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Sweden: Adjoining the Guarantee Pension with NDC

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Abstract: This paper analyzes old-age incomes in Sweden from a pension policy perspective, focusing on both the economic position of elderly citizens and the redistributive effects of the pension system's different parts. The empirical analyses show that each subsequent cohort that reaches retirement age faces higher relative poverty risks than previous cohorts. The relative decline in the value of the guaranteed minimum pension vis-à-vis the real income growth of wage earners brings to the forefront the issues of indexation of the guarantee and the ceiling on the means-tested housing benefits – i.e., the basic safety net for pensioners.

Keywords: Old-Age Poverty, Income Inequality, Redistribution, Pension Benefits, NDC

JEL codes: H55, I38, D63

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Abbreviations and Acronyms

DC	Defined Contribution
FDC	Financial Defined Contribution
HEK	<i>Hushållens ekonomi</i>
NDC	Notional Defined Contribution
OECD	Organisation for Economic Co-operation and Development
SEK	Swedish Kronor

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1. Introduction

The Swedish pension system received substantial international recognition when it was introduced in the mid-1990s. The earnings-related benefits, composed of the notional defined contribution (NDC) pension (*inkomstpension*) and the financial defined contribution (FDC) pension (*premiepension*), were left outside of the state budget, and established a direct link between what people pay during their working lives and the pensions they receive in retirement. Consequently, costs should not be passed on to future generations. Nonetheless, the system also included redistributive components intended to raise the incomes of the poorest elderly who were not able to allocate sufficient income-related contributions to secure an acceptable pension. These low-income targeted components, which consist of the guaranteed minimum pension (*garantipension*), the housing supplement (*bostadstillägg för pensionärer*), and social assistance (*äldreförsörjningsstöd*), were left in the state budget. Whereas the guaranteed minimum pension is tested only against the NDC and FDC schemes, social assistance and the housing supplement are means-tested more broadly vis-à-vis other income, including income from capital (or assets).

The new pension system has been in place for roughly two decades, which offers ample opportunity to study its effects on the Swedish income distribution. This paper applies a policy perspective on old-age incomes in Sweden, focusing on both the economic positions of elderly citizens and the redistributive effects of the pension system. It analyzes poverty trends among the elderly, as well as how income inequalities in old age have developed since introduction of the new pension system. Developments among the elderly are contrasted with those of the working-age population. The empirical analyses are based on the most up-to-date micro-level income data provided by Statistics Sweden. The data are from HEK (*Hushållens ekonomi*), which includes a sample of register data on incomes at individual and household level, coupled with survey data about household types and other characteristics of the sampled population. The total sample size varies across years and

includes between 9,000 and 19,000 households annually. The sampling frame is at the individual level, to which household-level data from registers are later added.

The reorganization of Swedish old-age pensions in the mid-1990s was largely motivated in politics by the aging of the population and the financial viability of the old system (Könberg, Palmer, and Sundén 2006). The ability to effectively control expenditures and provide incentives for long working careers by linking contributions to lifetime earnings was a clear advantage of the new system, including the prominent defined contribution (DC) components. However, one major challenge was how to balance concerns regarding financial and social sustainability in a DC framework. Whereas the former is related to costs and affordability of future pensions, the latter links to issues of low income, economic hardship, and inequality, as addressed in this paper (Grech 2013, 2014). Financial sustainability was already high on the political agenda at the onset of the major pension reform in the late 1990s. Concerns regarding social sustainability are more recent, and have only influenced the Swedish pension policy discourse in the last few years. The Pensions Working Group, representing all parties in the Parliament at the time of the introduction of the new DC system, proposed that the instruments for regulating low income in old age – the guaranteed minimum income and the housing supplement – should be automatically indexed. It was finally decided that only the guaranteed minimum pension was to be indexed, and in this particular case only to prices.

Although the Swedish pension system survived its first two decades without any major changes, there have been some adjustments and smoothening of the automatic balancing mechanisms in the indexation of the income pension to economic developments and the general income growth (European Commission 2018a). Despite these changes, which were intensified in 2010 and have continued stepwise, concerns remain that the incomes of current pensioners are falling behind the average income growth (Social Ministry 2011). Other adjustments have primarily concerned the fully funded premium pension, including strengthened regulation and improved consumer protection. Additional steps in this

direction are suggested, although they are not likely to significantly affect current pensioners.

The guaranteed minimum pension, paid to those with insufficient contributions, the housing supplement, and social assistance have been largely unchanged since their introduction. Nonetheless, low benefit take-up and inadequate indexation have recently raised concerns about the reemergence of old-age poverty and increased economic difficulties of elderly people with insufficient contributions for income-related pension benefits, including many women and elderly migrants (Social Ministry 2016). This paper examines the consequences of almost two decades without any major reforms of minimum pension benefits, considered here to be essential components of a well-functioning pension system.

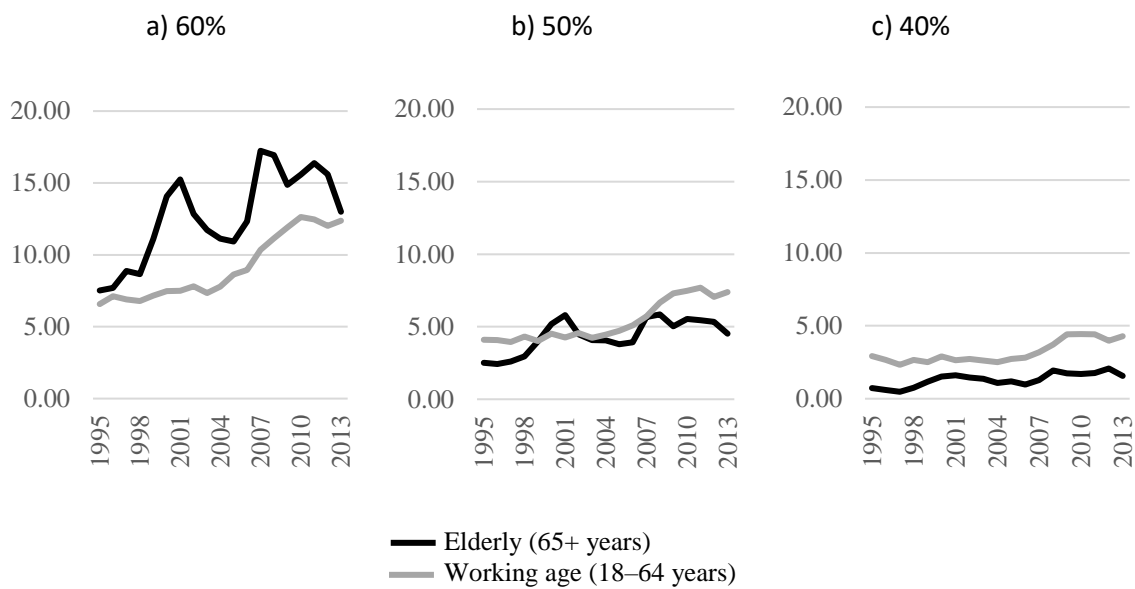
The study is divided into three sections. Section 2 analyzes developments in low-end incomes among the elderly and identifies some underlying characteristics that increase the risk of being poor in old age. Section 3 addresses the issue of redistribution and analyzes the extent to which old-age pensions reduce poverty. It also provides an analysis based on synthetic cohorts of elderly people, thus illustrating how incomes and poverty risks change as pensioners are growing older. Section 4 is devoted to the related, but somewhat broader, issue of income inequality, focusing first on developments since the mid-1990s, and second on the contribution of public pensions to income differences in old age. Section 5 briefly discusses the results and concludes.

2. Poverty

Poverty is complex to conceptualize and measure. Standard measures of poverty in rich countries typically apply a relative perspective on economic hardship and evaluate whether incomes are enough to maintain an average (or close to average) standard of living that in theory should allow people to participate in society (Townsend 1979). Figure 2.1a-c shows relative income poverty among the elderly (65 years and over) in Sweden for the years 1995–2013. As reference, the figure also shows poverty rates for the working-age

population (18–64 years). Since relative income poverty is sensitive to the yardstick used to define when households are poor, different poverty thresholds are used, for each year expressed as certain fractions of the median equivalized disposable household income in the total population. People in households with an income below 40 percent, 50 percent, or 60 percent of this median are considered relatively income poor. The higher poverty threshold is used by the European Commission to monitor social inclusion processes in member states (i.e., the so-called “at-risk-of-poverty,” or AROP, threshold). To adjust incomes for economies of scale within households, household income is divided by the square root of household size. All analyses apply sampling weights.

