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Jože Sambt

University of Ljubljana, School of Economics and Business, Ljubljana, Slovenia

Bernhard Hammer

Austrian Academy of Science, Vienna Institute of Demography, Vienna, Austria

Tanja Istenič

*University of Ljubljana, School of Economics and Business, Ljubljana, Slovenia, tanja.istenic@ef.uni-lj.si*Follow this and additional works at: <https://www.ebrjournal.net/home>Part of the [Demography, Population, and Ecology Commons](#)

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The European National Transfer Accounts: Data and Applications

Jože Sambt^a, Bernhard Hammer^b, Tanja Istenič^{a,*}

^a University of Ljubljana, School of Economics and Business, Ljubljana, Slovenia

^b Austrian Academy of Science, Vienna Institute of Demography, Vienna, Austria

Abstract

Population ageing exerts considerable pressure on the funding of public transfers. It is of utmost importance to understand how the transfer system can adapt to population ageing. Using National Transfer Accounts, we illustrate the different organisation of transfer systems across Europe. Countries like Greece and Romania, where labour income already falls short of consumption at age 54, would greatly improve their public system sustainability by following the Swedish example where this happens ten years later. High consumption at older ages is less problematic when financed substantially through savings (the UK) rather than almost exclusively through transfers (Austria).

Keywords: National Transfer Accounts, Economic dependency, European Union, Population ageing, Public system

JEL classification: J11, J16, J18

Introduction

It is characteristic of the economic life course that there are periods of economic dependency in childhood and old age. During these periods (part of) an individual's consumption is not covered by labour income but has to be financed by transfers and by asset-based reallocations such as asset income and the disposal of assets. During childhood, dependency is mainly financed by familial transfers from parents to their children and by public transfers in the form of education. In old age, the most important transfers are public transfers in the form of pensions and health services.

The European countries are undergoing profound changes in their population age structure. Eurostat population projections show that the proportion of the European Union's (EU) population aged 20–64 is expected to decrease from 60% in 2016 to 51.9% in 2050. At the same time, the proportion of the population aged 65+ is expected to increase from 19.2% to 28.1%. In contrast, the proportion of the population aged 0–19 is projected to be fairly stable over the

projection period at approximately 20.0% (Eurostat, 2019). The increasing share of dependent elderly persons exerts pressure on the funding of the public transfer systems. To adapt the system to the changing age structure, it is necessary to either increase the tax burden on the working-age generations, decrease the level of benefits paid to elderly persons, or have people stay longer in the labour market.

The degree of economic dependence and the relative importance of the different channels of age-based reallocation of resources are different across countries. Consequently, population ageing affects the European countries to different degrees and in different ways. The aggregate economic data, in particular the System of National Accounts (SNA), includes no age-specific information about economic categories such as income, transfers, consumption, and savings. The lack of information on age-specific economic activities severely limits the understanding of both the economic consequences of population ageing and the interactions between private and public systems in the reallocation of income among age groups (United Nations, 2013).

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* Corresponding author.

E-mail addresses: joze.sambt@ef.uni-lj.si (J. Sambt), bernhard.hammer@oew.ac.at (B. Hammer), tanja.istenic@ef.uni-lj.si (T. Istenič).

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In this paper, we use National Transfer Accounts (NTA) to measure important dimensions of the age reallocation systems across Europe and to analyse the consequences of demographic changes. By introducing the age dimension into the SNA, the NTA measures age-specific income, the redistribution of income among age groups through public and private transfers and the age-specific use of income for consumption and saving.

We present the paper's main findings based on the NTA age profiles for EU countries that we derived using harmonised data sources and the same analytical procedures for the first time (Istenič, Hammer, Šeme, Lotrič Dolinar & Sambt, 2017). This approach ensures perfect comparability of the results, and supplements findings on long-term economic sustainability in times of population ageing. It takes a broader perspective on sustainability in the EU countries than just the public sector, which is regularly monitored in the EU countries (European Commission, 2018) by also including private age reallocations. The country-specific ranking, based on indicators that we present, enable us to identify the nature of imbalances and suggest strategies for dealing with the pressure of population ageing on the sustainability of the public finance system.

We start by presenting the National Transfer Accounts methodology and the data used. Section 2 shows the main characteristics of the consumption and labour income age profiles in the EU countries. In Section 3, the level of old age dependency and the sources through which dependency is financed are presented for 25 EU countries. Section 4 is dedicated to the level of gender-specific economic surplus provided by the working age population. We conclude by comparing the different organisation of transfers across countries, and by identifying strategies that might be used to deal with the consequences of population ageing.

