



International Social Security Review

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- Explaining differences in unemployment benefit takeup between labour migrants and Dutch native workers
- The relationship between different social expenditure schemes and poverty, inequality and economic growth

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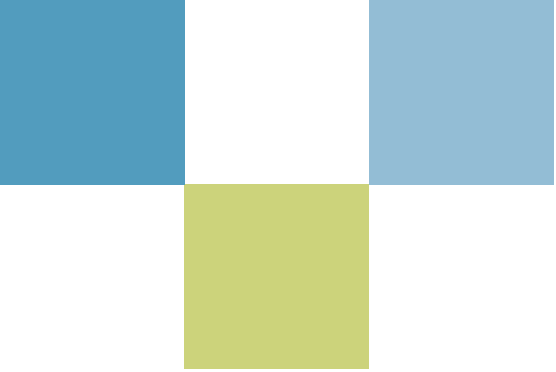
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Does a universal non-contributory social pension make sense for rural China?

*Ce Shen**, *Jessica Johnson**, *Zhenhe Chi*** and *John B. Williamson****

***School of Social Work, Boston College, United States; **China Institute of Industrial Relations, Beijing, China; ***Department of Sociology, Boston College, United States**

Abstract China's pension reform during the past three decades has allowed a majority of China's population to be covered by a pension scheme. Of particular note has been the New Rural Pension Scheme (NRPS), a voluntary programme introduced starting in 2009. One goal of our analysis is to assess that pension scheme, using a variety of sources of information including data drawn from recent (2013 and 2015) nationwide China Health and Retirement Longitudinal Surveys (CHARLS). Our analysis involves an exploration of differences between the generosity and structure of the NRPS and other pension schemes currently in place. We also explore the feasibility of reforming the current "quasi-social pension" component of the NRPS by substituting a universal non-contributory social pension pillar. In connection with our assessment of the NRPS, we note the unusually low benefit levels for rural China.

Keywords old-age benefit, universal benefit scheme, social security financing, rural population, developing countries, China

Addresses for correspondence: Ce Shen, School of Social Work, Boston College, United States; email: shenc@bc.edu. Jessica Johnson, School of Social Work, Boston College, United States; email: Jesskmjohnson@gmail.com. Zhenhe Chi, China Institute of Industrial Relations, Beijing, China; email: chizhenhe@gmail.com. John B. Williamson (corresponding author), Department of Sociology, Boston College, Chestnut Hill, Boston, MA 02467, United States; email: jbw@bc.edu.

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Introduction: A brief overview of China's pension system

At the beginning of the 1950s, China established a pay-as-you-go (PAYG) pension system for employees of state-owned enterprises (SOEs), as well as civil and military servants (Yang and Chi, 2009). As the economy began the transition from a planned economy to a market-oriented economy about four decades ago, a number of challenging issues emerged related to China's pension system. In order to enhance economic efficiency and competitiveness, the prior lifelong dependent relationship between workers and their enterprises could not be maintained. There was an urgent need to establish a new set of pension schemes that were much less dependent on the SOEs.

Zhu and Walker (2018) describe the current structure of China's pension system as being pyramidal. At the top of the pyramid are retired civil servants (CS) (e.g. government officials and their staff as well as medium and high level military retirees). The next category is institutional employees (IE); which includes those working in a wide variety of public organizations such as schools, research institutions and hospitals. The pension systems for CS and IE employees are similar and for this reason we will refer to their pension schemes collectively as the CS and IEPS; however, benefit levels tend to be lower for the IE group. For the CS and IE retirees, the benefits are generous relative to those for the other lower categories of pensioners (Zheng, Sun and Qi, 2009). Until recently, these two subgroups (CS and IE) were not required to make contributions, but still enjoyed much higher pension benefits than those covered in lower categories. Due to widespread societal criticism of the non-contributory structure of the CS and IEPS schemes, as of 2015, these two subgroups (CS and IE), are now required to make contributions.

China's first new pension system during the emerging market economy era, the Urban Enterprise Employee Pension Scheme (UEEPS), was established in 1997 for urban workers only. It is a multi-pillar pension scheme. The first pillar is pay-as-you-go (PAYG) and financed by a payroll tax on employers. The second pillar is an individual account financed by mandatory contributions from workers. In 2017, some 403 million workers were covered by the UEEPS (about 20 million of whom also benefited from supplementary enterprise annuities), including 62 million domestic rural-to-urban migrant workers, the majority of whom retain their rural residence (*hukou*) (Ministry of Human Resources and Social Security, 2017). Employees covered by the UEEPS are in the middle of the pension benefit pyramid mentioned earlier. Although the CS and IEPS now appear to be similar to the UEEPS, since they all require workers to make contributions, CS and IE workers continue to be paid occupational pension subsidies not available for the majority of UEEPS workers.

Prior to 2009, most people living in rural areas, those in urban areas working in the informal sector, and rural migrant workers generally, remained excluded from social protection mechanisms. In 2009, the voluntary New Rural Pension Scheme (NRPS) was established. In 2011, a similar programme, the Urban Residents' Pension Scheme (URPS), was established for individuals with urban *hukou* (household registration) who were not eligible for the UEEPS. In 2014, the government merged the NRPS and URPS to form the Urban and Rural Residents' Pension Scheme (URRPS). By the end of 2017, the URRPS covered 512 million people, of which 156 million were receiving pension benefits (Ministry of Human Resources and Social Security, 2017). Although the two programmes merged to form the URRPS, in practice they operate separately in most areas. These schemes form the bottom of the pyramid described by Zhu and Walker (2018). We will use the term "URRPS" when referring to the combined programme and the term "NRPS" when referring to the rural component of the URRPS.

The remainder of this article is structured as follows. In the following sections we explain the design features of the NRPS, including its strengths, limitations and extent of coverage. Next, using international comparative evidence, we discuss the feasibility of China transforming the NRPS and introducing a universal non-contributory social pension scheme. In this regard, we address political, economic and financial considerations before offering our policy conclusions. We now turn to a detailed discussion of the NRPS component of the Chinese pension system.

The New Rural Pension Scheme (NRPS)

In 2009, the NRPS was introduced with coverage gradually extended over several years to virtually the entire nation. The NRPS is for residents with a rural *hukou*. It was the first time in China's long history that farmers had a pension with a government subsidy. The NRPS has two components: i) a government-funded pension referred to as the "basic pension component", and ii) a personal account component based on contributions from enrolled individuals. In 2009, many provinces set the basic pension component at 55 Chinese yuan (RMB) (about 8.46 US dollars (USD)) per month per person. For the less developed central and western provinces, the central government generally finances the entire basic pension component. While participation was voluntary, adults younger than age 45 when the NRPS was introduced were required to contribute for at least 15 years to become eligible for their own basic pension benefit. Their annual personal contributions accumulate in their individual accounts. As a result, their eventual pension includes the basic pension and an additional sum based on their personal contributions over the years.

However, those who were already aged 60+ could receive the basic pension benefit without having to contribute to the programme, subject to the condition that all of their family members aged 16+ enrolled in and contributed to the NRPS – making this pillar a “quasi-social pension”. Typically, social pensions in most other countries do not require contributions from either workers or their children to become pension eligible. However, this provision is not rigidly enforced in China. For example, age-eligible adults who have no living children are eligible for the quasi-social pension. It is of note that participation in this programme is voluntary, but those who elect not to contribute will not be eligible for the government financed quasi-social pension when they reach retirement age. In the 2009 guidelines, contributing workers had the choice of five different contribution rates: RMB 100 (USD 15), RMB 200, RMB 300, RMB 400 or RMB 500 per year. Currently, the maximum contribution is over RMB 2,000 in some areas. Local governments are required to contribute at least RMB 30 per year to each active account. This practice is known as “matching individual account contributions” and is thought to provide incentives to participate in this “voluntary” pension scheme (Shen and Williamson, 2010). The financing of the full pension payment consists of three parts: the individual premium, a local government subsidy, and a central government subsidy. For the benefit levels from the basic pension component, there are discrepancies across provinces since local governments of relatively developed areas are expected to make much larger local government contributions.

Strengths of the NRPS

The NRPS is China’s first rural pension scheme with a quasi-social pension component subsidized by the government. Many elderly farmers, especially those from poor areas, have been very supportive of this new pension scheme in part because it is voluntary and in part because they have never before received pension benefits directly from the central government. The NRPS currently plays a significant role raising incomes for the elderly in rural China, especially in poor areas. In 2017, some 156 million rural residents received NRPS benefits averaging RMB 125 (USD 19) per month (Ministry of Human Resources and Social Security, 2018). A number of empirical studies demonstrated the positive impact of these rural pensions on consumption levels among recipients. Using data from the National Rural Fixed-point Survey, Zheng and Zhong (2016) report that participation in the NRPS is associated with higher consumption, as measured by expenditures on agricultural products, including seeds, pesticides and chemical fertilizers. Another study by Zhao and Li (2018) yielded similar findings, especially for those with low incomes or living in underdeveloped areas.

Using Chinese Longitudinal Healthy Longevity Survey data, researchers found that pension income from the NRPS has had beneficial effects on several objective measures of physical health and cognitive functioning. The pension income has also helped to improve the ability to perform the instrumental activities of daily living (Cheng et al., 2018).

As mentioned earlier, the formal merging in 2014 of China's urban and rural pension scheme (URRPS) was a positive reform for China's pension system. It will help to realize the gradual equalization of rural and urban benefits. In theory, pension benefits may be transferred among different pension schemes according to rules published by the Chinese government (Ministry of Human Resources and Social Security, 2014). However, the practical details of this are to be finalized.

Limitations of the NRPS

Data from the 2013 and 2015 China Health and Retirement Longitudinal Surveys (CHARLS)¹ as well as qualitative data from 34 interviews (face-to-face and telephone) with retired rural and urban workers (including farmers, civil servants, engineers, teachers, etc.) from several cities and provinces were used to identify NRPS weaknesses and limitations. The CHARLS is the most comprehensive data currently available to analyse Chinese pension-related behaviour. Respondents' pension types, benefit levels, contributions, receipt histories, and reasons for being without pensions are recorded every two years. The CHARLS is a nationally representative dataset, covering approximately 10,000 households and 17,500 individuals in 150 counties/districts and 450 rural villages and urban resident neighbourhoods² from 28 provinces (Zhao et al., 2015; Zhao et al., 2017).

The national basic monthly pension benefit increased from RMB 55 in 2009 to RMB 88 (USD 14) in 2018 across 28 provinces (Ministry of Human Resources and Social Security, 2018). Even through the basic pension benefit experienced growth over those years, it is still very low relative to the absolute rural poverty line of RMB 192 (USD 29) per month set by the Chinese central government.

With respect to the personal account component, Table 1 summarizes projected pension benefits from individual accounts at retirement after contributing for 15 years based on various levels of individual contributions from RMB 100 (USD 15) to RMB 2,000 (USD 308) per year and with assumed real rates of return ranging from 1 per cent to 5 per cent. The yearly real rate of return for personal contributions to the URRPS individual accounts has typically been

1. The first wave of CHARLS data is from 2011.
2. In China, villages in rural areas and resident neighbourhoods in urban cities are the lowest government administrative units.

Table 1. Pension benefit (RMB) per person per month from individual accounts by contributions and yielding rates

Contributions (RMB)			Yielding rates (%)				
Individual	Government	Total	1	2	3	4	5
100	30	130	16.03	18.35	21.04	24.16	27.77
200	30	230	28.37	32.47	37.23	42.74	49.13
300	30	330	40.70	46.59	53.41	61.32	70.50
400	30	430	53.03	60.71	69.60	79.90	91.86
500	60	560	69.07	79.06	90.64	104.06	119.63
600	60	660	81.40	93.18	106.82	122.64	140.99
700	60	760	93.73	107.30	123.01	141.22	162.35
800	60	860	106.07	121.42	139.19	159.80	183.72
900	60	960	118.40	135.53	155.38	178.39	205.08
1,000	60	1,060	130.74	149.65	171.57	196.97	226.44
1,500	60	1,560	192.40	220.24	252.49	289.88	333.25
2,000	60	2,060	254.07	290.84	333.42	382.79	440.06

Note: RMB 100 ≈ USD 15.

Source: Authors' calculations.

about 3 per cent. Of note, regardless of the contribution level and the real rate of return, in general, pension benefits from individual accounts are very low. For example, as shown in Table 1, if a contributor makes yearly contributions of RMB 100 (USD 15) and the matching yearly contribution from local governments is RMB 30 (USD 5) per year, after 15 years and with an annual real rate of return of 3 per cent the monthly benefit is RMB 21.04 (USD 3.24). When combined with the basic pension benefit of RMB 88 (USD 13.54) per month in 2018, the total monthly pension is RMB 109.04 (USD 16.78). If the annual contribution were raised to RMB 500 (USD 76.92) (which is very rare), and again assuming a real rate of return of 3 per cent, the pension benefit would be RMB 90.64 and the total pension benefit would reach RMB 179 (USD 27.48). This is still below China's absolute rural poverty line (RMB 192). Since most participants make the minimum contribution (RMB 100), most participants can expect to obtain a total monthly pension of RMB 109.04 (USD 16.78). In short, in the absence of major changes, the total pension benefit is likely to remain very low for NRPS participants.

Low NRPS pension benefits seriously undermine the government's proclaimed pursuit of guaranteed "basic security" for NRPS recipients. In 2017, basic pension

benefits were higher than the absolute poverty line only in Beijing, Tianjin and Shanghai. However, for all 28 provinces, basic pension benefits are far below the rural poverty line. Thus, the current low total pension benefit limits the role of the NRPS in adequately alleviating poverty in rural China.

China's complex pension system, with several pension schemes coexisting, also has significant effects on social stratification and income inequality. The low total NRPS pension benefit limits its role in reducing income inequality in the context of China's multi-pension scheme system. Using CHARLS 2015 data, Table 2 illustrates the striking differences in pension income by pension category in China. In the first row, we present monthly average benefit data for each of our seven subgroups. What is very clear from this data is how low the monthly average benefit level for rural residents (RR) is relative to the others, particularly the CS group at RMB 4,320 and the IE group at RMB 3,315. The evidence shows very unequal mean benefit levels for rural residents relative to workers in more affluent jobs, primarily in urban areas.

In the second row of Table 2 we present data on the percentage of the population covered by each of the seven pension schemes under discussion, while the third row presents data concerning the percentage share of pension benefits going to each of the same seven pension groups. For example, the CS group makes up 2 per cent of all pensioners, but they receive 8 per cent of all pension benefits paid out. Similarly, the RR group make up 62 per cent of all of pensioners, but together they receive only 8 per cent of all pension benefits. Thus, 62 per cent of the Chinese pensioner population gets the same share of all pension benefits paid as the 2 per cent in the CS (civil servants) category. These

Table 2. Pension benefit inequality measures cross subgroups belonging to different types of pension schemes (N=5859)

Pension	CS&IEPS	CS&IEPS	UEEPS	URPS	URRPS	LFPS	NRPS	Overall
Subgroup	CS	IE	UEE	UR	URR	LF	RR	
Mean benefit (RMB)	4,320	3,315	2,419	1,119	439	912	111	
Pensioner population %	2	5	21	4	3	4	62	100
Benefit share %	8	18	56	5	2	4	8	100
Gini	0.29	0.24	0.22	0.40	0.62	0.35	0.43	0.69
Theil	0.23	0.09	0.09	0.27	0.68	0.20	0.51	0.91

Notes: CS – civil servants and IE – institution employees with CS&IEPS pension scheme; UEE – urban enterprise employees with UEEPS pension scheme; UR – urban residents with URPS pension scheme; URR – urban and rural resident with URRPS pension scheme; LF – landless farmers who lost their farmland due to public construction with LFPS pension scheme; RR – rural residents with NRPS pension scheme.

Source: Authors' calculations using CHARLS 2015 data.

data point to there being a huge degree of inequality in the current structure of the Chinese pension system.

In rows 4 and 5 of Table 2 we present data based on two alternative measures of pension income inequality (the Gini coefficient and the Theil index) for each of our seven pension subgroups and overall. The within group Gini coefficients for the CS, IE, UEE, and the LF subgroups are relatively low, but for the URR and RR groups they are relatively high. This is to be expected given that in those two subgroups there is a combination of urban and rural residents. The pattern is the same for the Theil index. Of particular note is the evidence that the overall coefficients for both measures are very high (0.69 and 0.91). This is, as one would expect, based on the evidence from row 1 (the mean benefit levels). In separate calculations based on the same CHARLES data, we find that 84 per cent of total pension benefit inequality is due to between subgroups variability and 16 per cent is due to within-subgroups variability, a finding that is consistent with the pattern for both the Gini and Theil coefficients presented in Table 2.

Since 2005, average benefits have increased, but from very different base levels, resulting in ever increasing gaps between the various subgroups. In addition to the substantial urban-rural discrepancy, substantial inequality also exists among urban residents. There is widespread criticism of the so-called urban “double rail” pension system: one is for civil servants (CS) and institution employees (IE) with high pension benefits; the other is for urban enterprise employees (UEE) and provides substantially lower pension benefits; see Table 2, Mean benefit. Our face-to-face and telephone interviews with 12 retired urban employees including engineers, technicians, and other blue-collar workers indicated that their pension benefits are substantially lower than those of their peers and spouses who were assigned to work for the government (CS) or in schools (IE), even though they have similar years of employment and educational levels. During the past few years, the overall pension benefit has increased approximately 5 per cent per year for urban retirees. The absolute impact of the 5 per cent increase varies by job and institution type. For example, our interview data indicates that for retired civil servants and public institution employees with monthly pension benefits ranging roughly from RMB 4,000 to RMB 7,000 per month, the 5 per cent would mean an increase of between RMB 200 to RMB 350 per month. For those retired from enterprises, including engineers and technicians, with monthly benefits of between RMB 2,000 and RMB 4,000, the same 5 per cent would mean an increase of only RMB 100 to RMB 200. Similarly, the significant 60 per cent increase in the basic NRPS in 2018 resulted in an absolute increase of only RMB 33 (about USD 6) per person per month (from RMB 55 in 2009 to RMB 88 in 2018). Thus, China’s pension reform in recent years has reinforced stratification and income inequality within each

subgroup and even more so between subgroups belonging to different pension schemes, as shown in Table 2.

It may be argued that the NRPS is relatively generous given the ratio of the pension benefits provided to the amount that covered rural workers have contributed. Notwithstanding, the very low absolute level of the resulting rural pensions cannot be ignored. Many older workers would not be able to survive without income from subsistence farming and support from their children.

The pension replacement rate across different pension schemes presents another source of inequality. The “replacement rate” is the percentage of a worker’s final pre-retirement income that is paid out by a pension programme upon retirement, and it is a common measurement that can be used to determine the effectiveness of the pension system. CHARLS data cannot be used to calculate replacement rates for the various subgroups reported in Table 2. However, our informal interview data suggest that civil servants (CS) enjoy the highest replacement rate; high ranking retired civil servants and military officials often receive essentially the same income after retirement as before retirement (generally a replacement rate of between 90 per cent and 100 per cent). For those retired from various public institutions (IE), the replacement rate is also generally relatively high. IE pension income is usually not much lower than these workers’ pre-retirement salaries. In contrast, for retired urban enterprises employees (UEE), the replacement rate is substantially lower. Their replacement rate was estimated at 42 per cent in 2013 due to a number of reasons, such as a low contribution base, fewer contribution years, lower age at retirement, and a low interest rate on the individual accounts (Li and Wang, 2013; Zhu and Walker, 2018). Retired employees from urban SOEs usually have additional occupational pensions, so their replacement rate sometimes reaches 60 per cent (Zhu and Walker, 2018). In contrast, based on a study using 2010 data (Tao, 2017, p. 165), the replacement rate for NRPS recipients was only 11 per cent. In addition to incomes generally being much lower in rural areas than in urban areas, inequality in retirement income is exacerbated by the dramatic difference in replacement rates associated with pension systems available to rural in contrast to urban workers. This perpetuates substantial differences in Chinese living standards and retirement income.

Coverage discrepancy nationwide

During the past decade, China has achieved unprecedented improvements in its pension coverage. In 2017, some 915 million individuals including both pension scheme contributors and recipients (i.e. 66 per cent of the total population) in urban and rural areas were covered by various pension schemes (Ministry of Human Resources and Social Security, 2017; National Bureau of Statistic of

China, 2018). However, the NRPS coverage rates varied substantially by geographic region and province. Based on CHARLS 2013 data, the participation rate is as high as 80 per cent in some provinces, such as Qinghai, Henan and Heilongjiang. Nonetheless, participation rates in Beijing, Tianjin, and Shanghai are 26 per cent, 25 per cent and 41 per cent, respectively. Provinces such as Guangdong, Zhejiang, Jiangsu and Guangxi also have lower participation rates. Based on CHARLS 2013 data, we can estimate that the overall participation rate is about 75 per cent for residents aged 45+ in China's rural areas. In developed regions, such as the suburbs of major cities, the participation rate has been relatively low because many rural residents find urban jobs linked to more generous pension schemes. In addition, many rural residents receive generous compensation for land appropriated by the government for various uses linked to urbanization, such as road and factory construction.

The NRPS coverage discrepancies are related to a number of factors. Based on CHARLS 2013 data, 30 per cent of all non-participants are covered by other pension schemes, especially in eastern coastal areas with alternative pension schemes for rural residents, such as the pension schemes for farmers losing land ("LF" in Table 2) due to rapid urbanization in the past few decades. The unavailability of the NRPS in some counties, villages or towns is another important reason, accounting for 15 per cent of non-participation. Insufficient income to participate accounts for about another 15 per cent, indicating there are still many poor rural people who cannot afford to pay the minimum contribution of RMB 100 (USD 15.38) a year.

We also found a link between participation rates and the age of rural residents. Based on China Labor-Force Dynamics Survey in 2014 (Wang, Zhou and Liu, 2017), the participation rate for those aged 15–22 is under 20 per cent. The participation rate increases gradually with age. For those aged 60+, the participation rate is over 50 per cent. There are several likely reasons behind this pattern. Lack of trust in the pension system is one. Several farmers interviewed were suspicious of the sustainability and benefits of the NRPS. As one explained, "If I have the money, I want to keep it in my hand. Who knows where the money goes ... if I pay for many years ... will I get a good pension benefit when I reach age 60?". In contrast, older adults are more motivated to participate since they will receive benefits in the near future. Another possible reason is the largescale rural to urban migration and rapid urbanization process in China. Many young people look forward to opportunities to move to urban areas to find jobs with higher wages and access to alternative, more generous pension schemes, such as the UEEPS. In short, there is much uncertainty among rural residents as to what will happen to them or their village during the next 30 years or more.

As described by Brown (2008), well-designed social security systems have several characteristics. One priority is the mitigation of poverty in old age and significant

redistribution of wealth to poor participants. A second goal is to provide at least a minimally adequate standard of living in retirement. Solidarity is a third goal. The NRPS benefits are far below the government defined rural poverty line. Also, the NRPS yields very low replacement rates, much lower than those available for most urban pensioners. More wealth and government pension spending goes to high-income subgroups, such as CS and IE workers. Finally, the pension system does not help promote solidarity among various social groups in China; rather, it reinforces existing social cleavages linked to income inequality.

Evidence from other developing countries

There are pension innovations in China, such as the NRPS, that are worthy of study by pension policy-makers in other developing countries (Yang, Williamson and Shen, 2010). It is equally the case that there are pension policy developments in a number of other developing countries worthy of study by Chinese pension policy-makers. In this section, we provide examples of such developments in other countries that deserve attention by those in China who are engaged in identifying ways to improve China's current pension systems, including the rural pension system, in the decades ahead.

Our focus here is placed on evidence that suggests it should be feasible for China to introduce a universal non-contributory social pension scheme as a replacement for the current quasi-social pension scheme currently in place for the Urban and Rural Residents Pension Scheme (URRPS). This scheme could be financed entirely by the central government, or possibly with partial funding from local (provincial) government. We have in mind a pension scheme that is substantially more generous than the current quasi-social pension pillar component included in the NRPS and the URRPS.

We base our case for the introduction of a universal social pension on evidence drawn from a number of other developing countries. We have decided to focus on a diverse set of developing countries that have operated non-contributory pension schemes in recent decades. During this period, the advantages of non-contributory social pensions have become increasingly apparent to many experts at various international organizations, such as the World Bank and HelpAge International (Boger and Leisering, 2017). Currently, 106 countries provide non-contributory social pensions, with some providing them in multiple forms. Many are developing countries with largely rural populations (see Table 3). As regards social pension design, numerous countries provide universal (25 countries), pension-tested (29 countries) and means-tested (56 countries) pensions, with some countries having more than one such scheme in place.

A number of studies point to the increase in coverage, reduction in poverty rates, and general improvements in older adult well-being for a wide range of

Table 3. Social pension schemes and relevant data for China and 18 other developing countries¹

Country	% rural pop'n	GDP/cap (USD)	Social pension type	Year introduced	Monthly social pension (USD)	Eligibility age	Social pension as % GDP/cap	Social pension as % of poverty line ²
Azerbaijan (AZE)	45	4,132	Pension-tested	1990	57	67 (men) 62 (women)	10.8	276
Bolivia (BOL)	31	3,394	Universal	1997	43	60	15.4	167
Botswana (BWA)	31	7,596	Universal	1996	32	65	5.1	111
Brazil (BRA)	14	9,821	Loosely universal ²	1963	300	60 (men) 55 (women)	33.3	588
China (CHN)	42	8,827	Contributory	2009 (rural) 2011 (urban)	10 ³	60	1.7	34
Colombia (COL)	20	6,409	Means-tested and regional	2003	32	59 (men) 54 (women)	5.0	78
Egypt (EGY)	57	2,413	Pension-tested	1980	38	65	15.6	246
Georgia (GEO)	42	4,057	Universal	2006	67	65 (men) 60 (women)	27.9	318
India (IND)	66	1,942	Means-tested	1995 2007 (current form)	3	60	2.2	20
Kazakhstan (KAZ)	43	9,030	Pension-tested	1990	40	63 (men) 58 (women)	6.3	221
Kenya (KEN)	73	1,595	Means-tested	2006/7 (pilot)	19	65	17.4	81

(Continued)

Table 3. Continued

Country	% rural pop'n	GDP/cap (USD)	Social pension type	Year introduced	Monthly social pension (USD)	Eligibility age	Social pension as % GDP/cap	Social pension as % of poverty line ⁴
Mauritius (MUS)	59	1,0491	Universal	1950 1958 (universal)	140	60	18.2	507
Mexico (MEX)	20	8,910	Pension-tested	2001 (regional) 2007 (70+) 2013 (65+)	35	65	4.7	124
Namibia (NAM)	51	5,231	Universal	1949 (for whites) 1992 (universal)	75	60	16.7	274
Peru (PER)	22	6,572	Means-tested	2011	38	65	8.2	140
South Africa (ZAF)	34	6,151	Means-tested	1927/8 (whites) 1944 (universal) 1996 (full parity)	107	60	22.9	436
United Rep. of Tanzania (TZA)	67	936	Universal	2016	9	70	11.6	52
Thailand (THA)	51	6,595	Pension-tested	1993 2009 (extended)	17	60	3.5	85
Uganda (UGA)	77	606	Regional, Universal, Pension tested	2011	7	65 (60 in Karamoja)	14.8	45

Notes: 1. The countries other than China were selected because they have: i) social pensions for a substantial proportion of the low-income population, ii) populations of over 1 million, iii) GDP/capita relatively close China's, and iv) all relevant data available; 2. Brazil has no urban social pension; for rural workers, social pensions are based on work histories; 3. China's social pension amount and related variables reflect 2015 HelpAge International data; 4. This variable uses the United Nations poverty line of USD 1.90 per person per day. Sources: HelpAge International (2018); World Bank (2018).

developing countries where non-contributory social pension are available. The contributory pension in Bolivia reaches only 14 per cent of older adults, while the non-contributory social pension reaches 91 per cent of older adults and is associated with a 14 per cent decrease in poverty (Mendizabal and Escobar, 2013). South Africa's non-contributory social pension led to a 54 per cent decrease in poverty among households with older adults (World Bank, 2012). Namibia's universal non-contributory social pension has contributed to a 22 per cent decrease in severe poverty (Levine, van der Berg and Yu, 2011). In Georgia, poverty among older adults decreased from 22 per cent in 2006 to 15 per cent in 2013, largely because of its non-contributory social pension (Nutsubidze and Nutsubidze, 2015). Poverty and hunger among recipients of Uganda's non-contributory social pension dropped by 16 per cent and 23 per cent, respectively, in the two years following initial receipt of this benefit (Kidd, 2016).

Non-contributory social pensions promote social and family cohesion. Such pensions facilitate equality between men and women in later life because women, who typically earn less over the life course, are eligible regardless of employment experience (Arza, 2017). Non-contributory social pensions also enable older adults to make contributions to financially strained families and thus enhance the status of older adults. Zambia's pilot universal non-contributory social pension, which is available in the district of Katete, has reportedly contributed to dramatic increases in older adults' autonomy and dignity, as they are now able to contribute to their families and communities (Knox-Vydmanov, 2009). Previous research shows that recipients use benefits to help provide children and grandchildren with access to educational, health and employment training resources (World Bank, 2012). Child labour rates are lower in families with non-contributory social pension beneficiaries in Brazil, according to an analysis of data from the National Household Sample Survey (de Oliveira and Kassouf, 2013).

Such pensions also are said to have promoted economic development. For example, some families use these benefits to invest in business and farm capital (Tewodros and Daniel, 2014). Zambian recipients of non-contributory social pensions spend 18 per cent of their pensions on agricultural investment and 20 per cent on small businesses and saving (Knox-Vydmanov, 2009). Non-contributory social pensions enable family members in South African to seek out employment (World Bank, 2012). In Kenya and Uganda, non-contributory social pension benefits provide liquid cash to enable recipients to make upfront investments in farming and small business work endeavours (Derbyshire, 2018; Kidd, 2016). An analysis of National Survey of Quality of Life data indicates that the non-contributory social pension in Colombia contributed to an increase in labour force participation among younger beneficiaries in professions requiring initial investments, such as agricultural work (Pfutze and Rodriguez-Castelan, 2015). Colombia's non-contributory social pension provides the liquidity necessary to

allow for initial labour-related investments. However, it is also the case, in some countries, that the results are mixed with respect to the benefits of the introduction of non-contributory social pensions (see de Oliveira and Kassouf, 2013). It is of note that Pfütze and Rodriguez-Castelan suggest that this contrary finding may be related to a failure to adequately control for beneficiary age.

Universal, pension-tested, and means-tested non-contributory social pensions tend to offer similar benefits. Universal pensions are commonly thought of as administratively simpler to provide than means-tested pensions (Johnson and Williamson, 2006). This is an important consideration in China, where the local administrative structure in rural areas is sometimes weak. Income and asset assessments require accurate documentation, which informal employment arrangements in rural areas tend to lack (Overbye, 2005). A briefing about China's NRPS coverage from HelpAge International (Vilela, 2013) found a number of key issues reflecting under-developed administrative structures in rural China, including those related to the collection of contributions, communications technology and fund management. As mentioned earlier, about 15 per cent of CHARLS survey respondents did not participate in the NRPS due to the unavailability of the NRPS in some counties. This evidence supports the argument that there are administrative problems in some areas in rural China.

Universality also avoids debate over who deserves benefits, which can be difficult to determine in countries with complex or vague definitions of poverty (Heslop, 2002), as well as helps avoid stigmatization (Boger and Leisering, 2017). Tanzanian citizens view means-testing as unfair and likely to overlook some individuals in need (Tewodros and Daniel, 2014). Simulations using data from the Kenya Integrated Household Budget Survey indicate that a targeted pension would reduce poverty to a far less extent than would a universal pension (Ticci, 2011).