Figure 2.1a-c: Relative income poverty 1995–2013 in the elderly population (65+ years) and among those in working age (18–64 years) at various thresholds



Source: HEK.

At the 60 percent threshold, around 13 percent of those aged 65 and over were at risk of relative poverty in 2013. This was almost on par with poverty in the working-age population. However, for most of the period, poverty (using the 60 percent threshold) was substantially higher among the elderly than in the working-age population, although relative income poverty among the elderly declines substantially at lower poverty thresholds. At the 50 percent poverty threshold, old-age poverty drops to 5 percent. At the

40 percent poverty threshold, less than 2 percent of the elderly are at risk. At these very low levels of income, poverty was lower among the elderly than in the working-age population throughout most of the observation period. Thus, in terms of more severe forms of economic hardship, elderly persons in Sweden seem to be rather well protected. This result corroborates other findings in the literature showing that the share of materially deprived people above 65 years is very low in Sweden (Radoslaw and Asghar 2016). In terms of nonmaterial living conditions, not much research exists on the Swedish elderly. However, at least one recent study challenges common ideas in the international literature that loneliness is becoming more prevalent among the elderly (Dykstra 2009). In Sweden, no increase in loneliness among older people is found in the last two decades, nor do more recent elderly cohorts report loneliness to a greater extent than previous cohorts (Dahlberg, Agahi, and Lennartsson 2018).

Focusing on developments among the elderly over time, their relative income position has deteriorated quite substantially since the mid-1990s, irrespective of which poverty threshold is used for analysis. At the 60 percent poverty threshold, poverty among the elderly has almost doubled. Three periods with extraordinary developments stand out. The first one is the rise in old-age poverty between 1995 and 2000. Over these years, incomes in the working-age population increased more than twice as fast as those of the elderly. Whereas the equivalized median disposable income in the working-age population (18–64 years) increased by 19 percentage points, it increased by only 8 percentage points among those aged 65 and over. As a consequence, the poverty threshold also increased much faster than old-age incomes, thus throwing a growing number of elderly people into poverty (Table 2.1).

Table 2.1: Median equivalized household disposable income in different age groups, 1995–2013

	Total population		Elderly (65+ years)		Working age (18–64 years)	
	SEK	Percentage change	SEK	Percentage change	SEK	Percentage change
1995	121289		100433		129278	
1996	123329	1.7	102396	2.0	130965	1.3
1997	126400	2.5	102685	0.3	135620	3.6
1998	128398	1.6	103759	1.0	137736	1.6
1999	135031	5.2	107204	3.3	143851	4.4
2000	142352	5.4	108367	1.1	153325	6.6
2001	150113	5.5	112366	3.7	163190	6.4
2002	156968	4.6	119509	6.4	170770	4.6
2003	161077	2.6	123962	3.7	174860	2.4
2004	165861	3.0	127164	2.6	179754	2.8
2005	171176	3.2	134385	5.7	184766	2.8
2006	179507	4.9	138961	3.4	194309	5.2
2007	195269	8.8	145860	5.0	211511	8.9
2008	203187	4.1	154065	5.6	220357	4.2
2009	205192	1.0	158420	2.8	222161	0.8
2010	210219	2.4	162978	2.9	228164	2.7
2011	219925	4.6	170288	4.5	240131	5.2
2012	225067	2.3	176256	3.5	244547	1.8
2013	227740	1.2	181703	3.1	246346	0.7

Source: HEK.

The second interesting result in Figure 2.1 is the sharp rise in old-age poverty in 2007. This increase is most likely due to the introduction of an earned income tax credit, which raised

the median income used in the calculation of poverty thresholds. The earned income tax credit does not apply to old-age pensions. After the introduction of the earned income tax credit in 2007, the equivalized median disposable household income in the working-age population increased by 9 percentage points in a single year, versus only 5 percentage points among the elderly. Despite the introduction and expansion of a special tax allowance for persons aged 65 and above, discussion is ongoing about the different tax treatment of earned income and pension income in Sweden. As of January 2018, taxes on old-age pensions were again reduced, and it is estimated that around 75 percent of the elderly will gain up to SEK 5,000 from this reform. Other things equal, this lowering of taxes imposed on pensions will reduce relative income poverty among the elderly, although the exact redistributive consequences of the tax reform are difficult to assess at this stage.

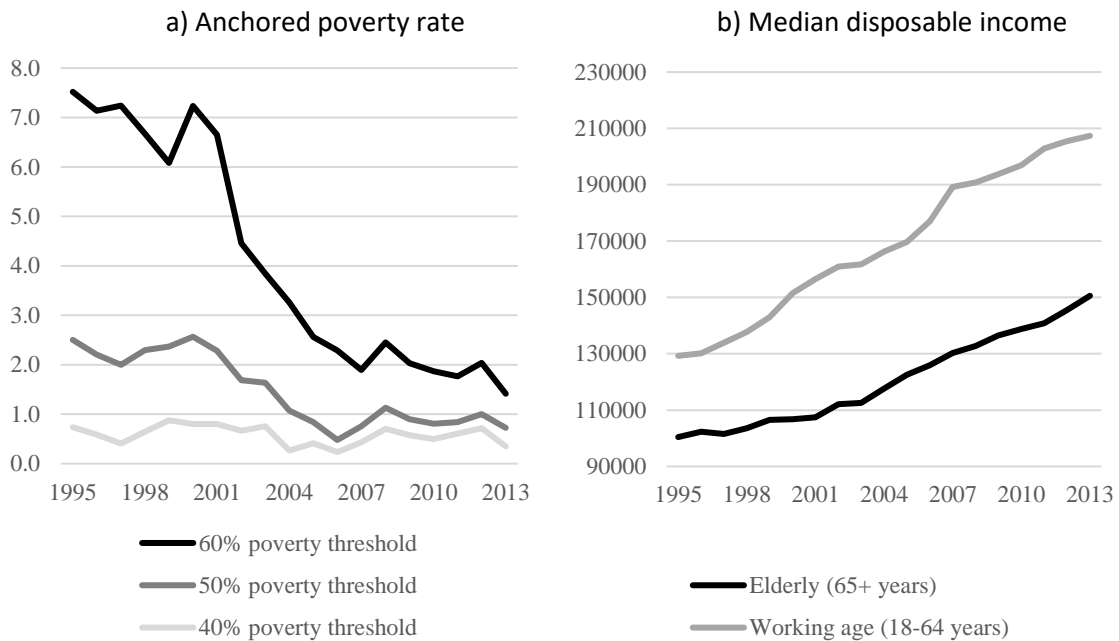
The third conspicuous period in Figure 2.1 **Error! Reference source not found.** is the decline in old-age poverty in the early 2000s, most noticeable at the 60 percent poverty threshold. It is tricky to provide a solid explanation for this development. One tentative explanation is the rather substantial rise in unemployment in these years, which supposedly resulted in a slowdown of the general income growth. Between 2001 and 2006, incomes among the elderly actually increased faster than in the working-age population (Table 2.1). Whereas the equivalized median income among the elderly increased by 24 percentage points over these years, it increased only by 19 percentage points among those in economically active years. According to Eurostat, the unemployment rate in Sweden increased from 5.8 percent to 7.7 percent between 2001 and 2005. Notably, when economic hardships declined among the elderly in the early 2000s, relative income poverty increased in the working-age population, from 7.5 percent in 2001 to 8.6 percent in 2005.

Relative income poverty only reveals how certain groups in society fare compared to the general population, irrespective of whether their incomes in real terms (i.e., net of inflation) have in fact increased. The so-called anchored poverty rate provides a complementary account of developments in old-age incomes. It captures changes in poverty while keeping

developments in living standards constant. Anchored poverty rates are particularly useful in periods of rapid economic transformations when the relative income position of poor people may be quite stable due to similar shifts in median incomes, but where low-incomes have indeed changed, either due to economic growth or because of contraction (Atkinson et al. 2002).

Figure 2.2a-b shows the anchored poverty rate among the Swedish elderly (65 years and above) for the period 1995–2013. The poverty thresholds are set at 40 percent, 50 percent, and 60 percent of the equivalized median disposable household income in the total population in 1995. This median income is then updated for subsequent years according to movements in consumer prices. Thus in this analysis, the poverty threshold is independent of changes in the general income growth. It is only affected by movements in prices. The median equivalized disposable income among the elderly (65 years and above) in constant 1995 prices is also plotted, as well as the similar median for the working-age population (18–64 years). The pattern is quite striking. While relative income poverty increased among the elderly (Figure 2.1), the anchored poverty rate declined substantially, particularly up to 2007, after which it remained more stable. The decline in the anchored poverty rate is most pronounced at the highest (60 percent) poverty threshold, but also visible at lower poverty thresholds. Between 1995 and 2013, the yearly increase in prices was around 1.2 percent. The corresponding yearly increase in median incomes among the elderly was around 3.6 percent (not shown). It can therefore be concluded that for the period 1995–2013, the purchasing power of the elderly improved. This is also illustrated by the sharp increase in the real value of median disposable income among the elderly. Notably, however, since the median income among those in working age increased even faster, the relative income position of the elderly deteriorated (as indicated above in the analyses of relative income poverty).