1 Methodology and data

A brief description of the NTA methodology and presentation of the NTA results for 23 countries around the world is given in Lee and Mason (2011). A comprehensive description of the methodology is presented in the United Nations (2013) Manual. Specifics of the European NTA results are presented in the European NTA manual (Istenič et al., 2017).

The NTA methodology is based on an individual's budget constraint, where an individual's inflows and outflows have to match. Since NTA builds upon the SNA data, we take into account categories related to the market economy that constitutes the GDP. Inflows include labour income, asset income, and

transfers received, whereas outflows include consumption, savings and transfers given. By rearranging these terms, we obtain the NTA flow identity where consumption minus labour income represents the life cycle deficit (LCD), which equals net transfers (transfers received minus transfers given) plus asset-based reallocations (asset income minus savings). Children and the elderly face a positive life cycle deficit, indicating their economic dependence. On the other hand, at working ages, people face a negative life cycle deficit: a life cycle surplus. The life cycle surplus enables the working age population to finance the life cycle deficit of the dependent population.

The NTA methodology comprehensively analyses both public and private transfers, and public and private asset-based reallocations. Public transfer inflows include public expenditure on education, health, pensions, and so on, whereas public transfer outflows mainly consist of taxes and social contributions paid. Private transfers include flows between households (inter-household transfers) and within households (intra-household transfers). Inter-household transfers include transfers between households in different countries and within country. We use data on net private transfers from the rest of the world (ROW), including remittances that are reported in the SNA, for the aggregate value of inter-household transfers between countries. It turns out that in our analysed countries intra-household transfers are much more prevalent than inter-household transfers. Public and private asset-based reallocations result from participation in the capital and financial markets, and include returns on capital, interest paid on loans, and so on. The unit of analysis in the NTA is the individual, whereas public or private institutions only represent intermediaries between individuals.

Analysing economic flows requires estimating a large set of 'age profiles'. Age profiles are age-specific averages of further decomposed variables included in the flow identity. By applying the NTA methodology, in the first step, we derive aggregate values for the variables using the SNA data and other related sources. In the next step, we estimate the relative distributions of variables over age groups using survey or administrative data. We then multiply age profiles from the second step by the adequate adjustment factor, so that the sum of the age-specific average multiplied by the population by age matches the aggregate value from the first step. We eliminate the random factors using the smoothing procedure for most of the age profiles (those resting on the sample data) (United Nations, 2013).

The NTA results are cross-sectional snapshots based on secondary data. We use the EU Statistics on Income and Living Conditions (EU-SILC) survey to estimate the income-related age profiles, and the Household Budget Survey (HBS) to estimate private consumption age profiles. One of the main contributions of the NTA methodology is the ability to estimate the private transfers flowing within a household. Private intra-household transfers are estimated as a residual category, assuming that household members whose disposable income is smaller than their private consumption receive transfers from other household members facing a surplus (their disposable income exceeds private consumption). If the total household surplus is not sufficient to cover total household deficit, the household head must use asset income or to borrow assets to cover the difference.

We present NTA results for 25 EU countries in 2010 in this paper. The results are further decomposed by gender. The gender-specific NTA is estimated in a similar way as the standard NTA. When age profiles are estimated using survey data, the only difference is that we calculate age- and gender-specific averages instead of only age-specific averages. Because gender-specific macroeconomic aggregates are generally not available, the gender-specific age profiles are adjusted in such a way as to achieve consistency with the standard NTA estimates. To do so, we sum the gender-specific age profiles multiplied by age- and gender-specific population and equalise the sum with the age profile for the total population multiplied by the number of individuals at that age (Donehower, 2014). The next subsections present the NTA methodology and the data used in a more detailed way.

1.1 Labour income, consumption and economic life cycle

The total labour income, as defined by NTA, consists of the gross earnings of employees (including employer's social contributions) and self-employment labour income. While the aggregate value of earnings can be directly estimated using the European System of Accounts (ESA), this is not the case for self-employment labour income. As ESA includes only values of gross mixed income, that includes returns on capital and labour, the aggregate value for self-employment labour income is estimated using two-thirds of the gross mixed income, while the rest is devoted to the capital income. As EU-SILC includes data for gross earnings, an employer's social contributions and self-employment labour income at the individual level,

the age profile of total labour income can be easily estimated as the sum of smoothed and adjusted age-specific averages of the three subcomponents. In most EU countries, the income reported in EU-SILC refers to the calendar year preceding the interview. We therefore use EU-SILC 2011 to estimate income-related age profiles for 2010. In EU-SILC 2011 variable age is reported at the end of income reference period, and therefore, for the year 2010.