It is common for developing countries to experiment with various non-contributory social pension schemes and to ease in pension reforms gradually over the course of years based on lessons learned (Williamson, Fang and Calvo, 2017). The expansion of Uganda's non-contributory social pension scheme, for example, is anticipated to take approximately ten years (Kidd, 2016). Similarly, Chinese policy-makers could gradually introduce a universal or pension-tested social pension in some rural communities while simultaneously monitoring the emerging impacts (both positive and negative) of the changes being made.

Some Mexican communities have undertaken extensive studies to determine the strengths, weaknesses and efficacy of universal non-contributory social pensions. Factors considered included impacts on expenditures and financial security; varied impacts on physical and mental health, diet and food security, health care utilization, risky health behaviours, and life expectancy; and transfers to and from family members. Another strategy has been to use waitlisted recipients as a control group in some Mexican communities (Aguila et al., 2014).

Kenya is a lower middle-income country with GDP per capita much lower than that for China. Approximately 73 per cent of Kenya's population live in rural areas (World Bank, 2018). Poverty rates among beneficiaries of Kenya's non-contributory means-tested pension decreased by 13 per cent, but targeting proved problematic and implementation challenges included poor administrative infrastructure, distribution delays and beneficiary identity confirmation problems (Mwasijaji, 2015). Such problems are common in developing countries implementing means-tested or targeted non-contributory social pensions (Güven and Leite, 2016).

The United Republic of Tanzania, a low-income country with 67 per cent of its population living in rural areas (World Bank, 2018), is currently moving toward universal coverage with pilot studies underway. Preliminary results indicate that recipients of its non-contributory Kwa Wazee pension in Nshamba and Muleba are healthier and more financially stable and capable of making employment-related investments, with the pension representing 80 per cent of older adults' income (Hofmann and Heslop, 2014). These pensions also reportedly improved older adults' community standing, as pension recipients were able to spend their pensions at local shops and help meet family members' needs (Hofmann and Heslop, 2014). Also in the United Republic of Tanzania, benefits are used sometimes to help finance community mutual support networks (Tewodros and Daniel, 2014).

Despite these positive impacts, some problems with social pension schemes have emerged, for example, in connection with pilot studies in Kenya (Hofmann and Heslop, 2014). First, the pensions were too low to cover certain basic needs, such as the costs of medication and healthcare services. In these pilot studies, many beneficiaries also reported distribution-related problems. Transport fees and long distances to distribution centres proved problematic for many.

Challenges and grievances such as those observed in Kenya and the United Republic of Tanzania are common (Livingstone, 2014). China would do well to consider how to prevent and address these common concerns in connection with future efforts to reform the NRPS. Fortunately, China would be able to draw upon its contributory pension infrastructure to administer non-contributory universal or pension-tested pensions, which are administratively simpler to manage than contributory pensions.

Political and economic considerations

The transformation of China's NRPS into a non-contributory universal pension scheme may require more political will than currently exists in China. Several factors are associated with political support for non-contributory social pensions in middle-income countries. An analysis of data collected via a recent investigation

of people's attitudes towards the elderly in Thailand suggests that the expectation that one will need financial support in old age is associated with support for universal pensions (Suwanrada, Sukontamarn and Bangkaew, 2018). Universal pensions generally receive high political support among workers around the world. Support for Uganda's non-contributory social pension is high because people know they will benefit from the pension in old age without having to make contributions prior to retirement (Kidd, 2016). Zambia's universal pension is perceived as fair and easy to administer, according to an analysis based on focus group and structured interview data (Knox-Vydmanov, 2009). The inclusion of local leaders in implementation is viewed as a way to enhance political will in Kenya (Mwasiaji, 2015).

If China were to modify the quasi-social pension pillar of the NRPS to make it a universal (or pension-tested) non-contributory scheme, the choice of the starting value and the provisions for adjusting its value over the years will undoubtedly be a major political as well as economic decision. Clearly, a very low non-contributory social pension would leave many rural residents in poverty. In Chile and Bolivia, it seems that the social pensions remain very low and, as a result, many older adults remain in poverty (Arza, 2017). The same is true in many African countries (Guyen and Leite, 2016). It is likely that in China any politically acceptable social pension would fall, at least initially, far short of what would be needed to end rural poverty; but if adequately incremented on a regular basis, over time this goal might well be achieved.

The financial sustainability of non-contributory social pensions is a major consideration in most countries with such schemes. Devereux (2007) suggests that countries with redistributive capacity (i.e. the political capacity to redistribute resources from wealthier to poorer people), administrative capacity, public will, and fundraising mechanisms in place, offer the most promising environments for non-contributory social pensions. The costs of Mexico's non-contributory social pension programmes in certain parts of the country are often justified on the grounds that they provide much needed safety-net support to older adults. Mexico City and several of the Mexican states have introduced social pension programmes for poor elders without other sources of pension income (Aguila et al., 2016). Kenya's new non-contributory universal pension scheme is conservatively projected to maintain financial stability at least through 2040 (Knox-Vydmanov, Leon and McPherson, 2012). Projections of financial sustainability are promising in both Colombia and Peru (Olivera and Zuluaga, 2014). China undoubtedly would be conducting similar analyses prior to any future reforms of the NRPS involving the introduction of a social pension scheme designed to replace the current quasi-social pension. Actual and projected costs associated with non-contributory social pensions in other countries may offer useful insights for China.

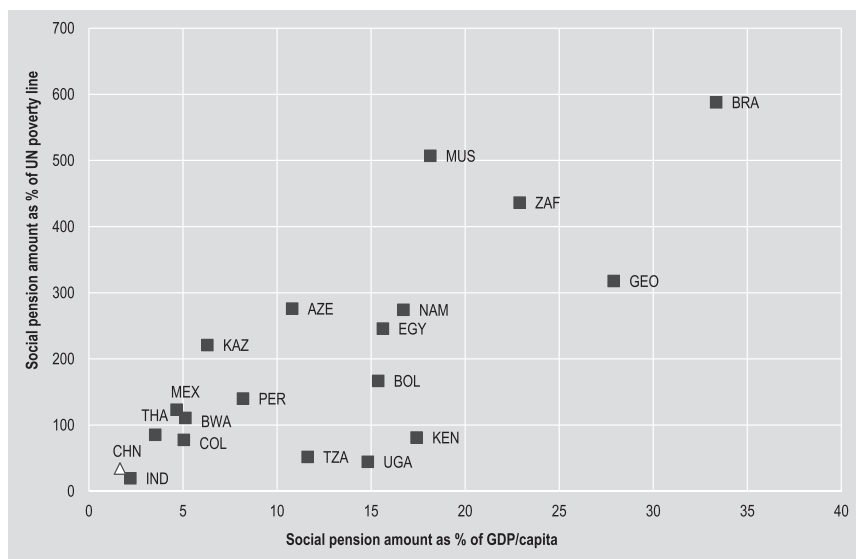
Can China afford to spend substantially more on its public pension system?

The question of whether China can afford to spend significantly more on its public pension system was presented by this study to a number of Chinese pension experts. Their responses suggest that government pension policy-makers are currently very unlikely to respond positively to calls for the introduction of a universal non-contributory pension scheme because the government does not have the resources to finance such a scheme. The data we present in Table 3 and Figure 1 provide a possible response to this argument.

In Table 3 we provide pension-related descriptive information for 19 developing countries that have: i) social pension schemes of some sort in place that provide benefits for a substantial proportion of the low-income population, ii) populations of over 1 million, and iii) GDP per capita relatively close to that for China. In the discussion that follows, we compare pension characteristics, particularly social pension effort, in these countries with China's current NRPS programme.

Table 3 illustrates the capacity of countries with relatively low levels of GDP per capita and large rural populations to provide non-contributory universal, pension-

Figure 1. China's relative status based on two measures of alternative pension effort.



Notes: Country codes are indicated in the "Country" column on Table 3. The triangle represents China (CHN).
Sources: HelpAge International (2018); World Bank (2018).

tested, or means-tested pensions to older adults. Of particular note are the last two columns of the table that present data for two alternative measures of social pension effort. The first is pension spending as percentage of GDP per capita. As shown in Table 3, China spent only 1.7 per cent of its GDP per capita on its quasi-social pension scheme (NRPS) in 2015, a value much lower than observed for most other countries listed in that table. It is also of note that Bolivia, Egypt, Kenya, Namibia and South Africa all spend more than 15 per cent of their GDP per capita on their social pension schemes.

The second measure of social pension effort is social pension spending as a percentage of the United Nations poverty line (USD 1.90 per person per day). As shown in the table, NRPS pension spending per recipient averages about 34 per cent of the United Nations poverty line, the second lowest value presented in the table. Universal pensions represent 167 per cent, 111 per cent, 507 per cent, and 274 per cent of the poverty line in Bolivia, Botswana, Mauritius, and Namibia, respectively, all countries that, as in China, have large rural populations. Pension-tested pensions represent 276 per cent, 221 per cent, and 246 per cent, of the poverty line in Azerbaijan, Kazakhstan and Egypt, respectively, again all countries with large rural populations. Finally, means-tested social pensions represent 20 per cent, 81 per cent, 436 per cent and 85 per cent for India, Kenya, South Africa and Thailand, respectively. At 20 per cent, India is the only country with a lower value than China's 34 per cent. As shown in Figure 1, China (CHN) is located at the bottom left corner due to its low values on both measures of social pension effort.

According to one recent study, Lu, He and Piggott (2014) project the cost of a pension-tested non-contributory social pension scheme for China at between 0.7 per cent and 1 per cent of GDP. The assumptions for this result set the current poverty line at RMB 2,300 per person per year, the retirement age at age 60 (gradually increasing to age 65 by 2050), and assume a constant fertility rate of 1.55 and a constant benefit level of 6.6 per cent of GDP per capita. That study suggests that such a scheme could lift most of the low-income elderly in China out of poverty at a fiscally affordable and sustainable cost. In addition, some pension experts interviewed for this present study argued that a universal pension scheme is not appropriate given the huge urban-rural income gap and very substantial differences in income levels between regions and occupational groups. We also note that in some rural communities (e.g. in Jiangsu province) the average income is higher than that for nearby urban communities. China is not unique among developing countries with respect to typically having huge income inequality between rural and urban areas as well as regional differences. International evidence tells us that universal non-contributory pension schemes can, and have been used to, substantially reduce rural poverty and improve the well-being of the most vulnerable rural populations (Johnson and Williamson, 2006).

How does our proposed scheme differ from the current NRPS?

Our proposed pension-tested universal non-contributory scheme, which sets the social pension benefit level at the government-defined poverty line, would substantially reduce poverty and improve well-being among older adults. In addition, it also has the following advantages compared with the current NRPS. As a scheme for residents not covered by another pension programme, it would better achieve nationwide coverage for both the rural and urban areas as well as for men and women, and independent of whether adult children contribute to the pension scheme, employment history, and the development level of the region. Observations gleaned from our interviews suggest that in some areas local governments are not adequately staffed to handle the current pension-related administrative work. Our proposed scheme would dramatically simplify and thus reduce the cost of administering the programme. We also propose to keep the voluntary pillar, but urge the government to provide enough matching funds to encourage participants to contribute substantially more to that pillar.

Conclusion

Although China is now the second largest economy in the world and classified as middle-income, it is still a developing country facing many of the same issues related to rural poverty found in many other developing countries. Between 2009 and 2014, China made major advances with respect to pension coverage for its rural population with the introduction of the NRPS. This new pension scheme was innovative in many ways and rapidly increased the proportion of the rural elderly population in China eligible for pensions. One major innovation was the introduction of a quasi-social pension for which most rural residents older than age 60 were immediately eligible. A second major innovation was the particular manner in which eligibility to this pension benefit was extended to retirement-age parents who had never contributed to the new pension scheme. Specifically, this was done by making the enrolment in the scheme of their adult children a precondition for their eligibility to the pension. One goal of our research is to outline the contributions of the NRPS that, in our view, deserve serious consideration by pension policy-makers in other developing nations.

A second goal has been to discuss some of the limitations of the NRPS (and the related URRPS). In this context, we have discussed how much improvement has been achieved for the rural elderly relative to the urban elderly. What we find is that living conditions have improved and poverty rates have decreased in rural China, but during this same period the gap between the rural and the urban population has been increasing. In view of this trend, we argue that China would

do well to increase its efforts to close the income gap between rural and urban residents. There are many policies that could be introduced that would help to close this gap and we are not able to address all of them, but we have proposed that one component of any effort to close the gap could be to transform the current quasi-social pension pillar into a much more generous social pension pillar.

There are other policies that could be used to help close this gap, such as providing substantially more government matching funds to the contributory pillar of the NRPS. However, we have elected to focus on what we consider the most promising first step: the replacement of the current modest quasi-social pension pillar with a much more generous true social pension pillar. This raises the question as to whether such a step is economically feasible for China at present. We argue that China could afford to fund a much more generous NRPS (and URRPS), and we present the data in Table 3 and Figure 1 in support of this proposal.

China's pension reforms during recent decades have been accompanied by rapid economic development as well as by rapidly increasing levels of inequality and large-scale rural to urban migration. China's several parallel pension schemes cover different population subgroups distinguished by social class, residential status (i.e. urban vs. rural), regional differences, and differences in occupations. Our analysis suggests that the differences among China's multiple pension schemes contribute to pension inequality and economic inequality more generally. Much of the increase in inequality in China can be attributed to the widening rural-urban income divide, including pension income. There is substantial room for China to reform pension policies so as to at least reduce the rate of the increase in the rural-urban gap in economic status, and to improve the quality of life for millions of elderly rural residents.

A key challenge is the level of Chinese government political will. Building a sound pension system will involve adjustments in fiscal and redistributive policies that may well be unpopular with many of the affluent, a group that will include many of those in a position to decide which reforms will be introduced and when.

We have presented a case for the introduction of a relatively generous universal non-contributory social pension to replace the current quasi-social pension pillar associated with the NRPS. A similar case could be made for doing the same with the entire URRPS. A universal non-contributory social pension covering both rural and urban populations set at the level of China's rural poverty line, or better yet, the poverty line used by the United Nations would substantially improve financial well-being for millions of China's rural elderly. It would also help reduce current severe pension income inequality and help to realize the government's goal of lifting most of China's rural population out of poverty in the near future. The data presented in Figure 1 suggests our proposal is presently

economically feasible. If China were to dramatically increase its social pension spending, it is quite possible that the Chinese model would come to influence pension policy in many other developing nations around the world, particularly those with large rural populations.

Bibliography

- Aguila, E. et al.** 2014. *A non-contributory pension program for older persons in Yucatan, Mexico: Implementing and designing the evaluation of the program in Valladolid*. Santa Monica, CA, Rand Corporation.
- Aguila, E. et al.** 2016. "Costs of extending the non-contributory pension program for elderly: The Mexican case", in *Journal of Aging and Social Policy*, Vol. 28, No. 4.
- Arza, C.** 2017. "Non-contributory benefits, pension re-reforms and the social protection of older women in Latin America", in *Social Policy and Society*, Vol. 16, No. 3.
- Boger, T.; Leisering, L.** 2017. *Social citizenship for older persons? Measuring the social quality of social pensions in the Global South and explaining their spread* (Social protection and labor discussion paper, No. 1703). Washington, DC, World Bank.
- Brown, R. L.** 2008. "Designing a social security pension system", in *International Social Security Review*, Vol. 61, No. 1.
- Cheng, L. et al.** 2018. "The health implications of social pensions: Evidence from China's new rural pension scheme", in *Journal of Comparative Economics*, Vol. 46, No. 1.
- Derbyshire, J.** 2018. *Congratulations to Kenya on the launch of its universal social pension, now how can we help make it a success?*. London, HelpAge International.
- Devereux, S.** 2007. "Social pensions in Southern Africa in the twentieth century", in *Journal of Southern African Studies*, Vol. 33, No. 3.
- Guen, M. U.; Leite, P. G.** 2016. *Benefits and costs of social pensions in Sub-Saharan Africa* (Social protection and labor discussion paper, No. 1607). Washington, DC, World Bank.
- HelpAge International.** 2018. *Social pensions database*. London.
- Heslop, A.** 2002. *Livelihoods and coping strategies of older people: The role of non-contributory pensions in the developing world*. London, HelpAge International.
- Hofmann, S.; Heslop, M.** 2014. *Towards universal pensions in Tanzania: Evidence on opportunities and challenges from a remote area, Ngenge ward, Kagera*. London, HelpAge International.
- Johnson, J. K. M.; Williamson, J. B.** 2006. "Do universal non-contributory old-age pensions make sense for rural areas in low-income countries?", in *International Social Security Review*, Vol. 59, No. 4.
- Kidd, S.** 2016. "Uganda's citizens' grants are a revolutionary initiative", in *The Observer*, 3 June.
- Knox-Vydmanov, C.** 2009. *A social pension in Zambia: Perceptions of the cash transfer pilot in Katete*. London, HelpAge International.

- Knox-Vydmanov, C.; Leon, R.; McPherson, A.** 2012. *Social protection for older Kenyans: Options for implementing the National Social Protection Policy* (Pension Watch briefing, No. 10). London, HelpAge International.
- Levine, S.; van der Berg, S.; Yu, D.** 2011. "The impact of cash transfers on household welfare in Namibia", in *Development Southern Africa*, Vol. 28, No. 1.
- Li, Z.; Wang, H.** 2013. "The analysis of policy influence factors and policy recommendations on the falling replacement rate of the basic old age insurance", in *China Soft Science*, Vol. 4.
- Livingstone, A.** 2014. *Accountability in social pension programmes: A baseline mapping of the Old Age Grant in South Africa*. London, HelpAge International.
- Lu, B.; He, W.; Piggott, J.** 2014. "Should China introduce a social pension?", in *The Journal of the Economics of Ageing*, Vol. 4.
- Mendizabal, J.; Escobar, F.** 2013. *Redistribution of wealth and old age social protection in Bolivia: The impact of the Renta Dignidad on the wellbeing of households with older persons* (Pension Watch briefing, No. 12). London, HelpAge International.
- Ministry of Human Resources and Social Security.** 2014. *The transforming method of pension benefit of the Resident Pension Scheme*. Beijing. (In Chinese).
- Ministry of Human Resources and Social Security.** 2017. *Statistical Bulletin on Chinese Human Resources and Social Security Developments in 2017*. Beijing. (In Chinese).
- Ministry of Human Resources and Social Security.** 2018. *The notification on raising national basic pension benefit of the Urban and Rural Resident Pension Scheme*. Beijing. (In Chinese).
- Mwasiaji, W.** 2015. *Scaling up cash transfer programmes in Kenya* (Issue brief, No. 286). Brasilia, International Policy Centre for Inclusive Growth.
- National Bureau of Statistics of China.** 2018. *China Statistical Yearbook – 2018*. Beijing, China Statistics Press.
- Nutsubidze, T.; Nutsubidze, K.** 2015. *The challenges of pension reform in Georgia: Non-contributory pensions and elderly poverty* (Working paper, No. 2015-08). Chestnut Hill, MA, Center for Retirement Research at Boston College.
- Oliveira, P. R. de; Kassouf, A. L.** 2013. *Impact of the continuous cash benefit programme* (Issue brief, No. 192). Brasilia, International Policy Centre for Inclusive Growth.
- Olivera, J.; Zuluaga, B.** 2014. "The ex-ante effects of non-contributory pensions in Colombia and Peru", in *Journal of International Development*, Vol. 26, No. 7.
- Overbye, E.** 2005. "Extending social security in developing countries: A review of three main strategies", in *International Journal of Social Welfare*, Vol. 14, No. 4.
- Pfutze, T.; Rodriguez-Castelan, C.** 2015. *Can a small social pension promote labor force participation? Evidence from the Colombia Mayor Program* (Policy research working paper, No. 7516). Washington, DC, World Bank – Poverty and Equity Global Practice Group.
- Shen, C.; Williamson, J. B.**, 2010. "China's new rural pension scheme: Can it be improved?", in *International Journal of Sociology and Social Policy*, Vol. 30, No. 5–6.

- Suwanrada, W.; Sukontamarn, P.; Bangkaew, B.** 2018. "Who supports intergenerational redistribution policy? Evidence from old-age allowance system in Thailand", in *Journal of the Economics of Ageing*, Vol. 12.
- Tao, J.** 2017. "Can China's new rural social pension insurance adequately protect the elderly in times of population ageing?", in *Journal of Asian Public Policy*, Vol. 10, No. 2.
- Tewodros, A.; Daniel, S.** 2014. *Social protection: Building effective and sustainable systems for equitable growth: Perspectives, policies and best practices* (paper presented at HelpAge International Conference, Arusha, 15–17 December). London, HelpAge International.
- Ticci, E.** 2011. *Study for the introduction of a universal social pension in Kenya*. London, HelpAge International.
- Vilela, A.** 2013. *Pension coverage in China and the expansion of the New Rural Social Pension* (Pension Watch briefing, No. 11). London, HelpAge International.
- Wang, J.; Zhou, Y.; Liu, S.** 2017. "China Labor-force Dynamics Survey: Design and practice", in *Chinese Sociological Dialogue*, Vol. 2, No. 3–4.
- Williamson, J. B.; Fang, L.; Calvo, E.** 2017. "Rural pension reform in China: A critical analysis", in *Journal of Aging Studies*, Vol. 4, April.
- World Bank.** 2012. *Africa social protection policy briefs: Pensions*. Washington, DC.
- World Bank.** 2018. *World development indicators* (Data file). Washington, DC.
- Yang, Y.; Williamson, J. B.; Shen, C.** 2010. "Social security for China's rural aged: A proposal based on a universal non-contributory pension", in *International Journal of Social Welfare*, Vol. 19, No. 2.
- Yang, Y.; Chi, Z.** 2009. "Review and evaluation of Chinese social security policy", in *Economic Aspect*, Vol. 4.
- Zhao, Q; Li, Z.** 2018. "Basic old-age insurance and household consumption: Multilevel modeling analysis based on CHARLS survey", in *Public Finance Research*, Vol. 2018, No. 3.
- Zhao, Y. et al.** 2015. *China health and retirement longitudinal study, 2013-2014 National 2 Wave users' guide*. Beijing, Peking University – National School of Development. (In Chinese).
- Zhao, Y. et al.** 2017. *China health and retirement longitudinal study, 2015-2016 National 3 Wave users' guide*. Beijing, Peking University – National School of Development. (In Chinese).
- Zheng, B.; Sun, S.; Qi, C.** 2009. "Pension insurance reform of agencies and institutions in China", in *Journal of Public Management*, Vol. 6, No. 1.
- Zheng, H.; Zhong, T.** 2016. "The impacts of social pension on rural household expenditure: Evidence from China", in *Journal of Economic Policy Reform*, Vol. 19, No. 3.
- Zhu, H.; Walker, A.** 2018. "Pension system reform in China: Who gets what pensions?", in *Social Policy and Administration*, Vol. 52, No. 7.

Substitution and spill-overs between early exit pathways in times of extending working lives in Europe

Aart-Jan Riekhoff, Kati Kuitto and Liisa-Maria Palomäki

Finnish Centre for Pensions, Helsinki, Finland

Abstract This article investigates to what extent instrument substitution between early exit pathways took place in Europe between 1995 and 2015. Using Eurostat aggregate data on labour market inactivity and employment rates among the population aged 55–64 in 19 European countries, we analyse substitution effects between pathways and overall spill-over effects into non-employment. In spite of a strong decline in early exit and rises in older workers' employment rates, findings suggest that instrument substitution was common especially between early retirement and disability. Reductions in early exit coincided with considerable spill-overs into non-employment, yet these spill-overs were limited when pathways contracted simultaneously.

Keywords early retirement, disability benefit, unemployment benefit, labour force participation, Europe

Introduction

In the current context of ageing societies and permanent austerity, there has been a growing concern in Europe since the mid-1990s that pension systems are becoming financially unsustainable. To various degrees, European governments have enacted institutional reforms to keep pension systems affordable. In terms of their fiscal

Addresses for correspondence: Aart-Jan Riekhoff (corresponding author), Research Department, Finnish Centre for Pensions (Eläketurvakeskus), Helsinki 00065, Finland; email: arie.riekhoff@etk.fi. Kati Kuitto, Finnish Centre for Pensions; email: kati.kuitto@etk.fi. Liisa-Maria Palomäki, Finnish Centre for Pensions; email: liisa-maria.palomaki@etk.fi.

and financial design, reforms have included shifts towards multi-pillar pension systems and a greater emphasis given to private pension provision (Ebbinghaus, 2012). Moreover, given the low labour market participation rates among older workers in many countries, early exit has become restricted or at least made financially unattractive, while statutory retirement ages are being raised.

One of the main instruments to limit early exit from the labour market has been to close off early exit pathways. Early exit pathways are usually institutionalized schemes that serve as a bridge for the period between the exit from a career job and the entry into the regular old-age pension system (Kohli and Rein, 1991). These mainly take the form of early retirement pensions, disability benefits or pensions, or (extended) unemployment benefits. In the wake of high unemployment in the late 1970s and early 1980s, such schemes were introduced or resulted from the conversion of other schemes to ease the strain on the labour market and accommodate structural economic changes (Ebbinghaus, 2006). These exit pathways constitute the so-called “pull factors” of labour market exit: by offering easily accessible and relatively generous benefits, they make it attractive for older workers to withdraw from the labour market. Whereas the initial rationale for early exit vanished during economic recovery, early exit persisted as it became a part of workers’ and employers’ expectation patterns and became “decoupled from the business cycle” (Ebbinghaus and Hofäcker, 2013; Hofäcker et al., 2016).

Whereas studies have found that reforming exit pathways can effectively increase employment of older workers (Arpaia et al., 2009; Ebbinghaus and Hofäcker, 2013), such reforms are not without risks or side-effects. In the “heydays” of early retirement, Casey (1987) observed that when closing off one exit pathway there is a risk that older workers will start using other exit schemes that, as a result of such reforms, become relatively more accessible or attractive. This “instrument substitution” might be the intended outcome of policy-making, but it can also occur as the unintended side-effect of policy implementation.

The implications of instrument substitution are even more important in times of the reversal of early exit. After all, if the effects of instrument substitution are substantial, the closing off of one exit pathway leads to a net increase in employment rates that is smaller than the decrease in the take-up of that pathway. Moreover, part of the costs of early exit may shift to other sources, creating new inefficiencies elsewhere in the system. In the 1980s, instrument substitution was often at least partly deliberate, motivated by the aim to actually keep early exit possible (Casey, 1987; Ebbinghaus, 2006). Since the 1990s, the primary aim of closing exit pathways has been to increase employment, but little is known if instrument substitution has continued to play a role.

Casey based his findings on case studies with a number of member countries of the Organisation for Economic Co-operation and Development (OECD). Other

studies referring to instrument substitution have been primarily based on single case studies or early retirement from a comparative perspective (Guillemard and Van Gunsteren, 1991; Ebbinghaus, 2006; Guillemard, 2016). In the field of economics, a rather large literature exists on the “spill-over effects” of – or the observation of instrument substitution resulting from – early retirement reforms. These studies usually focus on a single reform in a single country. The aim of this article is to take a quantitative cross-national approach, focusing on the period since 1995 when early exit has been on the decline in Europe. Cross-sectional time-series data from Eurostat¹ are used to analyse whether instrument substitution takes place between pathways and estimate how much spill-over there is.

The article is structured as follows. The next section discusses the existing literature on instrument substitution and spill-over effects. Then, we present our indicators for early exit and the methods for analysing these. In the findings section that follows, we first describe our data and trends in early exit and employment between 1995 and 2015, followed by an analysis of substitution and spill-over effects with the help of regression models. In the final section we discuss our findings in the context of the existing literature and current policy trends, while concluding with some implications for policy-making.

Previous research on instrument substitution and spill-over effects

Casey’s 1987 study was written at a time when early exit was omnipresent and on the rise in many industrialized countries. Some of the mechanisms he identified continue to be useful in analysing current developments in early exit. First of all, he observed that across countries, there is a great variety of programmes that accommodate early retirement by different names, various means and funded from different sources. Some of these programmes allow early exit *de facto* by removing the incentives to re-enter the labour market, whereas others promote early exit *de jure* by explicitly offering a generous option to withdraw (Casey, 1987). Yet, they all achieve the same outcome: workers withdraw permanently from the labour market before they reach the statutory retirement age.

This implies that early retirement schemes, disability pensions and extended unemployment benefits that act as exit pathways are to some extent “functional equivalents”. Functional equivalents can be defined as policy instruments that take different forms but perform similar roles in different national institutional contexts (Bonoli, 2003). In many countries there has been one dominant exit

1. See the Eurostat web site.

pathway. Hytti (2006), for example, has wondered “why are Swedes sick but Finns unemployed?”, concluding that due to differences in policy strategies even in rather similar welfare states, pressures on the labour market resulted in higher rates of sickness and disability in Sweden, but higher takeup of unemployment benefits and unemployment pensions in Finland. If in one country early exit takes place predominantly through disability benefits but in another country through unemployment benefits, it does not necessarily mean that in one country people’s health is worse and in the other structural unemployment is higher. It is more important to look at the conditions under which benefits can be claimed and what role different benefit schemes play as an exit pathway.

Besides being functional equivalents from a comparative cross-national perspective, exit pathways can act as substitutes within a single country. Casey found in several countries that when the dominance of one pathway declined, the relevance of another increased. This was the case in the 1980s with early-retirement provisions and disability benefits in the Netherlands, unemployment insurance and early old-age pensions in France, and early old-age pensions and special early-retirement schemes in Belgium. Other studies found that a rise in disability rolls due to reduced screening stringency coincided with a decline in low-skilled unemployment in the United States in the 1990s (Autor and Duggan, 2003). An extension of the maximum length of unemployment benefits in Austria in the late 1980s resulted in decreases in the takeup of disability benefits (Inderbitzin et al., 2016).

Pathways are usually “imperfect substitutes” at best: there are still specific eligibility rules that will exclude some groups from one scheme but could give them access to another. In a study on Germany, Riphahn (1997) rejected the hypothesis that labour force exit on the grounds of disability or unemployment are substitutes and that the takeup of both are the result of a different set of individual risks. However, Koning and van Vuuren (2010) found substantial hidden unemployment in disability insurance enrolments in the Netherlands.

Casey argued that instrument substitution can be the result of deliberate policy-making or an unintended consequence from changes in administrative procedures, often aimed at shifting costs from one programme to another. In the period when early exit was at a peak, instrument substitution was often a deliberate act of policy-making to channel the growing number of early retirees and the associated increasing costs. In times of reversal of early exit, instrument substitution has become more of an undesired and unintended side-effect of closing off exit pathways, but nevertheless there is ample evidence that it is occurring.

In the economic literature, the terms “spill-over” or “crowding-out” effects are commonly used: the reform of an early retirement programme does not simply result in a one-on-one increase in employment, but in a simultaneous increase in

the takeup of other social benefits or pensions. Spill-over effects can result from rises in eligibility ages (usually in the case of early retirement programmes), the tightening of eligibility criteria (often regarding disability programmes) and the shortening of periods of entitlement or from changes to the requirements for entitlement (often in the case of unemployment benefits). Reforming a particular exit pathway can result in the increased takeup of another programme instead (i.e. substitution of inflow), the extended duration of another type of benefit (i.e. a lack of outflow from the substitute) and increased transitions of beneficiaries directly between the reformed pathway and another programme.

