



EUROPEAN POLICY BRIEF



MEASURING THE ECONOMIC AND FISCAL CHALLENGES OF POPULATION AGEING

Demographic changes lead to a rising share of older people in the population and to an increase of public transfer beneficiaries relative to the working age population. These changing age structures affect the economy in different ways, depending on the socio-economic context of the country. In some countries, public expenditures have already been adjusted to the change in the population structure. A cross-country comparison allows for the identification of strategies aimed toward adapting age-specific economic behaviour and societal institutions to the demographic changes.

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INTRODUCTION

Public and private consumption levels per capita vary across ages and countries. These differences result from institutional differences as well as variation in individual and household preferences across EU countries. Consumption in younger and older ages depends in particular on the level and organization of public and private transfers across age groups. As in childhood and youth as well as in retirement labour income is low, consumption is largely financed through transfers (e.g. pensions).

In this policy brief we focus on two important economic aspects of demographic change. First, we present alternative approaches to measure the size of the economically dependent population and the degree of economic dependency. Traditional measures such as the demographic dependency ratio that are based only on demographic data ignore the fact that consumption and income levels vary across age. There are also large differences in the level of public transfer benefits across age groups – younger and older generations usually tend to benefit more from public transfers, such as education, health or pension benefits. These differences in economic behaviour across age groups are clearly reflected in the National Transfer Accounts (NTA) age profiles estimated for the EU countries.¹ Public transfers are highest for cohorts in older age groups since these transfers are frequently the main source of financing consumption after retirement. This has implications for the future: as the share of older people increases, public expenditures are likely to increase as well.

Second, we also study the links between public finances (general government expenditure and general government revenue) and population ageing in the past 20 years to gain insight into the extent to which demographic change could affect public expenditure levels.

¹ See the webpage of the NTA project for a general description of NTA (www.ntaccounts.org) and the European NTA manual for a detailed description of the European data (Istaitieh et.al. 2016).

Accounting for age-specific economic behaviour

Changes in the age structure of populations and their impact on the economy are frequently measured using the demographic dependency ratio. Applying fixed age limits, these ratios relate the non-working age population to the working age population. Usually, working ages are defined as between 20 and 64.² However, allocation into working and non-working populations according to a fixed age bracket can be problematic as not all younger and older people are inactive while a considerable share of people in the working age population are inactive and economically dependent on others. Thus, the demographic dependency ratios alone contain no information on how individuals and societal institutions adapt to the changing age structure. Countries differ with regard to the average age when young people enter gainful economic activity as well as the intensity of employment at different ages (i.e. the prevalence of part-time work) and the average exit age from the labour force for retirement. Age-specific consumption levels and economic behaviour also varies across national contexts, depending on societal institutions (e.g. the education system), labour market policy, and pension arrangements that affect life course decisions. Intergenerational transfers, particularly those received by younger and older people can vary significantly.³

In order to show the differences in age-specific economic behaviour, we compare the commonly applied demographic dependency ratio with two economic indicators. The first takes into account the intensity of engagement in paid work and the second the level of public transfers towards younger and older people (Table 1). Economic dependency ratios indicate how public policies and individual strategies adapt to population ageing.

Table 1. Demographic and economic dependency ratios

Name	Definition:
Demographic dependency ratio	The population in age groups 0-19 years and 65+ years in relation to the population aged 20-64.
Share of the non-employed population in the total population	Non-employed population measured as total population less those that are employed (measured in full-time equivalent) divided by the total population.
Net public transfers to the non-working age population relative to total labour income	Net public transfers (public transfer inflows – public transfer outflows) for people in age groups (0-19) and (65 and over) divided by total labour income of people in all ages.

The demographic dependency ratio is a concise measure of the demographic structure of the population and is used to illustrate the dynamics and extent of population ageing. This indicator is economically interpreted by assuming that persons in working age are participating in the labour force and children and elderly are inactive and regarded as dependent. In contrast, economic dependency ratios take into account the actual economic behaviour of generations at different stages of their life course.

One of the most used economic dependency measures relates the non-employed population to the total population. We use a similar indicator, which additionally takes working hours into account and relates the number of non-employed persons in full term equivalents (i.e. also accounting for part time work) to the total population. This allows us to identify the labour force potential in prime working age (see: Hammer et al. 2016). Our third indicator is based on age-specific measures of public transfer benefits and payments, including among others education, pensions and health care. This measure shows the extent to which the organisation and funding of public transfers are exposed to

² See for example the definition of the employment rate target in the Europe 2020 Strategy.

³ For more reading on different measures of generational economic dependency, see Sanderson and Scherbov (2015). Different measures of economic and fiscal dependency are shown in Hammer et al. (2014); Lee and Edwards (2002); Loichinger et al (2014); Prskawetz and Sambt (2014).