Total consumption, as defined by NTA, includes public and private consumption. Both public and private consumption are further divided into: 1) education, 2) health, and 3) other private or public consumption. Because ESA does not include aggregate values of private and public consumption subcategories, the aggregate values for private consumption subcategories are calculated by using the Classification of Individual Consumption by Purpose (COICOP), and the aggregate values for public consumption subcategories by using Classification of the Functions of Government (COFOG).

The private consumption age profiles are mainly estimated using HBS 2010 data. Because private consumption expenditure in HBS is reported only at the household level, we need to use different allocation rules to distribute household expenditure among its members. First, the individual-specific private expenditure on education is estimated by dividing the level-specific household expenditure between the members enrolled in this specific level of education. In doing so, we assume that unit costs are the same for all the household members enrolled in the specific level of education, independent of their age. Secondly, the age allocation of household private health expenditures is estimated using a regression method without a constant term. Specifically, we regress household health expenditure on the number of household members of a specific ten-year age group. The regression coefficients are then used as weights for distributing total household health expenditure among its members. Finally, we allocate other private household expenditure among its members using the following equivalence scale: individuals aged 20 or older have the same consumption share, which equals 1. It is assumed that children below the age of 4 consume 0.4 of the consumption of an adult. For individuals aged 4–20, the consumption share increases linearly from 0.4 to 1.0 of the consumption of an adult.

To estimate public consumption age profiles, we need to define the beneficiaries of different public programmes. We therefore separate individual public consumption (where beneficiaries of a specific programme are known) and collective public

consumption (where the beneficiaries are all the individuals). Data on public consumption is not available from household surveys, and is usually found from administrative data, government reports, and so on. Like private consumption, we divide public consumption into three main categories: education, health, and public consumption other than education and health. First, the public education consumption age profile is estimated by combining the data on educational level expenditure with the age- and level-specific enrolment rates. As in case of private education expenditure, we assume that the unit cost of public education is equal for all enrolled in the specific level of education, independent of their age. Secondly, because there is no available administrative data source that offers comparable data on public health expenditure for all EU countries, the age profile of public health consumption is estimated based on pre-calculated age profiles of health care consumption accessed by the Ageing Working Group (AWG). The age profiles from the AWG 2012 report (European Commission, 2012) are adjusted to the appropriate country-specific aggregates from 2010. Finally, we estimate “other public consumption” by decomposing it into two categories: individual and collective consumption. Because collective consumption includes consumption of public goods, such as national security, street lightning and so on, which is consumed by all individuals, we distribute collective public consumption equally among all the individuals. Whenever possible, however, we treat consumption as individual and allocate it by age. For example, we assume that ‘old age’ and ‘disability’ benefits have the same shape as long-term care, also accessed by AWG, while ‘unemployment’, ‘family and children’, and ‘housing’ benefits are allocated by age using the corresponding cash categories explained below.

In the next step, we calculate the difference between total consumption and total labour income, giving us the value of the life cycle deficit. The LCD is typically positive for the young and the elderly and negative during the prime working ages. The positive LCD of the young and the elderly is founded by the working-age population in the form of public and private transfers and public and private asset-based reallocations.

1.2 Public and private transfers and asset-based reallocations

Net public transfers show the difference between public transfer inflows and public transfer outflows. Public transfer inflows include in-kind and in-cash transfers. In-cash transfers are monetary transfers

received directly by individuals from the government, such as pensions, unemployment benefits, and so on. On the other hand, public transfers in-kind, by definition, are equal to public consumption explained above. The aggregate controls of different kinds of in-cash public transfers are based on data from the European System of Integrated Social Protection Statistics (ESSPROS), while age profiles are estimated using the EU-SILC survey data. Sickness, disability, old age, survivors’, and unemployment benefits are reported in the EU-SILC at the individual level, whereas family, children and housing benefits only at the household level. Based on the NTA methodology, family and children-related allowances are distributed to all the adults in the household, while housing benefits are assigned to the household head.

Public transfer outflows show the economic resources that flow from private sector (individuals or firms) to the government. They are used to finance public transfer inflows, public asset income or public saving. Public transfer outflows mainly include taxes and social contributions. The NTA distinguishes public transfer outflows by the activity that is being taxed, meaning that taxes are separated into taxes on asset income, taxes on labour income, and taxes on consumption. We also distinguish social contributions paid by employers and employees, and those paid by the non-employed. The age profiles of public transfer outflows sub-categories are based on the pre-calculated age profiles of the activity being taxed. For example, the age profile of taxes on labour income is based on the labour income age profile, while the age profile of taxes on consumption of goods and services on the private consumption age profile.

