Four Levels of Intergenerational Indicators and the Total Support Ratio

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Abstract

The demographic definition of the support ratio weighs the sizes of age groups against each other. Instead, the economic support ratio (ESR) by Cutler et al (1990) compares the effective number of workers to the effective number of consumers both defined by the combination of the age profile of the population and the age profiles of labour income and, respectively, consumption. Since this measure captures both the effect of age composition and the age patterns of producing and consuming income, it gives a richer and more accurate description of reality. Inspired by this approach we will calculate a generalized version of the ESR, the total support ratio (TSR). The TSR extends the age profile of labour income with the age profile of the value of household labour and the age profile of consumption with the age profile of the consumption of unpaid household labour by household members. Our calculations are based on data from the National Transfer Accounts, and a calculation of age specific non-market labour and consumption based on the time use survey. We argue that the conclusions drawn from the different levels of intergenerational indicators are varying. We demonstrate our results using not only the support ratios but other types of indicators as well. Combining our age profiles with future age compositions of the population we also calculate future projections of these indicators.

Overview

The support ratio is an indicator of economic demography. Comparing the working age population and dependent population (elderly and young), the usual way of understanding it is to weigh the sizes of age groups against each other. The current statistical standard defines working-age population as cohorts between 15 and 64 years old, and labels all the others inactive. More detailed statistics contain separate data for the 20-24 and 55-64 year-old cohorts.

Instead, Cutler et al (1990) compare the effective number of workers to the effective number of consumers both defined by the combination of the age profile of the population and the age profiles of labour income and consumption, respectively. Since this measure, the economic support ratio (ESR), captures both the effect of age composition and the age patterns of producing and consuming income, it gives a richer and more accurate description of reality. Lee and Mason (2011) and Fürnkranz-Prskawetz and Sambt (2014) give cross-country comparisons of ESRs on different samples of countries.

Defined on the general government, Miller (2011) introduces a similar indicator, the *fiscal support ratio* (FSR) limited to public tax-transfer system. Accordingly, the FSR compares the effective number of taxpayers and the effective number of beneficiaries. If the scope is narrowed further a support ratio can be defined on the public pension. The ratio in question compares the numbers of effective contributors and effective pensioners (*pension support*

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ratio, PSR). However, the scope of the ESR can be widened, too. We can further generalize the indicator by adding the value of household labour to market labour income and the consumption of the output of household labour to consumption of market commodities and services (including public consumption). We call this generalised indicator the *total support ratio* (TSR). In this paper we will provide the calculations of all these different types of support ratios on Hungarian data. We will project their values by combining the respective age profiles of the base year with future age compositions. We will apply these projections in the context of the sustainability of current reallocation patterns.

Data and methods

We use data about the population and population projections by the Hungarian Central Statistical Office (HCSO). For age specific public inflows and outflows as well as labour income and consumption we use the National Transfer Accounts (NTA) methodology[1] and data about Hungary.[2] Age profiles of unpaid household labour and consumption are based on the 1999/2000 Hungarian Time Use Survey,[3] and the National Time Transfers Accounts (NTTA) methodology (Donehower 2012, Gal et al (forthcoming)).

Preliminary Results

Figure 1 contains the results of projections of the above support ratios. Hungarian age profiles from the year 2000 of (a) pension contributors and pensioners, (b) taxpayers and beneficiaries, and (c) workers and consumers in an NTA context and (d) producers and consumers in a unified NTA and NTTA context are combined with future demographic age profiles of the population. All versions of the support ratio reveal increasing demographic burdens if base-year age profiles remain unchanged. However, the trends are declining at different speeds.

The most pronounced decline can be found in the public pension budget, since pay-as-you-go pensions are financed exclusively from taxes levied on labour. Balanced in the start year, it would face a 43 percent deficit by 2050. The public budget shows a slightly better picture, because it involves taxes on capital and consumption. It would face 20 percent deficit by 2050 if the age profiles of tax payment and social benefits remain unchanged. The aggregate gap between the number of effective consumers and the number of effective workers would increase to 21 percent from the initial 10 percent.