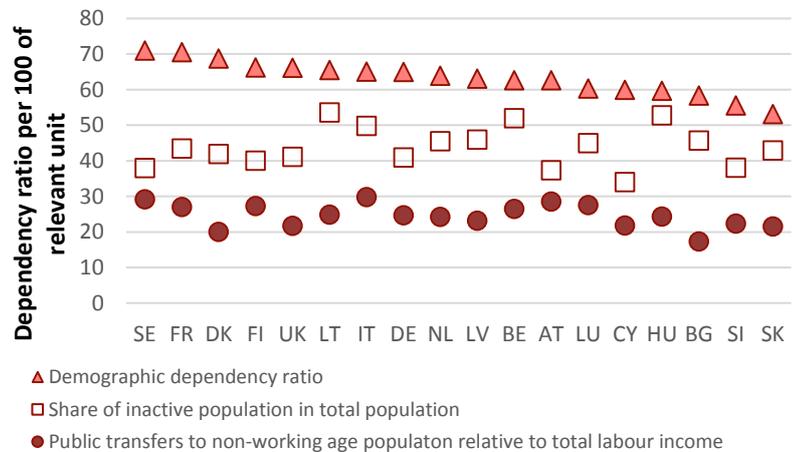
the consequences of population ageing, in relation to the labour income of working people. This dependency ratio depicts the outcome of existing social policies from a generational perspective.⁴

The values of these measures for a range of EU countries are plotted in Figure 1. The demographic dependency ratio varies between 71 in Sweden and France and 53 in Slovakia. The economic dependency ratios show no correlation with the demographic dependency ratio. The share of the non-employed population ranges from 30 and 40 percent in Sweden, Austria, Cyprus and Slovenia to more than 50 percent in Lithuania, Belgium and Hungary. The low level of inactive population in Sweden results from the high employment rates of the population 60-64; in the case of Slovenia this is due to the high employment rates of women. The similar low inactivity level in Austria is explained by the population structure and high employment rates combined with high working hours of men. High inactivity ratios are seen in the countries which were hardest hit by the economic crisis in 2007/08 (e.g. Lithuania) or have a large share of early retirees (e.g. Hungary). High inactivity shows the potential for an increase of activity levels and total labour income by an increased intensity of employment, particularly of people in younger and older ages.

Demographic change presents a challenge for the financing of public transfers. However, cross-country comparisons show that a high demographic dependency ratio is not always related to higher public expenditure. In Sweden, Italy and Austria about 30 percent of total labour income is reallocated to younger and older generations through public transfers. Although Sweden is the country with the highest demographic dependency in 2010, neither Italy nor Austria are countries with a particularly high demographic dependency ratio. A lower share of public transfers - around 20 percent - is seen for example in Denmark and the UK, despite a comparatively high demographic dependency ratio in these two countries.

The cross-country comparisons of demographic and economic dependency ratios allow the identification of strategies for how age-specific economic behaviour can adjust to changes in the demographic age structure. These strategies include: longer working lives and postponed retirement (e.g. Sweden), a better integration of the working age population in employment (e.g. Slovenia) or a better use of existing assets to provide consumption for old age that reduces the dependency on public sector transfers (e.g. UK).

Figure 1. Estimates of demographic and economic dependency indicators in the selected EU countries (2010)



Source: Estimates for countries with available NTA public transfer age profiles, own calculations

⁴ The indicator measuring public transfers relative to labour income is based on NTA data for Europe (Isteneič et.al, 2016). The data are preliminary as there are so far no final estimates for age-specific private consumption and the corresponding age-specific tax payments (e.g. VAT). Because the age-patterns of private consumption are rather constant over time and similar across countries, these preliminary estimates are expected to be close to the final ones.

Public finance and demographic change in the past: fiscal pressure or adjustment?

Table 2. Demographic change and public expenditure

Projected decline in the demographic support ratio 2014-2070	Relation between the demographic support ratio and government expenditure 1995-2014		
	Fiscal adjustment	Fiscal pressure	Not significant
more than 60 points	RO	SK PL	HU SI BG
above 50 and below 60 points	DE LU		CZ PT AT
above 40 and below 50 points	CY		EE ES EL NL IT LV
above 30 and below 40 points	UK	FI	LT DK
below 30 points		FR SE	IE

Source: Chłoń-Domińczak et al. 2016

Population ageing in Europe has already led to a rising share of older people in the past 20 years. The cross-country comparison shows that in 2014 countries that have on average older populations also have higher public spending (see: Chłoń-Domińczak et al. 2016). At the same time, many EU countries introduced reforms that affected their levels of public expenditure. To what extent are these reforms and developments accommodating demographic change? We related the level of general government expenditure (as % of Gross Domestic Product) to the level of the demographic support ratio (that is the inverse demographic dependency ratio) between

1995 and 2014 (for further reading see Chłoń-Domińczak et al. 2016). Our results indicate that there are countries where the decline in the demographic support ratio was linked with an increase in public expenditure (3rd column in Table 3). This negative relationship between the demographic support ratio and public expenditure indicates fiscal pressure in future years, as the demographic support ratio is projected to decline considerably until 2070 (1st column in Table 2). However, in most countries no such link can be found age (4th column in Table 2) and in several countries the relation between demographic support ratio and the level of government expenditure is found to be positive over the time period from 1995 to 2014 (2nd column in Table 2). These countries have already managed to adjust their fiscal situation to the changing age structure of their population. If this trend continues in the future, they will be in a better position to meet challenges related to population ageing.