Not every reform results in spill-overs. Substantial inflow spill-overs into disability or unemployment benefits were found for reforms increasing early retirement pension ages for women in Belgium (Jousten et al., 2011), the United Kingdom (Cribb et al., 2013) and Australia (Atalay and Barrett, 2015), for men in Italy (Ardito, 2017) and for both women and men in Austria (Staubli and Zweimüller, 2013) and the United States (Duggan et al., 2007). A study on raising the early retirement age for women in Germany showed that there was an increase in the average duration of unemployment, but that there were no inflow or transition substitution effects: unemployed women stayed unemployed, while employed women stayed employed (Geyer and Welteke, 2017).

Disability insurance reforms led to inflow spill-overs into social assistance programmes in the Netherlands (Borghans et al., 2014) and Sweden (Karlström et al., 2008). Kyyrä (2015) and Kyyrä and Pesola (2017) found no substitution effects in Finland after reforms to unemployment pensions and extended unemployment benefits. Lammers et al. (2013) investigated the effects of introducing stricter job search requirements for unemployed older workers in the Netherlands and found that beside increased entry into employment, a higher outflow into disability and sickness benefits also took place. A study on reforms of early retirement and disability in the Netherlands showed that spill-over effects can be limited if potential substitutes are targeted simultaneously (Euwals et al., 2012).

The remainder of this article investigates whether instrument substitution between early retirement, disability and long-term unemployment benefits can be identified among European countries and to what extent there are spill-over effects. In our operationalization, in order for substitution to take place, a change in the takeup of one pathway in one direction should be accompanied with a change in the opposite direction in the takeup of other pathways. Spill-overs occur when reductions in early exit do not produce equivalent increases in employment rates. Combining the regression of substitution and spill-over effects with analysing long-term trends in exit and employment should enhance our understanding of to what extent these mechanisms are universal across countries and time and contribute to bridging the gap between the economic and the macro-sociological literatures on early exit substitution.

Data and methods

Data

Instrument substitution is analysed based on cross-sectional time-series data for the period of 1995–2015 for 19 European countries; namely, Austria, Belgium, Czechia, Denmark, Estonia, Finland, Hungary, Germany, Greece, Italy, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden and the United Kingdom. A number of other countries had to be excluded because the time series was too short or owing to large gaps in the data or a lack of reliable observations with no possibilities for extra- or interpolation.

Three types of alternative exit pathways are included as dependent variables: early retirement, disability, and long-term unemployment. For the operationalization of early retirement and disability as exit pathway instruments, Eurostat aggregate data was used to calculate the proportion of the population aged 55–64 that was inactive due to retirement and disability (Eurostat, 2018). This was done by using the item “Inactive population – Main reason for not seeking employment – %”, which includes the options “Retired” and “Own illness or disability”, for the age group 55–64. These percentages were then multiplied by “Inactive population as a percentage of the total population”, also for the ages 55–64, to obtain the proportions for retirement and disability for the total population in that age bracket.

Admittedly, these are not ideal measures, as they are based on self-reported survey data on reasons for inactivity. It is likely that many who consider themselves retired, may in fact be receiving disability or unemployment benefits. In addition, in different countries the understanding of what constitutes retirement might vary. Moreover, statutory retirement ages differ between countries and sometimes between men and women within countries. Retirement before age 65 may therefore, in many cases, be the norm rather than defined as “early retirement” by local standards. Nevertheless, retirement at age 65 has traditionally been the norm in international comparisons and considered as a desirable minimum retirement age, while many current pension reforms aim at raising this minimum age (European Commission, 2018). Therefore, it is possible to consider exit before age 65 as “early”, even if the pension system in a particular country allows retirement before that age.

Within the same set of responses of “Inactive population – Main reason for not seeking employment” there was no suitable item that would indicate exit through unemployment. To operationalize an unemployment exit pathway, the long-term unemployed (i.e. 12 months or more) as a percentage of those who are unemployed was multiplied by the unemployment rate of the group aged 55–64. Again, this is not an ideal measure of exit through unemployment,

but it gives a reasonable indication of the proportion of older workers that are outside the labour market for a longer period due to job loss. In many countries, older workers have great difficulties finding new employment in the event of job loss and long-term unemployment often *de facto* means labour market exit.

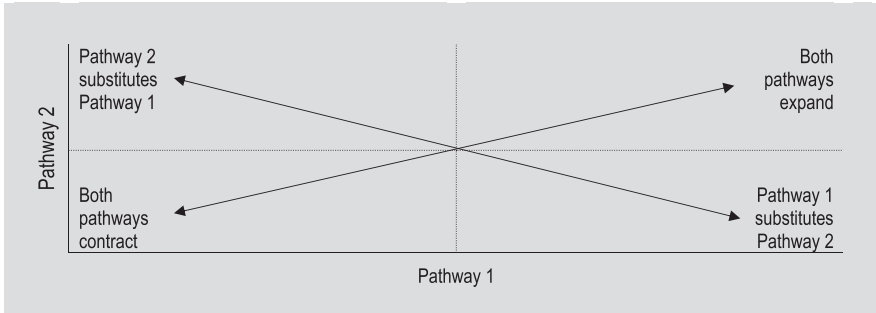
A final dependent variable is the employment rate of the group aged 55–64. Descriptive statistics for each of the variables are available in Table A1 in the Appendix. Table A1 also provides information on the imputations we made in the data. Due to missing values we extrapolated and interpolated the time-series where this was possible and reasonable. As a rule, we only extrapolated one or two years if there were missing values at the beginning or end of the time series, and interpolated when there were few consecutive missing values and when a reasonable trend could be assumed. After imputations, our data included a total of 375 country-year observations. Where possible, we cross-checked imputations of our dependent variables with data for the relevant years from the European Union (EU) Survey on Income and Living Conditions (EU-SILC) (Eurostat, 2015). EU-SILC permitted to calculate aggregate measures of self-reported labour market statuses and actual benefit reciprocity, but only for the years 2004–2014.

Analytical strategy

To identify long-term trends in pathway substitution, we created scatterplots for pairs of pathways. For each country, three-year averages of the share of the population aged 55–64 in a pathway are compared for 1995–1997 (or the earliest three years available) and 2013–2015. This results in three plots representing each possible combination of pathways (Figures 2–4): early retirement to disability; early retirement to long-term unemployment; and disability to long-term unemployment. The arrows in the plots indicate the direction of the changes between the mid-1990s and the mid-2010s. Figure 1 shows how these arrows should be interpreted. An arrow pointing towards the origin suggests a contraction in both pathways. When an arrow points away from the origin, the take-up of both pathways expanded. An arrow pointing towards the left-upper corner indicates that pathway 1 has decreased, but pathway 2 has expanded, therefore substitution from pathway 1 to pathway 2 has taken place. The other way around, an arrow towards the right-lower corner indicates that pathway 1 expanded and pathway 2 contracted, suggesting a substitution effect from pathway 2 to pathway 1.

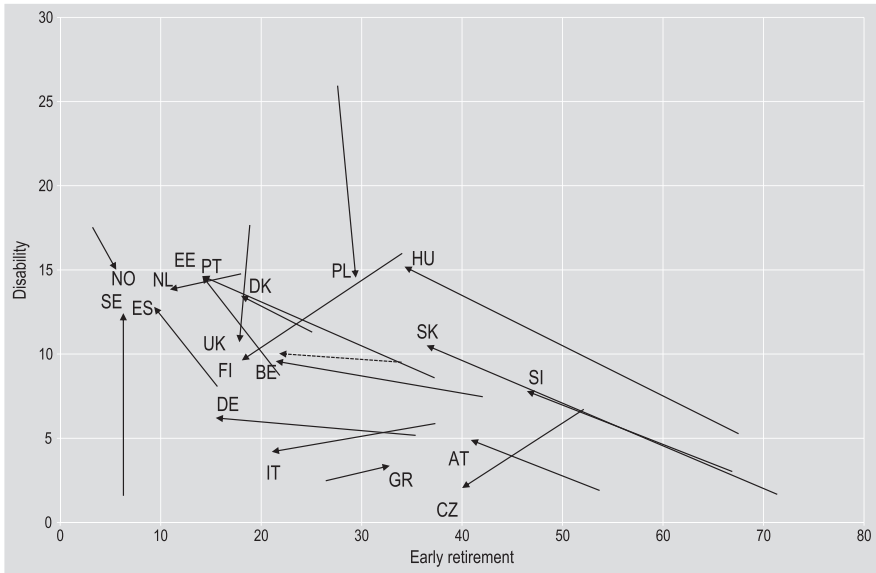
Similar plots were created for the relations between changes in each of the pathways and employment rates between the mid-1990s and the mid-2010s to give an indication of the size of the shifts from early exit in its various forms

Figure 1. Identifying substitution effects between two early exit pathways



Source: Authors.

Figure 2. Changes in % inactivity due to retirement and disability among the working-age population aged 55–64, between 1995 and 2015.



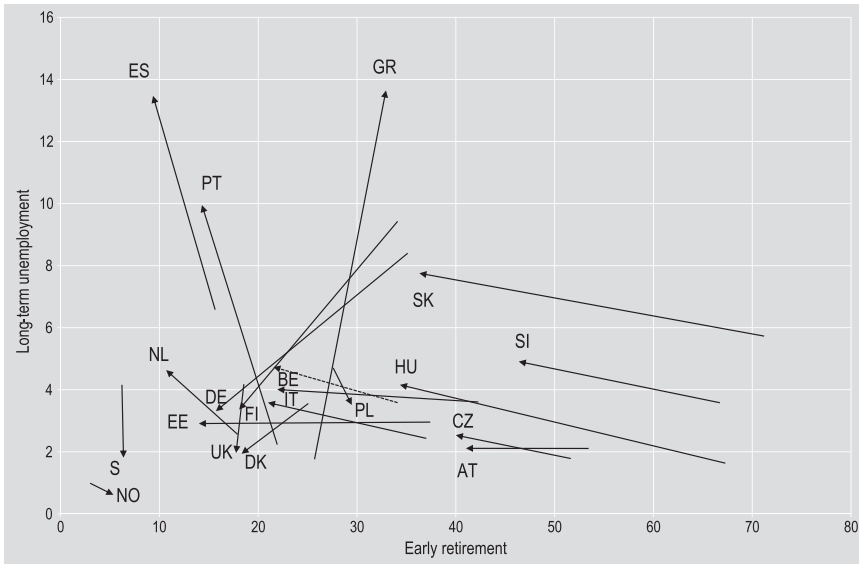
Note: Averages for all countries shown by a dotted arrow.

Source: Eurostat

towards employment. In the Figures 5–7, changes in the pathways are plotted on the x-axis and changes in employment are plotted on the y-axis.

Prais-Winsten regressions with panel-specific autocorrelation structure and panel-corrected standard errors were applied to analyse the time-series-cross-

Figure 3. Changes in % inactivity due to retirement and long-term unemployment among the working-age population aged 55–64, between 1995 and 2015



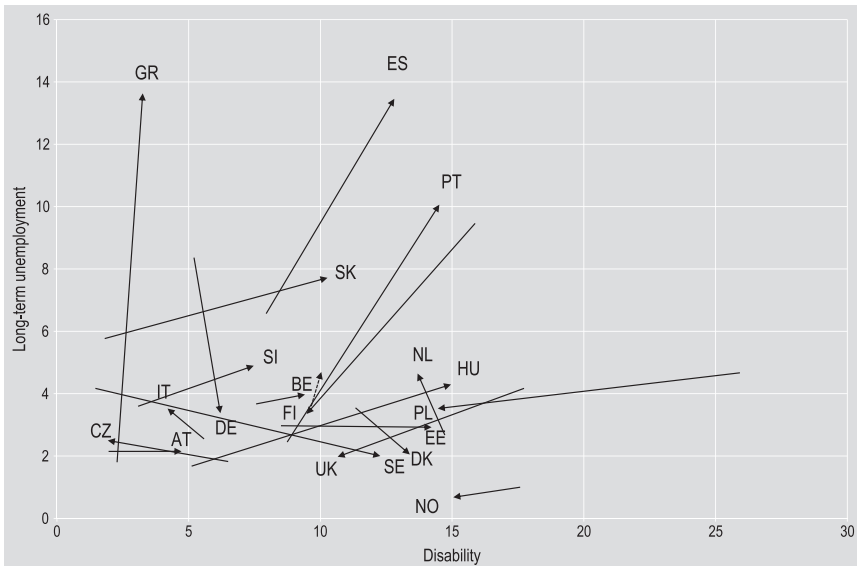
Note: Averages for all countries shown by a dotted arrow.

Source: Eurostat.

section data (Beck and Katz, 1995 and 2011). To identify substitution mechanisms between pathways, we first estimated whether a change in one pathway results in a change in the other two pathways combined. We hereby test the assumption that a change in one exit pathway is accompanied with a change in the other two pathways in the opposite direction. Second, we estimated whether there are certain flows between specific pathways. Next, to identify the size of possible spill-over effects we used the employment rate of the group aged 55–64 as the dependent variable and the pathway variables separately and in various combinations as independent variables. We hereby test the assumption that a change in exit pathways does not result in a one-on-one change in employment in the opposite direction, but that there are spill-overs to the other pathways and to other forms of inactivity.

As the dependent variables are likely to be non-stationary, we performed the analysis with annual changes rather than their levels (Fortin-Rittberger, 2014). All models include country- and year-fixed effects. Moreover, control variables that offer alternative explanations for changes in exit pathways and employment rates were included. First, a variable for the unemployment rate for the whole working-age population is used to control for business-cycle effects. Second, the size of the population aged 55–64 as a share of the entire working-age

Figure 4. Changes in % inactivity due to disability and long-term unemployment among the working-age population aged 55–64, between 1995 and 2015



Note: Averages for all countries shown by a dotted arrow.

Source: Eurostat.

population controls for the possibility that either a larger older workforce creates greater pressure for early exit options or that a larger older workforce provides more incentives to keep older workers in the labour market. To account for differences in health and mortality across countries and across time, we included an indicator for the life expectancy at age 55. Fourth, we controlled for the share of those with lower education (ISCED-2 or less) in the group aged 55–64 to analyse whether early exit is the result of older workers being low-skilled and therefore made redundant more easily. Year-on-year changes in the control variables were lagged by one year in the models. In addition, the level of the dependent variable was included, as we assume the magnitude of existing exit pathways to have an impact on the magnitude of change in a given exit pathway. In other words, changes in each of the pathways are likely to be path-dependent.

Findings

Trends in pathway substitution and transitions into employment

Figures 2 to 4 show the shifts between pathways between the years 1995–1997 (or earliest three years available) and 2013–2015. Figure 2 indicates that in a majority

of countries there was some substitution from early retirement to disability, but that this was far from a one-on-one effect (note the differences in scales for both axes). We can observe a decrease in the share of persons aged 55–64 in early retirement in almost all countries. While around a third of Europeans aged 55–64 were in retirement at the beginning of our observation period around the mid-1990s, 20 years later the same applied for about a fifth on average. On average, the share of disabled in the age bracket 55–64 has increased from 8.9 per cent to 10.2 per cent during our period of observation.

The observed substitution was largest among countries that had very high levels of early retirement in the mid-1990s, such as Hungary, Slovakia and Slovenia. Only in Norway was there some substitution the other way around, from disability to early retirement. Poland experienced a drastic decrease in disability, which was only to a very small extent compensated by an expansion of early retirement. Both early retirement and disability expanded in Greece and Sweden, although changes in early retirement were minimal in the latter case. Contraction of both pathways took place in Czechia, Finland, Italy, the Netherlands and the United Kingdom.

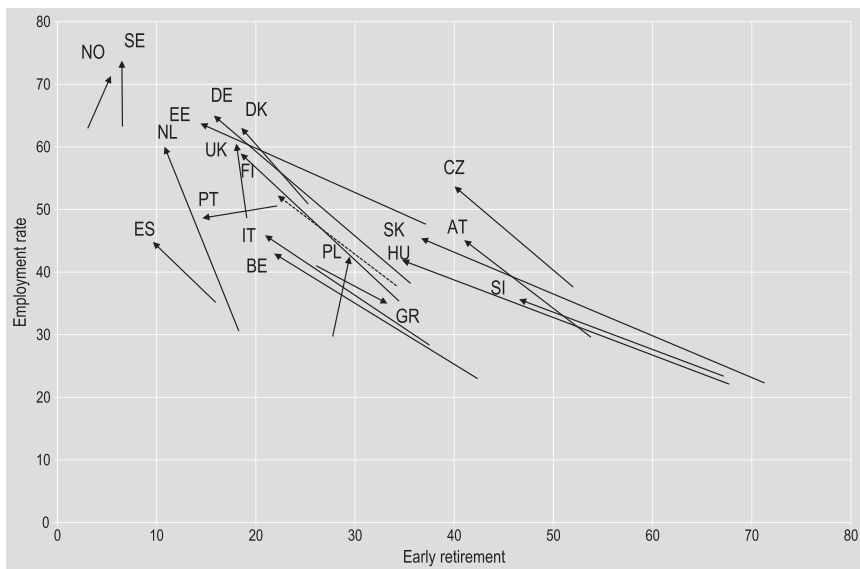
The changes between early retirement and long-term unemployment show a somewhat different picture (Figure 3). On average, the share of long-term unemployed in the age bracket 55–64 increased slightly from 3.8 per cent to 4.7 per cent. Again, the reduction in early retirement in countries with initially the highest levels was accompanied with an increase in long-term unemployment (Hungary, Slovenia and Slovakia). Milder substitution effects from early retirement to long-term unemployment took place in Czechia, Italy and the Netherlands. More substantial substitution from relatively low early retirement to high long-term unemployment were found in Portugal and Spain. A drastic increase in long-term unemployment also took place in Greece, accompanied with an expansion of early retirement at the same time. The increases in long-term unemployment in these three countries can obviously be seen as the effects of the economic recession. Small substitution effects from long-term unemployment to early retirement are found in Norway and Poland. In the other countries, these two pathways both contracted at the same time or one decreased while the other remained relative stable. On average, as indicated by the dotted arrow in Figure 3, there seems to be a shift from early retirement to long-term unemployment, but this effect was mainly due to the outlying positions of Slovakia, Slovenia and Hungary, as well as Spain, Portugal and Greece.

In Figure 4, we can see relatively little substitution between disability and long-term unemployment. There was some substitution from disability to long-term unemployment in Czechia, Italy and the Netherlands. There was substitution from long-term unemployment to disability in Denmark, Germany (mainly a reduction in long term-unemployment) and Sweden (mainly

an increase in disability). In Finland, Norway, Poland and the United Kingdom, both pathways contracted to a smaller or larger extent. Expansion of both pathways took place in the other countries. In Greece, Spain and Portugal the largest increases took place in long-term unemployment, while in Slovakia and Hungary disability accounted for the largest expansion. The short dotted arrow in Figure 4 suggests that although some of the contractions and expansions are quite large, they tended to even each other out in the European average.

Figures 5 to 7 show the relations between changes in each of the exit pathways and the employment rates for the age group 55–64, again between 1995 and 2015. There is a clear relation between decreases in early retirement and increases in employment rates (Figure 5). Almost all arrows point towards the top-left corner. Exceptions are Norway and Poland (both show increases in both early retirement and employment), Portugal (decreases in both early retirement and employment) and Greece (increase in early retirement and decrease in employment). The relation between disability and employment rates is not as straightforward (Figure 6). There is a group of countries where a contraction of disability was accompanied with an increase in employment and another group of countries where employment rates grew in spite of

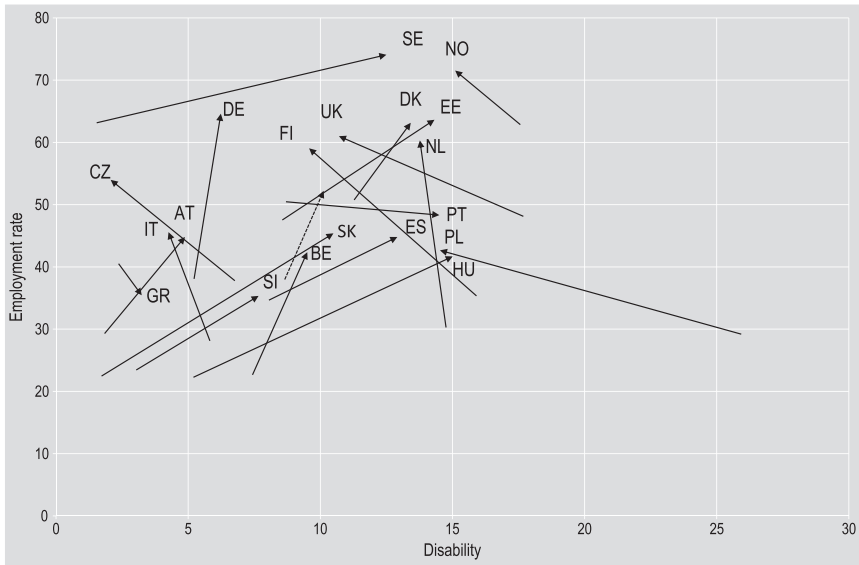
Figure 5. Changes in % inactivity due to retirement and the employment rate among the working-age population aged 55–64, between 1995 and 2015



Note: Averages for all countries shown by a dotted arrow.

Source: Eurostat.

Figure 6. Changes in % inactivity due to disability and the employment rate among the working-age population aged 55–64, between 1995 and 2015



Note: Averages for all countries shown by a dotted arrow.

Source: Eurostat.

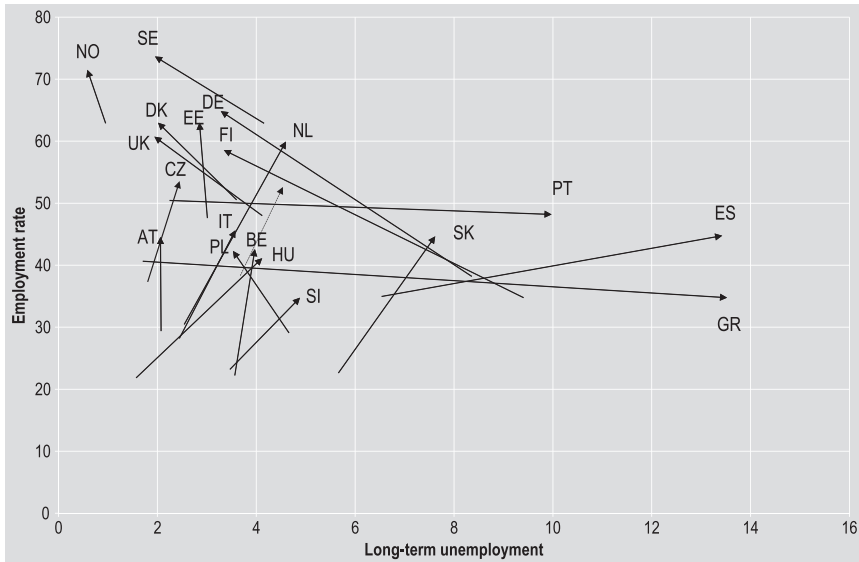
increasing disability. There appears to be some indication for a convergence effect: disability increased in countries with lower disability rates, but decreased in countries with higher disability rates.

In the case of long-term unemployment (Figure 7), again Greece, Portugal and Spain stand out, with large increases in unemployment rates and decreases or a modest increase in employment. Otherwise there appear to be two broad groups of countries. In one group employment rates were low in the mid-1990s and increases in employment were accompanied with increases in long-term unemployment (e.g. Czechia, Hungary, Italy, Slovenia and the Netherlands). In another group, employment rates were already higher in the mid-1990s and increased further in the 2000s, while long-term unemployment decreased (e.g. Norway, Sweden, United Kingdom, Denmark and Estonia).

Regression analysis of substitution and spill-over effects

Table 1 presents the results of the time-series-cross-section regression analysis. Models 1 to 3 show the results for the association between the changes in one pathway with changes in the other two pathways combined. Models 4 to 6 show

Figure 7. Changes in % inactivity due to long-term unemployment and the employment rate among the working-age population aged 55–64, between 1995 and 2015



Note: Averages for all countries shown by a dotted arrow.

Source: Eurostat.

the results for the substitution effects of the separate pathways. Model 1 indicates that a 1 percentage point change in early retirement was associated with a 0.37 percentage point change in the opposite direction of disability and long-term unemployment. Model 2 indicates that a 1 percentage point change in disability was associated with a 0.64 per cent point change in the opposite direction of early retirement and long-term unemployment. In Model 3 we do not find any statistically significant association between changes in long-term unemployment on the one hand and early retirement and disability on the other.

Models 4 and 5 further confirm that the strongest substitution took place between early retirement and disability. Changes in long-term unemployment were not statistically significantly related to changes in early retirement. Models 4 and 6, however, show that there were negative associations between disability and long-term unemployment, although the effect of long-term unemployment on disability was only significant at $p < 0.05$ and the effect of disability on long-term unemployment was small ($b = 0.05$). Apart from a relation between the overall unemployment rate and the pathways, and especially the long-term unemployment rate among those aged 55–64, there

Table 1. Associations in changes between early exit pathways in Europe, 1995–2015

	1	2	3	4	5	6
	Disability + long-term unemployment	Early retirement + long-term unemployment	Early retirement + Disability	Disability	Early retirement	Long-term unemployment
Pathways						
Early retirement	-0.365*** (0.028)			-0.358*** (0.0264)		-0.0147 (0.012)
Disability		-0.638*** (0.0618)			-0.581*** (0.060)	-0.052** (0.019)
Long-term unemployment			-0.170 (0.163)	-0.295* (0.120)	-0.102 (0.155)	
Controls						
Overall unemployment rate	0.499*** (0.061)	0.570*** (0.074)	0.255* (0.109)	0.189* (0.085)	0.207* (0.0947)	0.427*** (0.032)
<i>t</i> -1						
Population aged 55-64 <i>t</i> -1	0.246 (0.230)	-0.013 (0.405)	-0.192 (0.378)	0.149 (0.216)	-0.327 (0.402)	0.113 (0.082)
Life expectancy at age 55 <i>t</i> -1	-0.645 (0.442)	0.586 (0.607)	0.759 (0.653)	-0.343 (0.401)	0.940 (0.595)	-0.424* (0.214)
Share low-educated in age group 55-64 <i>t</i> -1	-0.019 (0.049)	-0.023 (0.064)	-0.007 (0.073)	-0.001 (0.048)	-0.013 (0.063)	-0.012 (0.016)
Dependent variable (level) <i>t</i> -1	-0.105** (0.032)	-0.092** (0.028)	-0.124** (0.0429)	-0.151** (0.046)	-0.139*** (0.0341)	-0.046* (0.021)
Constant	0.927** (0.319)	4.530** (1.694)	6.312* (2.527)	0.511* (0.254)	6.688*** (1.942)	0.288 (0.185)
R ²	0.483	0.496	0.218	0.443	0.466	0.622
RMSE	1.494	1.998	2.006	1.413	1.911	0.619
N	337	337	337	337	337	337

Note: Prais-Winsten regression estimates with panel-specific autocorrelation structure and panel-corrected standard errors (in parentheses). Unit and period fixed effects included, but not displayed. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Source: Eurostat.

were no statistically significant effects of the controls apart from a negative association of life-expectancy with long-term unemployment (Model 6). These results indicate that cyclical effects still played a role in determining early exit among older workers and that a healthier older workforce was less at risk of becoming long-term unemployed.

Table 2 shows the relations between changes in the pathways, separately (Models 7–9) and in various combinations (Models 10–11), and changes in

Table 2. Associations between changes in early exit pathways and employment rates in Europe, 1995–2015

	7	8	9	10	11
	Employment rate	Employment rate	Employment rate	Employment rate	Employment rate
Pathways					
Early retirement	-0.159*** (0.027)				
Disability		-0.042 (0.034)			
Long-term unemployment			-0.337*** (0.094)		
Early retirement + Disability				-0.226*** (0.033)	
Early retirement + Disability + Long-term unemployment					-0.247*** (0.032)
Controls					
Overall unemployment rate t_{-1}	-0.382*** (0.054)	-0.402*** (0.056)	-0.265*** (0.065)	-0.365*** (0.053)	-0.264*** (0.053)
Population aged 55-64 t_{-1}	-0.220 (0.159)	-0.344 (0.190)	-0.325 (0.191)	-0.230 (0.147)	-0.206 (0.142)
Life expectancy at age 55 t_{-1}	-0.065 (0.393)	-0.263 (0.390)	-0.365 (0.381)	-0.213 (0.378)	-0.312 (0.367)
Share low-educated in age group 55-64 t_{-1}	-0.013 (0.034)	-0.009 (0.037)	-0.0109 (0.037)	-0.003 (0.034)	-0.005 (0.033)
Dependent variable (level) t_{-1}	-0.045 [†] (0.020)	-0.061** (0.021)	-0.065** (0.020)	-0.045 [†] (0.020)	-0.047 [†] (0.019)
Constant	1.354 [†] (0.622)	2.102** (0.687)	2.182*** (0.645)	1.462 [†] (0.613)	1.528** (0.573)
R ²	0.496	0.445	0.464	0.513	0.538
RMSE	1.026	1.083	1.061	0.991	0.961
N	337	337	337	337	337

Note: Prais-Winsten regression estimates with panel-specific autocorrelation structure and panel-corrected standard errors (in parentheses). Unit and period fixed effects included, but not displayed. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Source: Eurostat.

the employment rates of the 55–64 years old. Models 7 and 9 indicate relatively strong associations between changes in the employment rate and changes in early retirement and unemployment, respectively. Yet, in particular the relatively low coefficient of early retirement ($b = -0.16$, Model 7) indicates that there was substantial spill-over to other kinds of non-employment. In Model 8 we did not find a statistically significant relation between disability

and employment. The effect sizes became larger when combining changes in early retirement and disability ($b = -0.23$, Model 10) and when adding long-term unemployment ($b = -0.25$, Model 11). In other words, the findings suggest that when the total of the pathways declined together, spill-over effects were more limited and the association with employment growth was largest. Apart from relations between the overall unemployment and lagged dependent variable indicators with the dependent variable, we found no statistically significant effects for any of the control variables.

Discussion

Since the mid-1990s, European policies have undergone an almost paradigmatic shift from promoting early exit of older workers towards “extended working lives” and “active ageing” (Ebbinghaus and Hofäcker, 2013). One of the dominant mechanisms in increasing labour market participation among older workers has been to close off the opportunities for leaving the labour market prematurely and before reaching the statutory pension age. Altogether, the average share of the older workforce being inactive due to early retirement, disability and unemployment decreased from nearly half (47.6 per cent) to a little over a third (37.6 per cent) in the 19 European countries of our sample from the mid-1990s to the mid-2010s. In other words, at present, early exit from labour market is less common and the role of early exit pathways as “pull factors” is less distinctive than 20 years ago.

Different benefit and pension schemes can serve as substitutes or functional equivalents in facilitating early exit (Casey, 1987; Kohli and Rein, 1991). Reforms that limit access to these and that promote and sanction reintegration to the labour market have decreased the incidence of early exit. We investigated the possibility that limiting access to one exit pathway does not always straightforwardly increases employment but leads to an increase in another pathway. Since the publication of Casey’s (1987) seminal work, ample evidence has been provided for instrument substitution in early exit. Qualitative macro-sociological case studies as well as quantitative micro-econometric studies have shown that substitution is a relatively common phenomenon. Yet, these studies usually look at relatively short time spans, often following a single reform, and at single countries only. Little research has been done on the universality of these substitution effects across countries and their direction and perseverance over a longer period of time and during the juncture favouring “extended working lives”.

Visual analysis of shifts between the exit pathways between the mid-1990s and mid-2010s confirmed the relevance of the substitution effects between pathways. In almost all European countries studied, the incidence of retirement before age 65 has

declined. In many countries the decline of early retirement was accompanied by increases in disability and in some countries with increases in long-term unemployment. Exceptions were Finland and the United Kingdom, where all pathways contracted and where no substitution was found to take place in the long run.

