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Production activities and economic dependency by age and gender in Europe: A cross-country comparison

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ABSTRACT

We compare selected European countries using an economic dependency ratio which emphasizes the role of age-specific levels of production and consumption. Our analysis reveals large differences in the age- and gender-specific level and type of production activities across selected European countries and identifies possible strategies to adjust age-specific economic behaviour to an ageing population. The cross-country differences in economic dependency of children and elderly persons are largely determined by the age at which people enter, respectively exit, the labour market. The ability of the working age population to support children and elderly persons in turn is strongly influenced by the participation of women in paid work. We also provide a measure for the age-specific production and consumption in form of unpaid household work. The inclusion of unpaid household work leads to a decrease of the gender differences in production activities and indicates that the working age population supports children and elderly persons not only through monetary transfers but also through services produced by unpaid work (e.g. childcare, cooking, cleaning...). Given the available data, we cannot distinguish the age profile of consumption by gender and have to assume – in case of unpaid work - that each member of the household consumes the same. Hence, our results have to be regarded as a first approximation only. Our paper aims to argue that a reform of the welfare system needs to take into account not only public transfers but also private transfers, in particular the transfers in form of goods and services produced through unpaid household work.

Introduction

Persistent low fertility and increasing survival to older ages are the key determinants of population ageing in many European countries. The consequences of the changing age structure for the overall economic development depend on the design of the economic life cycle, i.e. the age pattern of economic activities such as consumption, the generation of labour income and saving. A typical characteristic of the life cycle in modern societies are phases of economic dependency at the beginning and end of life, in which consumption exceeds the income generated through one's own labour input. In childhood and retirement at least part of consumption has to be covered through the reallocation of resources in form of transfers and asset accumulation. A shift in the age structure of the population - as a consequence of the ageing process - requires an adjustment of the age reallocation system. The current system will be under pressure as an increasing share of elderly people has to be sustained by an ageing and shrinking population in working age. The shift in the age structure of the population will be remarkable: according to EUROSTAT projections the population of the European Union aged 20–64 decreases from 308 m in 2013 to 289 m in 2030, while the population aged 65+ increases from 92 m in 2013 to 124 m in 2030.[2]

In this paper we analyse the cross-country differences in the age- and gender-specific involvement in production activities. These differences are influenced by country-specific institutional settings, practices and norms as well as the current demographic structure. With the comparative analysis we aim to identify challenges, but also possible strategies and best practice examples regarding the organisation of production and the reallocation of resources across age. We argue that a better understanding of the reallocation of resources across age is necessary to guide any

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[2] *Source:* EUROPOP2013 population projection; main scenario.

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welfare reform in the face of population ageing. In particular it needs to consider gender differences in the type and the intensity of production activities at each age as well as private transfers in combination with public transfers. For instance, the involvement of women in paid work might alleviate the financing of public transfers to children and dependent elderly persons. However, since women take up a great share of unpaid work, any reform that aims to increase female labour force participation also needs to consider that such a reform may reduce female's contribution to unpaid work.

The analysis is based on the methodology and data from the National Transfer Accounts (NTA) project, as well as on income data from the European Survey of Income and Living Conditions (EU-SILC) and data from the Multinational Time Use Study (MTUS), complemented by Austrian time use data. From these data sources we obtain information on the age-specific levels of production[3] and consumption. The difference between consumption and labour income is termed the *life cycle deficit* (LCD) (Mason et al., 2006) and represents a measure for the age specific level of economic dependency. For children as well as for elderly persons the life cycle deficit is positive, i.e. average consumption in these ages exceeds average labour income. The LCD is negative during the working years when labour income is higher than consumption. For a negative life cycle deficit we will also use the term *life cycle surplus* (LCS). By multiplying the age-specific per capita LCD with the corresponding population numbers and summing up over all age groups with a positive LCD, we obtain a measure for the total economic dependency of children, respectively elderly persons. The total economic surplus of the working age population (the sum over the age groups with a negative LCD) gives us a measure for a society's ability to support the population with a (positive) life cycle deficit. Different to the commonly used demographic measures, like the standard demographic young and old age dependency ratios,[4] that are based on fixed age limits and consider only the demographic structure, the aggregate life cycle deficit allows for flexible age limits and age-specific levels of economic dependency. NTA data therefore allow to endogenously define the stages of the life cycle. The importance of such measures is emphasized in Sanderson and Scherbov (2013), who argue that that a focus on chronological age limits the insight into the process of population ageing.