Based on the analysis of past trends and population projections (Table 2), we see that the public sector needs to adjust its funding in Poland and Slovakia, where population ageing is going to progress fast and population ageing is linked to increasing public expenditure. Population ageing places less pressure on the funding of the public sector in Finland, France and Sweden while adjustments that can help mitigate the challenge of rapid ageing are evident in Romania, Germany and Luxembourg.

POLICY IMPLICATIONS AND RECOMMENDATIONS

In this policy brief we provide arguments that purely demographic measures have little explanatory power regarding the economic and fiscal consequences of population ageing. Public consumption and transfers in Europe are shaped in a way that provide high transfers towards the older generations, which is a challenge for the future. Using economic support ratios when looking at the interrelationships between public finance and ageing should complement the study of the economic consequences of population ageing in individual countries and cross-country perspectives.

The challenge of population ageing requires life-course oriented reforms that support an increase in work intensity total labour income, combined with reforms ensuring the inter-generational balance of public consumption as well as balance between benefits and taxes. Countries that have adjusted their institutions and inter-generational transfer system to an ageing population can serve as role models for those countries that face rapid ageing in the coming years. Countries that implemented such reforms are already seeing improvements in their fiscal stability by offsetting the impact of changes in the age structure of populations.

References:

- Chłoń-Domińczak, A., Kotowska I.E., Łątkowski W., Abramowska-Kmon A., Qi, H. (2016). Demographic developments and public finances in the past two decades in the EU countries. AGENTA project report.
- Hammer, B., Prskawetz, A., & Freund, I. (2015). Production activities and economic dependency by age and gender in Europe: A cross-country comparison. *The Journal of the Economics of Ageing*, 5, 86-97.
- Hammer, B., Prskawetz, A., Loichinger, E. (2016). Projections of the Labour Force by Age, Gender and Highest Level of Educational Attainment until 2050. AGENTA project report. <http://www.agenta-project.eu/Jacomo/upload/publications/d-7.1-submitted.pdf>
- Istenič, T., Šeme, A., Hammer, B., Lotrič Dolinar, A., Sambt, J. (2016). The European NTA Manual. AGENTA project report. <http://www.agenta-project.eu/Jacomo/upload/publications/d-1.4-submitted.pdf>
- Lee, R., & Edwards, R. (2002). The fiscal effects of population aging in the US: Assessing the uncertainties. In *Tax Policy and the Economy, Volume 16* (pp. 141-180). MIT Press.
- Loichinger, E., Hammer B., Prskawetz A., Freiberger, M. (2014). Dependency Ratios : Present Situation and Future Scenarios. WWFforEurope Working Paper no. 74.
- Prskawetz, A., and Sambt, J. (2014). Economic Support Ratios and the Demographic Dividend in Europe. *Demographic Research* 30(April):963–1010.
- Sanderson, W C., and S Scherbov. (2015). Are We Overly Dependent on Conventional Dependency Ratios? *Population and Development Review* 41(4):687–708.

RESEARCH PARAMETERS

National Transfer Accounts introduce the age dimension into the System of National Accounts (SNA). Put differently, NTA brings age into the SNA by breaking down the various quantities by age, and thereby introduces information on the relation between the age of individuals and their economic activities into the System of National Accounts framework. The general approach of NTA is to obtain age profiles from surveys or administrative datasets and to adjust these profiles by age-specific population numbers to match the aggregate controls from the SNA. The data requirements are quite extensive since the various components of consumption, income, transfers, assets, taxes, etc. have to be estimated by single years of age. The NTA dataset contains an extensive number of age profiles (age-specific averages) of various economic activities. More information on NTA can be found on the webpage of the global NTA project (www.ntaccounts.org), as well as in the manual for the European NTA data (Istenič et.al, 2016).

PROJECT IDENTITY

PROJECT NAME	Ageing Europe: An application of national transfer accounts (NTA) for explaining and projecting trends in public finances (AGENTA)
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WEBSITE	www.agenta-project.eu
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FURTHER READING	Gal R. I., Monostori, J. (2016). Indicators of economic sustainability and intergenerational fairness http://www.agenta-project.eu/Jacomo/upload/publications/d-6.1-submitted.pdf Lee, R. D., & Mason, A. (Eds.). (2011). <i>Population aging and the generational economy: A global perspective</i> . Edward Elgar Publishing.