INTERGENERATIONAL REALLOCATION OF RESOURCES

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MAIN FINDINGS

» An average child received nearly one-and-a-half times (1.4 times) more resources in form of intergenerational transfers than an elderly person in Hungary in 2000.

» Public spending has a key role in supporting both the elderly and children, the former received 13% and the latter received 7% of national income as net public transfers (the difference between benefits received and taxes and contributions paid).

» The elderly are supported almost exclusively by public transfers flowing through the government; households have a marginal role in supporting them. On the other hand, children receive a high amount of private transfers mostly from their parents alongside the benefits they receive via the government. In total an amount equivalent of 9% of national income is transferred to children within the households.

» The direct role of households in supporting children is even greater than this. Parents give a large volume of unpaid labour to them, amounting to 10% of national income.

» Population ageing will have a more severe impact on the pension system in the coming decades than on the welfare system as a whole. Its impact on the economy will be even less severe, especially if the household economy (home production) is also taken into account.

» The analysis of home production also reveals the productivity potential of older generations – in particular younger retirees. If this is taken into account the ageing process is not as dramatic economically as if the analysis was restricted to the pension system alone.

Monostori, J. - Őri, P. - Spéder, Zs. (eds.)(2015): *Demographic Portrait of Hungary 2015.* HDRI, Budapest: 135–150.

INTRODUCTION

The life course starts and ends with periods of economic dependency.[1] Children and elderly people consume more resources than they produce. This is offset by a surplus produced by the active age population. To finance the lifecycle deficit we take advantage of the fact that at any given period there are working age people who transfer some of their resources to those who are inactive at that time. The life course is financed – always and everywhere – by the reallocation of resources among generations. The government, households as well as the corporate sector are part of this multi-channel intergenerational transfer system. Taxpayers are typically of active age, while the beneficiaries of public spending are more likely to be in the inactive section of their lifecycle. The income of households with children is produced by their parents, but children also benefit from it. Mortgages of younger active aged families are mainly financed by savings of older ones, who are before retirement and whose children have already grown up. Thus there is a strong demographic feature of the welfare system, financial and insurance markets, as well as the household economy.

This chapter will examine the system of resource reallocation within the total economy, which includes not only the national but also the household economy. Our analysis is cross-sectional in that it does not follow cohorts along their life course but examines transactions among people in their active and inactive age at a given point in time. We present the age profiles of labour income and consumption, as well as the age profiles of transfers aimed at linking lifecycle deficits and surpluses. Age profiles are then used to redefine the concept of the *demographic support ratio*[G] which is the ratio of dependents to the working-age population. We will also examine how the support ratio changes over time if not only the size of the different age groups but the age structure of the *resource reallocation system*[G] is also taken into account.

Sustainability of the resource reallocation system is often discussed in the context of ageing populations because of the growing share of the elderly and the declining share of active aged people. Concerns are raised about the sustainability of the pension system and sometimes the health care system in particular, even though population ageing has implications for other segments of the welfare system and more broadly for the system of resource reallocation. Our analysis aims at refining previous conclusions limited to the demographic age structure or the welfare system.

There are numerous studies on intergenerational transfers; however they tend to focus only on segments of the reallocation system instead of the system as a whole. The analysis of the pay-as-you-go pension system generally considers only two generations even though current taxpayers were brought up by the previous generation and their pensions will be paid for by the next generation. Another weakness of the mainstream literature is that – although resources are reallocated through various channels – they almost always ignore intra- and inter-household transfers. We will demonstrate that the lifecycle deficit of children is mostly financed by households themselves rather than through government.

The following analysis aims at drawing the full picture of resource reallocation. It includes three generations simultaneously

[1] This chapter was written as part of the AGENTA project which has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no. 613247.

and captures reallocations within the total economy. In addition to expenditures of the general government, this approach includes the market economy (national income and the items of related accounts) and the household economy as well.

A MODEL OF INTERGENERATIONAL RESOURCE REALLOCATION

The *system of reallocation* is described as resources transmitted among three concurrent generations flowing in opposite directions. The main elements of the model *(see Figure 1)* are as follows:

It assumes the simultaneous presence of three generations (the elderly, the active aged and children in periods (*t*-1), *(t)* and (*t*+1)), and examines three life stages (old age (O), active age (A), childhood (C)). The generations are named after calendar periods: generation *(t)* denotes people active in period t. Most models of the resource reallocation system include only two generations and two sections of the lifecycle. The ones of fertility and investment in the human capital of children include only the active age population and children; pension models are typically limited to the working age population and the elderly.

In each period it includes two transfers flowing to opposite directions. In period *t* – at the centre of the model – there are two transfers flowing to opposite directions: one from the active age population to children and the other from the active age population to the elderly. If the model had only two generations and two sections of the lifecycle, there would be only one transfer in each time points.