Private transfers are *inter vivos* transfers that flow between households (i.e. inter-household transfers) and within households (i.e. intra-household transfers). Inter-household private transfers include transfers between households (such as alimony payments and gifts) and indirect household transfers mediated by the non-profit institutions serving households (such as donations). At the aggregate level, the difference between inter-household transfer inflows and outflows is the net private transfers from the rest of the world (ROW). The age profiles of inter-household transfers are based on the EU-SILC data, however, because transfers received or given are reported only at the household level, we assume that inter-household transfer inflows and outflows flow only to and from the household head.

The estimation of intra-household transfers is one of the main contributions of the NTA. While intra-

household transfers equal zero at the aggregate level, there is a significant age distribution for such transfers. Intra-household transfers are estimated indirectly by using the household structure from EU-SILC and the pre-calculated age profiles. Intra-household transfers are estimated as the difference between age-specific disposable income and age-specific private consumption. Those household members whose consumption exceeds their disposable income are in deficit and have to receive transfers from other household members who are in surplus (their disposable income exceeds consumption). If the total deficit of the household exceeds the total surplus, the household head has to fund this gap through asset-based reallocations, for example, by borrowing assets. In contrast, when total household surplus exceeds the total deficit, the household head saves (or buys assets).

The NTA distinguishes between public and private asset-based reallocations (ABR), presenting the difference between (public or private) asset income and (public or private) savings. Public ABR equals the public transfer deficit or surplus. In general, a public transfer deficit is generated when the taxes and social contributions paid by the private sector are not enough to cover public transfer inflows. The government therefore has to cover the deficit through positive ABR (i.e. by issuing new debt). The age profiles of public asset income and public saving are estimated by using the age profile of public transfer outflows. This is assumed, because the taxpayers are those who need to cover public deficit and are those who benefit from the surplus.

Private ABR also present the difference between asset income (capital and property one) and savings. The age profiles of private asset-income sub-categories are estimated using the EU-SILC data. Because asset-income is reported only at the household level, we again assume that the household head is the only household member who owns the assets.

2 Consumption and labour income

The consequences of population ageing are determined by the speed of ageing and by the design of the economic life cycle. Fig. 1 presents the age pattern of (public and private) consumption and labour income for four selected European countries, as well as the average of 25 EU countries (all EU Member States except Malta, Croatia and the Netherlands). The basic pattern is common in all the countries. The market consumption of very young children is low, but increases strongly once they enter the educational system. Education is

responsible for the peak of the consumption age profile at age 10–14. For Sweden, Italy and the EU25, including many countries not presented in Fig. 1, the age profiles reflect the lower average consumption at age 40–50, when income and consumption goods are shared by parents with their own children. There is another consumption peak at older ages due to high private consumption around age 60 (consumption no longer shared with their children since they have moved out) and the consumption of health and long-term care services at older ages. The labour income for the EU25 is higher than consumption only in the 27 to 57 age groups with zero or very low values in childhood and old age, which is much narrower than the demographically defined working age group of 20–64 years.

There are also important cross-country differences that will determine the consequences of population ageing for the transfer system. In Table 1, we present the age at which labour income first exceeds consumption ('LCS starts at') and age at which labour income again drops below the consumption ('LCS ends at') for all countries. The LCS is defined as labour income minus consumption. In Sweden, for example, people stay in the labour force longer than in other countries. A higher employment rate at older ages is beneficial for the sustainability of the public system and makes it less vulnerable to population ageing. It turns out that by moving towards the age pattern of labour income in Sweden, the EU countries could neutralise most of the projected increase in public expenditure due to the population ageing (Loichinger et al., 2017). On the other hand, Italy is characterised by a high level of consumption which, together with an old population, will translate into the high economic dependence of elderly people (see Fig. 2). Austria and the United Kingdom (UK) have similar age patterns of labour income, but per-capita consumption in old age is considerably higher in the UK. These profiles can be explained by the fact that the savings rate is lower in the UK than in Austria, with the consequence that consumption relative to income is higher.