The largest reductions in early retirement took place in some of the post-communist countries, such as Hungary, Slovenia and Slovakia. In these countries, the regular retirement age was comparatively low in the early 1990s and raising the retirement age has been one of the main objectives of pension reforms. Accordingly, the decline in early retirement in these countries was not only due to the closing of early retirement pathways, but to raising the regular retirement age, which in many countries has been below age 65, particularly for women (OECD, 2013). It is possible that disability programmes had been relatively underdeveloped, but increased in significance once access to early retirement became limited. Moreover, some of these countries were hit relatively hard by the economic recession after 2008, explaining increases in long-term unemployment.

Southern European countries that suffered the most from economic recession and unemployment during and after the financial crisis of 2008 also show the greatest increase of long-term unemployed among those aged 55–64. In Greece, this is so even though all early exit pathways expanded between 1995 and 2015. Portugal and Spain managed to reduce earlier retirement, but experienced an expansion of disability and long-term unemployment rates. In contrast, long-term unemployment among the older workforce has diminished most in Finland and Germany, both of which experienced high long-term unemployment rates among the older workforce in the mid-1990s. Yet, in Germany, as well as in Denmark and Sweden, reductions in long-term unemployment were accompanied by higher disability rates.

There appears to be a relatively straightforward long-term relation between decreases in early retirement and increases in employment in most countries. The relations between disability and long-term unemployment on the one hand, and employment rates on the other hand, were less clear. There was a group of countries where increases in employment were accompanied with decreases in disability, but also a group where employment rose in spite of increases in disability. Decreases were most common in countries that suffered from initially high levels of disability and it is likely that these decreases were instrumental in increasing employment rates. Arguably, in countries that initially enjoyed lower levels of disability, it became a relatively more frequently-used exit pathway as other opportunities for early exit were reduced between 2000 and 2015. In those countries, older workers with minor health problems were possibly previously able to use early retirement schemes, whereas currently they need to qualify as disabled to be able to exit early.

Regarding the relation between long-term unemployment and employment rates, three broad categories of countries can be identified. The first consists of

the Mediterranean countries (Spain, Portugal and Greece) that suffered most from the economic recession after 2008 and where growth in employment rates stagnated while unemployment rates increased substantially. Employment rates grew in the other two groups, but in one long-term unemployment rates increased while in the other they decreased. Increases in long-term unemployment were found especially among countries where employment rates in the mid-1990s were particularly low. It seems that in these countries older workers were more vulnerable when the economic crisis hit than in countries where older workers had been previously better integrated or where their employment rates have traditionally been higher.

With the use of cross-sectional time-series data for 19 European countries, our regression analysis showed that substitution effects were common and substantial. The small or non-significant effects of the control variables excluded other explanations for changes in the exit pathways, such as developments in populations' age structure, health situation and education levels. Substitution took place between early retirement and disability in particular. This finding is supported by single-country studies on the spill-over effects between early retirement and disability (Duggan et al., 2007; Jousten et al., 2011; Atalay and Barrett, 2015; Ardito, 2017). It seems likely that reforms to increase retirement ages and to close off early retirement in Europe have led to greater inflows into or fewer outflows from disability benefits. Yet, the size of the substitution effects also indicated that early retirement and disability were not entirely functional equivalents but imperfect substitutes only.

There were small but statistically significant substitution effects between changes in disability and long-term unemployment. Various studies have shown that disability benefits often contain a certain degree of "hidden unemployment": people lose their jobs, but qualify for disability benefits and thereby exit the labour market (Autor and Duggan, 2003; Koning and van Vuuren, 2010). However, it is possible that long-term unemployment is an inadequate indicator of unemployment as an early exit pathway, due to the primarily cyclical nature of long-term unemployment. The findings showed that long-term unemployment among older workers was strongly affected by the state of the economy, although early retirement and disability as early exit pathways were also not entirely "decoupled from the economic cycle" (Ebbinghaus and Hofäcker, 2013): there were positive relations between the overall unemployment rate and each of the combinations of exit pathways.

The results of the regression models also confirmed the descriptive evidence from Figure 5 that there was a strong negative relation between changes in early retirement and employment rates. Unsurprisingly, there was also a negative relation between long-term unemployment and employment, as both are closely interrelated. However, there was no statistically significant relation between

disability and employment rates. This supports our other findings that disability acts as a substitute for the other two pathways, but that in times of employment growth its development was path dependent and related to the initial institutional arrangements in early retirement and disability programmes. The results also showed that effects on the employment rate were largest when combining changes in all three pathways. This supports earlier research that has found that spill-over effects are minimized and employment effects optimized when pathways are reduced simultaneously (Euwals, van Vuren and van Vuren, 2012).

One limitation to this study is that it is difficult to identify the exact flows between pathways based on this data and impossible to discuss causal effects. However, whereas single-country econometric studies have stronger claims about causal relations related to single reforms, they lack the ability to explain more universal trends and shifts over longer periods of time. Therefore, our approach of looking at trends in a cross-country comparative setting may increase a deeper understanding of substitution and spill-over effects.

One further limitation of this study is the availability and operationalization of data that actually measure the size of each of the pathways and that allow accurate comparisons between countries. Problematic with the self-reported data is that retirement and disability might mean different things in various countries or even between individuals within a single country. Unemployment might be more hidden in some countries, due to those losing their jobs being granted an early retirement pension or disability benefits (Koning and van Vuuren, 2010).

Moreover, the data did not allow investigating whether substitution effects were the result of intended policy-making or an unforeseen side-effect of policy reforms. An important role in further research on this topic should be ascribed to cost-shifting mechanisms between different early exit programmes, both publicly and privately funded (Casey, 1987). Although central to Casey's study, cost shifting could not be investigated further due to a lack of adequate aggregate data concerning spending on early exit programmes.

Nevertheless, the findings are in line with other, both qualitative and quantitative, studies and suggest that instrument substitution takes place in its various forms between countries and over time. This has at least two important implications for policy-making. The first concerns efficiency. In the current context of extending working lives, it needs to be taken into account that, when closing off a dominant exit pathway, workers in the later stages of their careers might seek other ways to withdraw from the labour market. Therefore, our study confirms that policy-makers are advised to take a comprehensive approach to early exit and address all possible spill-overs towards inactivity, if increased labour market participation of older workers is the aim of the reform (Euwals, van Vuren and van Vuren, 2012).

Such a comprehensive approach, however, should not only include addressing exit pathways simultaneously in order to remove the factors that "pull" older

workers from the labour market, but also aim at measures that enable older workers to continue working and reduce the effects of the so-called “push factors” of labour market exit (Ebbinghaus and Hofäcker, 2013). Such measures may include appropriate training and health policies, as well as removing other barriers that keep older workers from being retained or hired. This becomes even more relevant in light of the fact that many countries are further raising their retirement ages. A recent Dutch study predicted that future increases in the retirement age will not result in spill-overs into disability benefits, but this is only under the assumption that the health status of older workers will continue to improve (Dillingh et al., 2018).

The second implication concerns issues of equality and equity among older workers. Whereas most studies find that employment effects of early exit reforms dominate substitution effects, there are socio-economic inequalities between those who remain employed and those who make use of the substitutes (Ardito, 2017; Geyer and Welteke, 2017). Early exit and inactivity at older age increasingly become the exclusive domain of lower socio-economic classes and those in poor health with few possibilities for extended working lives. Moreover, considering the motive of many reforms to reduce or shift costs, the substitutes are likely to be financially less generous or not a permanent option through which to exit the labour market. Rather, in the case, for example, of unemployment or sickness benefits with a maximum duration, they may represent a temporary stop-over on the way to a next job. This could result in greater poverty, insecurity and precariousness in the late careers of disadvantaged groups in particular. Therefore, with extended working lives becoming increasingly the norm, social policies should address these inequalities comprehensively and consistently over the life course.

Bibliography

- Ardito, C.** 2017. *Rising pension age in Italy: Employment response and program substitution* (Working paper, No. 22). Turin, University of Turin – Department of Economics and Statistics.
- Arpaia, A.; Dybczak, K.; Pierini, F.** 2009. *Assessing the short-term impact of pension reforms on older workers' participation rates in the EU: A diff-in-diff approach* (Economic paper, No. 385). Brussels, European Commission – Directorate-General for Economic and Financial Affairs.
- Atalay, K.; Barrett, G. F.** 2015. “The impact of age pension eligibility on retirement and program dependence: Evidence from an Australian experiment”, in *The Review of Economics and Statistics*, Vol. 97, No. 1.
- Autor, D. H.; Duggan, M. G.** 2003. “The rise in the disability rolls and the decline in unemployment”, in *The Quarterly Journal of Economics*, Vol. 118, No. 1.

- Beck, N.; Katz, J. N.** 1995. “What to do (and not to do) with times-series”, in *American Political Science Review*, Vol. 89, No. 3.
- Beck, N.; Katz, J. N.** 2011. “Modeling dynamics in time-series-cross-section political economy data”, in *Annual Review of Political Science*, Vol. 14.
- Bonoli, G.** 2003. “Social policy through labor markets: Understanding national differences in the provision of economic security to wage earners”, in *Comparative Political Studies*, Vol. 36, No. 9.
- Borghans, L.; Gielen, A. C.; Luttmer, E. F. P.** 2014. “Social support substitution and the earnings rebound: Evidence from a regression discontinuity in disability insurance reform”, in *American Economic Journal: Economic Policy*, Vol. 6, No. 4.
- Casey, B.** 1987. “Early retirement: The problems of instrument substitution and cost shifting and their implications for restructuring the process of retirement”, in *International Social Security Review*, Vol. 40, No. 4.
- Cribb, J.; Emmerson, C.; Tetlow, G.** 2013. *Incentives, shocks or signals: Labour supply effects of increasing the female state pension age* (IFS working paper, No. 13-03). London, Institute for Fiscal Studies.
- Dillingh, R. et al.** 2018. *Effect van stijging AOW-leeftijd op arbeidsongeschiktheid*. Den Haag, Centraal Planbureau.
- Duggan, M. G.; Singleton, P.; Song, J.** 2007. “Aching to retire? The rise in the full retirement age and its impact on the social security disability rolls”, in *Journal of Public Economics*, Vol. 91, No. 7–8.
- Ebbinghaus, B.** 2006. *Reforming early retirement in Europe, Japan and the USA*. Oxford, Oxford University Press.
- Ebbinghaus, B.** 2012. “Europe’s transformations towards a renewed pension system”, in G. Bonoli and D. Natali (eds), *The politics of the new welfare state*. Oxford, Oxford University Press.
- Ebbinghaus, B.; Hofäcker, D.** 2013. “Reversing early retirement in advanced welfare economies: A paradigm shift to overcome push and pull factors”, in *Comparative Population Studies*, Vol. 38, No. 4.
- European Commission.** 2018. *The 2018 Pension adequacy report: Current and future income adequacy in old age in the EU*. Brussels, European Commission – Directorate-General for Employment, Social Affairs and Inclusion.
- Eurostat.** 2015. *European Union statistics on income and living conditions (EU-SILC)*. Luxembourg.
- Eurostat.** 2018. *Inactive population not seeking employment by sex, age and main reason [lfsa_igar]*. Luxembourg.
- Euwals, R.; van Vuren, A.; van Vuuren, D.** 2012. “The decline of substitute pathways into retirement: Empirical evidence from the Dutch health care sector”, in *International Social Security Review*, Vol. 65, No. 3.
- Fortin-Rittberger, J.** 2014. “Time-series cross-section”, in H. Best and C. Wolf (eds), *The SAGE handbook of regression analysis and causal inference*. London, SAGE.

- Geyer, J.; Welteke, C.** 2017. *Closing routes to retirement: How do people respond?* (IZA discussion paper, No. 10681). Bonn, Institute of Labor Economics.
- Guillemard, A.-M.** 2016. "France: Working longer takes time, in spite of reforms to raise the retirement age", in *Australian Journal of Social Issues*, Vol. 51, No. 2.
- Guillemard, A.-M.; Van Gunsteren, H.** 1991. "Pathways and their prospects: A comparative interpretation of the meaning of early exit", in M. Kohli et al. (eds), *Time for retirement: Comparative studies of early exit from the labor force*. Cambridge, Cambridge University Press.
- Hofäcker, D. et al.** 2016. "Trends and determinants of work-retirement transitions under changing institutional conditions: Germany, England and Japan compared", in *Journal of Social Policy*, Vol. 45, No. 1.
- Hytti, H.** 2006. "Why are Swedes sick but Finns unemployed", in *International Journal of Social Welfare*, Vol. 15, No. 2.
- Inderbitzin, L.; Staubli, S.; Zweimüller, J.** 2016. "Extended unemployment benefits and early retirement: Program complementarity and program substitution", in *American Economic Journal: Economic Policy*, Vol. 8, No. 1.
- Jousten, A.; Lefebvre, M.; Perelman, S.** 2011. *Disability in Belgium: There is more than meets the eye* (NBER working paper, No. 17114). Cambridge, MA, National Bureau of Economic Research.
- Karlström, A.; Palme, M.; Svensson, I.** 2008. "The employment effect of stricter rules for eligibility for DI: Evidence from a natural experiment in Sweden", in *Journal of Public Economics*, Vol. 92, No. 10–11.
- Kohli, M.; Rein, M.** 1991. "The changing balance of work and retirement", in M. Kohli et al. (eds.). *Time for retirement: Comparative studies of early exit from the labor force*. Cambridge, Cambridge University Press.
- Koning, P. W. C.; van Vuuren, D.** 2010. "Disability insurance and unemployment insurance as substitute pathways", in *Applied Economics*, Vol. 42, No. 5.
- Kyyrä, T.** 2015. "Early retirement policy in the presence of competing exit pathways: Evidence from pension reforms in Finland", in *Economica*, Vol. 82, No. 325.
- Kyyrä, T.; Pesola, H.** 2017. *Long-term effects of extended unemployment benefits for older workers* (IZA Discussion paper, No. 10839). Bonn, Institute of Labor Economics.
- Lammers, M.; Bloemen, H.; Hochguertel, S.** 2013. "Job search requirements for older unemployed: Transitions to employment, early retirement and disability benefits", in *European Economic Review*, Vol. 58, February.
- OECD.** 2013. *Pensions at a glance 2013: OECD and G20 indicators*. Paris, Organisation for Economic Co-operation and Development.
- Riphahn, R. T.** 1997. "Disability retirement and unemployment – Substitute pathways for labour force exit? An empirical test for the case of Germany", in *Applied Economics*, Vol. 29, No. 5.
- Staubli, S.; Zweimüller, J.** 2013. "Does raising the retirement age increase employment of older workers?", in *Journal of Public Economics*, Vol. 108, December.

Appendix

Table A1. *Descriptive statistics of the main variables*

Variable	Mean	SD	Min	Max	No. of imputed country-years	Imputations per country
Main dependent and independent variables (% of population aged 55–64)						
Retired	29.17	16.7	1.62	72.83	5	BE(2), DE(1), UK(2)
Disabled	9.75	5.43	0.96	28.21	12	BE(6), DE(1), SI(1), ES(1), UK(3)
Long-term unemployed	3.63	2.62	0.36	14.84	16	AT(1), BE(1), EE(3), NL(2), NO(5), SI(2), SE(2)
Employed	45.15	13.43	19.40	74.50	4	CZ(1), FI(1), NO(1), SE(1)
Controls						
Unemployment rate	8.64	4.43	2.10	27.50	0	
Share aged 55–64 of total working-age population	17.57	2.12	12.68	22.36	0	
Life expectancy at age 55	26.29	1.88	21.40	30.10	0	
Share of population aged 55–64 with lower education only	40.76	20.83	9.80	92.80	9	AT(4), CZ(1), DE(1), NL(1), NO(1), UK(1)

Source: Eurostat.

The performance of the income protection system for older adults in Ecuador and future challenges

Ignacio Apella

World Bank, Washington, DC United States

Abstract The objective of this article is to analyse the performance of Ecuador’s pension system and the challenges it will face in the future. Over the last 13 years, the pension system has made significant advances in terms of coverage and adequacy. However, demographic ageing is straining the financial sustainability of the contributory scheme. In this context, a number of public policy areas are identified, in terms of parameters and structures, which, together with the expansion of non-contributory coverage, could provide a more equitable and sustainable scheme.

Keywords pension scheme, defined benefit plan, non-contributory scheme, demographic aspect, gaps in coverage, Ecuador

Address for correspondence: Ignacio Apella, Social Protection Economist, World Bank, 1850 I St NW, Washington, DC 20006, United States; email: iapella@worldbank.org.

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Introduction

Ecuador has an income protection system for older adults composed of two major income transfer mechanisms. The first is a defined benefit contributory scheme, based on a general average premium scheme that provides insurance to all workers in the formal sector of the economy. The other is a solidarity pension system aimed at compensating for the gaps in population coverage resulting from the contributory scheme.

The Ecuadorian contributory pension scheme offers protection to registered workers, who over the last decade have represented less than 30 per cent of the workforce. In the last five years there has been a significant improvement in coverage due to better macroeconomic conditions and a major effort by the authorities to ensure compliance with regulations. This is of particular importance, as it is possible to advance the formalization¹ of the workforce if some basic conditions are met and the political will to do so is present. Considerable progress has been made, but it is not yet sufficient to offer adequate social protection to the entire population in the short term: hence, other types of initiatives are essential.

There are also various sources of funding for pension schemes. Contributions made by formal sector workers finance a significant part of the expenditure incurred by the contributory scheme. However, resources are also assigned from general tax revenue, not only to finance non-contributory pensions, but also to cover 40 per cent of the pension expenditure of the Ecuadorian Social Security Institute (*Instituto Ecuatoriano de Seguridad Social* – IESS). The combination of contributory and “non-contributory” resources in the scheme administered by the IESS is a controversial issue: the horizontal equity of the system is debated and merits consideration.

In a context of gradual demographic ageing, the current difficulties faced by social protection will tend to grow with time. Some 6.5 per cent of Ecuador’s population is aged 65+, but that percentage will almost triple by 2050. If the fiscal resources necessary to ensure adequate social protection seem insufficient at present, it is clear that in the medium and long term the challenge will be much more serious and will require substantial reforms, which need to be designed and implemented in the short term.

The objective of this article is thus to analyse the performance of the income protection system for older adults as a whole, covering both pillars – the contributory and the non-contributory pension schemes. The aim is also to understand the medium- and long-term challenges posed by demographic change, in particular in relation to the financial sustainability of the contributory system managed by the IESS.

1. In this article, the term “formal” is used to refer to workers who pay contributions to social security and are hence covered against the risks of loss of income and other shocks.

The article is structured as follows. The following section briefly describes the historical evolution of the income protection system for older adults in terms of its design. We then analyse a number of indicators related to the performance of pension schemes. In turn, an actuarial simulation is carried out using the model of pension policies developed by the World Bank, PROST (Pension Reform Options Simulation Toolkit), which makes it possible to simulate the future income and expenditure of IESS pension insurance. Some final considerations are then offered.

The income protection system for older adults

The structure of Ecuador's pension system has shifted over time. As in the rest of the Latin American region, the social protection system and its various components have been modified extensively since its initial conception.

Its origins date from 1928, as a result of the Retirement, Mutual Benefit, Savings and Cooperatives Act, which established the Pension Fund. With its corporatist nature, independent of the government, the Fund was intended to provide retirement pensions, funeral assistance and widows' pensions to public-sector employees, civilians and military personnel (Ibarra-Jarrin, 2015; Durán Valverde, 2008; Sasso, 2011). Later that same year, coverage was expanded to bank employees. In 1935, the Compulsory General Insurance (SGO) scheme was created and the National Social Security Institute was established as the supreme social security body, covering both public and private employees. A bipartite contributory system was thus established, with compulsory individual contributions of between 5 per cent and 10 per cent of wages, and a similar employer's contribution (Galvis Muñoz, 2015).

In the following decade, under the presidency of Carlos Arroyo del Rio, state contributions were added to the system, in an amount equivalent to 40 per cent of total pensions expenditure.² Thus in 1942 additional financing was introduced, derived from general tax revenue, with the adoption of the Compulsory Social Security Act. The original proposal was that such financing should be transitory, given that the system was young and in surplus, and would allow the fund to accumulate and through investments generate returns making it possible to finance part of the pension expenditure. However, this funding source was maintained without interruption until 2015, when it was suspended, but was later re-established in 2018.

2. It was with the arrival of a Czechoslovak actuary, Emil Schönbaum, expert of the International Labour Office, that the system acquired a technical structure, which was then enshrined in the Act of 1942, the Statutes of the Pension Funds of 1944, and the Statutes of the National Welfare Institute of 1945 (Mantilla and Abad, 1984).

In 1974 the IESS was created, which thereafter administered the various components of social security, which were decentralized and financed independently of each other (Durán Valverde, 2008; González Jaramillo et al., 2018).

The administration of pension funds for the armed forces and the police was left to autonomous institutions: in 1992 the Armed Forces Social Security Institute (*Instituto de Seguridad Social de las Fuerzas Armadas – ISSFA*) was created, followed in 1995 by the National Police Social Security Institute (*Instituto de Seguridad Social de la Policía Nacional – ISSPOL*). Also during the 1990s, the beginnings of the non-contributory component of the system were laid down with the creation in 1998 of the unconditional transfer programme, the *Bono Solidario* (Velásquez Pinto, 2003).

The last major reform took place in 2015, when the state contribution set at 40 per cent of total pension expenditure was eliminated, and replaced by a guarantee of transfer of resources in deficit situations. Similarly, the contribution rate for old-age, disability and survivors' insurance was reduced from 9.44 per cent of income to 5.76 per cent, accompanied by an increase in the rate of contribution for the individual and family health insurance, which increased from 5.71 per cent to 9.94 per cent (Table 1). The ultimate goal of this change was to solve temporarily the financial imbalance of health insurance and to liberate resources for the construction of hospitals.

The contribution rate for health insurance increased by 4.23 percentage points, with 3.68 points coming from the pension insurance rate, and 0.35 from occupational risk insurance.

This was a temporary measure, and assumes a gradual increase in contribution rates to the pension system until it reaches 10.36 per cent in 2021. The rate of contribution to health insurance will be gradually reduced to 5.16 per cent, also in 2021. The objective of this adjustment is to overcome the short-term financial deficits that have arisen in health insurance.

Table 1. Contribution rates (%), by branch of social security

Insurance	Rate of contribution (before 2015)	Rate of contribution (2015)	Difference
Pensions	9.44	5.76	-3.68
Health	5.71	9.94	4.23
Occupational risks	0.55	0.20	-0.35
Total	15.70	15.90	0.20

Source: Velazco Osorio (2017).

The eligibility of beneficiaries for retirement under the contributory pillar is based on a combination of age and length of contributions. Workers can retire at any age if they have paid a total of 40 years' contributions, at 60 years with 30 years of contributions, at 65 years with at least 15 years' contributions, or at 70 years with 10 years of contributions.

The amount of the pension is calculated as a percentage of the average monthly wage during the five best years: 50 per cent for those who have contributed 10 years, 75 per cent for 30 years, 81.25 per cent for 35 years, 100 per cent for 40 years, and 125 per cent for more than 40 years.

Performance of the income protection system for older adults

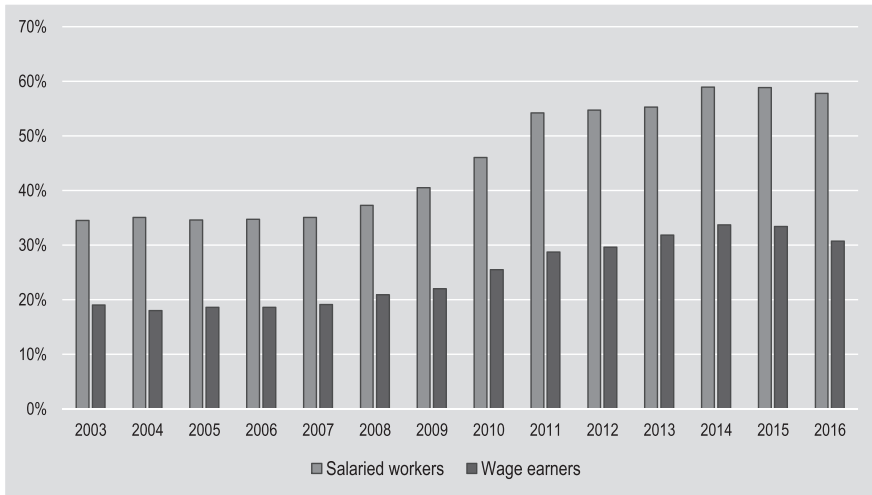
The performance of pension systems is measured on the basis of three criteria: i) coverage, understood as access to benefits by older adults in contributory schemes, of workers who should be generating future entitlements; ii) the adequacy of the benefits, that is, the extent to which the value of the transfers is sufficient; and iii) financial sustainability. These three criteria are interlinked given that it is not possible to increase coverage or benefits without affecting the financial needs of income protection schemes.

Coverage of the contributory system

The Ecuadorian contributory pension system is characterized by low levels of active coverage, regardless of whether this is measured in terms of the total number of all wage earners or if the target population is taken to be salaried workers (Figure 1). In this sense, between 2003 and 2007 the percentage of wage earners contributing to social security was on average only 18.6 per cent, whereas for salaried workers the percentage rose on average to 34.8 per cent.

This result is directly associated with the performance of the labour market; that is to say, the level of formality in the workforce. However, since 2007 a constant increase in active coverage has been observed, increasing from 19.1 per cent of the employed population in 2007 to 30.7 per cent in 2016. Something similar can be observed among salaried employees, workers whose coverage grew by 22.7 percentage points over the same period.

This significant increase in active coverage is related to two factors: the growth of the economy in recent years as a result of improvements in the terms of trade; and the implementation of a regulatory change that brought improvements in schemes supervising employers' obligations and reduced labour informality

Figure 1. *Percentage of people contributing to social security*

Source: Author's figures, based on the National Survey of Employment, Unemployment and Underemployment (ENEMDU – *Encuesta Nacional de Empleo, Desempleo y Subempleo*).

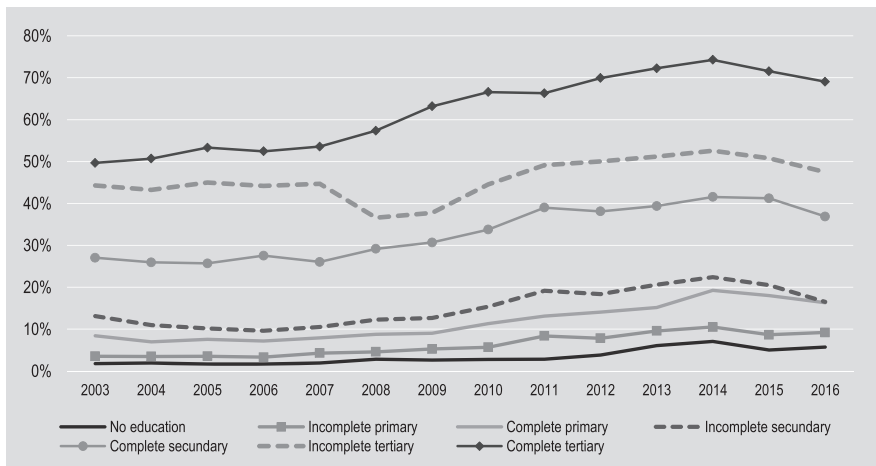
(Rofman, 2008). There was accordingly a significant increase in the level of formal public employment, which increased by 46 per cent between 2006 and 2015 (Ministry of Labour, 2015).

All policies that promote a reduction in labour informality also lead to higher social security contribution rates. Among the measures implemented are the use of the coercive power of the State (public officials penalize employers who do not formalize their workers), and the generation of incentive mechanisms such as simplified tax payment schemes. The IESS began offering a range of loans for the construction and repair of homes, and for the purchase of land by workers meeting certain conditions, including the requirement to have the status of a contributing worker with at least 36 consecutive months of social security contributions.

Despite this increase in active coverage, major differences can be seen if the individual characteristics of workers are considered: the percentage coverage of employed workers with a university level education is more than six times higher than coverage among those with an incomplete primary level (Figure 2). While this coverage gap has shown a slight reduction, it is still very significant.

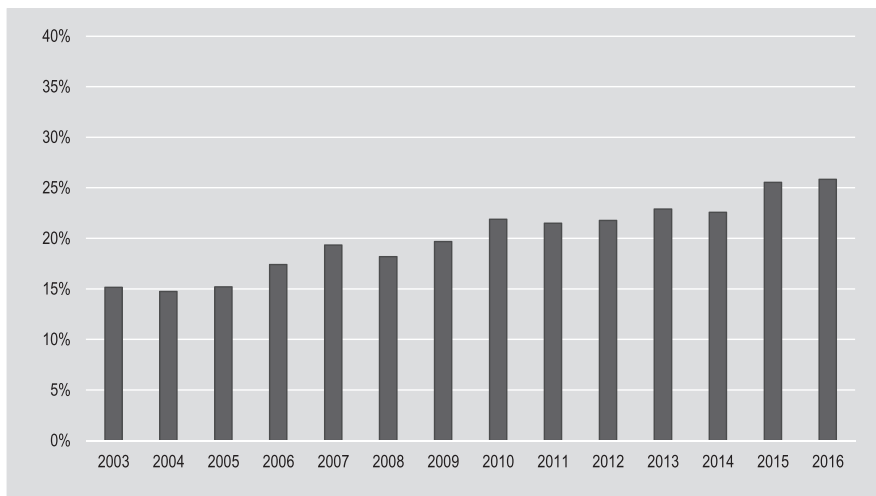
Coverage of Ecuador's non-working population has been among the lowest in Latin America since the 1990s. For the working population, between 2003 and 2007, there was a significant increase in the percentage of older adults who received a contributory pension benefit, which rose to about 20 per cent. After 2007, the trend was gradually upwards, reaching 25.8 per cent in 2016 (Figure 3).

Figure 2. Percentage of employed persons contributing to social security by educational level



Source: Author's figures, based on the National Survey of Employment, Unemployment and Underemployment (ENEMDU – Encuesta Nacional de Empleo, Desempleo y Subempleo).

Figure 3. Percentage of the population aged 65+ receiving contributory benefits, 2003–2016



Source: Author's figures, based on the National Survey of Employment, Unemployment and Underemployment (ENEMDU – Encuesta Nacional de Empleo, Desempleo y Subempleo).

This moderate increase is the result of a programme of retirement incentives that the State offered to workers, mainly those working in the health and

education systems, which consisted in the payment of a fixed amount as a “bonus” plus the payment of monthly benefits.

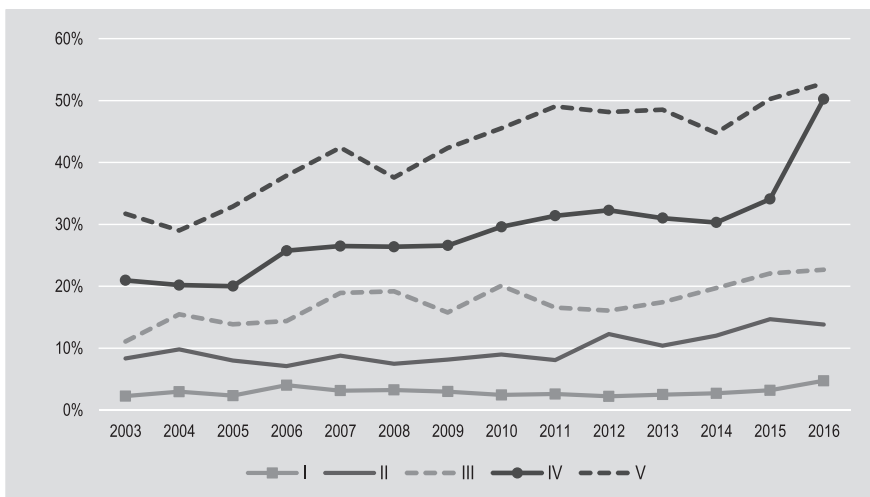
The patterns of inequality in terms of active coverage noted above are repeated at retirement: the passive coverage of compulsory insurance has a clear bias in favour of the highest income quintiles (Figure 4). In 2016, while only 5 per cent of older adults belonging to the first income quintile received a contributory pension benefit, this percentage was 53 per cent among those belonging to the fifth quintile.