It combines the cross-sectional and the longitudinal perspectives. *Figure 1* is two-dimensional. Horizontally we can follow cohorts, who are born in different years, making it possible to study their life courses. Vertically resources are reallocated among different age groups in a given time period; here cohorts differ from one another in their actual age.

Generation *(t)* and time *t* are at the centre of the model in *Figure 1.* During the life course of generation *(t)* there are four different transfers: in period *t*-1 they receive transfers from their parents' generation; in period *t* they produce two flows, one to their children's generation and another to their parents' generation; finally at time *t*+1 they receive transfers from the generation of their children.

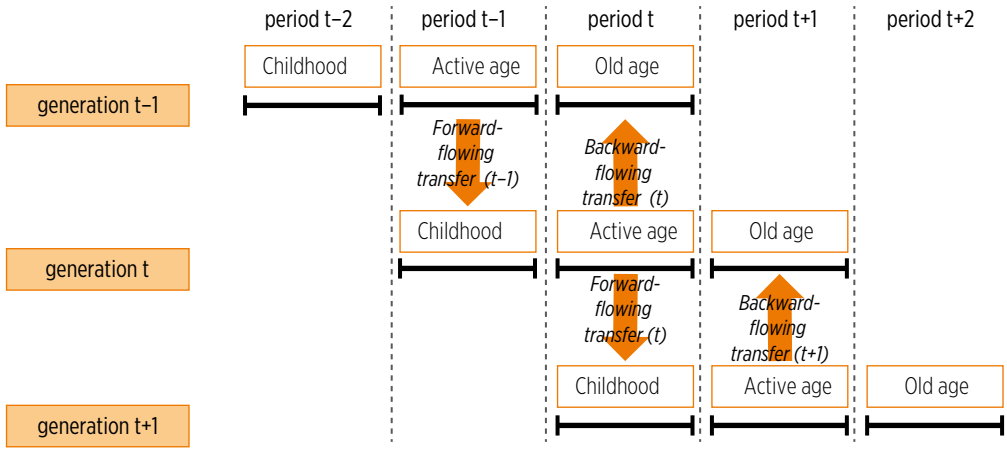
Transfers flow forward in time if they go from older to younger generations. We talk about intergenerational goods flowing back in time when they go from younger to older generations. Government spending on education, family benefits, some health care expenditure as well as private household expenditure and caring aimed for children flow forward. On the other hand, pensions, most of health care spending, public expenditure related to elderly care as well as relatives caring for older people are backward transfers. Transfers flow partly among kin and partly among non-relatives. This is true for both traditional and modern societies, however direct resource reallocation among relatives is much more widespread in traditional societies.

This model, as every model, is a simplification of reality. Stages of the lifecycle are not of equal length; time passes continuously rather than in stages; resources also flow in other directions such as from older people to the younger active age population; and stages of the lifecycle can be further broken down into more phases.

Data used in this analysis come from the international *National Transfer Accounts*[2]

[2] The method of National Transfer Accounts was established by Lee (1994a,b). For a detailed description of the method see the Manual released by the United Nations (2013). A summary of the research programme was published in Lee – Mason 2011. Further information is available on the website of the project: www.ntaccounts.org. The website of the project's European strand is: http://www.agenta-project.eu/en/index.htm.

Figure 1: The model of intergenerational resource reallocation



Source: Rangel, 2000, 2003.

project that includes more than 40 countries. Following the standard methodology we estimated the average volume of income, consumption and savings by age and based on these figures we measured the magnitude of intergenerational transfers.

INTERGENERATIONAL RESOURCE REALLOCATION IN HUNGARY IN 2000

Table 1 gives an overview of the main forms of intergenerational reallocation in Hungary. Some of these are part of the welfare system; others are non-public. The figures displayed in the table are from 2000, so they reflect for example pensions, income and the value of unpaid household labour in that year. Although the data might seem old, the structure of resource reallocation and the volume of items do not change rapidly. The situation in 2000 still gives a valid picture.[3]

Columns 2, 3 and 4 of the table contain the net value of intergenerational resource reallocation calculated from the national economy or national income. The calculations used data from National Accounts. The system of National Accounts is a set of macroeconomic accounts that provide a coherent description of production, income distribution and use of resources in terms of transfers among the government, the corporate sector and households (including the non-profit sector supporting households). The description of intergenerational resource reallocation applies the same items; the actors however are not economic entities but different cohorts of people taking part in the production, allocation and reallocation of income.

The system of resource flows consists of transfers and asset income. The mediating institutions of transfers are the government (public transfers) and households (private transfers) (Lee – Mason 2011). Types of income from assets (e.g. interest, dividends and rent) are underdeveloped in Hungary,

[3] Estimation of the complete reallocation system requires time use data which are collected once in a decade in Hungary. At the time of this analysis more recent data from 2010 were still processed.