Figure 2.2a-b: Anchored old-age poverty and equivalized median disposable income in different age groups in constant 1995 prices (SEK), 1995–2013



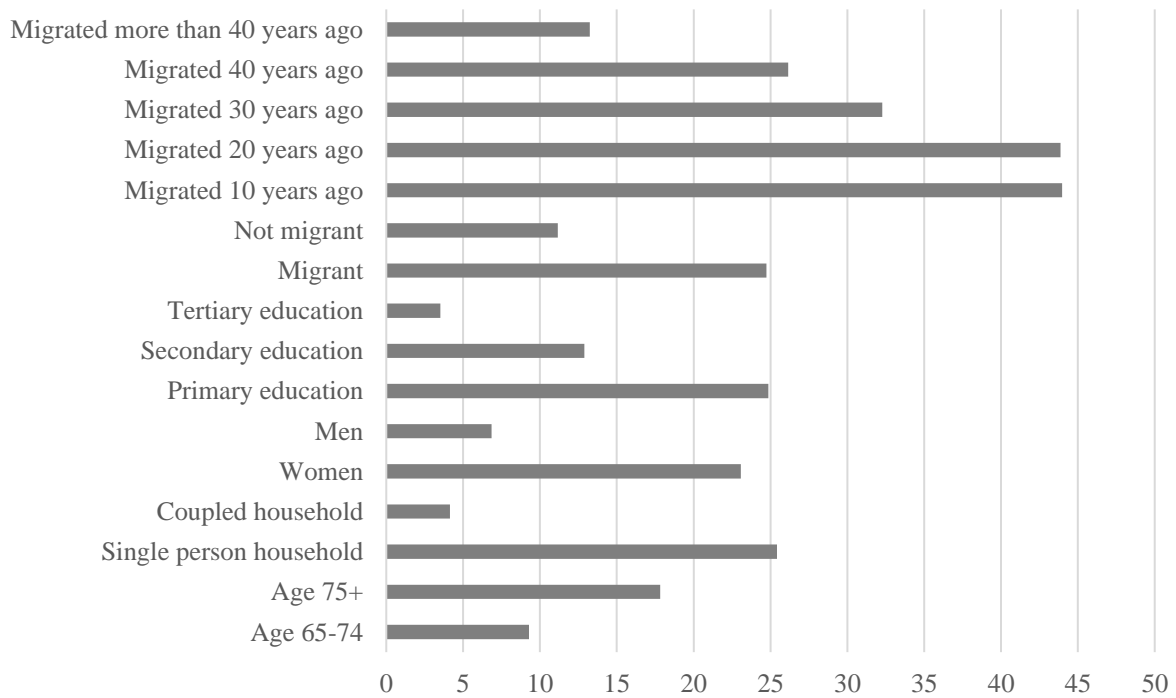
Source: HEK.

Poverty risks are not evenly distributed in society; neither in the total population, nor among the elderly. Figure 2.3 shows relative income poverty in different elderly groups, measured at the 60 percent poverty threshold in 2013. Since the scale of equivalence used in poverty measurement may affect the results, Figure A11.1 in the appendix shows similar decomposed poverty rates using the modified OECD (Organisation for Economic Co-operation and Development) equivalence scale, instead of the square root of household size described above. The modified OECD scale was proposed by Haagenars et al. (1994) and is the preferred equivalence scale of Eurostat (the statistical agency of the European Union). It assigns a value of 1.0 to the household head, a value of 0.5 to each additional adult member, and a value of 0.3 to each child. This change in equivalence scale hardly affects the interpretation of the results.

Relative income poverty is much higher among the oldest (75+) than among those aged 65–74. Relative income poverty among the elderly is also concentrated among single persons. Slightly more than 25 percent of single persons 65 years and above are relatively income

poor, compared to a poverty rate of less than 5 percent among elderly coupled households. Elderly women are in a particularly vulnerable position, with a poverty rate of around 22 percent. Relative income poverty among elderly men is substantially lower, around 7 percent. Observed gender differences in old-age incomes have brought about a discussion on the generosity (including indexation) of guaranteed pensions, incomplete take-up of housing supplements, and the role of survivors' benefits and other compensatory measures. The discussion is also centered on issues related to unequal pay and differences in working careers of men and women, which tend to spill over to the pension system and influence the formation of incomes in old age (Möhring 2014; The Swedish Social Insurance Inspectorate 2017).

Figure 2.3: Relative income poverty (60% poverty threshold) by household type, age, gender, education, and migration in the elderly population (65+ years), 2013



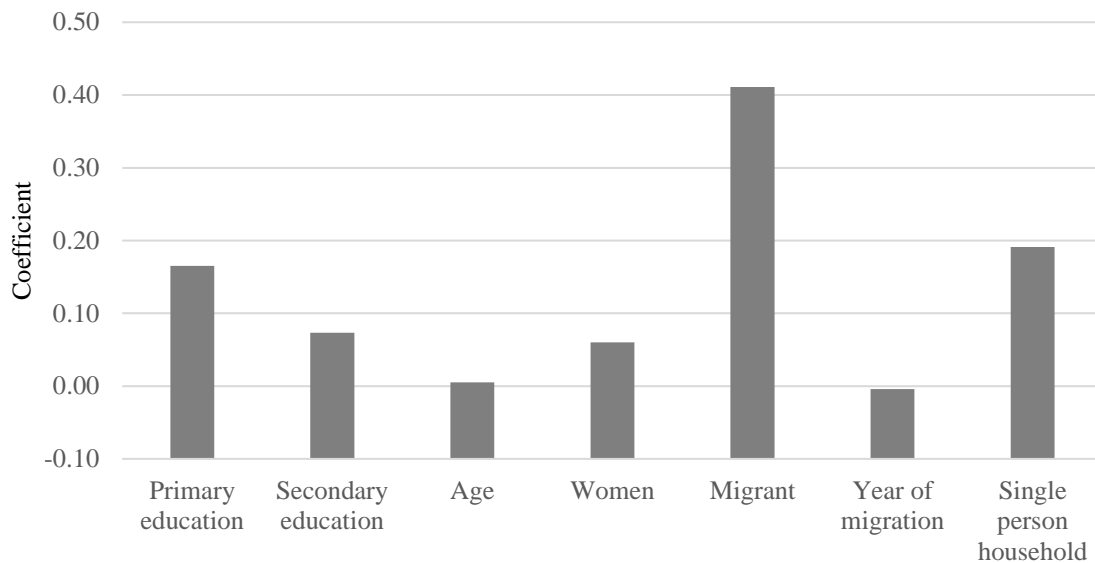
Source: HEK.

The results also clearly illustrate the role of education for old-age incomes, something that probably reflects differences in earnings and thus pension contributions during economically active years. Relative income poverty is almost doubled among elderly people

with only primary education (around 25 percent), compared to those with secondary education (around 13 percent). Poverty drops even more among the elderly with tertiary education (around 3 percent). Another group with high poverty risks is elderly migrants, especially if they moved to Sweden as adults. More than 40 percent of the elderly who moved to Sweden in the latest two decades can be defined as relatively income poor. Notably, the relative income position of elderly migrants and those with more than 40 years of residence in Sweden is around 13 percent, and on par with the poverty rate of all elderly citizens.

The analysis above does not capture the net contribution of each risk factor to old-age poverty, which can be calculated utilizing a simple multiple regression framework. A multiple regression uses two or more variables and calculates their relative contribution in predicting the value of an outcome of interest. Figure 2.4 shows the beta coefficients of a linear probability model using old-age poverty (65 years and above) at the 60 percent income threshold as the outcome of interest. The analysis is confined to the year 2013, and all coefficients are statistically significant at the 1 percent level. The value of each coefficient can easily be transformed into percentage points of change in probability by multiplying it by 100. The beta coefficient of primary education is 0.165. Thus, the probability of elderly people with only primary education being relatively income poor is 16.5 percentage points higher than those with tertiary education (the reference category).