3 Economic dependency – The life cycle deficit

The difference between consumption and labour income in childhood and old age can serve as a measure of economic dependency. As explained in the methodology section, this difference has been termed 'life cycle deficit' (LCD) in the NTA framework. By adding up the age-specific LCD of the elderly population, we determine the aggregate

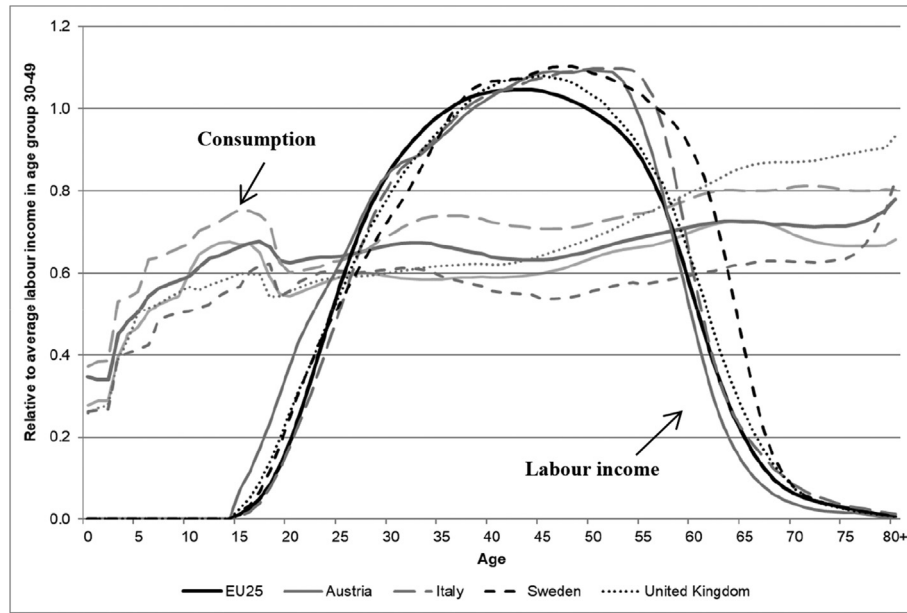


Fig. 1. Consumption and labour income in EU countries in 2010. Source: EU-SILC 2011; HBS 2010; Eurostat database; author calculations.

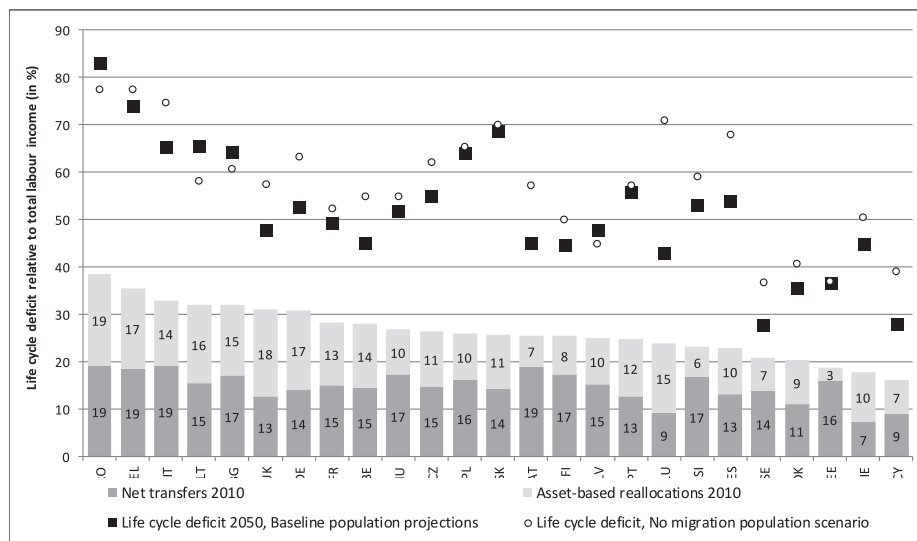
LCD for the elderly population. To facilitate comparison between countries, we relate aggregate LCD to total labour income. The indicator measures the total consumption of the elderly population that is not covered by their own labour income relative to total labour income in a country. The results are shown in Fig. 2, together with the share of the LCD

that is covered by transfers and asset-based reallocations, and the projected values of the LCD in 2050. The size of the life cycle deficit reflects age-specific patterns of economic activities and the level of consumption and labour income, but also the population structure. Consequently, the results for 2010 and 2050 also reflect the age structure of the

Table 1. The length of the life cycle surplus (LCS) in years by countries; total and decomposed by sex.