Table 1: Forms of intergenerational reallocations in Hungary in 2000. Aggregate net reallocations by item and age group, in percent of national income

(%)

	Household economy	National economy			Total economy
	time transfers	public transfers	private transfers	asset-based reallocations	
Children (0–23 years); 3.0 million people	10.2	6.7	9.2	0.8	26.9
Active age (24–57 years); 4.9 million people	–11.1	–19.0	–8.9	5.5	–33.5
Older people (58+ years); 2.3 million people	0.9	13.1	–0.3	0.8	14.4

Source: Authors' calculations.

Notes: Time transfers: the net value of unpaid household labour done for or received from another household member or an individual outside the household (for a definition of household labour see the boxed text). *Public transfers:* public expenditures and taxes/contributions. *Private transfers:* items included in the national income, transferred within (among household members) or between households. *Asset-based reallocations:* income from ownership and capital as well as savings. *Total economy:* national economy and household economy combined together. All items are net values, namely the difference between received and given amounts. See boxed text on age ranges.

and they play only a minor role in financing either old age or childhood. On the other hand, the government has a prominent role in supporting both inactive generations. This puts a substantial burden on the active age population that reallocates 19% of national income in the form of taxes and contributions to the inactive age groups. Within this, 13% goes to older people as net public transfer (i.e. the difference between what they get in the form of services and benefits and what they pay in as taxes and contributions). Government spending specifically targeted at older people mainly consists of pensions and health care services; however the elderly also access general public goods. The table also indicates that older people hardly have any other net transfers; public transfers from the government cover nearly all of their consumption that they cannot finance themselves from their own labour income. This can also be observed in *Figure 2* that shows the net per capita value of resource reallocation in percent of national income for the average active-age individual.

Children, in addition to general public goods, receive special public transfers in the form of public education and health care services; amounting to just under 7% of national income. Private transfers however, play a more important role in supporting children (see *Table 1* and *Figure 2*). They receive 9% of national income as, mostly intra-household private transfers. This puts further burden on parents because their income is the main source of these transfers. The role of households in supporting children is not only significant because of the amount parents pay for *their own* children's consumption, but also because parents do most of the unpaid household labour (care and other housework) for them as well.

Table 1 also includes the volume of these transfers of labour – or time transfers as referred to in the international literature – within the household. *Figure 2* reveals that most of the household labour not included in the national income has an intergenerational feature and it flows primarily towards children. The production and consumption

of unpaid household labour as well as intergenerational flows of in-kind transfers are calculated from data of the Hungarian Central Statistical Office's (HCSO) time use survey and related household satellite account calculations (Sik – Szép 2003).

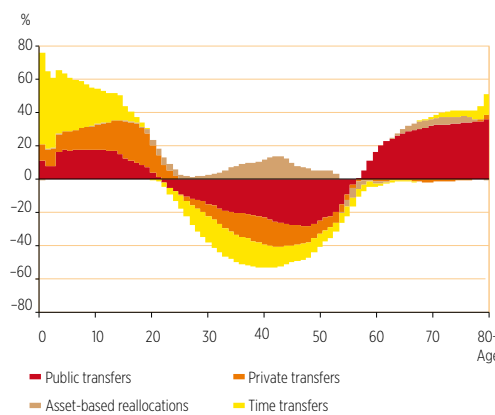
Time use surveys register the time use of individuals with diary methods, registering each activity separately. Household labour includes all activities that can be carried out by someone else for the individual and can, in principle, be outsourced. These activities are cooking, washing, cleaning, caring, reading stories to children etc. According to time use data, time spent on household activities exceeds time spent working in a primary job in the labour market.[4] Since activities that are concentrated in the household are typically of low productivity, labour productivity in the household is lower than in the labour market. Therefore the aggregate value of the household satellite account is considerably lower than aggregate earnings in the labour market.

Intergenerational time transfers – the value of labour generations do for or receive from others – can be computed from estimations of unpaid household labour and its consumption by age. These are measured not only in minutes but in monetary terms, thus it is also estimated how much the activities would cost under market conditions. The calculation also takes into account that work performed by non-professionals is less productive, as market wages were adjusted downwards.[5]

National Accounts also include the value of some unpaid household labour such as producing food for own consumption or building a house for own use. Therefore, there is a small overlap between the age profiles of labour income and unpaid household labour. Nevertheless, the age profile of labour income was not adjusted here because we adhered to widely-accepted international standards to ensure comparability of the results. Actually, the difference is very small and it has no substantial effect on the results. The figures that eliminate the overlap are published by Gál – Szabó – Vargha 2015.

According to our estimations the value of home production services transferred across generations is 11% of the national income and its beneficiaries are almost exclusively children (10%). In terms of net transfers, households (family members or other individuals) do not have a substantial role in supporting the elderly by providing direct financial support or care for them (see *Figure 2*).

Figure 2: Per capita net public, private and time transfers, and asset-based reallocations in Hungary in 2000, in percent of the per capita national income of the average active age population



Source: Authors' calculations.
See Table 1 for relevant notes.

[4] Once gender differences are taken into account this does not hold in the case of men. This is partly due to the fact that women spend longer time in retirement and work more in the household during their retired years.