Coverage of the non-contributory system

The scope of the contributory pension system discussed above illustrates one of the fundamental problems facing any contributory regime: the level of coverage is defined by factors external to the pension system, since the dynamics and performance of the labour market determine inclusion or exclusion. Contributory coverage hence reproduces labour market patterns, since middle-aged workers – with greater physical productivity, a higher educational level, and in an employment relationship with larger companies or in sectors characterized by job stability – are more likely to contribute (Apella, 2007).

In order to reduce the coverage gap of the non-working population, in 2006 the authorities introduced a non-contributory pension scheme, administered separately from the contributory scheme as a particular type of transfer under

Figure 4. Percentage of the population aged 65+ receiving contributory benefits by quintile of family income, 2003–2016



Source: Author’s figures, based on the National Survey of Employment, Unemployment and Underemployment (ENEMDU – *Encuesta Nacional de Empleo, Desempleo y Subempleo*).

the *Bono de Desarrollo Humano*. This scheme was focused initially on older adults representing the lowest 40 per cent of the poorest population. However, the constitutional reform of 2008 called for the gradual expansion of social protection. For this reason, in 2009 a revised standard was established, whereby the eligible population was defined as people aged 65+ living below the poverty line. However, in 2012 there was a relaxation of this rule, which made possible the coverage of the entire population registered in the household survey register.³

The amount of the transfer was originally very low (11.50 US dollars (USD), approximately 7 per cent of the minimum wage), but was increased in 2013 to USD 50 (16 per cent of the unified basic salary).

The introduction of the social pension brought a significant increase in the percentage of older adults receiving pension benefits: whereas in 2016 the contributory system covered 25.8 per cent of older adults, with the introduction of the non-contributory pension the proportion of older adults protected by some transfer scheme amounted to 60 per cent (Figure 5).

The low level of contributory coverage more significantly affects older adults belonging to the lowest income quintiles, while those in the highest income quintiles not only have greater coverage, but have also seen an increase in coverage in recent years. The implementation of the non-contributory pension has made it possible to reduce the coverage gap (Figure 6).

These findings show a significant and negative correlation between the scope of the non-contributory pension and income quintiles. Using figures for the last available year (2016), while the compulsory contributory system grants coverage to 5 per cent of older adults in the first quintile and 14 per cent of those in the second quintile, the non-contributory scheme reaches 49 per cent and 40 per cent, respectively. By contrast, in the fifth quintile, the scope of the contributory scheme is 53 per cent, while 11 per cent receive a social pension.⁴

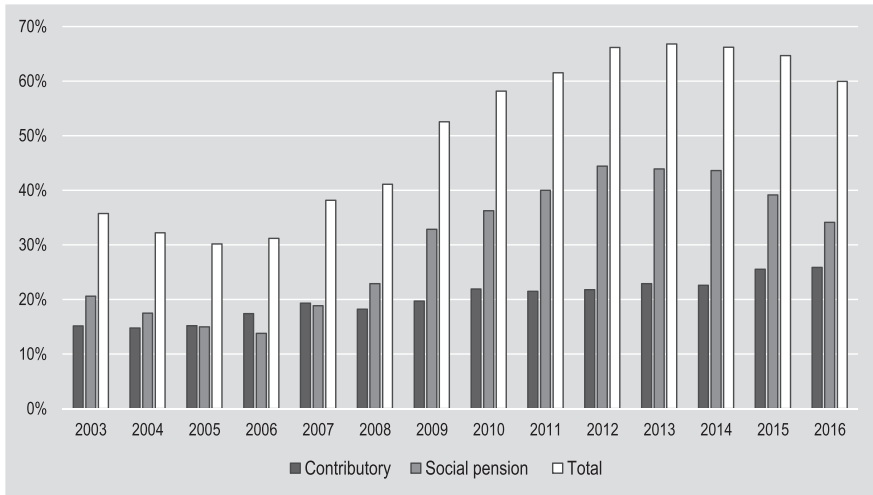
Impact on poverty and income distribution

The probability of falling below the poverty line is conditioned by various factors. Labour and social protection policies play an important role, since wages, the incomes of independent workers and social protection transfers constitute the main sources of household income.

3. The government is at the same time implementing a non-contributory pension in the context of the “My Best Years” (*Mis Mejores Años*) programme. This programme differs from the traditional social pension in the amount of the benefit, which is USD 100 (Ecuador has used the US dollar as currency since 2000). This transfer was announced during the last presidential campaign and is being introduced gradually. Eligible beneficiaries of My Best Years are persons aged 65+ assessed to be in a state of vulnerability according to a welfare index based on the household survey registry.

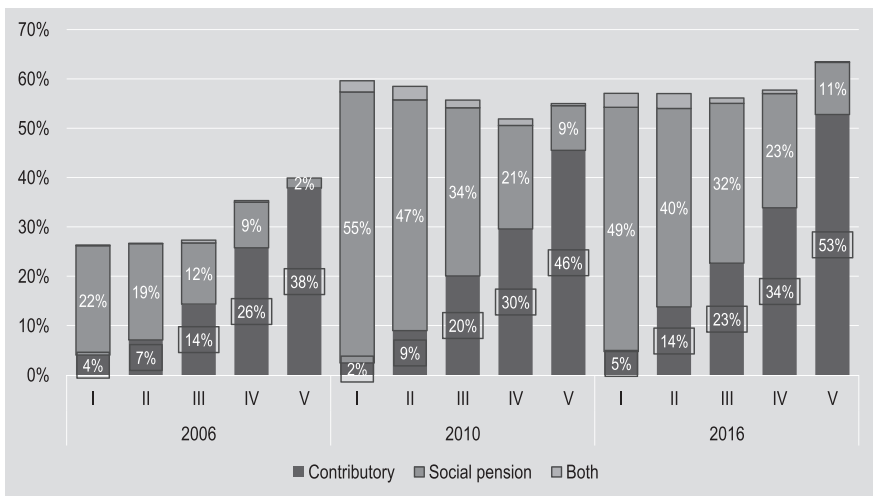
4. This finding may suggest errors of inclusion that merits review.

Figure 5. Percentage of the older population aged 65+ receiving benefits by type of scheme, 2003–2016



Source: Author's figures, based on the National Survey of Employment, Unemployment and Underemployment (ENEMDU – Encuesta Nacional de Empleo, Desempleo y Subempleo).

Figure 6. Coverage (%), by income quintile and type of pension, 2006, 2010 and 2016



Source: Author's figures, based on the National Survey of Employment, Unemployment and Underemployment (ENEMDU – Encuesta Nacional de Empleo, Desempleo y Subempleo).

In terms of age, the incidence of poverty by age is conditioned by the pattern of transfers and consumption over the life cycle. For this reason, pension systems are

regarded as an important component of social security systems, whose main objective is to cushion consumption (or income) across the life cycle of individuals and reduce the incidence of poverty among older people.

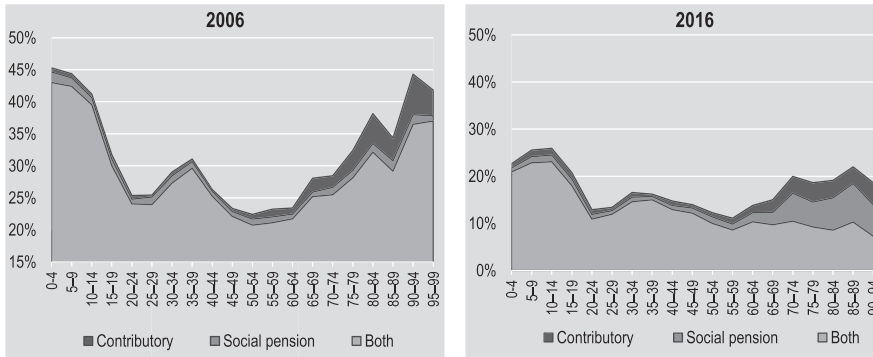
In order to approximate the size of transfers under the old-age income protection system in terms of the incidence of poverty and distributive inequality, the following includes an arithmetical exercise to determine poverty for the years 2006 and 2016. Using the National Survey of Employment, Unemployment and Underemployment (*Encuesta Nacional de Empleo, Desempleo y Subempleo* – ENEMDU) as the main source of information, this exercise consists in calculating the incidence of poverty and income distribution by age in terms of total household income, with and without transfers from the two pension schemes – compulsory contributory insurance and the solidarity pension.

Figure 7 shows, for the years 2006 and 2016, the percentage of people in poor households by age (presented using 5-year groupings), identifying the impact that each type of transfer has had on reducing poverty levels. Thus, it is noted that in 2006, poverty affected 30.6 per cent of the population, but without those transfer programmes it would have reached 32.4 per cent. However, the distribution by age of the incidence of poverty is not uniform: poverty is greater in two well-defined age groups: those younger than age 20 and those aged 65+. In this sense, the contributory pension scheme has a greater impact on poverty reduction among adults aged 65+, while social pensions have a smaller impact across the entire age distribution.

In 2016, the incidence of poverty was significantly lower (15.6 per cent) than that registered during 2006, and this is true of all age groups. As in 2006, transfers of income through the pension system played a central role in reducing poverty, since without such programmes the percentage of individuals belonging to poor households would have risen to 18.2 per cent. However, two separate features are evident by comparison with 2006: first, the impact of transfers on the incidence of poverty is greater given that the theoretical reduction is equivalent to 17 per cent, whereas in 2006 it was only 6 per cent; second, the impact of social pensions on this reduction increased significantly. This is the result of the increase in the value of the benefit paid. While in 2006 the social pension was USD 11.50, representing 20 per cent of the poverty line, in 2016 this transfer amounted to USD 50, reaching 60 per cent of the poverty line.

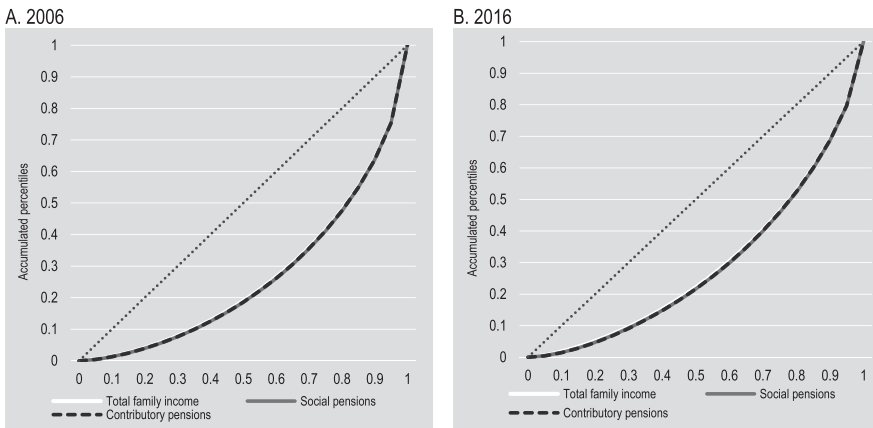
With respect to the distributive impact of the pension system, Figure 8 presents the Lorenz curve of total family income before and after transfers in 2006 and 2016. The results are less encouraging in terms of distribution. The Gini index in Ecuador was 0.41 in 2016 (similar to that observed in 2006, 0.47). However, even when we take contributory pensions and/or social pensions out of the picture, this indicator is not affected in any way.

Figure 7. Percentage of persons in poor households by age group before and after pension transfers



Source: Author's figures, based on the National Survey of Employment, Unemployment and Underemployment (ENEMDU – Encuesta Nacional de Empleo, Desempleo y Subempleo).

Figure 8. Lorenz curve before and after transfers through pensions



Source: Author's figures, based on the National Survey of Employment, Unemployment and Underemployment (ENEMDU – Encuesta Nacional de Empleo, Desempleo y Subempleo).

In summary, the income protection system for older adults has a mild impact on poverty, but none at all on the distribution of income.

Financial status of the contributory pension scheme

The financing of the contributory pension scheme administered by IESS has three main sources: i) current income, consisting of contributions from workers and employers;

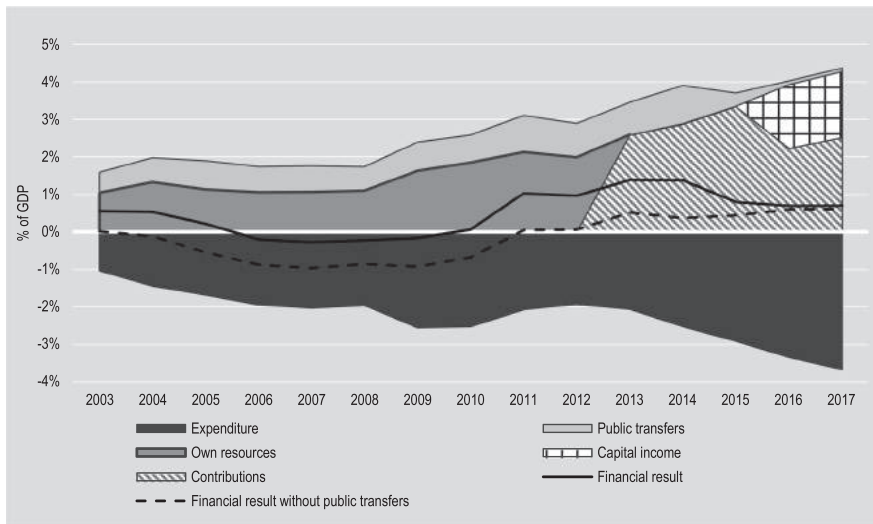
ii) capital income, which is mainly associated with the sale of assets generally managed in the technical reserve fund; and iii) public transfers. This last source of resources was defined as 40 per cent of total pension expenditure and was used until 2015, at which time it was suspended, then re-established in 2018 by order of the Supreme Court.

Figure 9 shows the expenditure, level of income and financial results of the contributory pension scheme expressed as a percentage of GDP. From 2003 to 2012, the available information makes it possible to divide the source of resources into two main categories: own resources (current and capital income) and public transfers. From 2013 to 2017, own resources can then be divided into current income (income from contributions) and capital income.

On average over the entire period considered, it may be observed that the financial result of the pension system was positive and equivalent to 0.5 per cent of GDP. However, it is possible to differentiate two well-defined periods: between 2003 and 2015 both current income and public transfers showed a growth trend, with an increase of 220 per cent, while the level of spending grew at a lower rate (181 per cent).

In particular, during 2010 and 2014 the financial result was significantly positive, reaching its maximum level in 2014 (1.3 per cent of GDP). These positive results show a high degree of dependence on transfers made by the State, which account for 40 per cent of total pension expenditure.⁵ Without

Figure 9. Resources, expenditure and financial results, 2003–2017 (% of GDP)



Note: Public transfers means transfers made by the State for 40 per cent of total pension expenditure.

Source: Author's own figures, based on IESS data.

5. These transfers are intended to finance total expenditure on pensions, and do not include employers' contributions made by the State as the employer of those employed in the public sector.

these public resources, the IESS would have shown a sustained deficit (on average equal to -0.15 per cent of GDP).

A second period begins in 2015. Two important changes have affected the pattern of resources of the contributory pension system administered by the IESS. On the one hand, the possibility of financing by the public sector – 40 per cent of total pension expenses – was eliminated. On the other hand, and as mentioned above, contribution rates were reduced. These changes meant a significant reduction in sources of income. In order to pay its obligations in the form of pensions, the IESS had to resort to capital income by drawing on technical reserves, which enabled it not only to finance current expenditure, but also to maintain a positive financial result. However, this implied a decrease in the funds accumulated by the system.

There has been a constant increase in the level of expenditure in recent years. This trend is directly associated with two factors: the increase in coverage, and the sustained increase in the level of benefits.

In 2010, the “Zero Law” (*Ley Cero*) established an automatic mechanism for updating benefits, which brought increases that exceeded the rate of inflation (Table 2). For this reason, between 2011 and 2015 the average increase in benefits amounted to 9 per cent (Figure 10). This, together with the increase in coverage, explains the increase in total spending. However, in 2015 this automatic mechanism was directly replaced by the inflation rate. Based on this new rule, benefits experienced an average annual increase of 3 per cent between 2016 and 2018.

As regards social pensions, the cost of the non-contributory programme is financed from general tax revenue and specific funds: during 2016, the cost of the programme represented 0.3 per cent of GDP.

In terms of the conventional approach to social security financing, the level of spending is relatively low. However, the rapid growth in spending observed in recent years requires specific attention. If this trend continues, the pressure on

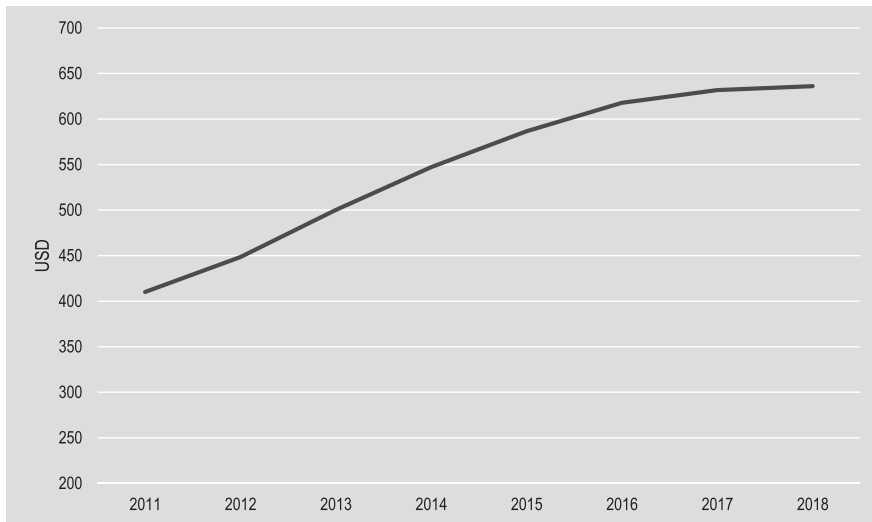
Table 2. *Legislated increases in contributory pensions to 2015*

Amount of benefit (as a percentage of the basic minimum wage)	Legal variation ^a
Less than 50%	16.16%
50–100%	12.41%
100%–150%	9.53%
150%–200%	7.31%
200%–250%	5.61%
250% and above	4.31%

Note: ^a means the variation in benefits resulting from the Zero Law (*Ley Cero*).

Source: IESS data.

Figure 10. Average benefit, 2011–2018



Source: IESS data.

the system could be excessive, which in turn could argue in favour of a decrease in expenditure, which is generally applied by restrictions on access to benefits, that is, a decrease in coverage.

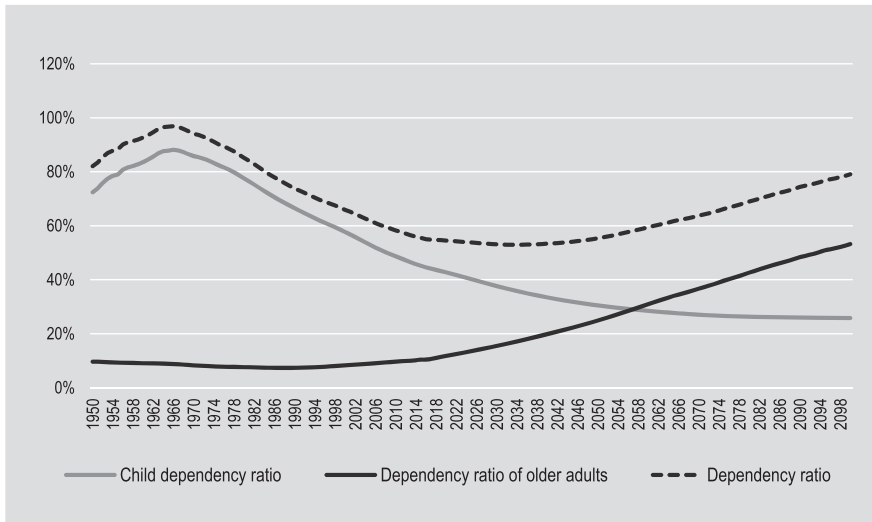
Demographic transition and medium- and long-term challenges

Ecuador is undergoing a process of demographic transition towards an older population structure. This is the result of the simultaneous decrease in fertility and mortality rates since the beginning of the last century. A growth in both the total dependency ratio and in the number of older adults is projected for the coming decades (Figure 11). The dependency ratio of older adults has been increasing since the beginning of the twenty-first century. While the ratio of the population aged 65+ to those of active age stood at 11.4 per cent in 2019, this ratio is projected to reach 24.9 per cent in 2050 and 53.2 per cent in 2100.

The apparent implication of demographic ageing is that there will be pressure on the sustainability of spending to finance pension benefits, while at the same time income from contributions will fall due to the smaller size of the active working-age population.

In this context, the objective of this section is to analyse the possible impact of demographic trends on the financial sustainability of the IESS contributory pension. This is done using the simulation model of pension policies developed

Figure 11. Ratios of demographic dependency, 1950–2100



Source: UNDESA – Population Division.

by the World Bank, called PROST (Pension Reform Options Simulation Toolkit), which makes it possible to simulate the course of income and expenditure of pension schemes and to map the impact of both parametric and structural reforms.⁶

This analysis draws on population projections by the United Nations Population Division⁷ and administrative information from the IESS on current coverage levels by type of benefit, number of contributors, wage levels, and benefit amounts, broken down by age and sex.

Long-term projections are necessary to assess how the system would react to expected changes in economic, political and demographic conditions. These forecasts are not intended “to get the future right”, but rather to make it possible to evaluate different prospects for the system, given certain reasonable assumptions about the long-term evolution of some determining variables. First, the current parameters of the model are set (amount of contributions,

6. This simulation tool develops models of pension contributions, pension rights, income and expenditure in the system over long time-frames. The model has been designed with the aim of promoting informed policy formulation. It is a flexible computerized mechanism that is easily adaptable to a wide range of circumstances in different countries.

7. The mortality tables projected by the United Nations are averages for the population as a whole. This means that they may underestimate the impact on pension expenditure flows as a result of differences in mortality rates between those covered by the contributory system (with higher educational levels and income) and those who are not so covered.

contribution rate, minimum legal retirement age, and levels of both passive and active coverage). In particular, for the sake of simplicity, and to avoid departing from a general view, it is assumed that the average retirement age is 60 years with 30 years of contributions. This combination of age and years of contributions results in a 75 per cent replacement ratio. In addition, the current contribution rate is set at 8.2 per cent of personal contributions and 1.3 per cent of employer contributions. In terms of the performance of the system, it is assumed that both the percentage of the population making social security contributions, analysed in terms of sex and age, remains constant over time. Finally, benefits are adjusted based on current regulations and the country's simulated inflation rate.⁸

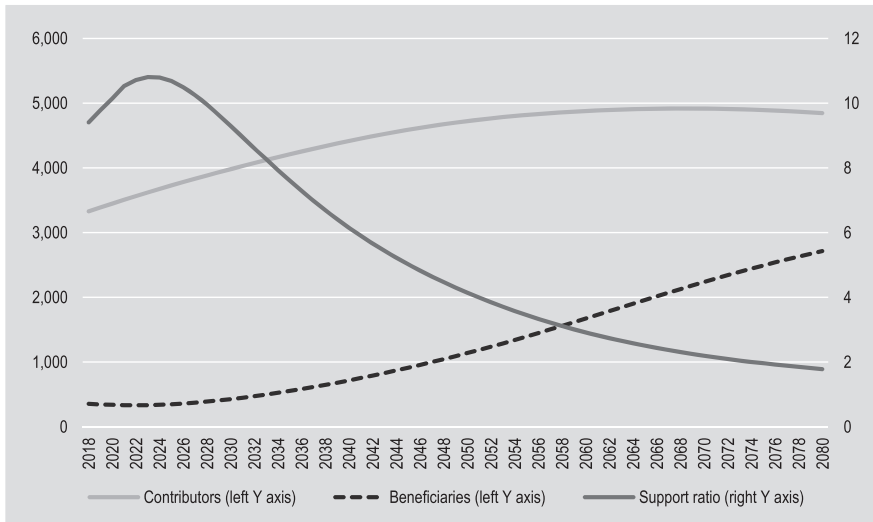
Based on the current parameters of Ecuador's pension system, the number of beneficiaries would increase from 340,000 in 2019 to 680,000 in 2040 and 2.7 million in 2080 (Figure 12). The number of contributors also shows an upward trend, although of lesser magnitude, until the 2060s, after which it will remain relatively constant at around 5 million. As a result, the system's support ratio shows a steadily downward trend from the 2020s onwards, from ten contributors to each beneficiary to two in 2080.

Based on these assumptions, the actuarial projection (Figure 13) shows a sustained growth in total expenditure, from 3 per cent of GDP in 2019 to 6.9 per cent in 2050, reaching 13.8 per cent in 2080. This is associated with the increase in the number of older adults in the population as the country undergoes demographic transition. At the same time, income from contributions paid by workers would maintain a relatively stable trend of around 3.3 per cent of GDP during the entire period under study. As a consequence of these trends, the pure financial result – the result arising from the difference between contributory resources and total expenditure on pensions – would be positive, at around 3 per cent of GDP up to the early 2030s. Thereafter, it would become negative, and could reach 3 per cent of GDP in 2050 and almost 11 per cent in 2080. However, if one examines resources from general tax revenue, the total financial result would only become negative a little more than a decade later (around 2045).

Ecuador faces two challenges. The first is associated with the low coverage that has traditionally characterized its pension system. Second, as demographic change progresses, there will be pressure on the financial sustainability of the system. For this reason a number of ideas for reform, both parametric and structural, are currently being discussed. In order to contribute to that discussion, some parameters in the simulation tool are modified to provide a better picture of their impact on trends in income and expenditure.

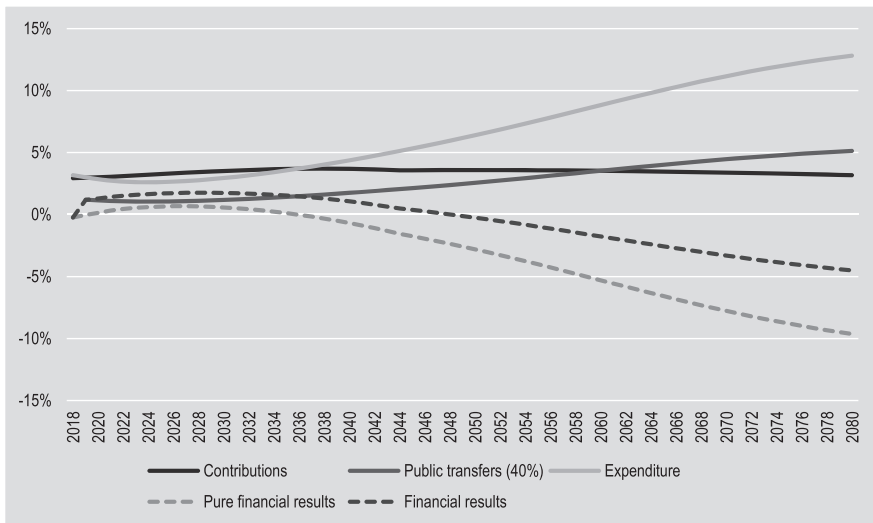
8. GDP and inflation projections by the International Monetary Fund (IMF) are used up to 2023. Thereafter, an annual inflation rate of 1 per cent and a GDP growth rate of 2 per cent are assumed.

Figure 12. Numbers of contributors, beneficiaries and support ratio, 2018–2080



Source: Author's figures, based on IESS data.

Figure 13. Resources, expenditure and financial results of pensions insurance, 2018–2080



Source: Author's figures, based on IESS data.

Such theoretical alterations include increasing the legal retirement age by eliminating the combinations of age-contribution requirements currently in force in order to allow workers to vary their active life and match projected increases

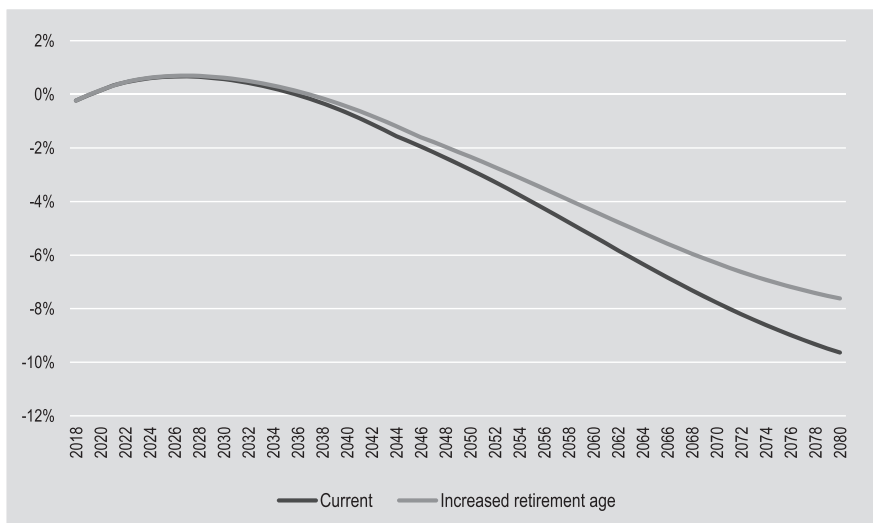
in life expectancy over time. For this, a public policy scenario is proposed in which the retirement age is raised by one year every ten years from 2028 onwards, while keeping all other parameters constant (Figure 14).

From a financial perspective, this alternative scenario would mean delaying by one year the deficits of the system. However, since there will be gradual changes in the retirement age, this allows only an approximate saving of 1 percentage point of GDP over the entire deficit period, with savings of 2 percentage points in the later years.

One alternative that normally accompanies such projections in public policy discussions is the incorporation of a capitalization pillar. In the particular case of Ecuador, the option considered in this analysis is to include an individual capitalization scheme, but targeted at the administration of the pension savings of workers belonging to the highest income quintiles. The reason for this is the potential inequity resulting from the greater level of subsidy (given the State transfer equal to 40 per cent of expenditure) that such workers would receive as beneficiaries.

The simulation is then used to examine the impact of introducing an individual capitalization scheme on the financial result of the traditional general average premium system administered by the IESS. Here it is assumed that the total active population between ages 15–50, employed and with a wage 2.5 times the

Figure 14. *Financial results compared, before and after an increase in retirement age, 2018–2080*



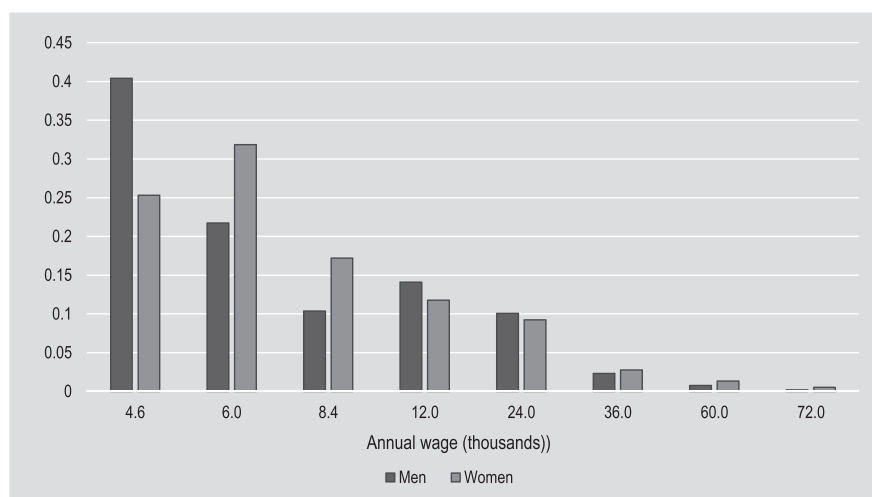
Source: Author's figures, based on IESS data.

unified basic salary (*salario básico unificado* – SBU),⁹ opt for the capitalization scheme and contribute up to the limit of the pay-as-you-go scheme, and then above that level to the capitalization scheme. This represents approximately 15 per cent of all contributors to the IESS (Figure 15).