Country	Positive LCS starts			Positive LCS ends			Length of positive LCS		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Austria	24.1	21.1	29.1	58.0	60.0	54.8	34.0	38.9	25.6
Belgium	23.9	23.1	25.1	58.7	60.3	54.9	34.8	37.2	29.8
Bulgaria	25.5	23.8	29.8	56.0	57.8	51.5	30.4	33.9	21.7
Cyprus	—	27.5	—	—	62.4	—	—	34.8	—
Czech Republic	25.6	24.1	35.7	56.5	59.7	52.1	30.9	35.6	16.4
Germany	26.3	25.6	28.3	59.4	61.7	54.5	33.1	36.1	26.2
Denmark	25.7	24.1	26.9	61.5	63.0	59.8	35.8	39.0	32.9
Estonia	24.7	23.4	33.1	58.8	59.2	58.5	34.1	35.8	25.4
Greece	—	29.2	—	—	60.0	—	—	30.8	—
Spain	26.2	24.9	28.4	59.0	61.3	53.5	32.9	36.4	25.0
Finland	26.6	25.0	30.9	59.5	60.0	59.1	32.9	35.1	28.2
France	23.9	22.9	25.7	58.4	59.6	55.3	34.4	36.7	29.6
Hungary	24.2	23.6	25.2	57.8	58.9	57.0	33.6	35.4	31.8
Ireland	27.0	26.0	28.6	58.5	61.2	51.8	31.5	35.2	23.2
Italy	26.8	24.7	37.3	58.6	60.2	51.1	31.8	35.6	13.9
Lithuania	28.7	27.6	34.2	55.3	57.2	54.2	26.5	29.6	20.0
Luxembourg	24.9	24.4	25.6	58.4	59.9	50.2	33.4	35.5	24.6
Latvia	25.5	23.8	31.3	57.5	58.8	56.3	31.9	35.0	25.0
Poland	25.8	24.1	31.3	55.1	58.3	51.0	29.3	34.2	19.7
Portugal	26.1	25.9	26.3	57.5	59.7	53.8	31.5	33.8	27.5
Romania	25.9	23.7	35.1	53.3	57.1	45.3	27.4	33.3	10.2
Sweden	26.6	24.9	32.4	63.3	64.2	62.1	36.7	39.3	29.6
Slovenia	25.6	24.2	27.7	57.1	58.7	55.7	31.5	34.5	28.0
Slovakia	25.6	24.3	36.2	55.3	57.5	51.5	29.8	33.2	15.4
United Kingdom	25.7	24.4	29.7	57.7	60.7	48.8	32.0	36.3	19.1

Source: EU-SILC 2011; HBS 2010; Eurostat database; authors' calculations.



Note: Life cycle deficit 2050 = Net transfers 2050 + Asset-based reallocations 2050.

Fig. 2. Financing the difference between consumption and labour income of elderly people in EU countries in 2010 and 2050. Source: EU-SILC 2011; HBS 2010; Eurostat database; various other sources; author calculations.

population affected by longevity, migration, fertility, the baby-boom generations gradually moving to higher groups, and so on. The total LCD of the elderly population amounts to 16–19% of total labour income in Cyprus, Ireland and Estonia, and 36–39%¹ in Greece and Romania. In Romania, average labour income already falls short of consumption at the age of 54, while the corresponding age for the average EU citizen is 58. Greece and Italy are characterised by a pronounced public redistribution to the elderly population, low saving rates, low labour force participation rates and high unemployment. The LCD of elderly people in relation to total labour income in Greece and Italy is therefore among the highest across all the countries. On the other hand, in Sweden and Denmark, high labour force participation at older ages is reflected in the comparable low aggregate LCD, and average consumption only starts to exceed the labour income at ages 64 and 62 respectively.

To simulate the aggregate LCD until 2050, we keep age-specific economic characteristics constant at the level observed in 2010 and only vary the population structure according to The Eurostat (2019) Population Projections. Assuming that the age-specific economic characteristics in 2050 will be the same as in 2010 (relative to the labour income) is a very strong assumption. In reality, this assumption will be most likely violated for various reasons including a) cohort effects, b) potentially

later retirement since individuals will collect the required working period later (as a result of starting employment later due to higher tertiary education enrolment), and c) migration impacting the pension expenditure relative to the number of pensioners since the pensions paid to pensioners in other countries will vary. The results should therefore not be considered realistic projections of the future development but rough estimates of how severe the potential imbalances are across countries.

The highest LCD in 2050 is projected for Romania and Greece with LCDs of over 80% and 70% of total labour income. Such values are clearly impossible to maintain in the long term, and emphasise the need for changes in the age pattern and level of inter-generational transfers. It is particularly alarming that the countries with a high LCD in 2010 are also those confronted with a fast and strongly ageing population. On the other hand, high employment rates combined with relatively favourable population projections lead to the lowest LCD in Sweden, accounting for less than 30% of the total labour income in 2050. In contrast, the ranking of some countries is projected to change substantially. The population is ageing at a moderate pace in Belgium and France, which is consequently reflected in a moderate increase in the LCD. Slovakia and Poland, on the other hand, are ageing more rapidly, which is reflected in a strongly increasing LCD.