[5] For a detailed description of the method see Donehower (2014), Gál – Szabó – Vargha (2015).

WHICH COHORTS ARE ACTIVE AND WHICH ARE INACTIVE?

Our estimations – based on the size of cohorts, surveys and administrative data – show the magnitude of labour income of each birth cohort, how much they consume or save, in what proportion they convert their previous savings to consumption, and it also shows how much they pass on to other cohorts in the form of transfers. First, total labour income and consumption are distributed among cohorts. Then the age distribution is cleared of the size effect in order to obtain the per capita age-profiles.

The first consists of per capita labour income for each cohort (all labour costs that is taxes and contributions levied on labour including those paid by employers), while the consumption age profile is the per capita net consumption without taxes – including the consumption of goods provided by the government and imputed rent from owner-occupied houses). These age profiles are displayed by the National Economy panel of *Figure 3*. It is important to highlight the difference between the age profile of labour income used here and the well-known age-earnings function. The latter depicts the average earnings of only workers by age, while the former projects the total earnings of a cohort to the total number of people in that cohort including the non-employed.

The difference between per capita consumption and labour income for a cohort determines whether it is inactive or active. Inactive cohorts consume more than they produce while the active produce more than they consume. In 2000 in Hungary inactive cohorts were those aged between 0–23 years – referred to as *children* here – and people aged 58 years or over: the *elderly*. Active age is between 24–57 years. By 2005 the ranges shifted by a year, so in 2005 people aged 25–58 years were considered active.

According to data available on the website of *National Transfer Accounts* from the mid-2000s the active population in Hungary could be considered relatively young in European comparison. The youngest active cohort was 25 years old in Slovenia, similarly to Hungary, and in Austria – due to the education system – it was even younger: 23 years old. In Spain, France, Finland and Sweden the start of becoming active was at age 26 and in Germany, having one of the oldest age compositions, it was age 27. The oldest active cohort in Slovenia was 55 years old, in Germany, France and Hungary 57, in Spain and Austria 58, in Finland 59, and in Sweden 62 years old.

RESOURCE REALLOCATION IN INTERNATIONAL COMPARISON

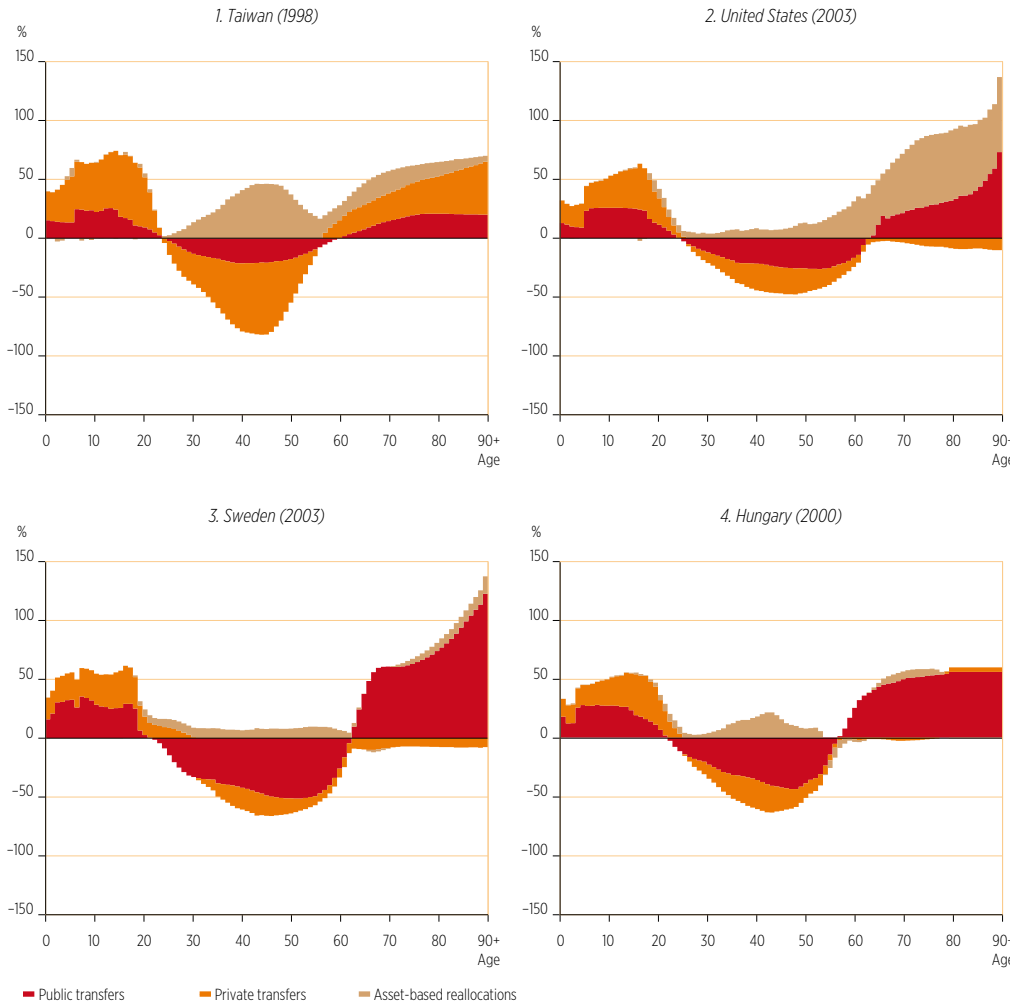
To put the Hungarian resource reallocation system into context we briefly present reallocation systems from different parts of the world. These systems differ from each other and the Hungarian system quite considerably. Time transfers will not be included in this analysis because no international data is available yet. To ensure adequate comparison, per capita public and private transfers as well as asset-based reallocations are normalized by the average per capita labour income of the 30–49-year-old cohorts in the respective countries *(Figure 3)*.