The results suggest that the transition cost (the cost of transition from one scheme to the other) that would have to be addressed is not significant. Indeed, the pure financial result remains positive until the beginning of 2030, at which point it becomes negative (Figure 16). The transition cost would lead to a negative financial result five years earlier than would be the case without the introduction of a capitalization scheme. However, in the long term, the projected savings achieved in terms of deficit are equivalent to almost 2 percentage points of GDP on average.

An additional challenge posed by the income protection system for older adults is low coverage. Given that the contributory regime, which covers around 26 per cent of adults aged 65+, receives some financing from general tax revenue, there is a problem of horizontal inequity: those not covered by the scheme help finance the benefits for those who are covered through the payment of taxes. This fact justifies a public measure to grant a social pension to the excluded population, which partially exists already. In this way, a scheme of transfers is ensured, both contributory and non-contributory, which makes it possible to achieve almost universal coverage.

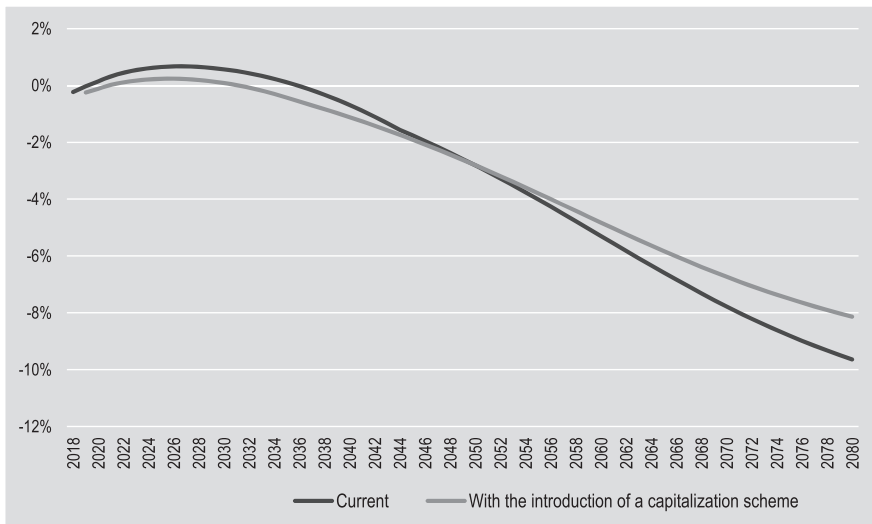
Figure 15. *Distribution of IESS contributors by wage intervals, 2018*



Source: Author's figures, based on IESS data.

9. In 2018, the unified basic salary was USD 386 per month; in 2019 it was USD 394.

Figure 16. *Financial impact of the introduction of a capitalization pillar, 2018–2080*



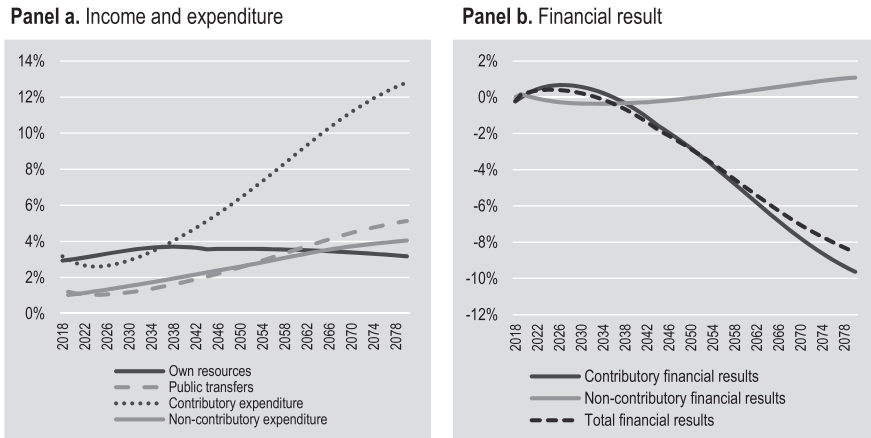
Source: Author's figures, based on IESS data.

To estimate the financial impact of such a scheme, the pattern of income and expenditure of the pension system is simulated based on two major assumptions. First, a universal pension is granted, consisting in transfers through contributions for those who are eligible, and a social pension for others older than age 70 who are excluded from the scheme. Second, the amount of the non-contributory benefit is USD 100. Figure 17 presents the results based on trends in contributory resources and in public transfers, and spending on contributory and social pensions.

The incorporation of a universal non-contributory scheme generates, hypothetically, an increase in the level of spending from 1 per cent of GDP in 2019 to 2.6 per cent in 2050 and 4 per cent in 2080 (Figure 17, Panel a). This trend results from assumptions of demographic ageing while maintaining relatively stable contributory coverage. However, the fiscal effort needed – if the statutory transfer to the IESS of 40 per cent of pension expenditure is maintained – not only increases, but also exceeds non-contributory requirements. This results in the fiscal resources (non-contributory) committed to the IESS regime exceeding the financial needs of a universal social pension, thus generating a surplus in the medium and long term (Figure 17, Panel b).

In summary, it is possible to identify several alternative changes in the income protection system for older adults, both parametric and structural, that could cushion the impact of demographic ageing in the medium term and expand the level of coverage. The public policy alternatives discussed above are not mutually

Figure 17. Resources, expenditure and financial results of pensions by scheme, 2018–2080



Source: Author's figures, based on IESS data.

exclusive, and a combination of parametric and structural changes could both be considered.

Final considerations

The Ecuadorian pension system faces two major challenges: how to realize higher coverage and financial sustainability. These two variables represent a trade-off. However, the article argues that there is some space to introduce certain reforms that will enable progress towards this goal.

The current scheme, which uses a combination of years of contributions and retirement age, is too flexible, enabling people younger than age 60 to withdraw from the labour market. When considering the gradual and constant increase in life expectancy, together with possible improvements in public health in general, there is some room to discuss introducing a single eligibility requirement, establishing more advanced retirement ages. At the same time, a gradual increase in the contribution rate necessary to protect contributory financing is a topic to be discussed between policy-makers, workers and employers.

Alternatively, consideration may also be given to the introduction of a capitalization pillar to manage the individual savings of workers with higher incomes. This could have two possible benefits: first, it would reduce the level of public subsidies to such workers; second, it would enable an increase in the replacement rate of these workers as a result of their contributing beyond the upper limit.

In the short term, the challenge that Ecuador must face is low pension coverage and prevailing horizontal inequality. The IESS receives part of its financing from general taxation resources equivalent to 40 per cent of its total expenditure, but the percentage of older adults who receive a retirement pension is only 26 per cent. This means that 74 per cent of older adults are excluded from a benefit that they finance through the payment of taxes (in general through consumption). As discussed in this article, those receiving contributory benefits are those who belong to the richest income quintiles, and the current financing scheme is hence very regressive.

For this reason it is necessary to consider expanding the non-contributory pension programme using the financing from general tax revenue that is paid to the IESS. From the simulations in the previous section it can be seen that such a move is not only viable, but would also have a major impact on coverage, thus correcting the existing inequality.

However, the economic policy underlying any process of change usually requires a long period of transition to achieve a consensus and the full application of a new institutional framework. For this reason, the creation of spaces for dialogue and agreement between policy-makers, the private sector, workers' unions and civil society is of paramount importance. These are necessary to build a consensus that will make it possible to reflect on the system of income protection for older adults in the medium and long term while ensuring adequate levels of coverage and financial sustainability.

Ecuador has a current demographic window that offers an important opportunity to start discussing and designing the reform of the entire income protection system for older adults, including contributory and non-contributory schemes. At this stage in the gradual process of demographic ageing, it has sufficient time to implement a change of design in the pension system in advance of the country's fuller demographic transition.

Bibliography

- Apella, I.** 2007. *Determinantes de la cobertura del sistema de pensiones argentino. Un enfoque desde los microdatos* (Documentos de Trabajo CEDES 36). Buenos Aires, Center for the Study of State and Society.
- Durán Valverde, F. D.** 2008. *Diagnóstico del sistema de seguridad social del Ecuador*. Lima, Oficina de la Organización Internacional del Trabajo para los Países Andinos.
- Galvis Muñoz, A. P.** 2015. *Sistema de pensión público, Colombia y Ecuador*. Manizales, Universidad de Manizales.
- González Jaramillo, V. H. et al.** 2018. "Propuesta de sustentabilidad para el fondo del Instituto Ecuatoriano de Seguridad Social (IESS)", in *Revista Espacios*, Vol. 39, No. 7.

- Ibarra-Jarrín, R.** 2015. *The inclusion of homemakers and household labour in the Ecuadorian social security system*. Quito.
- Mantilla C.; Abad, E.** 1984. “El Instituto Nacional de Previsión (1935-1970)”, in J. Núñez (ed.), *Historia del seguro social ecuatoriano: la evolución institucional*. Quito, Editorial Voluntad.
- Ministry of Labour.** 2015. *Evolución de la nomina del sector público 2006-2015*. Quito.
- Rofman, R.** 2008. “The pension system”, in V. Fretes-Cibils, M. Giugale and E. Somensatto (eds), *Revisiting Ecuador’s economic and social agenda in an evolving landscape*. Washington, DC, World Bank.
- Sasso, J.** 2011. “La seguridad social en el Ecuador: historia y cifras”, in *Boletín de Análisis de Políticas Públicas*, No. 6.
- Velazco Osorio, S.** 2017. *Nota técnica sobre la sostenibilidad de los regímenes de seguridad social administrados por el Instituto Ecuatoriano de Seguridad Social (IESS)*. Lima, Oficina de la Organización Internacional del Trabajo para los Países Andinos.
- Velásquez Pinto, M. D.** 2003. *The Bono Solidario in Ecuador: An exercise in targeting* (Extension of social security paper, No. 17). Geneva, International Labour Office – Social Security Policy and Development Branch.

Explaining differences in unemployment benefit takeup between labour migrants and Dutch native workers

Anita Strockmeijer, Paul de Beer and Jaco Dagevos

**Dutch Employee Insurance Agency, University of Amsterdam; Erasmus
University Rotterdam**

Abstract The large increase in Eastern European migrants entering the Dutch labour market has led to concerns about their potential claim on Dutch unemployment benefits. We use a decomposition analysis to investigate differences in uptake of unemployment benefits between migrants and native Dutch employees by analysing register data for all employees in the Netherlands in 2015. The results show that Eastern European migrants, similar to other migrants, receive unemployment benefit more often than native Dutch employees. This difference can be largely ascribed to job characteristics. The inclusion of unemployment risk in the analysis reveals that non-working migrants are much less likely to receive unemployment benefits than Dutch natives.

Keywords unemployment benefit, takeup, migrant worker, social cohesion, Netherlands

Addresses for correspondence: Anita Strockmeijer (corresponding author), Dutch Employee Insurance Agency (UWV), La Guardiaweg 68, 1043 DK Amsterdam, Netherlands; email: anita.strockmeijer@uwv.nl. Professor Paul de Beer, Chair in Labour Relations at University of Amsterdam, Amsterdam Institute for Advanced Labour Studies (AIAS-HSI), Nieuwe Achtergracht 166, 1018 WV Amsterdam, Netherlands; email: p.t.debeer@uva.nl. Professor Jaco Dagevos, Chair in Integration and Migration at Erasmus University, Burgemeester Oudlaan 50, 3062 PA, Rotterdam, Netherlands; email: j.dagevos@scp.nl. Professor Jaco Dagevos is also affiliated with the Netherlands Institute for Social Research (SCP). Professor Paul de Beer is also affiliated with De Burcht (Dutch Centre for Industrial Relations).

Introduction

A consequence of the enlargement of the European Union (EU) is that many migrants from Eastern European Member States have come to the Netherlands. Labour migrants who are residents of EU Member States do not need a work permit to work in the Netherlands, making it relatively easy for Dutch employers to employ this group of workers. In 2007, when the free movement of EU workers began to widen, 63,000 migrants were in paid employment in the Netherlands; a decade later, their number had increased to almost 300,000.

For the majority of the Eastern European migrants, work is the most important reason for coming to the Netherlands, primarily because of the higher income they expect to receive (Dagevos, 2011; Gijsberts and Lubbers, 2013). These workers are willing to accept lower wages and poorer working conditions than native Dutch employees because wages in the Netherlands are substantially higher than in the Eastern EU Member States. The jobs performed by Eastern European labour migrants in the Netherlands are characterized by a high degree of uncertainty about how long employment will last and whether employment contracts will be renewed. Given that these workers are mainly employed on temporary contracts in sectors that are sensitive to economic and seasonal fluctuations, these workers face a high risk of unemployment (Huijnk, Gijsberts and Dagevos, 2014).

The Dutch Unemployment Insurance Act (*Werkloosheidswet*) protects employees against the financial consequences of unemployment by providing a replacement income. The share of Eastern European labour migrants among recipients of unemployment benefits is substantially higher than their share in the working labour force (Huijnk, Gijsberts and Dagevos, 2014; Eurofound, 2015; Statistics Netherlands, 2018). The share of European migrants claiming unemployment benefits is also higher than among native Dutch employees, by a factor of between 1.5 and 2 (Barrett and Maître, 2013).

The arrival of Eastern European labour migrants in the Netherlands has fuelled the debate about the claiming of unemployment benefits. Borjas argues that a more generous social security system can attract or pull migrants, in a process he likens to a “welfare magnet” (Borjas, 1999). A negative self-selection mechanism may operate among migrants in the sense that they migrate in the expectation that the welfare state in the host country will offer them income protection (Nannestad, 2007). Generous benefits then act as a magnet, pulling in low-skilled migrants. It is sometimes argued in the public and political discourse that, while Eastern European labour migrants come to the Netherlands to work, they do so in the knowledge that if they become unemployed they can count on more generous unemployment arrangements than in their home country.

Although Eastern European labour migrants are more often in receipt of unemployment benefits, studies have often taken no account of differences in

background characteristics. The existence of a “pull” mechanism is difficult to test empirically, but we can investigate whether, after controlling for migrants’ background characteristics and labour market position, their takeup of unemployment benefits is disproportionately high. The unemployment risk of labour migrants was not included in earlier analyses (Huijnk, Gijsberts and Dagevos, 2014; Eurofound, 2015; Statistics Netherlands, 2018), while excluding their often vulnerable labour market position risks missing a possible explanation for their higher takeup of unemployment benefits.

The development of more detailed knowledge about the relationship between migrants and their use of social security programmes is highly desirable (Guild, Carrera and Eisele, 2013). If (too) many migrants make use of social security, this can put pressure on (national) solidarity (De Beer and Koster, 2007; Reesken and Van Oorschot, 2012) and have a bearing on public support for migration and the way migrants are perceived. In turn, this could threaten the legitimacy of migrant workers and therefore the continuation of their rights if they should become unemployed. This is not an imaginary risk: a large majority of the Dutch population (80 per cent) believe that migrants should go back to their country of origin if they become unemployed, while almost 60 per cent agree with the statement that migrants from Eastern Europe abuse the benefits system (Dagevos and Gijsberts, 2013).

To enable us to form a more substantiated view on the takeup of unemployment benefits by Eastern European labour migrants, in this article we address the following question: *Do Eastern European migrants claim Dutch unemployment benefits more often than Dutch natives, and if so, to what extent can this be explained by differences in personal and job characteristics?*

Theoretical framework

To be able to claim unemployment benefits, an employee must pass through two stages. The first is to lose their work and become unemployed. The second is to apply for unemployment benefit; provided they meet the conditions set out in the Unemployment Insurance Act, they may then receive benefits. In this article we analyse these two stages, first separately and then in combination. The distinction between the two stages is important, because the factors that influence the risk of becoming unemployed may be different from those affecting the likelihood of receiving benefits after becoming unemployed. It is, for instance, possible that workers in a vulnerable labour market position are more likely to become unemployed but are less likely to be awarded unemployment benefits if they do. This may occur, for example, because they do not meet all the eligibility criteria, such as the number of requisite weeks worked.

We analyse the risk of becoming unemployed to shed light on the effect of migrants' vulnerable labour market position and then investigate whether migrants who have lost their jobs receive unemployment benefits more or less often than native workers. We then combine the data on the two stages to explore whether labour migrants overall claim unemployment benefit more or less often than native Dutch employees. This latter exercise aligns with the majority of studies, which look at the relative benefit takeup of labour migrants (Barrett and Maitre, 2013; Huijnk, Gijsberts and Dagevos, 2014; Eurofound, 2015; Statistics Netherlands, 2018). Additionally, it offers an insight into the question of whether the impact of the first stage (losing work) or of the second stage (receiving unemployment benefit when unemployed) is the dominant factor for the total takeup of benefits.

The risk of employees losing their job depends on factors such as the sector in which they work and the type of employment contract they have. In a contracting economy, the reduction in employment is generally more marked in the private sector than the public sector (Vrooman, 2009). The risk of unemployment is also substantial in sectors that are subject to seasonal fluctuations in demand for labour. It is commonplace for employers in the agro-sector, for example, to hire Eastern European labour migrants to accommodate peaks in the workload. Short periods of employment also characterize the temporary employment sector. Many labour migrants from Eastern Europe find work with a Dutch employer in this sector owing to active placement by temporary employment agencies in their home country (Strockmeijer, De Beer and Dagevos, 2017). We therefore expect Eastern European labour migrants, given the sectors in which they are employed (especially the agro-sector and the temporary employment sector), to be at greater risk of unemployment, since these jobs are commonly temporary.

Employees with temporary employment contracts are at greater risk of unemployment than those with permanent employment contracts and more often receive unemployment benefits (Van der Werff, Kroon and Heyma, 2016). Employees with a migration background more often have flexible employment contracts than those with a Dutch background, and Eastern European labour migrants tend to work under temporary employment contracts over longer periods than do other migrant groups (Berkhout, Bisschop and Volkerink, 2014; Strockmeijer, De Beer and Dagevos, 2017). This, too, translates into a higher risk of unemployment for Eastern European labour migrants.

Apart from job characteristics, the unemployment risk also depends on personal characteristics. The risk of becoming unemployed is relatively high among young employees, who often have temporary contracts and who are often first in line for dismissal at times of rationalization ("last in, first out"). The average age of labour migrants from Eastern Europe is age 33, eight years younger than that of

native Dutch employees (Strockmeijer, De Beer and Dagevos, 2017). This also contributes to the higher risk of these workers losing their jobs.

Low-skilled workers have a greater risk of unemployment than workers with a higher education level. The share of low-skilled workers is twice as high among Eastern European labour migrants than among native Dutch employees (Dagevos, 2011). In addition, there is often a poor match between Eastern European labour migrants' educational background and their job: they are often overqualified for the work they are doing, or are qualified for a different type of work (Dagevos, 2011).

Finally, gender also influences the risk of unemployment. For many years, the unemployment rate for women was higher than that for men, but this difference disappeared during the most recent economic crisis; men are now actually slightly more at risk of losing their jobs because they work in more economically sensitive sectors such as construction and transport (Merens and Van den Brakel, 2014). The overrepresentation of Eastern European men in precisely these sectors heightens their risk of unemployment.

The above overview shows that the specific job and personal characteristics of Eastern European labour migrants are contributory factors in their risk of unemployment. Our first hypothesis states that:

Eastern European labour migrants lose their jobs more often than do native Dutch employees because of their job characteristics (H1a) and because of their personal characteristics (H1b).

Employees pay mandatory contributions towards unemployment insurance, affording them protection against the financial consequences of unemployment. Eastern European labour migrants pay these contributions, as do native Dutch employees, via their employer. To qualify for Dutch unemployment benefits, an employee must have been working in the Netherlands for at least 26 weeks during the 36 weeks preceding the first day of unemployment. An unemployed employee is then entitled to receive unemployment benefit for a period of three months. A longer employment history confers a longer entitlement to unemployment benefit. EU Regulations on social security ensure that differences in social security systems between countries do not pose a barrier to the free movement of workers.¹ If an employee works in another Member State, he or she enjoys the same social and tax advantages as employees who are nationals of that Member State.² Eastern European labour migrants therefore have the same entitlement to unemployment benefits as native Dutch employees. Periods in

1. Regulation 883/2004 (the base Regulation) and 987/2009 (the implementing Regulation).
2. Article 7(2) of Regulation 492/2011 guarantees the equal treatment of employees.

employment in the Netherlands, and elsewhere (EU/EEA), are taken into account in calculating the number of weeks and years worked.³

The requirement regarding the number of weeks worked means that unemployed workers with a short employment history do not always qualify for unemployment benefit. Many Eastern European labour migrants are young (Strockmeijer, De Beer and Dagevos, 2017), and almost half of them are “starters” (see below) on the Dutch labour market, meaning they first began working as employees in the Netherlands in the previous calendar year. By contrast, only 2 per cent of native Dutch employees are starters (Strockmeijer, De Beer and Dagevos, 2017). We would accordingly expect a high proportion of Eastern European labour migrants to have no entitlement to unemployment benefits when losing their job.

As stated, labour migrants may count the weeks worked in their country of origin as part of their entitlement to unemployment benefits, but they must apply for this to be taken into account explicitly. In 2015, only 32 applications included the foreign employment history when entitlement to unemployment benefit was being determining (Pacolet and De Wispelaere, 2016).⁴

Even when a worker is entitled to unemployment benefit, a lack of knowledge about the Dutch benefits system can still create a barrier to claiming it. An unemployed worker needs to know about the unemployment benefits system and the administrative procedures involved in making a claim (Hernanz, Malherbet and Pellizzari, 2004; Renema, 2018). Although we might expect labour migrants to have less knowledge than native Dutch employees, a study by Renema (2018) shows that many Polish migrants are aware of the Dutch eligibility requirements: 80 per cent know the rules governing entitlement. In answer to the question of when someone is entitled to unemployment benefits, a large majority select the response category “after having worked, paid taxes and social contributions for an extended period”. Respondents know that they are only entitled to unemployment benefit if they have been economically active in the Netherlands for a certain period; native Dutch employees were not asked this question. Social networks are one way in which this knowledge is transferred. Eastern European labour migrants often make use of employment placement agencies and intermediaries, which are by no means always concerned exclusively

3. Articles 6 and 61 of Regulation 883/2004 stipulate that periods of employment completed in another EU Member State must be taken into account as though they were periods completed in the Netherlands.
4. An employee who has received wages for 52 days or more per year during four of the last five years meets the “year requirement”. An employee who meets the year requirement is entitled to extension of the duration of benefits by one month per employment year worked. Approximately 9,000 applications were submitted in 2015 wherein the applicants may have had an employment history, impacting on the extension of the duration of the unemployment benefit. In 2,927 of the successful applications, the applicant had a Polish employment history.

with job placement, but also communicate with the benefits agency when the temporary employment contract expires (Guiaux, 2016).

Lack of knowledge therefore appears to be less of a barrier for Eastern European labour migrants than their employment history. Our second hypothesis is therefore:

Unemployed Eastern European migrants are less likely to receive unemployment benefit than do unemployed native Dutch workers because they are often unable to meet the requirement regarding the number of weeks worked (H2).

If Eastern European labour migrants lose their jobs more often than Dutch natives because of their job and personal characteristics, but less often receive unemployment benefits due to an insufficient employment history, the question then is which effect is dominant. Are Eastern European labour migrants more or less likely to receive unemployment benefits? There is considerable difference in the labour market position between Eastern European labour migrants and native Dutch employees (see Strockmeijer, De Beer and Dagevos, 2017). However, labour migrants are well aware of their unemployment benefit entitlements and know that they are entitled to benefits after working for six months. Accordingly, we expect the first effect (a higher risk of unemployment) to be stronger than the second effect (a lower chance of receiving benefits in the event of unemployment). Additionally, given that earlier studies show a higher takeup of unemployment benefits by Eastern European migrants, our third hypothesis is as follows:

Eastern European employees are more likely to receive unemployment benefits than native Dutch employees (H3).

Data and methods

Data

To answer the research question, the study drew on administrative microdata published by Statistics Netherlands concerning the jobs and wages of employees in the Netherlands, as well as unemployment benefits. The country of origin of employees born abroad was added to the employees' database in order to be able to distinguish between different groups of migrants in the analyses.

The focus in the analyses is on Eastern European labour migrants. The share of labour migrants from Eastern Europe in paid employment in the Netherlands and enrolled in the population register is around 45 per cent (Strockmeijer, De Beer and Dagevos, 2019). Focusing on both registered and unregistered labour migrants

produced a rich research database for the entire population of Eastern European labour migrants in paid employment. Their position is compared with that of native Dutch employees. We also wish to compare the Eastern European population with other migrant groups. To do so, we group migrants by origin into a number of categories: “Eastern European”; “other EU” (Member States that had free movement of workers before EU enlargement in 2004 and 2007, as well as Iceland, Liechtenstein, Norway (EEA) and Switzerland); “Western”; “Non-Western”; and Turkish and Moroccan employees, who formed the largest group of labour migrants in the 1960s and 1970s, are placed in a separate category.

In January 2015, there were 6.3 million employees aged 19 to 60 in paid employment in the Netherlands. Just over 183,000 were of Eastern European origin, or 2.9 per cent of the cohort (Table 1). The share of native Dutch employees in the total number of employees working in January 2015 was 87.0 per cent.

Dependent variables

We used two dependent variables: “no work in paid employment” and “receiving unemployment benefits”. “Receiving unemployment benefits” applies for employees from the cohort with “no work in paid employment” if they are no longer in paid employment in the Netherlands for at least one month within a year. To measure this, we monitor the cohort from February 2015 to December 2015 inclusive. Analysis of the variable “no work in paid employment” sheds light on the effects of a person’s labour market position. From this we can determine whether the often vulnerable labour market position of labour migrants is an important reason for their high share of claims for unemployment benefits. We derive the variable “no work in paid employment” from the monthly

Table 1. *Share of employees aged 19–60 and background characteristics, cohort January 2015*

Origin	Share employees (%)	Share male (%)	Average age	Share temporary work (%)
Eastern European	2.9	57.2	33.1	70.9
Other EU	2.5	55.3	39.7	35.3
Western excl. EU	1.2	47.1	41.0	34.3
Non-Western	4.5	51.2	40.4	36.6
Turkish/Moroccan	2.0	62.2	40.6	29.7
Dutch	87.0	51.2	39.7	26.8
	100.0			

Source: Authors, derived from Statistics Netherlands (2016).

observations of wage income. If an employee receives no income from wages in a given month, this suggests no work in paid employment in the Netherlands.

To avoid measuring mainly seasonal effects, we opted not to measure a single moment at which employees were or were not in work. Rather, we opted to spread the measurement over a period of one year. We use the term “no work in paid employment in the Netherlands” rather than “unemployed” because being unemployed implies that people have no work, have recently been looking for work and are available for work – information that we do not have. Although we refer to “no work”, we cannot rule out the possibility that income was obtained from self-employed activity during the relevant period, since this is another factor on which we have no information. It is moreover unclear whether people who are no longer in paid employment are still living in the Netherlands. We can therefore make statements about the extent to which migrants receive unemployment benefits more or less often than native Dutch employees after losing their job, but not why some of them do not claim unemployment benefits. However, this information is not needed in order to answer the main question, as we are concerned with whether Eastern European labour migrants receive unemployment benefits more or less often; the question of why is less important here. “No work” is a dichotomous variable; it is about becoming unemployed, not about how long someone spends without work.

The Dutch unemployment benefits database is linked to the employee database and contains information on unemployment benefits paid in the year 2015. For the variable “receiving unemployment benefits”, we monitor the cohort over the same period of a year and observe whether they received unemployment benefit for at least one month during that period. We measure the incidence, i.e. the number of people starting to receive unemployment benefits within a year, whereas most other studies focus on the prevalence, i.e. the total takeup of unemployment benefits at a specific moment. “Receiving unemployment benefits” is similarly a dichotomous variable: receiving or not receiving unemployment benefits within a year. If a person receives both income from wages and unemployment benefits in a given month, we interpreted this as receiving unemployment benefits.

Independent variables

Gender, age, contract, sector, hourly wage, employment history and origin were used as independent variables in our analyses. We have no information on education level for Eastern European labour migrants who are not enrolled in the population register, nor for the majority of those who are enrolled. We use hourly wage as a proxy for the strength of the labour market position (which is related to education, but also to other factors such as the skill level required by

the job); a lower hourly wage generally suggests a vulnerable position on the labour market.

We derive employment history from the number of years that employees were in paid employment in the Netherlands in the period 2011–2014. We distinguish between three categories: starters, employees with a longer employment history, and employees with an interrupted employment history. A starter is someone who worked in paid employment in the Netherlands for the first time in 2014. An employee with a longer employment history was in paid employment in the Netherlands for at least six months in each of the four preceding years (2011–2014). An employee with an interrupted employment history worked in paid employment for some of the period 2010–2014, but not in all years and not just in 2014.

Research methodology

We use the decomposition method to investigate differences in receipt of unemployment benefits between two groups of employees, and to determine the extent to which those differences are attributable to personal and job characteristics. This is a suitable method for investigating differences in average outcomes between two groups (Jann, 2008). In our analyses, we explain the differences between different migrant groups and native Dutch employees. The decomposition analysis breaks down the differences into an explained and an unexplained part. The explained difference shows what proportion of the difference can be ascribed to the background characteristics included in the model – in this case gender, age, contract, sector, hourly wage and employment history. The unexplained part reflects the portion of the differences between the groups that remains after controlling for the background characteristics. This unexplained part is often ascribed in the literature to discrimination, but it may also be caused by variables that are not included in the model, for example, in our case, education level. The Oaxaca method was used for the analyses in this article (Jann, 2008). This method enables categorical predictor variables to be included in the statistical programme Stata. We use logical regression analysis, present the categorical predictor variables and use deviation dummies.

First, we analyse whether and to what extent differences in “no work” between a labour migrant group and native Dutch employees can be explained by personal and job characteristics. We estimate the probability of loss of work by those in work:

$$P(\text{loses work between } t \text{ and } t + 1 | \text{work}_t)$$

This tests hypothesis 1a that Eastern European labour migrants more often lose their jobs than do native Dutch employees and that this difference can be explained by their job characteristics. It equally tests hypothesis 1b that this difference can be explained by their personal characteristics.

We then investigate the difference in receipt of unemployment benefits between labour migrants without work and Dutch natives without work, exploring the extent to which personal and job characteristics, including employment history, explain the differences. We estimate the probability of receiving unemployment benefits given the fact that people are not in work:

$$P(\text{receiving unemployment benefits between } t \text{ and } t + 1 | \text{loses work between } t \text{ and } t + 1)$$

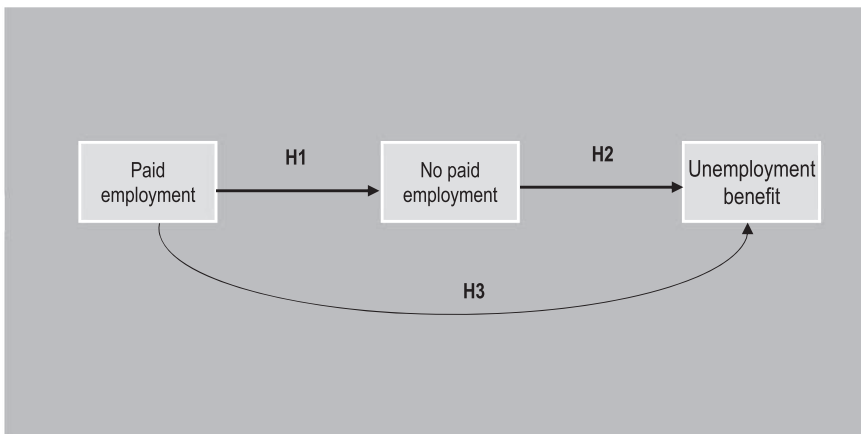
This tests hypothesis 2, which posits that the employment history of Eastern European labour migrants is often insufficient to qualify for unemployment benefits.