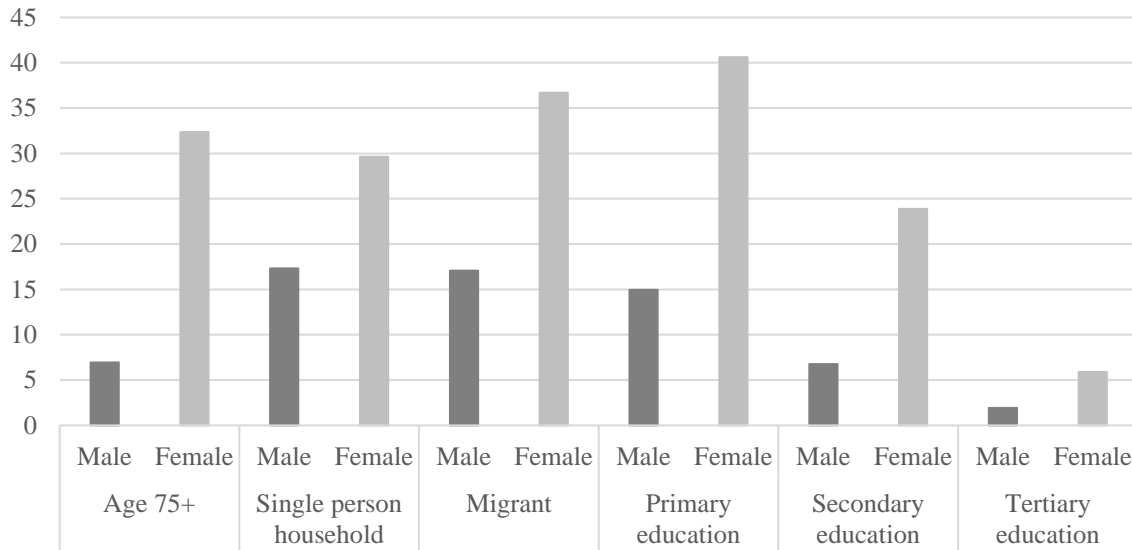
Figure 2.4: Linear probabilities of relative income poverty (60% threshold) in different elderly (65+) risk groups, 2013



Note: Unstandardized beta coefficients in parenthesis. All coefficients are statistically significant at $p < 0.000$.

Besides education, migration background and household composition are also strongly associated with old-age poverty. Notably, the net effect of gender is much smaller in comparison, which is related to substantial overlaps between risk factors. Figure 2.5 therefore shows relative income poverty by gender in different elderly risk groups, using the 60 percent poverty threshold. Old-age poverty is indeed strongly gendered, as the poverty rate of elderly women is much higher than that of elderly men across all identified risk factors. For example, whereas the poverty rate of elderly men hardly changes as they grow older (compare Figure 2.3 above), the poverty rate increases substantially among elderly women. Also in terms of education, migration background, and household type, elderly women have substantially higher poverty risks than elderly men.

Figure 2.5: Relative income poverty (60% threshold) by gender in different elderly (65+ years) risk groups, 2013



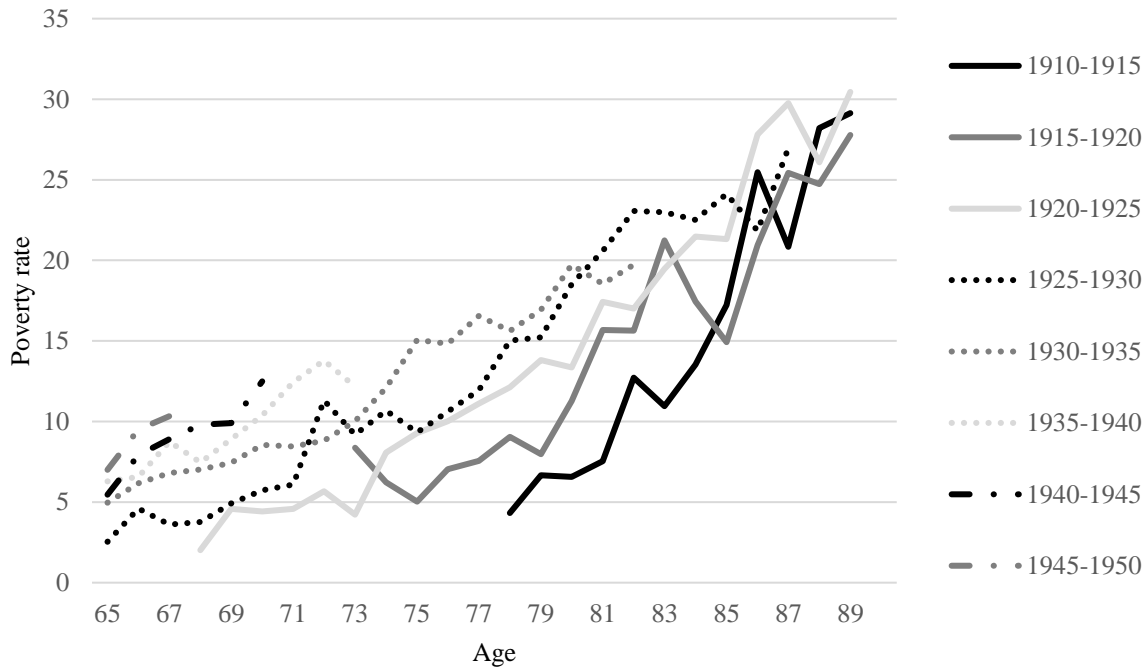
Source: HEK.

The observation above that poverty risks among the elderly increase with age brings the issue of cohorts to the forefront of analysis. Figure 2.6 shows the association between age and relative poverty separately for different elderly cohorts, using the 60 percent poverty threshold. The analysis is based on so-called synthetic cohorts (Shorrocks 1975; Deaton 1985), where different cohorts are formed defined by year of birth and followed across successive waves of data. Although cohort membership is fixed over time, the same individuals are not followed as they grow older. Since the analysis is based on successive and independent cross-sections, the composition of each synthetic cohort may actually change over time, something that of course complicates interpretation of the results. Nonetheless, two findings are particularly noteworthy.

First, younger cohorts face consistently higher poverty risks than older cohorts. Thus, when cohorts reach retirement age, their poverty risks tend to be higher than those of the previous cohort. For instance, when the cohort born between 1925 and 1930 reached retirement age (65 years), around 2 percent were at risk of poverty. By comparison, around 6 percent were poor when they reached retirement age in the cohort born one decade later (between 1935 and 1940). These initial differences in poverty risks between cohorts at the

onset of retirement are not recovered at later ages, but more recent cohorts quite consistently continue to face higher poverty risks than older cohorts.

Figure 2.6: Relative income poverty (60% poverty threshold) in different synthetic cohorts according to age

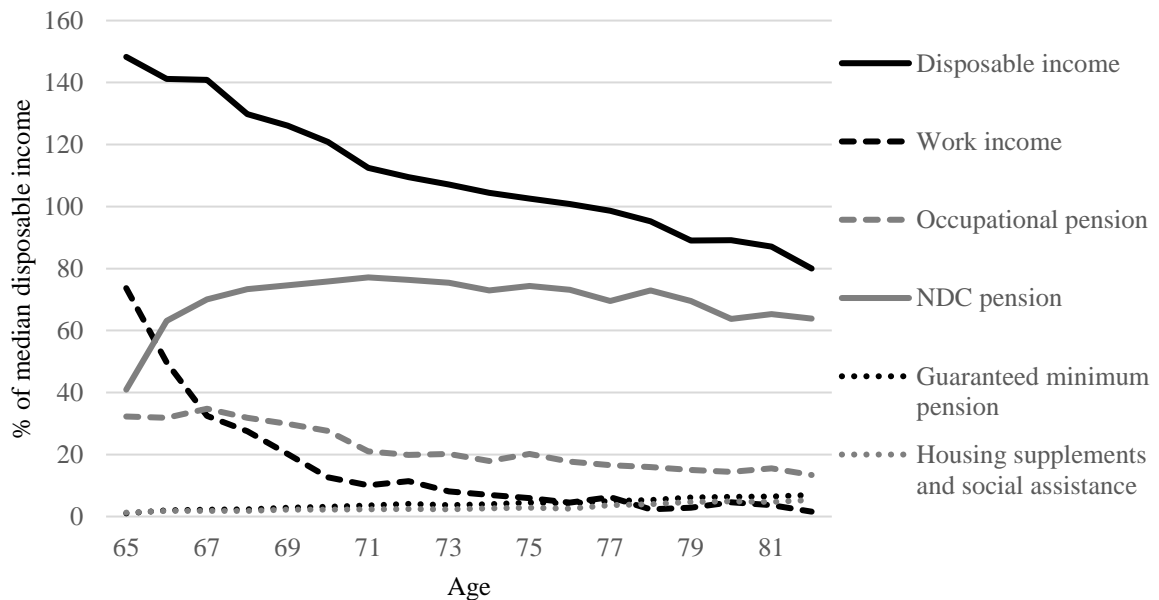


Source: HEK.