In Taiwan the government did not have any significant role in intergenerational transfers neither towards the elderly nor children in 1998. In contrast, private transfers were very important. While workers in Hungary pay high taxes to fund public transfers, in Taiwan taxes are low but a large proportion of workers' labour income is passed on as private transfers to their relatives in inactive age. Taiwanese households have – unlike their Hungarian counterparts – relatively high levels of capital income. Hungarians rely mainly on labour income and the fact that they do not need to pay rent on their privately owned property. Asset income in Taiwan also comes from loans parents took to pay for the private education of their children. In the Taiwanese model of resource reallocation children will pay this back directly to their parents without the involvement of the pension system.

In the United States, similarly to most Western societies, the role of private transfers is limited, especially in older age. Children benefit from the income of their parents while they live with them. Older people however do not receive transfers from their younger relatives but they rather provide for the younger generation. This is a key difference compared to the Taiwanese model. Another characteristic of the American system is the prominent role of asset income in funding consumption in older age.

This is in contrast with the Swedish system where the state is the dominant mediator among generations. The role of capital and property income is negligible, similarly to Hungary. Apart from the government, the other major actor is households contributing to the financing of the life cycle deficit of children. The combined age profile of all Swedish transfers – similarly to the American one, but unlike the Hungarian and Taiwanese models – shows a particularly strong dominance towards older age groups. Whereas in medium-income countries per capita consumption of older people does not correlate with age, in higher income countries it does: the older the people are, the higher their consumption is. The main underlying reason of this is the increase in health spending over the past two decades. Lee – Mason (2011) show that this is a universal pattern: the richer a country, the older the age profile of consumption gets.

Figure 3: Per capita net public and private transfers as well as asset-based reallocations in percent of per capita average labour income of the 30–49 years old cohorts in selected countries



Source: Authors' calculations based on the NTA database (www.ntaccounts.org) and Hungarian NTA data.
Note: No breakdown per cohort is available for people aged over 80 years in Hungary; see other notes under Table 1.

Table 1 shows that – against conventional wisdom – the volume of total net resources flowing towards children is greater (27% of national income) than the amount flowing towards the elderly. The latter is only 14.4% of national income. The per capita difference is also large (see *Figure 2*). Taking all net reallocations – public, private and time transfers as well as asset-based reallocations – into account an average child received nearly one and a half times (1.4 times) more resources than an average older person in Hungary in 2000. With age the overall volume of transfers goes up for older people and goes down for children.

PER CAPITA AGE PROFILES OF RESOURCE REALLOCATION

As highlighted above the starting point of the three-generational model is income by cohort and its uses: how much of it is consumed or saved; how much of previous savings is converted into current consumption; and how much of these resources are passed on to other cohorts in the form of transfers. The per capita values of these can also be calculated for each birth cohort. The five panels of *Figure 4* show a total of ten such cross-sectional age profiles. Mean per capita values for each cohort are compared to per capita national income of the average active-age person. The panels of the figure display respectively the age profiles of labour and consumption in the national economy; in the household economy; and in the combination of the two, the total economy. The age profiles of contributions and benefits of public transfers and separately for the pension system are also shown. The panels clearly illustrate the difference among the three concurrent generations in terms of production and consumption, as well as transfers.