Finally, we examine which of the two effects dominates, estimating the probability that workers who lose their jobs will receive unemployment benefits:

$$P(\text{receiving unemployment benefits between } t \text{ and } t + 1 | \text{work}_t)$$

This tests hypothesis 3, which posits that Eastern European labour migrants who lose their jobs are more likely to receive unemployment benefits than native Dutch employees. The different routes to receiving unemployment benefits are shown in Figure 1.

Figure 1. Schematic representation of different effects into unemployment benefits



Source: Authors.

Results

No work

Of the 183,000 Eastern European labour migrants who were in paid employment in the Netherlands in January 2015, 59.7 per cent worked in every month of that year. The remainder (40.3 per cent) were not in paid employment for one or more months in 2015 (Table 2). Among native Dutch employees, 10.4 per cent were not in paid employment for at least one month. Other migrant groups occupy an intermediate position, with the proportion not in paid employment for at least one month varying from 15.2 to 19.3 per cent. By some margin, therefore, Eastern European labour migrants more often have no work in the Netherlands.

Four times as many Eastern European labour migrants have thus spent at least a month with “no work” as have native Dutch employees: a difference of 29.9 percentage points. In total, 80 per cent of this difference (23.6 percentage points) can be ascribed to differences in the job and personal characteristics included in the model, while the remaining 6.3 percentage points of the difference are unexplained. Table 3 presents the results of the decomposition analysis. Job characteristics and employment history make the biggest contribution to explaining the difference in the share with no work between Eastern European labour migrants and native Dutch employees.

The main explanatory characteristic is employment history, accounting for 8.0 of the 23.6 percentage points difference in the chance of having no work (i.e. the greater chance that Eastern European labour migrants will have no work). In interpreting the individual categories, the effect is a combination of the

Table 2. *Number of employees aged 20–60 and the share who received no income from wages for at least one month during a year, cohort January 2015*

Origin	Number of employees (x 1,000)	Share of employees with no work in paid employment for at least one month (%)
Eastern European	183	40.3
Other EU	161	19.3
Western excl.EU	75	16.8
Non-Western	283	18.4
Turkish/Moroccan	124	15.2
Dutch	5,518	10.4
	6,346	100.0

Source: Authors, derived from Statistics Netherlands (2016).

Differences in UB takeup between migrants and Dutch workers

Table 3. Results of decomposition analysis of the chance of having no work; contribution by personal and job characteristics to explaining differences between migrants and native Dutch employees, cohort January 2015

	Eastern Europe versus Netherlands	Other EU versus Netherlands	Westers versus Netherlands	Non-Western versus Netherlands	Turkey/Morocco versus Netherlands
Size group_1	EE: 183,193	EU: 160,977	W: 75,318	NW: 283,373	T/M: 124,187
Size group_2	NL: 5,518,436	NL: 5,518,436	NL: 5,518,436	NL: 5,518,436	NL: 5,518,436
Labour migrants	.403	.193	.168	.184	.152
Dutch employees	.104	.104	.104	.104	.104
Difference	.299	.089	.064	.080	.048
Explained difference	.236	.053	.040	.047	.019
Unexplained difference	.063	.037	.024	.033	.028
Explained difference (in % in brackets):	(79.0)	(60.0)	(62.5)	(58.8)	(39.6)
<i>Total contract effect</i>	.068	.010	.008	.012	.004
Sector					
Agro-sector	-.002	.000	.000	.000	-.001
Construction	.000	.000	.000	.000	.000
Industry [*]	.000	-.001	.000	.001	-.001
Retail	.000	.000	.000	.000	.000
Transport	.000	.000	.000	.000	.000
Financial services	-.002	.001	.001	.000	-.002
Temp agencies	.014	.018	.001	.002	.003
Health	-.001	.000	.000	.000	.000
Education	.003	.000	.000	.001	.001
Public sector	.013	.007	.003	.001	.002
Other/cleaning	.000	.001	.001	.003	.003
<i>~ Total sector effect</i>	.033	.013	.008	.009	.007
Hourly wage					
€1-5	-.002	-.001	-.001	.000	-.001
€5-10 [*]	.023	.000	.001	.003	.002
€10-15	-.001	.000	.000	-.001	-.002
€15-20	.014	.002	.002	.002	.002
€20-25	.011	.002	.002	.004	.004
€25-30	.005	.000	.001	.002	.003

(Continued)

Table 3. Results of decomposition analysis of the chance of having no work; contribution by personal and job characteristics to explaining differences between migrants and native Dutch employees, cohort January 2015 - Continued

	Eastern Europe versus Netherlands	Other EU versus Netherlands	Westers versus Netherlands	Non-Western versus Netherlands	Turkey/Morocco versus Netherlands
> €30	.000	.000	.000	.000	.000
~ Total hourly wage effect	.052	.004	.004	.010	.008
Employment history					
Starter	.017	.007	.004	.003	.002
Interrupted*	.010	.003	.003	.003	.002
Longer	.053	.020	.014	.014	.007
~ Total employment history effect	.080	.030	.020	.020	.011
Age					
19–24*	.003	-.002	-.002	-.002	-.003
25–34	-.001	.000	.000	.000	.000
35–44	.000	-.001	-.001	-.001	-.003
45–54	.005	.000	.001	.000	-.001
55–60	-.002	.000	.000	.000	-.001
~ Total age effect	.004	-.004	-.002	-.004	-.009
Total gender effect	0.001	-.001	.000	.000	-.001

Notes: * reference category; € = euro.

Source: Authors.

individual category and the over- or under-representation of the origin group in that category. Employees with a longer employment history more often hold onto their work and are thus less often without work. Eastern European labour migrants are under-represented in this category compared with Dutch employees, and this explains almost a quarter of the explained difference in the probability of no work. The opposite effect, but with the same result, occurs for starters on the labour market, with no employment history and a greater likelihood of having no work. Eastern European labour migrants are predominantly starters compared with native Dutch employees, and this explains part of their greater chance of having no work.

Employment with a temporary contract more often leads to no work. Eastern European labour migrants much more often have temporary contracts than do

native Dutch employees, and are therefore more often without work than are native Dutch employees. If Eastern European labour migrants had permanent contracts in numbers proportional to that of native Dutch employees, the share with no work would reduce by 6.8 percentage points.

The total sector effect explains 3.3 percentage points of the difference in having no work. The risk of no work varies across sectors; the sector effect of the public sector is for example small because the risk of losing a job in this sector is limited. This is a sector in which Eastern European labour migrants are heavily under-represented compared with native Dutch employees, which explains part of their greater probability of being without work. Employees in the temporary employment sector also have a greater chance of having no work. With the over-representation of Eastern European labour migrants in the sector, this also explains their greater chance of having no work. The sector effect thus explains the difference due to both over-representation in high-risk sectors and under-representation in low-risk sectors.

We treat hourly wage as a proxy for the strength of the labour market position, with a lower hourly wage indicating a vulnerable position and a greater probability of unemployment. The logit analysis confirms this: workers in the two lowest hourly wage categories are at greater risk of having no work. Half the Eastern European labour migrants receive an hourly wage of between 5 euros and 10 euros per hour, compared with 10 per cent of native Dutch employees. This explains 10 per cent of the explained difference in the risk of having no work between the two groups. The total effect of hourly wage on no work equates to 5.2 of the explained difference of 23.6 percentage points. Differences in the personal characteristics of gender and age explain only a very small part of the difference in the risk of having no work.

To summarize, 80 per cent of the large difference between Eastern European labour migrants and native Dutch employees in the probability of spending at least one month during a year with “no work in paid employment” in the Netherlands can be explained by employment history, job characteristics and, to a lesser extent, personal characteristics. These results support hypothesis 1a that Eastern European labour migrants are at greater risk of having no work than native Dutch employees, and that this is due to their job characteristics, which indicate a vulnerable position on the labour market. However, personal characteristics offer virtually no explanation for the differences, and hypothesis 1b is therefore rejected.

Table 3 also shows the results of the decomposition analysis for other migrant groups. They too are at greater risk of having no work compared with native Dutch employees, but the difference is smaller than for Eastern European migrants, and a smaller part of the difference can be explained by job characteristics.

Receipt of unemployment benefits by non-workers

Employees from the cohort who have performed no work in paid employment in the Netherlands for one or more months during a year are potentially eligible for unemployment benefit. We find that just over one in four Eastern European labour migrants without work received unemployment benefit, compared with one in three non-working native Dutch employees (Table 4). The difference between the two groups is 8.7 percentage points; 67 per cent of this difference (5.8 percentage points) can be explained by differences in personal and job characteristics. Once again, the majority of the difference is explained by the characteristics that were included in the model. A third of the difference (2.9 of the 8.7 percentage points) is not explained by background characteristics.

The main explanation for the smaller share of non-working Eastern European labour migrants receiving unemployment benefits is employment history. A longer employment history qualifies the person concerned for a longer duration of unemployment benefits, but relatively few Eastern European labour migrants have a lengthy employment history. Conversely, starters on the labour market do not always qualify for unemployment benefits, and many Eastern European labour migrants without work fell into this category. Employment history explains 10.4 percentage points of the smaller share of Eastern European labour migrants receiving unemployment benefits compared with non-working native Dutch employees. The explained portion is 8.7 percentage points, which means that other job and personal characteristics partially compensate for the effect.

Non-workers who held temporary employment contracts more often claim unemployment benefit than do non-workers who held permanent employment contracts. It may be that employees who held a permanent contract find new work more quickly. Receipt of unemployment benefits by non-workers with temporary employment contracts explains 3.1 percentage points of the greater share of Eastern European migrants receiving unemployment benefits, thereby partly compensating for the lower share receiving unemployment benefits owing to a shorter employment history. Young people who lose their jobs more often claim unemployment benefits than older workers, contributing to the slightly greater share of Eastern Europeans in receipt of unemployment benefits. On the one hand, Eastern European labour migrants are under-represented in the financial services sector, where the likelihood of receiving unemployment benefits is relatively high; this partly explains the lower share of Eastern European labour migrants receiving unemployment benefits. On the other hand, Eastern European migrants are also under-represented in sectors with a low likelihood of moving onto unemployment benefits, such as the public sector and education, which has the effect of increasing the share receiving benefits. The total sector effect therefore explains only a small part of the difference in receiving unemployment

benefits: 0.2 percentage points. Differences in gender and hourly wage, as a proxy for strength of the labour market position, offer no significant explanation for the difference in receiving unemployment benefits.

To sum up, a relatively high proportion of Eastern European labour migrants spent at least one month during the course of a year with no work, but relatively few non-working labour migrants received unemployment benefits, and this difference is explained principally by their employment history. These findings support hypothesis 2 that many Eastern European migrants are unable to meet the required number of weeks worked to qualify for Dutch unemployment benefits. The limited unexplained portion may be due to a lack of knowledge on the part of migrants about their unemployment benefit entitlements, preventing them from making a claim. It is also plausible that some of them return to their country of origin or move to another EU Member State if they become unemployed, and therefore do not claim Dutch benefits.

Turkish and Moroccan labour migrants without work are the only migrant group who are more likely to receive unemployment benefits than non-working native Dutch employees (Table 4). For labour migrants from other European countries, with both a Western and non-Western origin, only a small part of the difference can be ascribed to job and personal characteristics, with other, unknown factors playing a bigger role.

Total share of labour migrants receiving unemployment benefits

The foregoing analyses show that Eastern European labour migrants who lose their jobs due to their vulnerable labour market position are less likely to receive unemployment benefits because of their short employment history. Next, we look at whether Eastern European labour migrants in paid employment are more or less likely to receive unemployment benefits than native Dutch employees? Receiving unemployment benefits is plotted against the starting position of having work. The share of Eastern European labour migrants is found to be substantially greater than that of native Dutch employees, at 14.7 per cent and 5.5 per cent, respectively (Figure 2).

The greater share of Eastern European labour migrants receiving unemployment benefits shows that the effect of their vulnerable labour market position on the receipt of unemployment benefits is greater than their lower receipt of these benefits if they lose their job. In total, 87 per cent of the difference of 9.2 percentage points (which equates to 8.0 percentage points) is explained by the characteristics included in the model. Table 5 shows the difference in receipt of unemployment benefits between native Dutch employees and different migrant groups, from the perspective of migrants.

Differences in UB takeup between migrants and Dutch workers

Table 4. Results of decomposition analysis of receiving unemployment benefits given no work; contribution by personal and job characteristics to explaining differences between non-working migrants and non-working native Dutch employees, cohort January 2015

	Eastern Europe versus Netherlands	Other EU versus Netherlands	Western versus Netherlands	Non-Western versus Netherlands	Turkey/Morocco versus Netherlands
Size group_1	EE: 73,782	EU: 31,119	W: 12,622	NW: 52,039	T/M: 18,868
Size group_2	NL: 574,299	NL: 574,299	NL: 574,299	NL: 574,299	NL: 574,299
Labour migrants	.271	.203	.323	.347	.419
Dutch employees	.359	.359	.359	.359	.359
Difference	-.087	-.156	-.036	-.012	.061
Explained difference	-.058	-.018	.003	.008	.048
Unexplained difference	-.029	-.138	-.039	-.019	.013
Explained difference (in % in brackets)	(66.7)	(11.5)	(8.3)	(66.7)	(78.7)
<i>Total contract effect</i>	.031	.000	.002	.007	.005
Sector					
Agro-sector	.002	.000	.000	.000	.000
Construction	-.001	.000	.000	-.001	.000
Industry [*]	.001	.000	.000	-.001	.000
Retail	-.006	-.003	-.001	-.003	-.003
Transport	.008	.000	.000	.000	.000
Financial services	-.012	.001	.001	-.002	-.006
Temp agencies	.008	.001	.001	.002	.004
Health	.001	.000	.000	.000	.000
Education	.004	-.001	.000	.001	.002
Public sector	.006	.002	.001	.001	.001
Other/cleaning	.003	.000	.000	-.003	-.002
<i>~ Total sector effect</i>	.002	-.007	-.002	-.006	-.003
Hourly wage					
€1-5	.021	.006	.004	.003	.012
€5-10 [†]	-.004	.000	.000	.000	.000
€10-15	.000	.000	.000	.002	.006
€15-20	-.011	.000	.000	-.002	-.003
€20-25	-.005	.000	.000	-.001	-.002
€25-30	-.002	.000	.000	.000	-.001

(Continued)

Table 4. Results of decomposition analysis of receiving unemployment benefits given no work; contribution by personal and job characteristics to explaining differences between non-working migrants and non-working native Dutch employees, cohort January 2015 - Continued

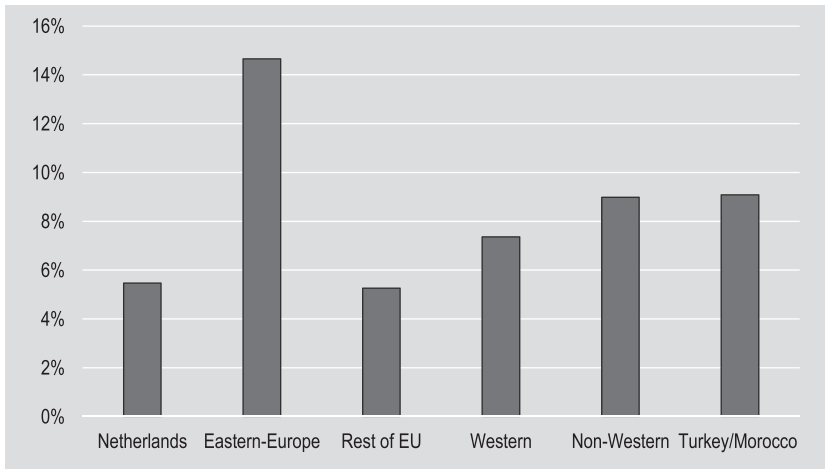
	Eastern Europe versus Netherlands	Other EU versus Netherlands	Western versus Netherlands	Non-Western versus Netherlands	Turkey/Morocco versus Netherlands
> €30	.000	.000	.000	.000	.000
~ Total hourly wage effect	-.002	.006	.004	.002	.011
Employment history					
Starter	-.051	-.026	-.013	-.012	-.010
Interrupted*	.001	.000	.001	.001	.001
Longer	-.053	-.023	-.013	-.017	-.016
~ Total employment history effect	-.104	-.048	-.025	-.028	-.024
Age					
19–24*	.021	.027	.021	.028	.045
25–34	.001	.000	.000	.000	.000
35–44	.003	.004	.003	.004	.012
45–54	-.005	.001	.000	.001	.004
55–60	-.004	-.001	.000	-.001	-.003
~ Total age effect	.016	.031	.024	.032	.059
Total gender effect	-.001	.000	.000	.000	.000

Notes: * reference category; € = euro.

Source: Authors.

The type of employment contracts of Eastern European labour migrants and the sectors in which they are employed both explain why they receive unemployment benefits more often than native Dutch employees. As Eastern Europeans more often have temporary contracts, more often work in the temporary employment sector, and less often work in the public sector, they are more likely to claim unemployment benefits. The fact that the effects of employment contract and sector are greater than those of age and employment history is responsible for the greater receipt of unemployment benefits by Eastern European labour migrants compared with native Dutch employees. The findings support hypothesis 3. The limited proportion of around 10 per cent that cannot be explained by job and personal characteristics (1.1 of the difference of

Figure 2. *Receiving unemployment benefits, migrant groups and native Dutch employees, cohort January 2015 (in percentage)*



Source: Authors.

9.2 percentage points) leaves little scope for strategic behaviour by labour migrants who come to the host country in order to take advantage of a more generous unemployment benefits system.

The takeup of unemployment benefits is also higher by other migrants, with the exception of those from other European countries. The difference between migrant groups and native Dutch employees is however smaller, and between 64 and 84 per cent of the difference can be ascribed to job and personal characteristics; the unexplained part is limited. The type of employment contract explains a large part of the difference, especially for Western and non-Western migrants (42 per cent and 43 per cent, respectively), while hourly wage explains a relatively large part of the difference for Turkish and Moroccan migrants (44 per cent).

Conclusions and discussion

In this study, we investigated the difference in takeup of Dutch unemployment benefits between migrant groups and native Dutch employees. More specifically, by drawing a distinction between the probability of becoming unemployed and the probability of receiving benefits, we also investigated the importance of labour migrants' vulnerable position on the labour market. We included job and

Differences in UB takeup between migrants and Dutch workers

Table 5. Results of decomposition analysis of receiving unemployment benefits; contribution of personal and job characteristics to explaining differences between migrants and native Dutch employees, cohort January 2015

	Eastern Europe versus Netherlands	Other EU versus Netherlands	Western versus Netherlands	Non-Western versus Netherlands	Turkey/Morocco versus Netherlands
Size group_1	EE: 183,193	EU: 160,977	W: 75,318	NW: 283,373	T/M: 124,187
Size group_2	NL: 5,518,436	NL: 5,518,436	NL: 5,518,436	NL: 5,518,436	NL: 5,518,436
Labour migrants	.147	.053	.074	.090	.091
Dutch employees	.055	.055	.055	.055	.055
Difference	.092	-.002	.019	.035	.036
Explained difference	.080	.011	.016	.025	.023
Unexplained difference	.011	-.013	.003	.010	.013
Explained difference (in % in brackets):	(87.0)	(~)	(84.2)	(71.4)	(63.9)
<i>Total contract effect</i>	.052	.005	.007	.011	.003
Sector					
Agro-sector	.001	.000	.000	.000	.000
Construction	.000	.000	.000	.000	.000
Industry ⁺	.000	.000	.000	.000	.000
Retail	.000	.000	.000	.000	.000
Transport	.002	.000	.000	.000	.000
Financial services	-.002	.000	.001	.000	-.002
Temp agencies	.014	.001	.001	.002	.003
Health	.000	.000	.000	.000	.000
Education	.002	.000	.000	.001	.001
Public sector	.012	.004	.003	.002	.002
Other/cleaning	.000	.000	.000	.000	.001
<i>~ Total sector effect</i>	.029	.006	.006	.005	.005
Hourly wage					
€1-5	.000	.000	.000	.000	.000
€5-10 ⁺	.014	.000	.000	.002	.002
€10-15	.003	.000	.001	.003	.006
€15-20	-.001	.000	.000	.000	.000
€20-25	.002	.000	.000	.001	.001
€25-30	.001	.000	.000	.001	.001

(Continued)

Table 5. Results of decomposition analysis of receiving unemployment benefits; contribution of personal and job characteristics to explaining differences between migrants and native Dutch employees, cohort January 2015 - Continued

	Eastern Europe versus Netherlands	Other EU versus Netherlands	Western versus Netherlands	Non-Western versus Netherlands	Turkey/Morocco versus Netherlands
> €30	.000	.000	.000	.000	.000
~Total hourly wage effect	.020	.000	.002	.007	.010
Employment history					
Starter	-.01	-.003	-.002	-.002	-.001
Interrupted*	.005	.002	.002	.003	.001
Longer	-.006	-.002	-.002	-.002	-.001
~Total employment history effect	-.010	-.003	-.002	-.001	-.001
Age					
19–24*	-.003	.002	.003	.003	.006
25–34	.000	.000	.000	.000	.000
35–44	.000	.000	.000	.001	.002
45–54	-.003	.000	.000	.000	.001
55–60	-.003	-.001	.001	-.001	-.003
~ Total age effect	-.010	.002	.004	.004	.006
Total gender effect	-.001	.000	.000	.000	-.001

Notes: * reference category; € = euro.

Source: Authors.

personal characteristics in the analyses in a bid to explain the differences between labour migrants and native Dutch employees.

In a similar manner to migrants from other groups, Eastern European labour migrants receive unemployment benefits more often than do native Dutch employees (15 per cent versus 6 per cent, respectively). We can explain a large part of the difference (90 per cent) by differences in job characteristics between the groups of employees. As Eastern Europeans more often have temporary employment contracts, more often work in the temporary employment sector and less often in the public sector, their likelihood of claiming unemployment benefits is higher. Although the fact that Eastern European labour migrants are younger on average and are more often labour market starters, which reduces their probability of receiving unemployment benefits, their takeup is still higher than that of native Dutch employees. Based on the “welfare magnet” theory, we

might expect migrants to be deliberately choosing a temporary contract and employment in sectors where they are more likely to lose their job and receive unemployment benefits. In reality, however, we know that it is mainly employers in particular sectors who choose to take on Eastern European labour migrants (Heyma, Bisschop and Biesenbeek, 2018) and in most cases to offer these workers temporary employment contracts (Ruhs and Anderson, 2010; Berkhout, Bisschop and Volkerink, 2014).

The small unexplained portion (around 10 per cent) of the difference can be ascribed to variables which were not included in our model, such as education level, discrimination on dismissal, family composition or illegitimate unemployment benefit claims. To what extent these and other variables are responsible for the unexplained portion cannot be determined based on our study. The findings reported in this article suggest two explanations. First, the difference in takeup of unemployment benefits between Eastern European labour migrants and Dutch natives is largely attributable to the characteristics included in the model, especially job characteristics such as the type of employment contract and working in temporary employment. Second, numerous unmeasured factors influence the unexplained portion. In concrete terms, this means that, while we cannot rule out the role of strategic behaviour, other factors are much more significant.

To place takeup of unemployment benefits in a broader perspective, in this study we also analysed the probability of becoming unemployed. Eastern European labour migrants in paid employment are four times as likely to lose their jobs as are native Dutch employees. Most of this difference is attributable to differences in job characteristics, underlining the vulnerable position of labour migrants on the labour market. If native Dutch workers had occupied the jobs taken, and then lost, by Eastern European migrants, their uptake of unemployment benefits would have been 9.2 percentage points higher.

While a relatively high proportion of Eastern European labour migrants have no work, relatively few of this unemployed group receive unemployment benefits (27 per cent compared with 36 per cent of non-working Dutch natives). This opposing effect may explain the confusion that sometimes exists regarding the takeup of unemployment benefits by labour migrants.

One limitation of our research method is that we interpret “no income from paid employment” as job loss, whereas the absence of wage income may also be due to a worker becoming self-employed or returning to their home country. This could overestimate the possibility of becoming unemployed and underestimate the probability of receiving benefits when becoming unemployed. Additionally, the takeup of Dutch unemployment benefits says nothing about the duration of those benefits or the total takeup of unemployment benefits by country of origin. Our intention is to investigate this in a follow-up study.

The results of our study have a number of potential implications for policy. The vulnerable labour market position of labour migrants leads to more frequent job loss and ultimately to a relatively greater takeup of unemployment benefits. This finding calls for an approach aimed at strengthening the labour market position of Eastern European labour migrants. Education and training focusing specifically on migrants could limit that vulnerability and contribute to helping workers to find a new job on the Dutch labour market and ultimately reduce the rate of job losses. In addition, we conclude that the lower takeup of Dutch unemployment benefits by out-of-work labour migrants could indicate that they are not accessing the benefits system. As well as knowledge transfer via social networks, communication about arrangements pertaining to the labour market could be geared more effectively to labour migrants.

Bibliography

- Barrett, A.; Maitre, B.** 2013. "Immigrant welfare receipt across Europe", in *International Journal of Manpower*, Vol. 34, No. 1.
- Beer, P. de; Koster, F.** 2007. *Voor elkaar of uit elkaar? Individualisering, globalisering en solidariteit*. Amsterdam, Aksant.
- Berkhout, E.; Bisschop, P.; Volkerink, M.** 2014. *Grensoverschrijdend aanbod van personeel: Verschuivingen in nationaliteit en contractvormen op de Nederlandse arbeidsmarkt 2001-2011*. Amsterdam, SEO Economisch Onderzoek.
- Borjas, G. 1999. "Immigration and welfare magnets", in *Journal of Labor Economics*, Vol. 17, No. 4.
- Dagevos, J.** 2011. *Poolse migranten: de positie van Polen die vanaf 2004 in Nederland zijn komen wonen*. The Hague, Sociaal en Cultureel Planbureau.
- Dagevos, J.; Gijsberts, M.** 2013. "Beeldvorming over arbeidsmigranten uit Oost-Europa", in *COB Burgerperspectieven*, No. 4.
- Eurofound.** 2015. *Social dimension of intra-EU mobility: Impact on public services*. Luxembourg, Publications Office of the European Union.
- Gijsberts, M.; Lubbers, M.** 2013. *Nieuw in Nederland: het leven van recent gemigreerde Bulgaren en Polen*. The Hague, Sociaal en Cultureel Planbureau.
- Guiaux, M.** 2016. "Naleving en gedrag offline klanten", in *UWV Kennisverslag*, No. 9.
- Guild, E.; Carrera, S.; Eisele, K.** 2013. *Social benefits and migration: A contested relationship and policy challenge in the EU*. Brussels, Centre for European Policy Studies.
- Hernanz, V.; Malherbet, F.; Pellizzari, M.** 2004. *Take-up of welfare benefits in OECD countries: A review of the evidence*. Paris, Organisation for Economic Co-operation and Development.
- Heyma, A.; Bisschop, P.; Biesenbeek, C.** 2018. *De economische waarde van arbeidsmigranten uit Midden- en Oost-Europa voor Nederland*. Amsterdam, SEO Economisch Onderzoek.

- Huijnk, W.; Gijsberts, M.; Dagevos, J.** 2014. *Jaarrapport integratie 2013: Participatie van migranten op de arbeidsmarkt*. The Hague, Sociaal en Cultureel Planbureau.
- Jann, B.** 2008. “The Blinder-Oaxaca decomposition for linear regression models”, in *The Stata Journal*, Vol. 8, No. 4.
- Merens, A.; Brakel, M. van den.** 2014. *Emancipatiemonitor 2014*. The Hague, Sociaal en Cultureel Planbureau.
- Nannestad, P.** 2007. “Immigration and welfare states: A survey of 15 years of research”, in *European Journal of Political Economy*, Vol. 23, No. 2.
- Pacolet, J.; De Wispelaere, F.** 2016. *Aggregation of periods for unemployment benefits: Report on U1 portable documents for migrant workers – Reference year 2015*. Brussels, European Commission.
- Reesken, T.; Van Oorschot, W.** 2012. “Disentangling the ‘new liberal dilemma’: On the relation between general welfare redistribution preferences and welfare chauvinism”, in *International Journal of Comparative Sociology*, Vol. 53, No. 2.
- Renema, J.** 2018. “Knowledge about group’s welfare access among immigrants in the Netherlands”, in *Immigrants’ support for welfare spending: The causes and consequences of welfare usage and welfare knowledgeability* (Doctoral thesis). Nijmegen, Radboud University Nijmegen.
- Ruhs, M.; Anderson, B.** 2010. *Who needs migrant workers? Labour shortage, immigration and public policy*. Oxford, Oxford University Press.
- Statistics Netherlands.** 2016. *Jaarrapport integratie 2016*. The Hague, Centraal Bureau voor de Statistiek.
- Statistics Netherlands.** 2018. *Dashboard migrantenmonitor 2007–2016*. The Hague, Centraal Bureau voor de Statistiek.
- Strockmeijer, A.; De Beer, P.; Dagevos, J.** 2017. “Mobiliteit binnen de perken: zeer geringe positieverbetering van werknemers uit Oost-Europa bij een langer werkverleden”, in *Tijdschrift voor Arbeidsvraagstukken*, Vol. 33, No. 4.
- Strockmeijer, A.; De Beer, P.; Dagevos, J.** 2019. “Should I stay or should I go? What we can learn from working patterns of Central and Eastern European labour migrants about the nature of present-day migration”, in *Journal of Ethnic and Migration Studies*, Vol. 45, No. 3.
- Vrooman, C.** (ed.). 2009. *Werkloosheid in crisistijd. Baanverliezers, inkomensveranderingen en sociale gevolgen; een verkenning*. The Hague, Sociaal en Cultureel Planbureau.
- Werff, S. van der; Kroon, L.; Heyma, A.** 2016. *Beslag uitkeringen personen in flexibele schil 2006–2014*. Amsterdam, SEO Economisch Onderzoek.

The relationship between different social expenditure schemes and poverty, inequality and economic growth

Emile Cammeraat

Leiden University, Netherlands

Abstract In this article, we study how social expenditure is related to poverty, income inequality and GDP growth. Our main contribution is to disentangle these relationships by the following social expenditure schemes: 1) “old age and survivors”, 2) “incapacity”, 3) “health”, 4) “family”, 5) “unemployment and active labour market policies” and 6) “housing and others”. For this purpose, we employ OLS and 2SLS regression models using a panel data set for 22 Member States of the European Union from 1990 until 2015. We find total public social expenditure to be negatively related to poverty and inequality, but not related to GDP growth. The results vary substantially between the different social expenditure schemes, which makes more accurate targeting possible.