Second, for each elderly cohort, poverty increases with age. The drivers of this relationship are complex. Notwithstanding that there may be compositional changes, Figure 2.7 shows changes in different income components as a synthetic cohort of elderly people born between 1930 and 1950 is growing older. Besides developments in household disposable income, the figure also shows changes in work income, the NDC pension, occupational pensions, the guaranteed minimum pension, as well as housing supplements and social assistance. It should be noted that this list of income components is not exhaustive. For ease of interpretation, capital income, private pensions, the FDC premium, and survivors' benefits are not included. Work income includes salaries and wages, as well as income from self-employment. The NDC pension category includes the supplementary pension (*tilläggs pension*) paid to those born before 1954, and who have accumulated pension rights in the old system. The guaranteed minimum pension includes benefits paid to those born

before 1938 and who were eligible for the people's pension (*folkpension*) in 2002. Each income component is shown as a percentage of median household disposable income. All incomes are adjusted for household size and composition using the same square root scale as above.

Figure 2.7: Developments in the income packages of a synthetic cohort born 1930–1950 according to age (% of median equivalized disposable household income in total population)



Source: HEK.

As expected, disposable income declines quite markedly as the cohort grows older. Before age 70, the decline in disposable income is mostly a result of a sharp reduction of work income, but also due to a decline in occupational pensions. In Sweden, people can choose how they want to receive their occupational pension. Although most pensioners choose to receive smaller lifelong payments, an increasing share of the elderly opt for a much shorter period, which typically increases payments during the first five or ten years of retirement (Hagen 2017).

After age 70, there is a slight, but noticeable, decline in the NDC pension, which is not fully compensated by corresponding increases in the pension guarantee or the housing

supplement (including social assistance). Notwithstanding compositional changes, it should be noted that the NDC pension is not fully indexed to the growth in average incomes. An amount corresponding to 1.6 percentage points is deducted from the annual percentage increase in the so-called income index, which is used each year by the pension authority to adjust the value of the NDC pension. Over time, there is thus a gradual erosion of the NDC pension vis-à-vis the growth in average incomes. The deduction of 1.6 percentage points does not apply to the supplementary pension. The indexation of the NDC pension may also be discounted in periods of economic turmoil as a result of financial unbalances in the public pension system. In extreme situations, pensions may even be reduced. During the introduction of the new pension system, it was expected that this automatic balancing of the NDC pension would hardly ever be activated. However, the automatic brake in the Swedish pension system has already reduced NDC pensions on three occasions – in 2010, 2011, and 2014.

Insufficient indexation of the guaranteed minimum pension has resulted in quite a substantial erosion of benefits compared to general living standards. In this analysis, the low-income targeted character of the guaranteed minimum pension is likely to disguise much of this relative decline in benefits. It should therefore be noted that between 2003 and 2017, the guaranteed minimum pension for a single person increased by 16 percent (from SEK 6,852 per month to SEK 7,952 per month). By comparison, average gross salaries (according to the OECD) increased by 47 percent (from SEK 24,481 per month in 2003 to SEK 35,987 per month in 2017). In net amounts (i.e., after taxes), the difference in the growth of the guaranteed minimum pension and average incomes is probably even greater due to the more favorable tax treatment of work income noted above.

The housing supplement has eroded as well, as housing costs have increased faster than the ceiling above which no benefits are paid. In 2003, around 25 percent of the beneficiaries of the housing supplement had rents above this ceiling. In 2017, this share increased to slightly above 50 percent. In 2018, the government increased the ceiling, which is expected to

lower the share to around 35 percent (Social Ministry 2018). This analysis lumps together the housing supplement and social assistance. However, it should be mentioned that the lion's share of incomes in this category is made up of the housing supplement for elderly people. In 2016, less than 1 percent of Swedish pensioners received social assistance, the clear majority (around 93 percent) of whom are migrants with incomplete access to the minimum guaranteed pension and housing supplements (PROP. 2017/18:1). Social assistance for the elderly has increased somewhat faster than the minimum guaranteed amount, but it has still fallen behind the growth in wages. Between 2003 and 2017, social assistance for elderly persons increased by about 32 percent (from SEK 4,162 per month for a single person in 2003 to SEK 5,499 in 2013). The discussion above indicates that an effective indexation of benefits is important to avoid eroded pension benefits. However, without panel data that observe incomes of the same person over time, it is difficult to analyze the extent to which indexation principles impair the effectiveness of the minimum guaranteed pension and other low-income targeted benefits to compensate for declines in other parts of the pension system.

3. Redistribution

This paper's goal to provide a policy perspective on old-age incomes makes it reasonable to focus on the issue of redistribution. Conceptually, pension policies can redistribute vertically between the rich and the poor, and horizontally over the life-course. Empirically, the analysis does not distinguish between these two forms of redistribution. The extent to which policy redistributes economic resources and reduces poverty is often assessed by comparing the shape of the income distribution before and after social transfers and benefits. To distinguish the effects of different types of policies, transfers and benefits are often ordered sequentially depending on at which stage of the distributive process from market to disposable income they are supposed to enter. The reduction in poverty is subsequently calculated at each step of the distributive process. Although intuitively powerful, this sequential method in poverty measurement and redistribution requires that

transfers and benefits enter the distributive process in a natural order. Otherwise, the results may be very misleading (Nelson 2003).

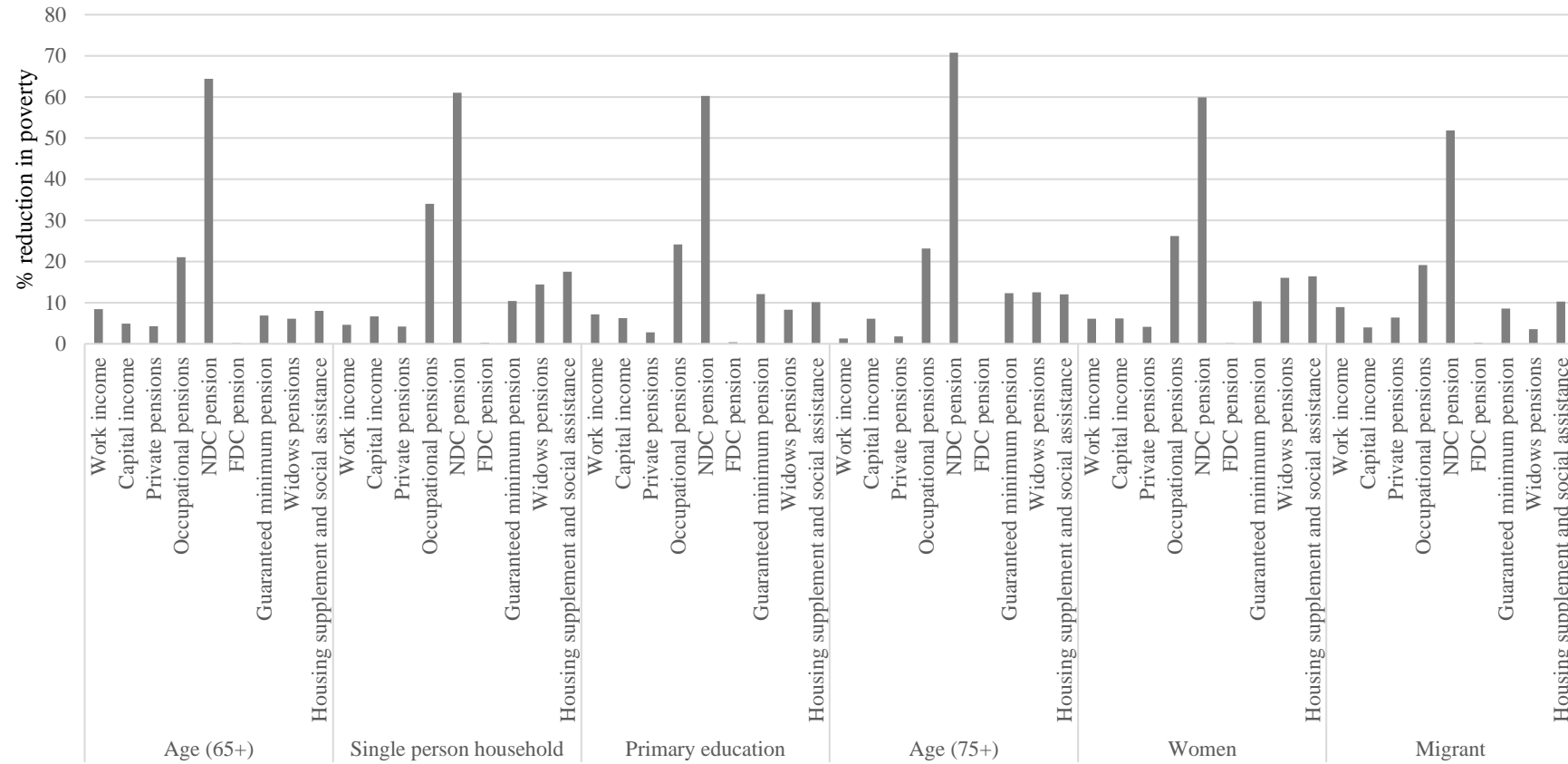
Since the ordering of transfers and benefits in the distributive process is very difficult to achieve in this case, a simpler marginal method is used. Redistribution is assessed by deducting transfers and benefits from disposable income, after which the poverty rate is recalculated. For example, in the case of the NDC pension, this income component is deducted from disposable income and the poverty rate recalculated. Redistribution is assessed by inspecting the difference between the poverty rate of disposable income less the NDC pension and the poverty rate of disposable income. This procedure is repeated for each component in the transfer and benefit package. For the sake of simplicity, transfers and benefits are gross of taxes. It should be noted that neither the marginal nor the sequential method is additive. Depending on the interplay between transfers and benefits in the distributive process, the sum of each component may be lower or higher than the total reduction in poverty. Although there are more complex methods of assessing how different parts of the transfer and benefit package redistribute incomes and additively contribute to the total reduction in poverty (Nelson 2004), the marginal method serves the purpose of providing a first analysis of the relative importance of different income components. In the counterfactual analyses below, any behavioral effects that may appear in the absence of policy are not estimated.