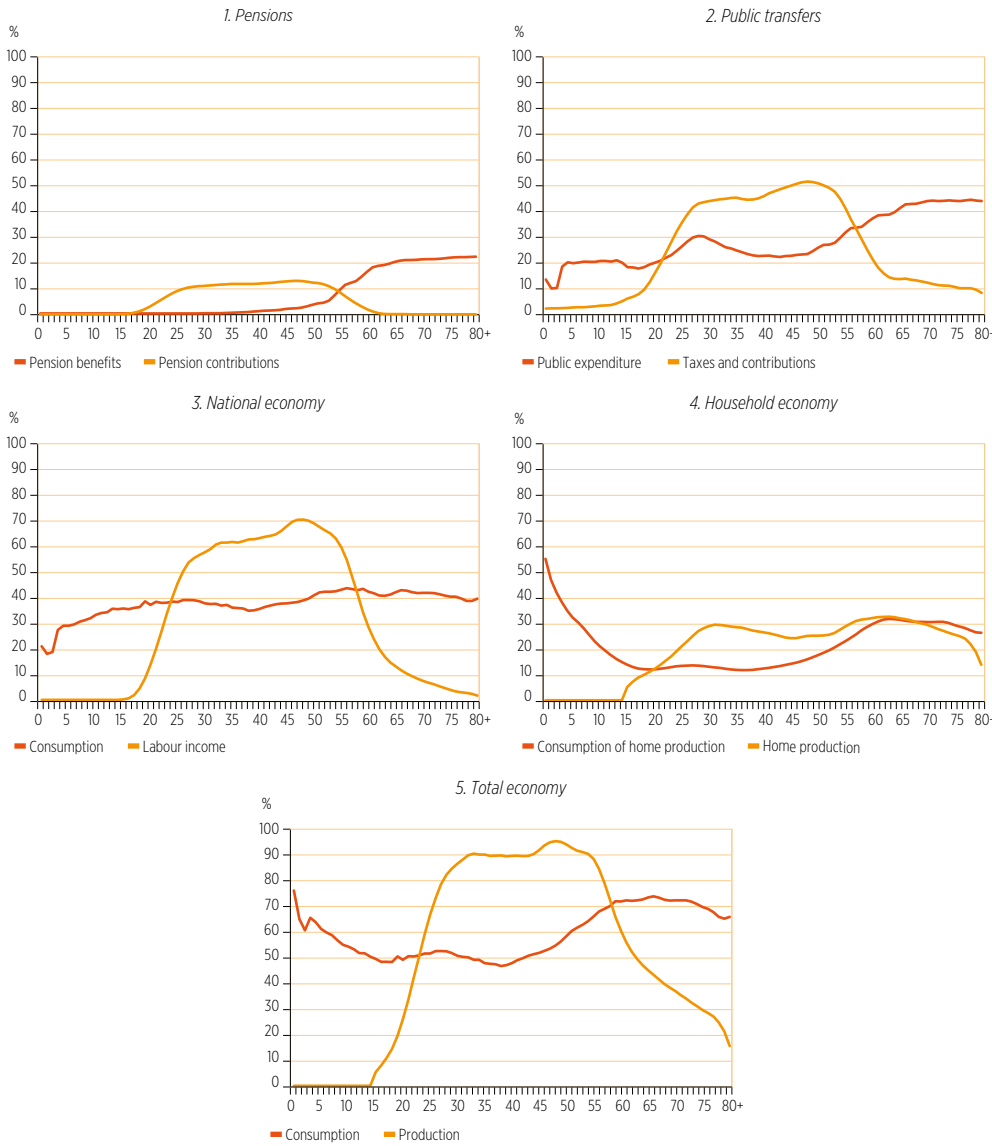
Panel 1 displays a special item of public transfers: the age profiles of pension benefits and contributions. As expected in a pay-as-you-go pension system, beneficiaries of the various benefits are the older generations whereas contributions are paid by the working age population. Pension contributions, however, make up only a smaller part of total taxes paid by those in active age. This is shown on Panel 2 that illustrates the whole tax-transfer system. Pension contributions make up to 11% of national income per average active aged person; other taxes and contributions add another 34 %. The age profiles of public expenditure by the general government combine the age profiles of public services (health care, education and other benefits in kind including general public goods funded by the state) and cash benefits (various pensions and retirement benefits, family benefits and other cash benefits). All generations receive public transfers, the elderly however receive the most (42% of the per capita national income per average active age person, whereas the corresponding figure is 28% in the total population); and they are predominantly financed by the active age population.

Panel 3 displays production (labour income) and consumption in the national economy. These two age profiles determine the total intergenerational reallocation of market income. The figure clearly shows that only the working age population have income from labour, but consumption is fairly evenly distributed by age. Financing the consumption of the inactive population primarily falls on active age people, in the form of public and private transfers. Private transfers represent a tertiary redistribution of resources after the primary allocation of income and its secondary redistribution through public transfers. Private transfers tend to flow between cohabiting members of the same household or to a lesser extent between relatives who live in different households. As highlighted above, private transfers are particularly important in supporting children, because the consumption of older people is fully covered by public transfers and their limited labour and capital income.

Panel 4 shows the average per capita production and consumption in the household economy by age. Similarly to the previous panel these are also age profiles of labour and consumption (the latter in this case refers to the consumption of the outputs of unpaid household labour). Panel 4 shows that people remain active longer in households than in the labour market; and home production increases after retirement creating a second local maximum on the curve. Household output is the highest among the 61–64 years old and in monetary

terms this value amounts to 33% of per capita national income of the active-aged. Transitions between stages of the lifecycle are less clearly marked in the age profile of household labour compared to that of market labour.