¹ Due to rounding, the numbers presented in the figures may not add up precisely to the totals provided.

Positive net migration is assumed for most EU countries in the baseline demographic scenario. In Fig. 2, therefore, we also present the results using the *No migration* population projection available at Eurostat (2019). Without migration, the life cycle deficit of elderly relative to total labour income would be even larger in most EU countries, since there would be no positive impact from young immigrants generating labour income. Unfortunately, Eurostat does not provide any other scenario of demographic projections except *baseline* projections and the *no migration* scenario. In particular, we miss sensitivity to mortality, whereas we know that the impact of fertility assumption on the results would be minor. In other words, by 2050 newborns will only have a small impact on total labour income. Without migration, Italy, Luxembourg, Spain and Germany would face much higher LCD in 2050 than presented above, using baseline demographic projections.

However, it is not only the level but also the channels through which old-age dependency is financed that are of utmost importance for the economic consequences of population ageing. In countries where elderly people rely on asset-based reallocation (such as a funded pension system or interests and dividends from private savings), the strain on the public sector will be lower. Savings and investment also have positive effects on the economy (Mason & Lee, 2007; Prskawetz & Sambt, 2014). On the other hand, if elderly people mainly rely on transfers, the economy is more vulnerable to

an increasing ratio between the elderly and the working-age population.

Fig. 2 distinguishes the part of the LCD that is financed through transfers and the part financed through asset-based reallocations. For example, in Romania, Greece, Italy and Austria, the LCD that is covered through transfers amounts to 19% of total labour income. The corresponding values are 7% in Ireland and 9% in Cyprus and Luxembourg. Old-age dependency in the UK, Germany, Luxembourg and Ireland shrinks considerably once we take into account only the part of LCD financed through transfers.

4 Economic surplus

Population ageing clearly increases the share of the economically dependent elderly population and the LCD. The pressure that this development exerts on the funding of public transfers depends on the ability of the working-age population to provide these transfers. In analogy to the LCD, we use the age-specific values of consumption and labour income to calculate the life cycle surplus (LCS), defined as the difference between labour income and consumption.

The level of the surplus depends on an individual's age; however, there are also large gender differences in the surplus that individuals generate during their prime age (see Fig. 3). There is a redistribution of income between genders within households, and therefore, the differences in

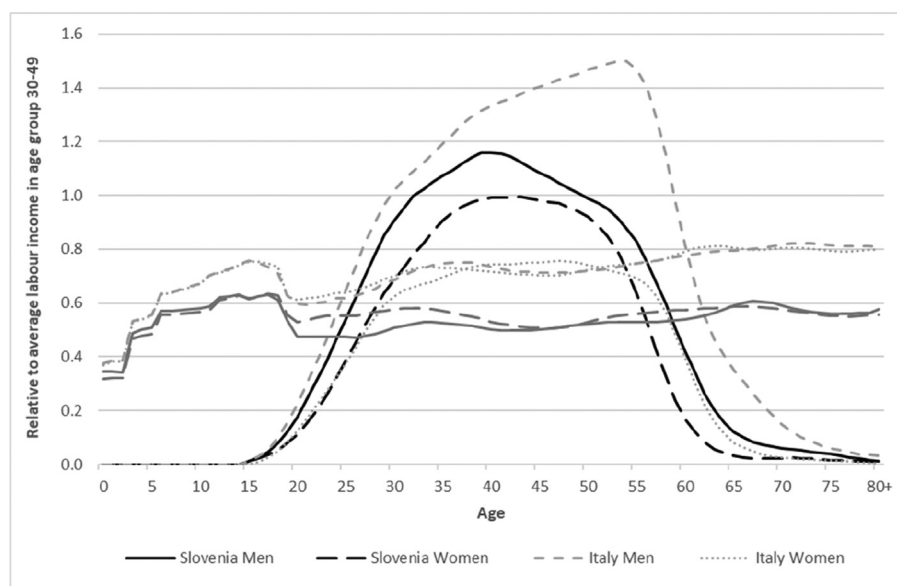


Fig. 3. Consumption and labour income for men and women in EU countries in 2010. Source: EU-SILC 2011; HBS 2010; Eurostat database; author calculations.

consumption are rather small. The gender differences in the LCS are thus mainly caused by gender differences in labour income. These differences usually reflect considerable cross-country variations in gender-specific enrolment and labour market participation rates, and also differences in the gender wage gap of fully employed men and women. In Italy the labour income of women exceeds their consumption only around ages 40–50, while in Slovenia this period lasts almost 30 years.

