fairness without a conflict with the efficiency criterion.

The role of the state in intergenerational fairness is obvious. Governments determine what is actually left for future generations. This refers not only to the economy in a direct manner (e.g. public debt, growth prospects) but also to ecology, the environment and natural resources. However, the role of the state in the economy and social relations may affect the intergenerational conflict. The state determines the directions and magnitudes of transfers between age groups in a given period. So, agents may feel being favoured or discriminated against or, in an optimal situation, as compared to other agents, regardless of age group they belong to. The question to be answered is if there is a link between state involvement in society and economy, and intergenerational fairness. Does this involvement support or counteract intergenerational fairness? However, this question is not easy to answer since it is difficult to say what is fair and what is unfair in intergenerational terms. Where is the borderline between intergenerational fairness and unfairness? The search for the optimal intergenerational policy is of a huge interest to scholars. The problem is very complex and difficult since regardless of the methods applied the question about the normative measures of intergenerational fairness remains. The definition or concepts of intergenerational fairness resulting from different theories (Rawlsian egalitarianism, utilitarianism, direct and indirect reciprocity, the Lockean proviso and others) does not solve this problem since they only indicate the general idea how to perceive fairness in intergenerational relations. However, how to measure it? This question refers not only to intergenerational fairness. It touches also on the problem of pension adequacy, pension efficiency, and other aspects of social welfare. This problem is characteristic for comparative social policy and consists of the lack of objective and quantitatively expressed norms that would allow for distinction between effectiveness and ineffectiveness, between efficiency and inefficiency. In the case discussed here, the distinction or borderline refers to intergenerational fairness and intergenerational unfairness.

The idea of how to cope with this methodological problem can be based on the comparative approach to studies on intergenerational fairness. This fairness is certainly multidimensional and, therefore, requires a multidimensional approach in evaluation. This means the more than one measure is required to assess the intergenerational fairness in a given country. If one knows the nature of these measures in terms of its demanded level (the greater the better, the lower the better, or optimal value or interval is demanded), then the directions of the growth or decline of intergenerational fairness can be defined. However, the changes in the measures of selected dimensions of intergenerational fairness can indicate only if this fairness improves or deteriorates. It is much to know that, however it would be better to know if the level of intergenerational fairness is satisfactory in a given country. To assess this level of fairness, comparative cross-country studies can be very useful. Such studies based on cross-sectional series can deliver comparisons between many countries in terms of intergenerational fairness. In such a case, the approach based on the concept of benchmarking is employed. A given country is compared to others and, on this basis, is classified as one with relatively high or low intergenerational fairness. If cross-country comparisons are based on data with a similar time interval (e.g. for years 1990, 2000, 2010) additionally some time-comparisons can be investigated. Such a cross-country approach allows comparison of different

intergenerational policies pursued by different welfare states and a search for more effective solution in this field.

5. Summary

The significant changes in the population structure experienced in Europe over the past few decades are a real challenge for policy makers. Contemporary societies have been facing the problem of intergenerational relations in terms of fairness. Both terms, "intergenerational" and "fairness" are perceived by scholars representing different fields of science very differently. However, from policy makers' point of view, the economic perspective seems to be the most important one since it determines the means and tools applied to maintain relations between generations in a fair manner. Since our focus in these considerations was determined by a cross-country approach to studies on intergenerational fairness, this perspective was accounted for when defining the term "generation" and conceptualizing "intergenerational fairness". From technical point of view, it is useful, but also substantially justified, to perceive generations as different age groups which is usually consistent with a different social groups perspective. In such a case, intergenerational fairness means such relations between different age groups which, in the context of given economic, political and demographical conditions, do not discriminate against any age group in terms of its present and future living situation. This includes present transfers (today) and their impact on prospects (future). In the studies on intergenerational fairness, future prospects for young people or even those not yet born should be taken into account. Today's transfers are the main determinants of these future prospects. That is why distinguishing between transfers and prospects has an apparent character. However, since intergenerational fairness requires a longer time perspective as compared e.g. to intragenerational distribution, the trade-off between efficiency and intergenerational fairness is very important from economic point of view. Long-term fairness in the relations between generations requires efficiency. In this case, the rule is very similar to those in pensions which are a dominant dimension of intergenerational relations. Income adequacy of pensions needs efficiency to be maintained in the long term.