Figure 4: Age profiles of the pension system and public transfers; and age profiles of consumption and labour income in the household economy, national economy and the combination of the two in Hungary in 2000, in percent of per capita national income of the active age population (%)



Source: Authors' calculations.
See relevant notes under Table 1.

The age profile of consumption in the household economy resembles more the mirror image of the age profile of general government expenditure presented in Panel 2 than the age profile of consumption depicted in Panel 3. In other words, the pattern of unpaid household labour is similar to public welfare services with one important difference: its beneficiaries are children rather than older people. The beneficiaries of household labour – or time transfers – are those cohorts whose unpaid household labour does not cover their consumption. Therefore the youngest receive the most time transfers; and it declines with age. A newborn in the first year of his/her life receives time transfers that are equivalent to 55% of the per capita national income of active age workers; a six-year-old receives 30% and a 14-year-old 15%. Panel 4 also shows that the net contributor of the household economy is again the active age population because their production of unpaid household labour well exceeds their consumption.

Finally, Panel 5 represents production and consumption in the total economy, the combination of the national economy (Panel 3) and the household economy (Panel 4). At this level of intergenerational reallocations all resources are taken into account. Per capita consumption of older cohorts is higher than that of children; however their net consumption is lower because they also work, mainly in the household. Comparing the profiles of the working age population in the total economy and the national economy the production-consumption gap is wider in the former. Active age people do not only subsidise the elderly (through public transfers) but also support their children (in form of private and time transfers).

SUSTAINABILITY OF THE RESOURCE REALLOCATION SYSTEM

Following the description of the cross-sectional characteristics of the resource reallocation system, the rest of this chapter investigates the potential effects of expected future changes in the age composition of the population on the sustainability of the current resource reallocation system. Using the age profiles presented above and population projections not only the sustainability of the pension system and general government spending can be analysed but also the sustainability of current consumption levels.

Sustainability as an issue often emerges in relation to population ageing. The main cause of concern is the changing age structure; more precisely the rising share of the elderly and the declining share of the younger population and the unforeseen economic and social effects they might arise.

Using the *demographic support ratio* on its own – or in other words describing the problem exclusively in terms of changes in the age composition of the population – gives a distorted picture of the effects of ageing. This view distinguishes active and inactive age groups based exclusively on their age and would also use fixed age limits. According to this approach, the elderly (aged 65 years or over) and children (0–19 years) are dependents, and people aged 20–64 years are contributors; the demographic support ratio is the ratio of the number of people in these generations.

The *support ratios* calculated here also take into account the volume of contributions and benefits. In addition to the age structure, the age profiles of pension contributions, taxes, labour income and home production, as well as pension benefits, received public transfers, consumption and

consumed household labour are also used here in order to account for the magnitude of these economic activities by age. The size of cohorts is weighted by per capita values within the given cohort.

This calculation and projection method does not provide predictions about the effects of ageing but refines conclusions drawn from the pure demographic changes. Furthermore, it also highlights tensions in the different segments of the reallocation system. In this respect it is similar to generational accounting that calculates indicators of imbalance for general government expenditure (or the reallocation of public resources in our terminology). Our calculations consider the future but we do not attempt to predict it. Instead – using some simple and realistic assumptions – we aim to refine previous conclusions based exclusively on population projections and highlight different amounts of tension in the various segments of intergenerational reallocation system.

Using the age profiles of transfers flowing through the government we consider the *pension support ratio*^{G} calculated for the pension system and the *fiscal support ratio*^{G} (Miller 2011) for general government expenditure. In case of both indicators cohort sizes are weighted by the per capita taxes and contributions paid and the pension or general government benefits received. Ratios of these numbers are calculated respectively for the pension system and the general government. We also distinguish between the *economic support ratio*^{G} of the national economy (Cutler, 1990; Lee – Mason, 2011) and the *total support ratio*^{G} of the total economy; these indicators give the ratio of cohort sizes weighted by the per capita production and consumption respectively in the national economy and the total economy as displayed in Panels 3 and 5 of *Figure 4*.