In Table 1, we present the results for all 25 EU countries. LCS for men starts earlier and ends later than for women in all countries. Consequently, the LCS length for men is longer than for women but with huge variability across countries. The difference ranges from only 3.6 years in Hungary to 23.1 in Romania and 21.7 in Italy, whereas in Greece and Cyprus there is no LCS for women at all, because their labour income does not exceed their consumption at any age.

In Fig. 4, we present the total value of LCS relative to the total labour income, decomposed by gender. The total LCS ranges from 12 to 13% of labour income in Lithuania and Greece, to more than 35% in Slovenia, Belgium and Luxembourg. We observe a relationship between the LCS and the contribution of women to total labour income. Women's contribution to the LCS is highest in Slovenia, Denmark, Sweden and Hungary. These countries are also among those with the highest total LCS. In Cyprus, Greece, Romania, Italy, Slovakia and the UK, the surplus is (almost) entirely generated by men. These countries have the

potential to increase their LCS and improve the sustainability of the public system by increasing labour market participation and the labour income of women.

5 Discussion

The economic consequences of population ageing depend on the degree of ageing and on the age patterns of economic activity. While there are common patterns of economic activity across European countries, there are large differences in the degree of dependency, as well as the length of the period an average person is dependent. This cross-country variation allows us to identify strategies that could be successful in reducing the negative consequences of population ageing, and in particular the pressure on the funding of public transfers. These strategies generally include: 1) reducing the economic dependency of the elderly population, and 2) increasing the ability of the working-age population to support others.

Among the most efficient strategies to decrease economic dependency in old age is an increase in the labour force participation of elderly people. Sweden is clearly a role model in this regard, where the average citizen stays in the labour market for about five years longer than in the majority of European countries. Additionally, reducing the consumption level of the elderly population is inevitable in some countries with particularly high dependency ratios, such as Italy. The overall saving rate of Italy was negative in 2010. To avoid a steady

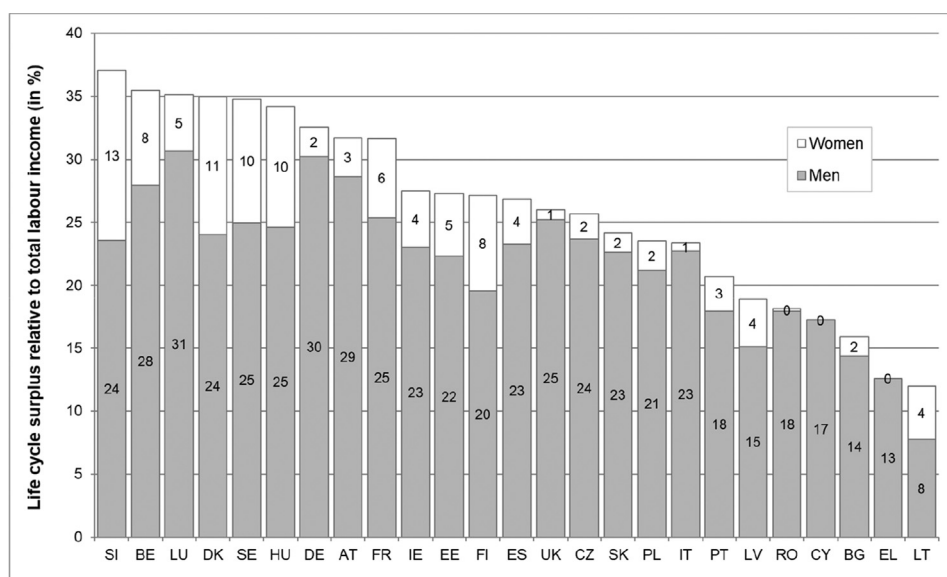


Fig. 4. Life cycle surplus for men and women in EU countries in 2010. Source: EU-SILC 2011; HBS 2010; Eurostat database; various other sources; author calculations.

deterioration of economic conditions and a decrease in the capital stock, consumption expenditure relative to income has to decrease.

A high economic dependency in old age is not necessarily related to high pressure on the funding of public transfers. In all countries, part of consumption in old age is financed through asset-based reallocation. The UK is characterised by comparatively high consumption in old age, but elderly Britons finance a large part of consumption through their own savings. Elderly people in Austria, in contrast, finance their consumption mainly by means of generous public transfers. The consequences of ageing for the public transfer system are therefore more severe in Austria than in the UK.

The dependent elderly population can be supported if the surplus of the working-age population is large enough. This in turn depends largely on employment rates. The negative consequences of population ageing can be avoided if it is possible to increase the employment rates of the working-age population, including a decrease in unemployment and an increase in the labour force participation rates of women. These measures could be the main drivers of policy reforms in Europe.

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