Figure 3.1 shows the extent to which different types of transfers and benefits reduce old-age poverty. Data are from 2013 and redistribution is calculated by using a poverty threshold corresponding to 60 percent of the equivalized median disposable household income in the total population. The benefit and transfer package is divided into private pensions, occupational pensions, the NDC pension, the FDC premium pension, the guaranteed minimum pension, survivors' benefits, and housing supplements (including social assistance). Occupational pensions, the NDC pension, the guaranteed minimum, and housing supplements (including social assistance) are defined and measured similarly as

above. The FDC premium is simply the fully funded component of the new pension system introduced in the mid-1990s, as noted above. Survivors' benefits are only paid to widows. The program was abolished in 1990 and is in the process of being phased out. For those currently receiving survivors' benefits, these will continue to be paid. Widows who got married before 1990 may still qualify for a survivors' benefit. All others, including men, may choose to add survivors' protection to their FDC premium pension, whereby benefits are transferred from the deceased spouse to the survivor. Similar types of survivors' protection may be added to occupational and private pensions. Capital income includes earned interests and dividends, as well as capital gains and losses. Redistribution is assessed among the elderly as a whole, and separately for major elderly risk groups.

The single most important factor for income redistribution is the NDC pension. Without this component, and everything else equal, old-age poverty would have been more than 60 percentage points higher. Occupational pensions come next with a reduction in old-age poverty by about 20 percentage points. The remaining transfers and benefits separately reduce poverty by less than 10 percentage points. Switching focus and analyzing poverty reduction in the old-age risk groups identified above, it is clear that the guaranteed minimum pension, survivors' benefits, and the housing supplement (and social assistance) become slightly more important. Particularly, this pattern is apparent among elderly women and elderly single-person households. Notably, the guaranteed minimum pension contributes slightly less to poverty reduction among migrants compared to the other old-age risk groups. This result is likely due to the design of the guarantee, as full benefits are only available for those with at least 40 years of residence in Sweden (from age 16). Three years of residence in Sweden are required to receive a partial guaranteed minimum pension.

Figure 3.1: Reduction of relative income poverty (60% threshold) attributed to different income components by elderly risk group, 2013

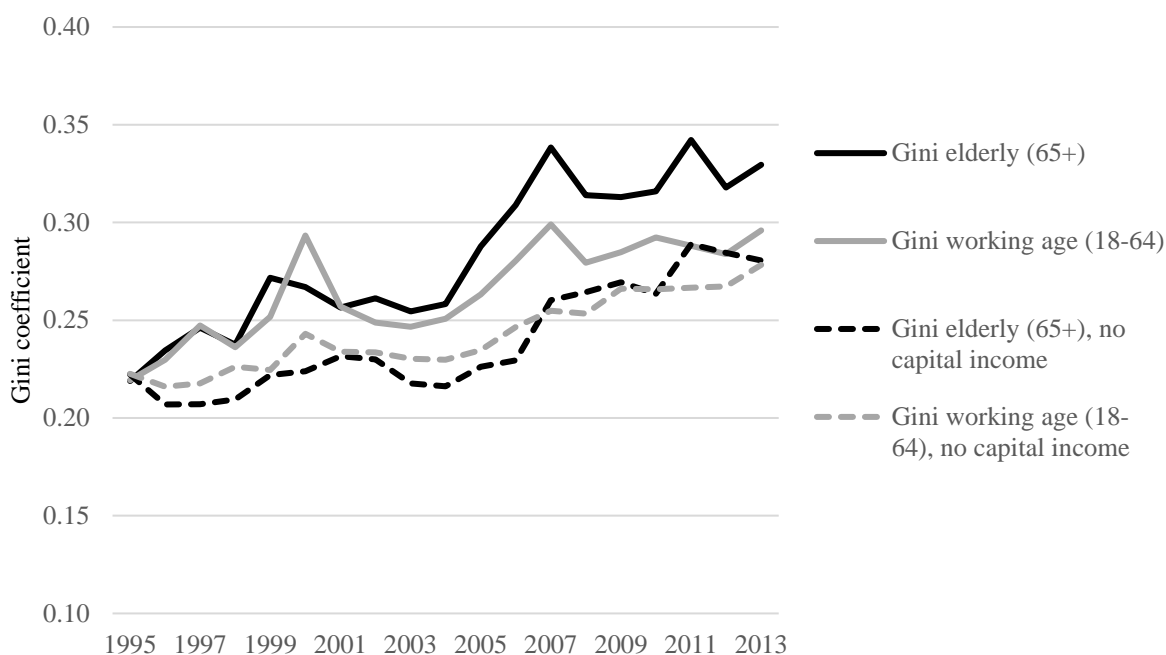


Source: HEK.

4. Inequality

Although relative poverty is closely linked to the larger issue of inequality, the focus is very much on developments in low-end incomes. This section broadens the analysis and takes into consideration the distribution of incomes above the poverty threshold. Figure 4.1 shows Gini coefficients of disposable income from 1995–2013. The Gini coefficient is a measure of statistical dispersion commonly used in analyses of income inequality. Gini coefficients normally vary between zero and one (values above one may be observed if some people have negative incomes). Gini coefficients close to zero resemble situations of near-perfect equality, where everyone has very similar incomes. A Gini coefficient of one reflects maximum inequality, where one person has all income. Income inequality is analyzed separately for the elderly (65 years and above) and the working-age population (18–64 years). Since capital income has been a main driver of income inequality in many rich countries (Atkinson and Piketty 2007), including Sweden (Roine and Waldenström 2008; Björklund and Jäntti 2011), Gini coefficients of disposable income are shown before and after capital income.

Figure 4.1: Income inequality 1995–2013: Gini coefficients of disposable income of elderly (65+ years) and working age (18–64 years) populations



Source: HEK.

Similar to developments in the working-age population, income inequality has increased among the elderly, particularly between 2003 and 2007. The rise in income inequality is not solely driven by changes in capital income, as the Gini coefficient continues to increase after capital income is excluded from the analysis. However, the rise in income inequality is slightly less dramatic after excluding capital income. Even though changes in (the distribution of) capital income contributed to making the incomes of the elderly more unequal, the evidence thus shows the relevance of focusing on a broader set of income sources.

For most of the period, and especially after 2000, incomes (including those from capital) were distributed more unevenly among the elderly than in the working-age population. This age-related difference in income inequality also became more pronounced. Income inequalities among the elderly and in the working-age population were quite similar in the mid-1990s. At the end of the period, in 2013, income inequality was clearly higher among the elderly than in the working-age population. Thus, income differences are reinforced in old age. To understand the drivers of these changes to inequality of old-

age incomes, the section next analyzes the extent to which different types of incomes add to income inequality, or reduce income differences in old age.