To study possible relationships between intergenerational fairness and economic efficiency as well as to search for better welfare policies in this field, comparative studies based on cross-section or cross-section time series data can be very useful. Such quantitative analyses based on many indicators representing different dimensions of intergenerational fairness may allow for indicating those models of welfare state in which the relations between generations in terms of transfers and prospects are more fair. Such an approach can help find the rules that stimulate "fair play" game between different age groups in both a static as well as a dynamic view.

Acknowledgments

The paper forms part of the project "Intergenerational fairness across welfare state regimes: A comparative cross-country study", funded by the National Science Centre (Poland) under grant number UMO-2016/23/B/HS4/01772.

References

- Ando, A., & Modigliani, F. (1963). The "life cycle" hypothesis of saving: aggregate implications and tests. *The American Economic Review*, 53(1), 55-84. <https://doi.org/10.1126/science.151.3712.867-a>
- Balestra, C., & Dottori, D. (2012). Aging society, health and the environment. *Journal of Population Economics*, 25(3), 1045-1076. <https://doi.org/10.1007/s00148-011-0380-x>
- Barr, N., & Diamond, P. (2006). The economics of pensions. *Oxford Review of Economic Policy*, 22(1), 15-39. <https://doi.org/10.1093/oxrep/grj002>
- Blanchard, O. (1985). Debt, deficits, and finite horizons. *Journal of Political Economy*, 93(2), 223-247. <https://doi.org/10.1086/261297>
- Boldrin, M., & Montes, A. (2009). Assessing the efficiency of public education and pensions. *Journal of Population Economics*, 22(2), 285-309.
- Bronfenbrenner, M. (1973). Equality and equity. *Annals of the American Academy of Political and Social Science*, 409(September), 5-25.
- Chybalski, F., & Marcinkiewicz, E. (2014). Does the professional activity of older workers contribute to youth unemployment? A cross-section study of European countries. *Business and Economic Horizons*, 10(4), 238-252. <https://doi.org/10.15208/beh.2014.20>
- Diamond, P. (1965). National debt in a neoclassical growth model. *The American Economic Review*, 55(5), 1126-1150.
- Fisher, I. (1930). *The theory of interest*. London: Macmillan. Retrieved from <http://oll.libertyfund.org/Home3/EBook.php?recordID=0219>
- Foley, D. (1967). Resource allocation and the public sector. *Yale Economic Essays*, 7(1967), 45-98.
- Friedman, M. (1957). *A theory of the consumption function*. Princeton: Princeton University Press. Retrieved from <http://papers.nber.org/books/frie57-1>
- Gosseries, A. (2008). Theories of intergenerational justice: a synopsis. *Surveys and Perspectives Integrating environment and society*, 1(1), 1-18. <https://doi.org/10.5194/sapiens-1-39-2008>
- Gosseries, A. (2009). Three models of intergenerational reciprocity. In A. Gosseries & L. Meyer (Eds.), *Intergenerational justice* (pp. 119-146). Oxford: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199282951.003.0005>
- Góra, M. (2008). *Retirement decisions, benefits and the neutrality of pension systems*. Retrieved from <http://aei.pitt.edu/9450/2/9450.pdf>
- Gruber, J., Milligan, K., & Wise, D. A. (2009). Social security programs and retirement around the world: the relationship to youth employment, introduction and summary. *NBER Working Paper*, 14647(January), 1-49. <https://doi.org/10.7208/chicago/9780226310008.001.0001>
- Hagemeyer, J., Makarski, K., & Tyrowicz, J. (2015). Unprivatizing the pension system: the case of Poland. *Applied Economics*, 47(8), 833-852.
- Hoberg, N., & Baumgärtner, S. (2011). *Irreversibility, ignorance, and the intergenerational equity*