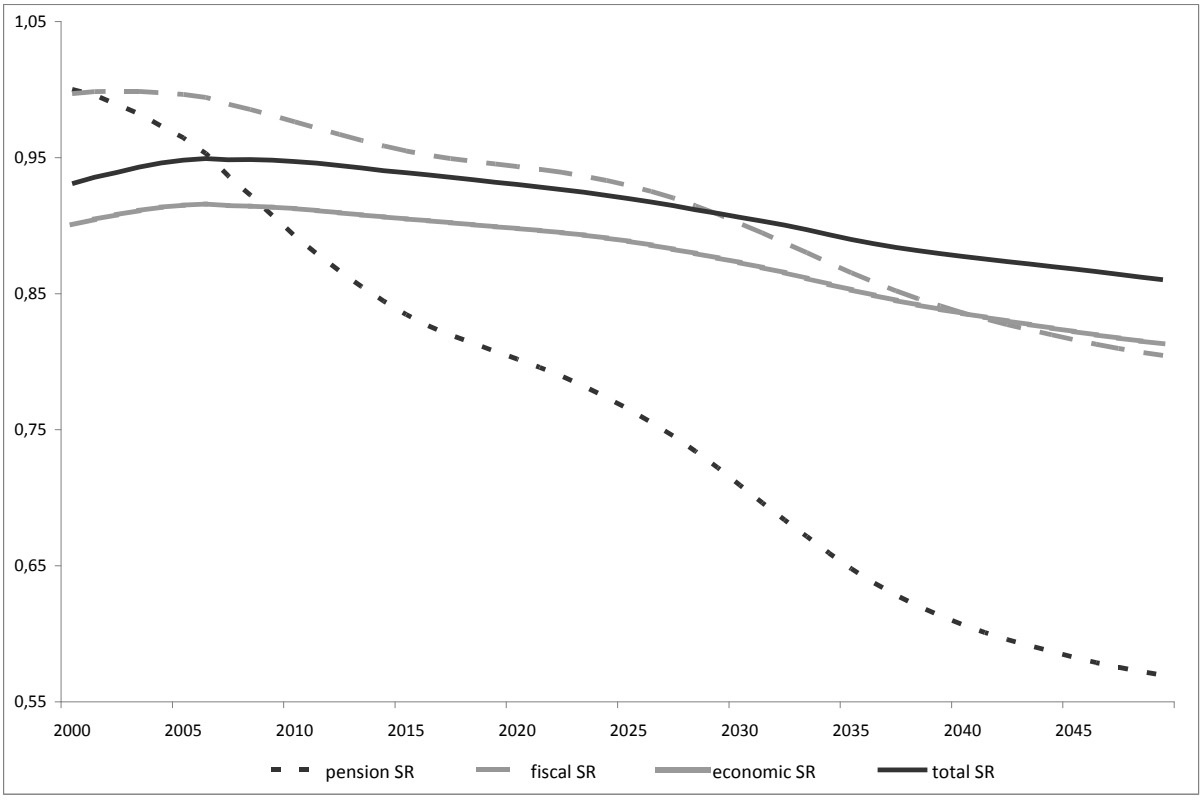
The total support ratio has a less dramatic decrease. The gap in the effective number of workers and consumers in the combined NTA and NTTA is 7 percent in 2000, which would increase to 14 percent by 2050 should the age profiles of labour and consumption remain in their base-year shape. The slower pace of decrease reveals some labour reserves in the

[1] The method of National Transfer Accounts was established by Lee (1994a,b). The Population Division of the United Nations has recently released a revised Manual (United Nations 2013). Lee and Mason (2011) present a comprehensive introduction to the method, including theoretical foundations, comparative results and a wide range of country-studies.

[2] Labor income is identified with the following National Accounts entries: compensation of employees, the labor share of mixed income and the labor share of taxes on products less subsidies. Consumption consists of individual as well as collective consumption expenditures less the consumption share of taxes on products.

[3] The survey was conducted by the Hungarian Central Statistical Office. The sample represents the population aged 15-84 years living in private (that is, non-institutional) households. Data were collected by interviews with people who were selected by a three-stage stratified sampling procedure. The interviews referred to the previous day. Interview dates represented the four seasons and the days of the week.

household. Thus, if unpaid household labour is also taken into account, the decline is less dramatic, exposing a working potential of older people, in particular of younger retirees. These findings are in line with the recent conclusions of Börsch-Supan (2013), who showed that the quickly falling productivity after youth is a myth and argue that the level of productivity can be significantly increased through health and education investments and well designed economic policy.



Source: Authors' calculation.
Notes: pension SR: rate of effective number of contributors to effective beneficiaries; fiscal SR: rate of effective tax payers to effective beneficiaries; economic SR: rate of effective workers to effective consumers (only national income); total SR: rate of effective workers to effective consumers (national income and household labor combined). Projections are based on age profiles prevalent in 2000.

Figure 1: Projected support ratios in the public pension system, the general government, the national income and the total economic product, Hungary, 2000

We extend this generalization to two other intergenerational measures by incorporating time transfers into the reallocation system. We introduce a generalized version of the Benefit Generosity Ratio (BGR, Miller 2010) or Elderly Bias of Social Spending (EBiSS, Vanhuysse, 2013), two similar indicators measuring the generational asymmetry of public expenditures; and the Lee arrow (Lee 1994a,b), which indicates how "old" a reallocation pattern is. We demonstrate that incorporating production and consumption of unpaid household labor largely rewrites the conclusions drawn by these indicators.

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