Table 4.1 shows the contribution of different income sources to inequality of old-age incomes at three cross-sections: 2003, 2007, and 2013. Two measures are calculated: the concentration coefficient and the income share of each income source (expressed as percentages). Multiplying the concentration coefficient and the income share provides an impression of how each income source affects inequality (Kakwani 1977; Lerman and Yitzhaki 1985). The concentration coefficient shows the distribution of each income source when households are ranked from high to low according to disposable income. The concentration coefficient varies between minus one and plus one. Positive values indicate that the income source concentrates in the upper half of the income distribution, and all else equal increases inequality. Negative values show that the income source concentrates in the lower half, and – ceteris paribus – reduces inequality. The income share simply shows the relative size of each income source in disposable income. A negative income share means that the component is deducted from disposable income (e.g., applies to taxes). A change in the concentration coefficient will have more profound consequences for inequality the larger the share of an income source in disposable income, and vice versa.

Table 4.1: Concentration coefficients and income shares of different income sources in the population 65 years and older (1995, 2005, and 2013), including and excluding capital income

a) Including capital income						
	Concentration			Income share (%)		
	coefficient					
	2003	2007	2013	2003	2007	2013
Work income	0.74	0.69	0.71	11.3	13.1	17.1
Capital income	0.74	0.81	0.84	13.5	29.4	20.2
Public pensions	0.10	0.09	0.07	84.4	68.2	62.0
<i>NDC pension</i>	<i>0.19</i>	<i>0.16</i>	<i>0.11</i>	<i>69.7</i>	<i>59.1</i>	<i>55.7</i>
<i>FDC pension</i>	<i>0.42</i>	<i>0.36</i>	<i>0.29</i>	<i>0.0</i>	<i>0.1</i>	<i>0.7</i>
<i>Survivors' benefit</i>	<i>-0.26</i>	<i>-0.35</i>	<i>-0.35</i>	<i>4.7</i>	<i>3.1</i>	<i>2.2</i>
<i>Guaranteed minimum pension</i>				<i>10.1</i>	<i>5.8</i>	<i>3.4</i>
Private pensions	0.55	0.50	0.42	9.6	8.0	7.4
Occupational pensions	0.48	0.45	0.44	19.3	17.7	21.7
Housing supplement (incl. social assistance)	-0.52	-0.60	-0.33	3.0	2.2	3.2
Taxes	0.36	0.41	0.43	-41.0	-38.6	-31.7
b) Excluding capital income						
	Concentration			Income share (%)		
	coefficient					
	2003	2007	2013	2003	2007	2013
Work income	0.76	0.76	0.72	12.8	17.4	20.7
Public pensions	0.10	0.09	0.07	95.6	90.0	74.9
<i>NDC pension</i>	<i>0.19</i>	<i>0.16</i>	<i>0.11</i>	<i>79.0</i>	<i>78.1</i>	<i>67.3</i>
<i>FDC premium</i>	<i>0.43</i>	<i>0.41</i>	<i>0.31</i>	<i>0.0</i>	<i>0.2</i>	<i>0.9</i>
<i>Survivors' benefit</i>	<i>-0.28</i>	<i>-0.38</i>	<i>-0.37</i>	<i>5.3</i>	<i>4.1</i>	<i>2.6</i>
<i>Guaranteed minimum pension</i>	<i>-0.34</i>	<i>-0.42</i>	<i>-0.30</i>	<i>11.3</i>	<i>7.7</i>	<i>4.1</i>

Private pensions	0.54	0.50	0.40	10.9	10.6	9.0
Occupational pensions	0.48	0.47	0.44	21.8	23.3	26.2
Housing supplement (incl. social assistance)	-0.44	-0.52	-0.24	3.4	2.9	3.9
Taxes	0.29	0.29	0.31	-44.5	-44.2	-34.7

Source: HEK.

The analysis begins by dividing disposable income into seven different components: work income, capital income, public pensions, private pensions, occupational pensions, housing supplements (including social assistance), and taxes (Table 4.1a). The results clearly show why income inequality has increased among the elderly. Although the distributive profile of public pensions became more equalizing to disposable income (the concentration coefficient moved somewhat closer to zero), their share in disposable income decreased substantially. This decline in public pensions is particularly evident between 2003 and 2007 when the rise in income inequality among the elderly was pronounced. Meanwhile, other income sources with less egalitarian distributive profiles (larger positive concentration coefficients) increased their shares of disposable income, causing income inequality to rise. This particularly concerns developments in capital income, whose income share increased from 13.5 percent in 2003 to 29.4 percent in 2007. The decline in the income share of taxes between 2003 and 2007 is most likely associated with the substantial increase in capital income, which is taxed at a lower rate than work income.

Table 2a also shows a more detailed disaggregation of income inequality, focusing on different components of the public pension system. Similar to the previous analysis, the NDC pension, the FDC premium pension, survivors' benefits, the guaranteed minimum pension, and housing supplements (including social assistance) are separated. Since the guaranteed minimum pension and housing supplements (including social assistance) are pension- and income-tested, respectively, they obviously have distributive profiles that are more pro-poor than the NDC and FDC pensions (i.e., the concentration coefficient is closer to zero or negative). Between 2003 and 2007, the guaranteed minimum pension and housing supplements (including social assistance) became increasingly targeted at

elderly people with very low incomes (the associated concentration coefficients became increasingly negative). Considering the guaranteed minimum pension, it is evident that the equalizing effect of this change is circumscribed by a substantial reduction in the relative size of benefits.

The increased low-income targeting of the guaranteed minimum pension, as well as reductions in its income share, are most likely due to the insufficiency of price indexation in an overall economic context of real earnings increasing at around 2 percent per year, leading to the gradual erosion in the relative value of benefits, noted above. As a result, a larger share of elderly persons with low incomes is above the threshold used to determine eligibility for the guaranteed minimum pension. Data from the Swedish Pension Authority (*Pensionsmyndigheten*) show that the share of pensioners receiving the guaranteed minimum pension declined from around 42 percent in 2010 to 31 percent in 2017.

The FDC premium pension is currently such a small part of the public pension system that it hardly has an effect on inequality. Currently, the premium pension has a distributional profile that is less equalizing (has a larger concentration coefficient) to income inequality than the income pension, but this mostly reflects that there are still pensioners who retired before the premium pension came into force, or pensioners who have only had the possibility to allocate a few years of contributions. It is reasonable to expect that the contribution of the premium pension to inequality will increase in the future, as a greater number of old-age pensioners will have allocated more funds within this component of the public pension system, and as a consequence the share of pension income contributed by the FDC pension will increase. However, since contributions to the premium pension are fixed at 2.5 percent of pensionable income for everyone (compared with 16.5 percent contributions going to the NDC pension), it can be expected that the concentration coefficient of the FDC pension will decline. It already declined between 2003 and 2013. The pension premium will have fully matured in 2040, and in principle, its distributive profile should be more similar to that of the income pension, which includes benefits accrued in the old ATP (*Allmän tilläggspension*) system, later replaced by the mandatory public NDC and FDC premium pension.

Table 4.1b shows the same type of inequality decomposition by income source, but excluding capital income. The overall conclusion is analogous to the previous one. Income inequality among the elderly has increased, foremost due to a relative decline of public pensions, and a parallel increase in more unequal sources of income (now excluding capital income). Notably, both work income and occupational pensions now have substantially larger shares of disposable income, whereas the share of private pensions in total income has been quite stable. Tax deductions for savings in private pension funds were abolished in 2016, something that is likely to contribute to a decline in the share of private pensions in the future. The decline in the income share of taxes between 2007 and 2013 is most likely due to successive increases of the earned income tax credit each year between 2008 and 2011, combined with the introduction of a tax allowance for persons 65 years of age and older in 2009. The tax allowance for elderly persons was raised in 2010, 2011, and 2013.

5. Concluding discussion

The major Swedish pension reform of the mid-1990s had multiple objectives, but the most important driving force behind the introduction of the new NDC scheme was financial (Könberg, Palmer, and Sundén 2006). The old pension system was on the verge of becoming unaffordable. Much has been written about the financial stability of the NDC component of the Swedish old-age pension system. This paper instead focused on social sustainability and the degree to which old-age incomes are equally distributed and above commonly applied poverty thresholds. Although old-age incomes are the result of complex processes that often operate over extended periods, the conclusions highlight three findings that add to the discussion about the social sustainability of the Swedish system of old-age pensions.

First, the income position of elderly persons in Sweden has become more precarious. This is not because the incomes of pensioners has declined in real terms. Quite the contrary: median incomes among elderly persons have increased faster than prices. Yet incomes of the working-age population have increased even faster, and as a result the relative income position of the elderly has deteriorated. Although relative income

poverty among the elderly resembles something like a rollercoaster pattern since the mid-1990s, the overall trend shows an increase.