- efficiency trade-off* (Working Series Papers in Economics No. 198). Luneburg. Retrieved from www.leuphana.de/institute/ivwl/publikationen/working-papers.html
- Jousten, A., Lefèbvre, M., Perelman, S., & Pestieau, P. (2010). The effects of early retirement on youth unemployment: The case of Belgium. *Social security programs and retirement around the world: the relationship to youth employment*, (February), 31. Retrieved from <http://www.nber.org/chapters/c8251.pdf>
- Kalwij, A., Kapteyn, A., & de Vos, K. (2010). Retirement of older workers and employment of the young. *Economist*, 158(4), 341-359.
- Kotlikoff, L. J. (2004). *Pension systems and the intergenerational distribution of resources* (No. 36/04). Boston. Retrieved from http://www.cerp.carloalberto.org/wp-content/uploads/2008/12/WP_36.pdf
- Lutz, W., & Skirbekk, V. (2008). Low fertility in Europe in a global demographic context. In J. Tremmel (Ed.), *Demographic change and intergenerational justice, the implementation of long-term thinking in the political decision making process* (pp. 3-19). Berlin Heidelberg: Springer Verlag.
- Makarski, K., Hagemeyer, J., & Tyrowicz, J. (2016). Analyzing the efficiency of pension reform: the role of the welfare effects of fiscal closures. *Macroeconomic Dynamics*, 1-38. <https://doi.org/10.1017/S1365100515000383>
- McCarthy, D., Sefton, J., & Weale, M. (2011). *Generational accounts for the United Kingdom* (NIESR Discussion Paper, No. 377). London. Retrieved March 9, 2018, from <https://www.niesr.ac.uk/>
- Modigliani, F., & Brumberg, R. (1954). Post-Keynesian economics. In K. Kurihara (Ed.), *Utility analysis and the consumption function: an interpretation of cross-section data* (pp. 388-436). New Brunswick: Rutgers University Press.
- Papworth, T., & Corlett, A. (2014). *Intergenerational fairness: what is it? Does it matter?* Retrieved from <http://www.centreforum.org/assets/pubs/intergenerational-fairness.pdf>
- Piachaud, D., Macnicol, J., & Lewis, J. (2009). *A think piece on intergenerational equity*. London. Retrieved from <http://justageing.equalityhumanrights.com/wp-content/uploads/2009/09/Intergenerational-Equality.pdf>
- Rawls, J. (1999). *A theory of justice*. Oxford/New York: Oxford University Press.
- Rydell, I. (2005). *Equity, justice, interdependence: intergenerational transfers and the ageing population* (Institute of Future Studies, No. 5). Retrieved March 9, 2018, from <https://www.iffs.se/>
- Samuelson, P. A. (1958). An exact consumption-loan model of interest with or without the social contrivance of money. *Journal of Political Economy*, 66(6), 467-482. <https://doi.org/10.1086/258100>
- Sánchez-Romero, M. (2013). The role of demography on per capita output growth and saving rates. *Journal of Population Economics*, 26(4), 1347-1377. <https://doi.org/10.1007/s00148-012-0447-3>
- Stavins, R. N., Wagner, A. F., & Wagner, G. (2003). Interpreting sustainability in economic terms: dynamic efficiency plus intergenerational equity. *Economics Letters*,

- 79(3), 339-343. [https://doi.org/10.1016/S0165-1765\(03\)00036-3](https://doi.org/10.1016/S0165-1765(03)00036-3)
- Steiner, H., & Vallentyne, P. (2009). Libertarian theories of intergenerational justice. In A. Gosseries & L. Meyer (Eds.), *Intergenerational justice* (pp. 50-76). Oxford: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199282951.003.0003>
- Summers, J. K., & Smith, L. M. (2014). The role of social and intergenerational equity in making changes in human well-being sustainable. *Ambio*, 43(6), 718-728. <https://doi.org/10.1007/s13280-013-0483-6>
- Thomson, J. (2009). *Intergenerational justice: rights and responsibilities in an intergenerational polity*. New York: Routledge.
- Tremmel, J. (2014). *A theory of intergenerational justice*. New York: Routledge.
- Walker, A. (2003). Intergenerational relations and the provision of welfare. In A. Walker (Ed.), *The New Generational Contract: Intergenerational relations, old age and welfare* (pp. 10-36). London/New York: Routledge.
- Woodward, R. T. (2000). Sustainability as intergenerational fairness: efficiency, uncertainty, and numerical methods. *American Journal of Agricultural Economics*, 82(3), 581-593. Retrieved from <https://oied.ncsu.edu/selc/wp-content/uploads/2013/03/Sustainability-as-Intergenerational-Fairness-Efficiency-Uncertainty-and-Numerical-Methods.pdf>
- Wrede, M. (1999). Pareto efficient pay-as-you-go pension systems with multi-period lives. *Jahrbucher Fur Nationalokonomie Und Statistik*, 219(3-4), 494-503.
- Yaari, M. E. (1965). Uncertain lifetime, life insurance, and the theory of the consumer. *Review of Economic Studies*, 32(2), 137-150. <https://doi.org/10.2307/2296058>