In Section "The life cycle deficit for paid work" we give an overview of the NTA methodology and present the LCD as a measure of economic dependency for selected European countries. In Section "The life cycle deficit by gender" the LCD and LCS are presented for men and women separately. Since our emphasis is on the role of the age specific design of the economic life cycle independent of the demographic structure, we control for cross-country differences in the population structure by applying a standardized population for all countries. With this analysis we gain further insights into the cross-country differences regarding the gender-specific shape of the economic life cycle. By only considering paid work the estimates for production activities by gender are biased since they ignore unpaid household labour that is on average higher for females as compared to males. We therefore further extend our analysis by unpaid household work in Section "Unpaid work" and build up an indicator that measures the difference between the production and consumption of goods and services which are produced by unpaid household work in a specific age group. In Section "The life cycle deficit for paid- and unpaid work" we combine paid work as well as unpaid household work into a measure for total production and consumption at each age and by gender. Section "Conclusions" concludes.

The life cycle deficit for paid work

National transfer accounts

The concept of the life cycle deficit and the data on age-specific consumption are taken from the National Transfer Accounts (NTA) project which extends the System of National Accounts (SNA) by information on age - the so-called National Transfer Accounts. NTA measure how much labour- and asset income each age group generates, how income is subsequently redistributed across age groups through public and private transfers and how each age group uses the disposable resources for consumption and saving. The NTA data set consists of an extensive number of age profiles containing per capita averages of labour income, asset income, public transfers, private transfers, consumption and saving. The broad estimation strategy for age-specific averages of economic quantities is, first, to derive the aggregate values (e.g. total income, total consumption) from the System of National Accounts and related sources. In the second step the distribution of these quantities over age groups is measured or estimated by using administrative and survey data. A detailed introduction to the methodology is given in UN (2013) and in Lee and Mason (2011). The NTA project is a collaborative work of international research teams from 41 countries.[5] Among these countries are the following 12 European countries: Austria, Finland, France, Germany, Hungary, Italy, Poland, Slovenia, Spain, Sweden, Turkey and the UK. Due to data availability we focus on 10 European countries excluding Poland and Turkey.[6] NTA measure the economic activities of individuals in a given year. It is important to note that the age patterns represent a cross-sectional snapshot of the economic activities of each age group and do not represent the actual life course pattern of an average individual.

The life cycle deficit

NTA are based on an accounting identity which states that for each individual, and for each age group, the resources used for consumption (C) and saving (S) equal the disposable income composed of labour income (YL), asset income (YA) and net transfer inflows (τ)[7]:

$$C + S = \underbrace{\mathrm{YL} + \mathrm{YA} + \tau}_{\text{disposable income}} \tag{1}$$

The difference between consumption and labour income in NTA offers a measure for the average economic dependency (if positive) or the economic ability to support others (if negative) at each age. It can also be derived by an rearrangement of the terms in the NTA accounting identity (1):

$$\underbrace{C - \mathrm{YL}}_{\text{life cycle deficit}} = \underbrace{\tau + (\mathrm{YA} - S)}_{\text{age reallocations}} \tag{2}$$

In childhood and old age labour income falls short of consumption. On the other hand, an average person in working age generates

[3] Production includes labour income as well as unpaid household labour.

[4] The young age dependency ratio relates the number of people below the age of 20 to those in working age, assumed to be the age group from 20 to 64. Similarly the elderly dependency ratio records the number of the population above age 65 relative to those in working age. Also the age borders 0–14 for children, 15–64 for the working age population and 65 + for the elderly are often used.

[5] http://www.ntaccounts.org/web/nta/show/NTA%20Countries.

[6] For data from Austria, Finland, Germany, Hungary, Slovenia, Spain and Sweden see Lee and Mason (2011). For the Italian data see Zannella (2013). Turkey and Poland joined the NTA project in 2012 and 2013, respectively. For these two countries no NTA dataset is available yet.

[7] Transfer inflows and outflows are recorded from the individuals point of view: inflows constitute the benefits, outflows the contributions to the transfer systems. Public transfer inflows consist for example of benefits such as pensions, health services or child benefits while the public transfer outflows consist mainly of taxes and social contributions.

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