The results are sensitive to the exact yardstick whereby households are considered to be poor. In terms of more extreme levels of economic hardship (i.e., incomes below 40 percent of the equivalized median disposable household income in the total population), elderly persons in Sweden are well protected. At these very low levels of income, relative poverty is actually lower among the elderly than in the working-age population. However, this pattern is reversed at higher poverty thresholds. At the 60 percent poverty threshold, a commonly accepted poverty threshold in the European Union, relative poverty has consistently been more widespread among the elderly than in the working-age population – throughout the whole observation period 1995–2013, and particularly toward the end.

Second, poverty risks in old age are not evenly distributed. Certain old-age subgroups face exacerbated risks, including elderly single women, migrants, persons with only primary education, and people living on their own. The most important component in the disposable income of the elderly is the NDC pension, which also reduces poverty more substantially than other income components. Although the guaranteed minimum pension and housing supplements (including social assistance) become somewhat more important when the analysis focuses on particular old-age risk groups, it is evident that benefits are often insufficient to lift elderly households above commonly accepted poverty thresholds. Some indication also exists that the relative poverty risks increase for each cohort that reaches retirement age, something that obviously raises issues in relation to the social sustainability of the Swedish pension system. In particular, the erosion of the guaranteed minimum pension (*vis-à-vis* the development of wages), which has continued through both center-left and center-right political alliances, raises concerns. Perhaps more effort should be devoted to crafting an effective indexation of the minimum guarantee.

Third, the incomes of the elderly have become more unevenly distributed since the 1990s, reflecting a more general trend related to earnings. However, since the mid-

1990s, income inequality has increased faster among those aged 65 years and over than among the working-age population. Much of this increase in income inequality among the elderly is due to a relative decline in the share of public pensions in total income, and corresponding increases in income sources that are distributed more unevenly. In addition to the increase of capital income being a major source of inequality in old age, the slow but pervasive increases of work income after (partial) retirement and the gradual rise of occupational pensions (for those who receive them) have also made old-age incomes more unequal.

Improvements in minimum pensions are high on the political agenda in Sweden. The parliamentary review group on the Swedish pension system (*Pensionsgruppen*) recently suggested several reforms to improve the lowest pensions, including increases in the guaranteed minimum pension and in housing supplements (Social Ministry 2018). These reforms certainly would strengthen the degree to which the Swedish pension system provides basic security in old age, and possibly would also reduce observed differences in poverty between population subgroups – including those defined by gender. Yet the suggested increases in the guaranteed minimum pension and housing supplements may not necessarily be sufficient remedies. Indexation principles are important to assure that benefits are not eroded over the longer term. However, changes in indexation are not on the political agenda at the moment, and were not considered by the parliamentary review group. One important objective of the guaranteed pension, and to some extent the housing supplement, is to make sure that the poorest pensioners are not falling too far behind other income groups. Wage indexation is therefore a realistic alternative to price indexation or ad hoc political decisions to update benefits on a regular basis.

Another neglected issue concerns benefit take-up. Whereas eligibility for the pension guarantee is automatically assessed, the housing supplement for elderly persons suffers from an incomplete take-up of around 40 percent of those eligible for benefits. The take-up of social assistance for elderly persons is even worse, at around 20 percent, according to one inquiry (Riksrevisionen 2013). The reasons for this low take-up are not that well researched. Some indications suggest that many elderly people simply have too little knowledge about these programs. Other suggested reasons are failures in

administration and stigma; the latter is more of an issue in relation to social assistance. Although estimates of benefit (non-)take-up should be treated with caution due to serious methodological difficulties, the results nonetheless warrant closer consideration in debates about old-age poverty.

Considering inequality in old-age incomes, it should be noted that around 10 percent of the Swedish workforce lacks collective agreements and is thus not covered by an occupational pension. Although greater coverage of occupational pensions would probably reduce some of the differences in old-age incomes, tax reforms could potentially bring down inequalities even further. Whereas the differential tax treatment of work and pension income will most likely disappear in the near future, there is no serious political discussion about changes in the tax treatment of capital income, or reforms to make occupational pensions compulsory, as suggested by Palmer and Könberg (2019). In Sweden, the latter is generally considered to be outside the scope of political decision making, and instead subject to negotiations between the social partners.

The financial sustainability of the Swedish pension system is arguably essential for maintaining adequate provisions for current and future generations. Yet the importance of social sustainability should not be downplayed. Ensuring adequate incomes for all elderly people, without the better-off increasingly availing themselves of alternative private or occupational arrangements, would most likely increase popular support and willingness to contribute to the public system. Envisioned this way, social sustainability supports financial sustainability, promoting positive-sum solutions (Birnbaum et al. 2017). The generosity and accessibility of specific components in the pension system can of course be adjusted to achieve more desirable social inclusion outcomes in old age.

As incomes in Sweden are growing more unequal at a rapid pace, also in the working-age population, the possibilities of pension systems with clear elements of direct contributions to deliver on a wider set of sustainability concerns need to be assessed repeatedly. A recent European Commission (2018b) projection of pension benefits in Sweden estimated that old-age poverty will continue to increase at a steady pace. Over

the coming decades, and as a consequence of increased longevity, pension benefits in Sweden are expected to decline. The at-risk-of-poverty rate among the elderly is also expected to grow by an additional 8 percentage points, landing slightly above 25 percent of the Swedish elderly in poverty by 2070. An implicit remedy to this scenario is to postpone retirement by introducing measures that would increase the effective retirement age. However, without due consideration to inequalities in working conditions, this strategy of prolonging working careers may further accentuate the need to strengthen the redistributive components of the Swedish old-age pension system.

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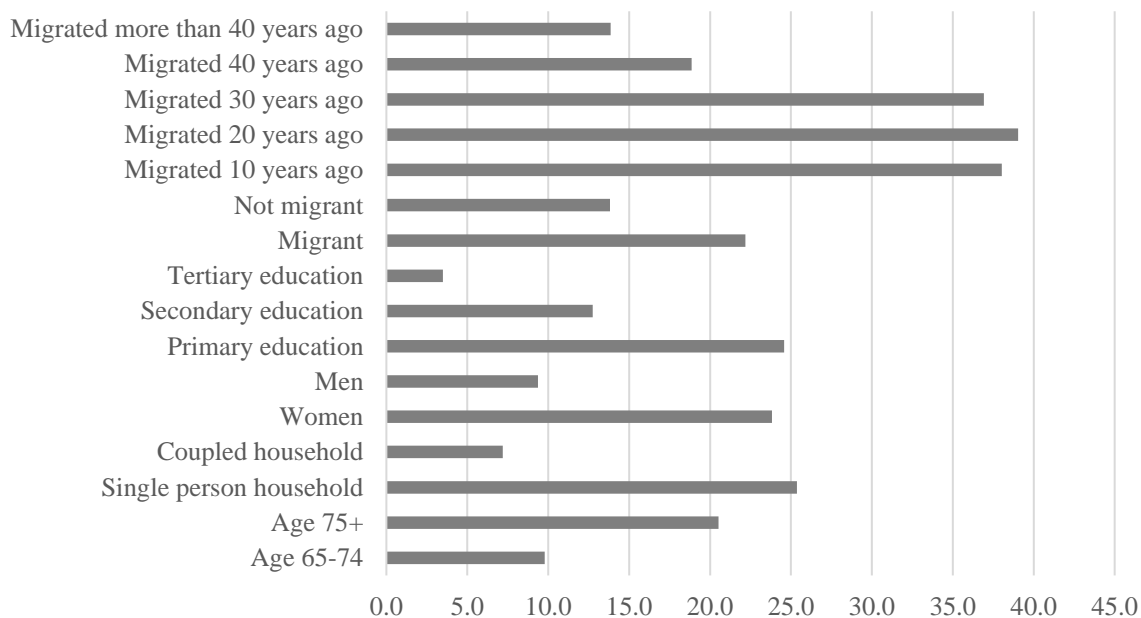
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Appendix

Figure A11.1: Relative income poverty (60 percent poverty threshold) by household type, age, gender, education, and migration in the elderly population (65+ years), 2013 (OECD modified equivalence scale)



Source: HEK.

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ABSTRACT

This paper analyzes old-age incomes in Sweden from a pension policy perspective, focusing on both the economic position of elderly citizens and the redistributive effects of the pension system's different parts. The empirical analyses show that each subsequent cohort that reaches retirement age faces higher relative poverty risks than previous cohorts. The relative decline in the value of the guaranteed minimum pension vis-à-vis the real income growth of wage earners brings to the forefront the issues of indexation of the guarantee and the ceiling on the means-tested housing benefits – i.e., the basic safety net for pensioners.

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