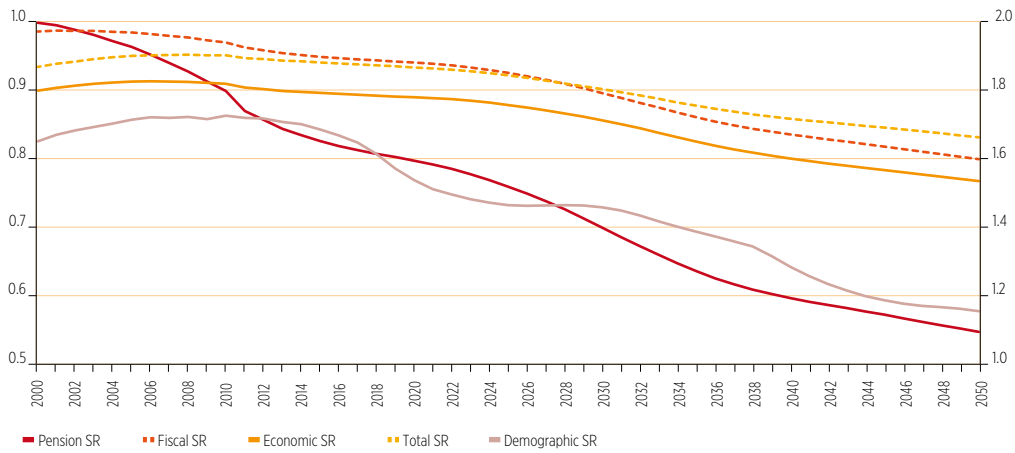
Figure 5 presents the projected values of the five different support ratios from 2000 to 2050. To show how the same demographic process affects the different segments of the resource reallocation system, we weigh the age composition of projected future populations with the age profiles of the pension system, the tax-transfer system, the national economy and the total economy of the base year.

All indicators show a declining trend. If the age profiles of the resource reallocation system remain unchanged, the expected ageing of the Hungarian population will become a burden on all four levels. However, the speed of the decline varies for the different support ratios. Pressures on the sustainability of the four systems are expected to be different.

The pension support ratio shows the largest decline because the pay-as-you-go pension system is financed exclusively from contributions levied on labour. If unchanged the pension system, balanced in 2000, would face a 45% deficit in 2050. *Figure 5* shows that the rate of decline of the pension support ratio is almost identical to the decline of the demographic support ratio; the former declines by 0.9% per year.

General government expenditures seem less unsustainable: the rate of decline is only 0.4% per year. This is because government spending is financed not only by taxes on labour but also taxes on consumption and capital. Their age profiles are flatter (they do not have the same peak during the working age) than the age profile of taxing labour. Furthermore the age structure of general government expenditure is more balanced; it is less concentrated in old age than pension benefits. If the age profiles of the tax-transfer system of the general government remained unchanged, public deficit would be 20% by 2050.

Figure 5: The demographic support ratio and projected support ratios for the pension system, general government, the national economy and the total economy, 2000–2050



Source: Authors' calculation using Eurostat population projections.

Notes: Right axis: values of the demographic SR (support ratio): 20–64 / (0–19 + 65+). Left axis: support ratios (SR) which weight expected future cohort sizes with the age profiles of the resource reallocation system on four levels in the base year. For the description of the four levels see main text.

In the national economy – which takes into account the reallocation of market income – population ratios weighted by consumption and labour income would decline from 90% in 2000 to 77% by 2050, thus the gap that the market economy has to cover with asset income would be 13 percentage points wider.

The total support ratio shows the smallest deficit by 2050. It drops the smallest among the indicators presented here (from 94% to 83%) making the annual rate of decline the smallest too, at only 0.2%. One of the reasons for this is that the consumption per child is highest in the total economy and according to population projections the number of children will fall assuring that their total consumption will also decline. Another reason is that in the total economy older population produce more than in the national economy. The age profile of household labour (as shown in *Figure 4*) is more age-balanced than that of market labour. The adjustment required to ensure the sustainability of the total economy, where the gap is narrower, will be smaller than the adjustment required for all the other institutions of income reallocation. The household economy and related indicators also highlight the productivity potential of older people, in particular of younger retirees.

Based on these projections we conclude that some changes and restrictions will happen in the welfare system, particularly in the pension system. The age profile of labour income will need to change so that consumption patterns from 2000 can be maintained financially. However, if the output of households is also taken into account, the ageing process seems less dramatic in the next 35 years. These results are in line with the findings of Lee, et al. (2014) who showed that there is a substantial gap between the fertility rate needed to avoid impoverishment and the fertility rate needed to maintain the balance of the public transfer system.

GLOSSARY

Resource reallocation system: A multi-channel system of institutions through which consumption in childhood and old age can be financed without labour income by the flow of resources from the active to the inactive population. It includes the public tax-transfer system, private intra- and inter-household transfers of different resources, and a variety of organisations in the capital and insurance markets.

Support ratios:
Demographic support ratio is the number of active age people over the number of people in inactive age. It is based on the predetermined age-limits for the different stages of the lifecycle and its value depends on the number of people in the age groups defined by theses age-limits. Taking into account the system of resource reallocation additional weighted support ratios can be calculated.

Pension support ratio is the ratio of cohort sizes weighted by the per capita pension contributions and benefits, respectively.

Fiscal support ratio (Miller 2011) is the ratio of cohort sizes weighted by the per capita taxes and contributions and the per capita public expenditures, respectively.

Economic support ratio (Cutler 1990, Lee – Mason 2011) is the ratio of cohort sizes weighted by the per capita consumption and labour income in the national economy, respectively.

Total support ratio incorporates the output of unpaid household labour and its consumption, in addition to items of the national economy into the support ratio.

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