Keywords social expenditure, poverty, income redistribution, economic growth, universal benefit scheme, means test, target group, European Union, OECD

Introduction

In the light of the work of Piketty (2014), and given further impetus by the rise of populist movements (Muis and Immerzeel, 2017), there has been a resurgence in the public and academic debate on income and wealth inequality (Connor

Address for correspondence: Emile Cammeraat, Economics Department, Leiden University, P.O. Box 9520, 2300 RA Leiden, Netherlands; email: e.cammeraat@law.leidenuniv.nl.

et al., 2019). Previously, many policy-makers and academics assumed a trade-off between reducing income inequality and increasing GDP growth (Okun, 1975; Benabou, 2000; Arjona et al., 2003). Yet, other studies find no evidence for such a trade-off, and even find a negative association between income inequality and economic growth (Persson and Tabellini, 1994; Alesina and Rodrik, 1994; Perotti, 1996; Easterly, 2007; Berg et al., 2018). However, this negative association between inequality and growth cannot be taken to imply that higher levels of redistribution are related to higher economic growth. Looking to recent research, the empirical evidence does not support that redistribution is negatively related to economic growth (Thewissen, 2013; Berg et al., 2018). Nevertheless, redistribution is a broad concept and different kinds of redistribution (e.g. different social expenditure schemes) have different effects on poverty, inequality and economic growth.

In this article, we study how different social expenditure schemes are related to final values of the poverty rate and the Gini coefficient for income inequality, as well as to GDP growth. First, we investigate how social expenditure at the aggregated level is related to poverty, inequality and GDP growth. This analysis examines whether reducing poverty and inequality through total public social expenditure comes at the expense of economic growth. Second, we study how these relationships between “social expenditure” and “poverty, inequality and GDP growth” differ for social expenditure on 1) “old age and survivors”, 2) “incapacity”, 3) “health”, 4) “family”, 5) “unemployment and active labour market policies” (ALMPs), and 6) “housing and others”. This analysis shows the importance of the different expenditure types for reducing poverty and inequality and stimulating GDP growth.

Our main contribution is to disentangle the relationships between total social expenditure and poverty, inequality and GDP growth for the different expenditure schemes. This allows to compare the different relationships for the different expenditure schemes and poverty, inequality and economic growth in a more systematic way. To our knowledge, our study is the first that uses this approach to contribute to the following two branches of the literature. First, we contribute to the literature that studies whether there is a trade-off between equity and efficiency. Our contribution to this literature is that we study which expenditure types are the most strongly negatively related to poverty and inequality while also being positively related to economic growth. Our second contribution is to study how the relationships between social expenditure and poverty, inequality and growth differ between expenditure schemes targeted at the poor and expenditure schemes with a more universal character. This contributes to the literature on the targeted (means-tested) versus the universal (comprehensive) approach to the welfare state (Korpi and Palme, 1998; Jacques and Noel, 2018).

We employ OLS and 2SLS regression models in which the lagged values of the different expenditure variables are used as explanatory variables. We use social expenditure in period (t-1) because social expenditure levels depend also on growth and potentially also on poverty and inequality. In our 2SLS model, we use the social expenditure variables in period (t-2) as our instrument. Our preferred model is an OLS model with panel corrected standard errors in which we correct for first order serial correlation and control for country and year fixed effects. We use a panel data set of 22 Member States of the European Union (EU) for the years 1990–2015 for our base results and a panel data set of 32 member countries of the Organisation for Economic Co-operation and Development (OECD) in our robustness analysis. The data are from several OECD databases.

Our main findings are as follows. First, we find total public social expenditure to be negatively related to poverty and inequality and not significantly related to GDP growth. Hence, there seems to be no trade-off between reducing poverty and inequality through social expenditure on the one hand and higher economic growth on the other hand. Second, the different social expenditure schemes are differently related to poverty, inequality and economic growth, which makes more accurate targeting possible. For poverty, we find negative relations with expenditure on 4) “family”, 5) “unemployment and ALMPs”, and 6) “housing and others”.¹ For inequality, we find a strong negative connection with social expenditure on 1) “old age and survivors” and 2) “family”. Finally, a strong positive relation with GDP growth is found for expenditure on 6) “housing and others”.

The article continues as follows. We start by reviewing the literature on the effects (and mechanisms) of social expenditure on poverty, inequality and GDP growth. We then explain the data, methodology and results. We conclude with a discussion of the results.

Literature review

The effects of social expenditure on poverty and inequality. We expect social expenditure to reduce poverty and inequality (Kenworthy, 1999; Caminada and Goudswaard, 2009; Adema, Fron and Ladaïque, 2014; ILO, 2014; Wang, Caminada and Goudswaard, 2014). Wang, Caminada and Goudswaard (2012) and Caminada et al. (2019) find that public pensions account for the largest reduction in income inequality, but also that social assistance, disability benefits, family benefits and unemployment benefits are negatively associated with income inequality. Wang, Caminada and Goudswaard (2012), Wang, Caminada and Goudswaard (2014) and Caminada et al. (2019) study redistribution by taking

1. Social expenditure on “others” consists for the largest part of expenditure on social assistance.

the difference between market income and disposable income, which is a useful accounting exercise. Our approach is to run regression models in which we study the relationship between social expenditure and final values of the poverty rate and the Gini coefficient. One important advantage of our approach is that our effects also include the effects on market income, whereas these previous studies assume that redistribution does not affect market income.

We expect social expenditure types that are best targeted at the poor to have the largest negative effects on poverty. In contrast, the largest effects on income inequality, measured by the Gini index, are expected for social expenditure types with a more universal character. We expect universal expenditure types to have a stronger negative effect on the Gini (for income inequality) for the following two reasons. First, as a larger share of the population is benefiting, universal social expenditure types can count on higher public support, translating into higher levels of social expenditure (Korpi and Palme, 1998). Indeed, not only the targeting efficiency but also the budget size is important for reducing income inequality (Caminada et al., 2017). Second, the Gini coefficient is much more sensitive to the income groups in the middle of the income distribution than to the bottom or top of the income distribution.

In Table 1, we present the share of social cash benefits received by the five quintiles of the income distribution, based on 21 EU-SILC countries in 2015.² This table gives an indication of which social expenditure categories are best targeted at the poor. We find that housing and social exclusion benefits are those best targeted at the poor, with 52 per cent and 62 per cent of cash benefits, respectively, being received by the bottom 20 per cent of the income distribution.

Table 1. Share of social benefits received by quintiles of the income distribution

	Q1	Q2	Q3	Q4	Q5
Old-age benefits	11	17	19	22	30
Survivor benefits	19	21	21	18	20
Disability benefits	20	23	22	19	17
Family benefits	23	25	21	17	14
Unemployment benefits	24	20	17	18	22
Housing benefits	52	23	9	9	7
Social exclusion benefits	62	17	10	7	5

Notes: The calculations are based on equivalized disposable household income in 2015 for 21 of the 22 EU Member States in our sample, excluding Germany which is not available in EU SILC.

Source: Own calculations based on EU Survey on Income and Living conditions for European countries (EU-SILC).

2. See Eurostat.

Thereafter, family benefits are best targeted, with 48 per cent going to the bottom 40 per cent and only 14 per cent to the highest 20 per cent. Disability benefits and unemployment benefits are distributed roughly equally over the five income quintiles. Social expenditure on old age is not targeted at the poor, with only 28 per cent of old-age cash benefits received by the bottom 40 per cent of the income distribution.

One expenditure type that we expect to be effective in reducing both poverty and inequality is family expenditure. This is firstly so because families are more often poor, as income must be shared with all household members, including children and non-working adult members. In line with this, poverty rates are higher among children than among adults in most countries. Second, due to economies of scale for larger households, it is relatively cheap to reduce the poverty rate by targeting on families. As regards the Gini, we expect a large negative effect from family social expenditure, because a large share of family social expenditure is received by the second and third quintiles of the income distribution; 25 per cent and 21 per cent of family expenditure, respectively. Increasing income for the second and third quintiles is expected to be relatively effective in reducing the Gini for income inequality because the Gini is relatively sensitive to the income groups in the middle of the income distribution.

The effects of social expenditure on economic growth. The literature is divided on the effect of social spending on economic growth. On the one hand, Barro (1996) shows that government expenditure has a negative effect on economic growth and Arjona et al. (2003) find some evidence that social expenditure reduces growth. On the other hand, most studies reject the hypothesis that social expenditure has a negative impact on growth (e.g. Atkinson, 1995; Singh, 1996; Baldacci et al., 2008; Thewissen, 2013; Bakija et al., 2016; Berg et al., 2018). In line with this, Cingano (2014), OECD (2015) and Dabla-Norris et al. (2015) show that inequality reduces economic growth, suggesting that redistribution may increase growth.

Capital accumulation is one of the main mechanisms that can explain GDP growth rates (Solow, 1956). The effect on capital accumulation depends highly on the social insurance system in place. In a pay-as-you-go (PAYG) pension system, the expected effect of old-age expenditure on savings is negative, as less personal savings are needed when retirees receive a pension paid by the working-age population (Feldstein, 1974). In a capital-based system, premiums for social insurance may be higher than the amount people would have saved otherwise, which could increase investments and thereby economic growth.

Another main determinant of growth is labour supply. The welfare state typically decreases labour supply because the benefit of supplying labour decreases when the outside option becomes more attractive (Krueger and

Meyer, 2002; French and Song, 2014). Some studies find either no effect or a positive effect of social protection schemes on labour supply (Krueger and Pischke, 1992; Rust and Phelan, 1997). These studies show that the effects of welfare state programmes (e.g. retirement schemes) on labour supply can be explained in large part by the specific features of the social security system. For example, it is expected that the negative effects on labour supply are absent when benefits supplement market income rather than replace it, which is the case for many types of benefits. The largest negative effect on labour supply is expected for the social expenditure type “unemployment and ALMPs”, as these target the working-age population and not children, the elderly or the disabled. Only people registered as unemployed are eligible for unemployment benefits, which creates a disincentive to work.

In addition to labour supply, the level of productivity is also important for economic growth. Social expenditure affects the level of productivity by two main mechanisms: it increases risk-taking behaviour and it reduces poverty. First, social protection decreases income risks, which may increase risk-taking, investments, productivity and thereby growth. Second, social expenditure increases productivity by reducing poverty. Health, work performance and even the cognitive capacity of the brain are negatively affected by poverty (Aber et al., 1997; Brooks-Gunn and Duncan, 1997; Banerjee, Benabou and Mookherjee, 2006; Mani et al., 2013). Hence, reducing poverty increases the capacities of poor people and thereby increases productivity and GDP growth. Not only poverty but also inequality can be detrimental to productivity. Increased income inequality depresses the development of skills among those whose parents have a lower education background (Cingano, 2014; OECD, 2014). The driver of this negative impact of inequality on growth is the gap between low-income households and the rest of the population. This suggests that targeting social expenditure at the poor would be most effective to increase productivity.

Finally, social expenditure is expected to have a positive and stabilizing effect on aggregate demand (Keynes, 1937; Blanchard and Leigh, 2013; Darby and Melitz, 2008). For this reason, we expect the largest positive effects on aggregate demand for the best targeted schemes, as lower-income households consume a higher share of their income.

Overall, for GDP growth, we expect the largest positive effects of targeted schemes when the most important mechanisms are an increase in risk-taking, releasing the potential of the poor, and increasing aggregate demand. Hence, we expect the largest positive effects on GDP growth from social expenditure on “housing and others”, as these are best targeted at the poor; see Table 1. When we consider the size of the different social expenditure types, we expect large effects of expenditure on “old age and survivors” as this category is the most sizable.

Data

We use a panel data set for 22 EU Member States that are a member country of the OECD covering 26 years from 1990–2015.³ The countries in our EU sample are Austria, Belgium, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden and the United Kingdom. We employ the same analysis for a sample of 32 OECD countries in our robustness analysis. Selecting the period 1990–2015 allows us to consider the post-Soviet bloc states and provides a more balanced sample, as much less data are available for the years before 1990.

Our dependent variables are the final values of the poverty rate (poverty after taxes and transfers for a poverty line of 50 per cent),⁴ final values of the Gini coefficient for income inequality (Gini for disposable income post taxes and transfers), and average GDP growth rate over three years $[(\text{growth}(t) + \text{growth}(t+1) + \text{growth}(t+2))/3]$ (annual growth of GDP per capita, constant prices, in percentage). We use the average annual GDP growth rate over the next three years to reduce the endogeneity problem (Thewissen, 2013). The poverty rates and the Gini coefficients are taken from the Income Distribution Database (IDD) of the OECD and the GDP growth rates are taken from the Annual National Accounts data of the OECD.⁵

The explanatory variables of interest are social expenditure variables for which we use the OECD Social Expenditure Database (SOCX) (OECD, 2007).⁶ We are aware that social expenditure variables have limitations in explaining the degree of social protection and generosity (De Deken, 2014; Van Vliet and Wang, 2015). First, differences in spending may reflect variation in demographic and socio-economic trends across countries. Second, expenditures neglect some important institutional characteristics of welfare state programmes, such as the extent to which welfare state programmes are means-tested. Third, gross social expenditure does not take the taxation of benefits into account. We deal with these problems by including year and country fixed effects and a large number of economic and demographic controls to control for different demographic and socio-economic trends and different institutional characteristics. We use gross social expenditure variables for our base results because not much data is

3. The data set is limited to EU Member States that are a member country of the OECD for reasons of data availability, but also because these countries are more similar in their characteristics, making the results more reliable.

4. The poverty rate for a poverty line of 50 per cent shows the ratio of the number of people whose income falls below half the median disposable equivalized household income of the population.

5. See OECD IDD, and OECD Annual National Accounts.

6. See OECD SOCX.

available on net social expenditure and no data is available on net social expenditure for the different expenditure categories. However, we perform the same analysis with the limited available data for net social expenditure in our robustness analysis. Overall, social expenditure variables are the most objective and most used variables for studying the effects of the welfare state.

Another issue is whether we should include old-age expenditure in total public social expenditure when we are interested in the redistributive effects of social expenditure. Most studies (e.g. the OECD studies) look at expenditure schemes targeted at the working-age population as regards poverty and inequality among this group. The main concern is whether pensions are about redistribution over the life cycle or about redistribution among people. Also of concern, cohort effects may blur the effects of social expenditure. We chose to look at different social expenditure types, including old-age expenditure, separately. Further, we look at the effects on poverty and inequality for the total population as well as for the working-age population. Furthermore, we control for demographics to ensure that the coefficients are not biased by cohort effects.

Our main explanatory variable is total public social expenditure (as a percentage of GDP), as the quality of public social expenditure data is the highest when we consider the different expenditure types, especially for the comparison over time. Total public social expenditure includes both cash and in-kind social expenditure. We also look at the effects of total public and mandatory private social expenditure and total social expenditure (including public, mandatory private and voluntary private) in the robustness analysis. The reason for this is that public and private social expenditure are close substitutes (Goudswaard and Caminada, 2010). Our total public social expenditure variable is separated by spending on 1) “old age and survivors”, 2) “incapacity”, 3) “health”, 4) “family”, 5) “unemployment and ALMPs” and 6) “housing and others”, which are our next explanatory variables.⁷

Table 2 shows the descriptive statistics for poverty, inequality and GDP growth and the various social expenditure variables for our sample of EU Member States during the period 1990–2015. On average, 9.2 per cent of the population has an income below the poverty line of 50 per cent of the median income. Our indicator for inequality, the Gini coefficient, is on average 0.29 in this period. GDP growth is on average 2.4 per cent between 1990 and 2015. Table 2 also denotes the mean values and standard deviations for the different social expenditure variables. Total public social expenditure is on average 22.1 per cent of GDP, the largest part is going to “old age and survivors” (9.1 per cent of

7. This article is supplemented by an extensive online Appendix (Tables A.1–A.25) developed by the author and made available to readers (see Supporting Information). See Table A.1 for a more detailed description of these different categories of social expenditure.

Table 2. *Descriptive statistics: Dependent and explanatory variables 1990–2015 for EU sample*

Variable	Mean	Std. Dev.	Min	Max	Obs
Poverty	9.2	3.1	3.6	18.6	317
Gini	0.29	0.04	0.21	0.39	317
GDP growth	2.4	2.6	-7.3	13.0	555
Total public SE	22.1	4.5	11.1	34.7	534
Old age and survivors SE	9.1	2.7	3.1	17.1	535
Incapacity SE	2.6	1.1	0.8	5.9	535
Health SE	5.7	1.3	2.3	9.3	545
Family SE	2.2	0.9	0.3	4.5	535
Unemployment and ALMPs SE	1.8	1.2	0.1	6.1	533
Housing and others SE	0.7	0.5	0.0	2.2	521

Source: Own calculations based on EU Survey on Income and Living conditions for European countries (EU-SILC).

GDP) and “health” (5.7 per cent of GDP). Lower amounts are spent on “incapacity” (2.6 per cent of GDP), “families” (2.2 per cent of GDP), “unemployment and ALMPs” (1.8 per cent) and “housing and others” (0.7 per cent).

The control variables we use in our models for poverty and inequality are GDP per capita (measured in thousands of US dollars (USD), constant prices, 2010 PPPs), unemployment rate (harmonized), population share aged 15–64, population share aged 65+, and trade union density. The data are from OECD databases, except for population data sourced from the United Nations Department for Economic and Social Affairs (UN DESA).⁸ We control for business cycle fluctuations and demographics, as these have an effect on both social expenditure and poverty and inequality. We consider trade union density as a control for labour market institutions, as trade unions may increase pressure to increase social expenditure and decrease poverty and inequality (Card, 2001; Hooghe and Oser, 2016).

In our models for GDP growth, we use the control variables population share aged 15–64, population share aged 65+, gross capital formation (annual growth rate), education (share of population attained tertiary education, aged 25–64), export (as per cent of GDP) and inflation (consumer price all items, annual percentage change). We add these control variables to our model as we expect them to have an effect on both social expenditure and on GDP growth. These

8. See UN DESA.

control variables are based on the work of Solow (1956), Barro (1996), Belletini and Ceroni (2000), and Barro (2013). These data are from the OECD databases. (See the online Appendix, Table A.2 for the descriptive statistics of the control variables).

Empirical methodology

Endogeneity issues. We start this section by elaborating on the reverse causality issue. Not only can social expenditure have an effect on poverty, inequality and economic growth, but there can also be an effect the other way around. We expect a positive effect of poverty and inequality on social expenditure (Alesina and Rodrik, 1994; Arjona, Ladaique and Pearson, 2003; Milanovic, 2000; Lupu and Pontusson, 2011). This positive effect can be explained by the median voter who cares more about redistribution in instances where the possibilities and benefits of redistribution are larger – which is the case when poverty and inequality are more severe. This positive effect of poverty and inequality on social expenditure may cause a positive relation between social expenditure and poverty and inequality, leading to an underestimation of a negative effect of social expenditure on poverty and inequality. For economic growth, we expect a negative effect on social expenditure as a percentage of GDP, at least in the short term that we are studying. This is because, first, the denominator of social expenditure as a percentage of GDP per capita increases and, second, because social expenditure is negatively related to the business cycle. This negative effect of GDP growth on social expenditure (as a per cent of GDP) could translate into a negative relationship between social expenditure and GDP growth, leading to an underestimation of a potential positive effect of social expenditure on GDP growth. In short, the coefficients we will find are conservative estimates for the potential negative effects on poverty and inequality and potential positive effect on GDP growth.

We reduce the problem of reverse causality by using the social expenditure variables in period (t-1), as we expect that the dependent variables in period t cannot have an effect on the explanatory variables in period (t-1). We also check if the results are robust when we consider different time lags, up to a 5-year period lag, as reverse causality becomes less likely with a longer time lag. In line with the literature, we use the average annual GDP growth rate over the next three years $[(\text{growth}(t) + \text{growth}(t+1) + \text{growth}(t+2))/3]$ as the dependent variable in the growth models to further reduce the endogeneity problem (Thewissen, 2013).

Besides, we use 2SLS regression models to correct for possible endogeneity. In the 2SLS model, we use the social expenditure variables in period (t-2) as instruments because we argue that social expenditure in period (t-2) has an effect on social expenditure in period (t-1) but no direct effect on poverty,

inequality and growth two periods later. We indeed find high F-statistics in the first stage indicating that the instrument is relevant. The exclusion restriction is harder to prove statistically, but it is plausible that the dependent variables poverty, inequality and growth are, in the first instance, affected by a change in social expenditure in the same period or the next period but less, or not at all, two periods later. Nevertheless, we prefer to be cautious by considering the 2SLS results jointly with the OLS estimates, as it is impossible to prove that social expenditure in period (t-2) has no direct effect on our outcome variables. The 2SLS estimates generally give very similar results to the OLS estimates, indicating that the effects are indeed due to social expenditure.

Our preferred model is an OLS regression model, which contains panel corrected standard errors and in which we control for first order serial correlation. In addition, we include year and country fixed effects to control for different demographic and socio-economic trends and different institutions. This model deals most extensively with possible simultaneity problems in which social expenditure and the dependent variables move simultaneously and affect each other over time.

Empirical specification. The model is built step-by-step to show how the different parts of the model change the results. The first specification shows a correlation coefficient when we do not include controls. In specification 2, we include the economic, demographic and institutional control variables. We add year fixed effects to control for the business cycle and other time effects in specification 3. We include country fixed effects to control for unobserved characteristics (e.g. institutional differences between countries) in specification 4. Then, in specification 5, we run a 2SLS regression model, in which we use the social expenditure variables in period (t-2) as instruments. The regression equation of our 2SLS model is as follows:

$$y_{it} = \alpha_t + \beta_i + X'_{it}v_x + \gamma SE_{it-1} + \epsilon_{it} \quad (1)$$

$$SE_{it-1} = \alpha_t + \beta_i + \delta SE_{it-2} + X'_{it}v_x + \mu_{it} \quad (2)$$

The dependent variables in which we are interested are denoted by y_{it} , standing for poverty, inequality and GDP growth, which vary by country ($i = 1, \dots, N$) and years ($t = 1, \dots, T$). We regress the outcome variables on year fixed effects (α_t) country fixed effects (β_i), economic and demographic controls (X'_{it}) with coefficients v_x and the explanatory variables of interest for social expenditure (SE_{it-1}) with coefficient γ . The second lags of the social expenditure variables, our instruments in the first stage, are captured by SE_{it-2} with coefficient δ . Finally,

specification 5 gives our most preferred model, given by regression equations 3 and 4:

$$y_{it} = \alpha_t + \beta_i + X_{it}'v_\chi + \gamma SE_{it-1} + \mu_{it} \quad (3)$$

$$\mu_{it} = \rho\mu_{it-1} + \epsilon_{it} \quad (4)$$

We prefer this OLS model over the 2SLS model as we cannot prove that the exclusion restriction holds, making OLS estimates with panel corrected standard errors in which we control for first order autocorrelation most reliable. This model is the same as the second stage of the 2SLS model, but now we control for autocorrelation in the error term. We use robust standard errors in the first four empirical specifications and panel corrected standard errors in specification 5.

Results

Main results. Table 3 presents the results for the relationship between total public social expenditure and poverty. The first column shows the correlation coefficient in the model when we only control for economic, demographic and institutional control variables. We find a negative significant coefficient of -0.237 . Adding year fixed effects in column 2 increases the negative coefficient to -0.409 . The coefficient decreases slightly when we include country fixed effects in column 3, but increases again to 0.431 in our 2SLS model in column 4. In our preferred specification, column 5, we run an OLS model with panel corrected standard errors in which we control for serial correlation. The coefficient of total public social expenditure on poverty has a statistically significant coefficient of -0.337 . This coefficient indicates that a 1 percentage point increase in total social expenditure is associated with a 0.337 percentage point lower poverty level one year later. In turn, increases in GDP per capita, the population share aged 15–64, the population share aged 65+ and trade union density rate are associated with lower poverty rates. However, these coefficients are smaller than the coefficient for total public social expenditure.

Table 4 shows the relation between total public social expenditure (t-1) and poverty, Gini and GDP growth in our preferred model. Tables A.3 and A.4 in the online Appendix show the six different regression models for inequality and growth. In Table 4, we find a negative significant coefficient of total public social expenditure on inequality of -0.0038 , which is 9 per cent of the standard deviation of Gini. This coefficient seems small, but it is a function of the units in which variables are measured and is large compared to the coefficients of GDP per capita (-0.0018), unemployment rate (-0.0008) and trade union density (-0.0006), which are the controls that are significantly related to the Gini (see

Table 3. Estimation results of total public social expenditure on poverty

	(1) Poverty	(2) Poverty	(3) Poverty	(4) Poverty	(5) Poverty
Total public social expenditure (t-1)	-0.237*** (0.053)	-0.409*** (0.080)	-0.372*** (0.107)	-0.431*** (0.077)	-0.337*** (0.074)
GDP per capita (t-1)	0.020 (0.038)	0.027 (0.027)	-0.162 (0.117)	-0.180** (0.086)	-0.147** (0.059)
Unemployment rate (t-1)	0.085 (0.059)	0.303*** (0.083)	0.032 (0.072)	0.030 (0.049)	0.037 (0.040)
Population 15-64 (t-1)	-0.130 (0.246)	-0.369 (0.246)	-0.275 (0.272)	-0.371** (0.172)	-0.286* (0.170)
Population 65+ (t-1)	0.246 (0.171)	0.583** (0.249)	-0.209 (0.160)	-0.269** (0.126)	-0.223* (0.133)
Trade union density (t-1)	-0.058*** (0.020)	-0.032** (0.014)	-0.102*** (0.038)	-0.092*** (0.023)	-0.097*** (0.016)
Control variables	Yes	Yes	Yes	Yes	Yes
Year dummies	No	Yes	Yes	Yes	Yes
Country fixed effects	No	No	Yes	Yes	Yes
Ar1 component	No	No	No	No	Yes
Method	OLS	OLS	OLS	2SLS	OLS
Standard errors	Robust	Robust	Robust	Robust	PCSE
Observations	275	275	275	270	275
R-squared	0.468	0.628	0.926	0.327	0.923
Number of countries	22	22	22	21	22

Notes: * denotes significant at the 10% level, **at the 5% level and ***at the 1% level. Panel corrected standard errors in parentheses.

Source: Own calculations based on EU Survey on Income and Living conditions for European countries (EU-SILC).

the online Appendix, Table A.3). In column 3, we find a positive but statistically insignificant coefficient for total public social expenditure on GDP growth. Finding a statistically insignificant coefficient may explain why the effect of social protection on GDP growth is disputed in the academic literature.

The online Appendix, Table A.4, presents the other models for growth and we find a negative significant relation in specifications 1 to 3, but the coefficient becomes positive and statistically insignificant when we include country fixed effects. This suggests that countries with lower social spending have grown faster, but that no effect remains when we merely consider the within countries variation over time by controlling for (unobserved) differences between countries. Adding fixed effects is needed to make sure that there are no other differences between countries that explain both social expenditure and GDP growth, for example different phases of development.

Table 4. Estimation results of total public social expenditure on poverty, inequality and GDP growth

	(1) Poverty	(2) Gini	(3) GDP growth
Total public social expenditure (t-1)	-0.337*** (0.074)	-0.0038*** (0.0005)	0.142 (0.102)
GDP per capita (t-1)	-0.147** (0.059)	-0.0018*** (0.0004)	
Unemployment rate (t-1)	0.037 (0.040)	0.0008*** (0.0002)	
Trade union density (t-1)	-0.097*** (0.016)	-0.0006** (0.0002)	
Population 15-64 (t-1)	-0.286* (0.170)	-0.0019 (0.0019)	-0.118 (0.261)
Population 65+ (t-1)	-0.223* (0.133)	-0.0012 (0.0013)	-0.222 (0.293)
Capital formation growth (t-1)			-0.001 (0.013)
Education (t-1)			-0.006 (0.056)
Export (t-1)			0.056** (0.028)
Inflation (t-1)			-0.096* (0.057)
Year dummies	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes
Ar1 component	Yes	Yes	Yes
Method	OLS	OLS	OLS
Standard errors	PCSE	PCSE	PCSE
Observations	275	275	406
R-squared	0.923	0.9634	0.610
Number of countries	22	22	22

Notes: * denotes significant at the 10% level, **at the 5% level and ***at the 1% level. Panel corrected standard errors in Parentheses.

Source: Own calculations based on EU Survey on Income and Living conditions for European countries (EU-SILC).

Table 5 uses the same preferred models to examine the relationships between the different social expenditure types and poverty, inequality and GDP growth. Column 1 gives the relation between the different social expenditure schemes and poverty. Social expenditure on “family, unemployment and ALMPs” and “housing and others” are negatively and significantly related to poverty. The largest coefficients are found for “family” (−1.156) and “housing and others” (−0.794). This indicates that a 1 percentage point increase in social spending on families as a percentage of GDP is associated with a 1.156 percentage point lower poverty rate in the next year. Column 2 shows the connection between the different kinds of social expenditure and the Gini coefficient for income inequality. We find that spending on “old age and survivors” (−0.0058) and

Table 5. Estimation results of different kinds of social expenditure on poverty, inequality and GDP growth

	(1) Poverty	(2) Gini	(3) GDP growth
Old age and survivors SE (t-1)	-0.197 (0.152)	-0.0058*** (0.0009)	0.275 (0.254)
Incapacity SE (t-1)	-0.061 (0.324)	-0.0009 (0.0027)	0.023 (0.279)
Health SE (t-1)	-0.021 (0.154)	-0.0015 (0.0009)	-0.033 (0.222)
Family SE (t-1)	-1.156*** (0.215)	-0.0108*** (0.0035)	0.576 (0.466)
Unemployment and ALMPs SE (t-1)	-0.429*** (0.141)	-0.0021 (0.0018)	-0.332 (0.291)
Housing and others SE (t-1)	-0.794** (0.367)	0.0037 (0.0028)	1.211* (0.644)
GDP per capita (t-1)	-0.146** (0.063)	-0.0021*** (0.0005)	
Unemployment rate (t-1)	0.029 (0.037)	0.0010*** (0.0002)	
Trade union density (t-1)	-0.078*** (0.016)	-0.0007** (0.0003)	
Population 15-64 (t-1)	-0.183 (0.186)	-0.0004 (0.0018)	-0.187 (0.264)
Population 65+ (t-1)	-0.114 (0.165)	-0.0003 (0.0012)	-0.341 (0.322)
Capital formation growth (t-1)			-0.001 (0.013)
Education (t-1)			-0.014 (0.058)
Export (t-1)			0.061** (0.029)
Inflation (t-1)			-0.106* (0.059)
Year dummies	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes
Ar1 component	Yes	Yes	Yes
Method	OLS	OLS	OLS
Standard errors	PCSE	PCSE	PCSE
Observations	275	275	400
R-squared	0.927	0.9676	0.619
Number of countries	22	22	22

Notes: * denotes significant at the 10% level, **at the 5% level and ***at the 1% level. Panel corrected standard errors in Parentheses.

Source: Own calculations based on EU Survey on Income and Living conditions for European countries (EU-SILC).

“family” (−0.0108) are negatively and significantly related to the Gini coefficient. In column 3, we find that only expenditure on “housing and others” (1.211) is significantly related to GDP growth. An increase of 1 percentage point in public social expenditure on “housing and others” is associated with a 1.211 percentage point increase in GDP growth over the next three years. However, countries

spend on average only 0.7 per cent of GDP on “housing and others”, indicating that this spending category plays only a small role as a determinant of GDP growth.

The results in Table 5 suggest large differences in effects between the different social expenditure schemes, providing policy-makers with the possibility to target more accurately when selecting social expenditure schemes for the policy goals of reducing poverty and inequality without detrimental effects on GDP growth.

The two largest categories of social expenditure, “old age and survivors” and “health”, are particularly interesting. “Old age and survivors” expenditure is negatively and significantly related to inequality, but there is no statistically significant relation to poverty or to GDP growth. Finding a strong negative relation with the Gini, but no statistically significant relation with poverty, indicates that the groups in the middle of the income distribution benefit most from spending on “old age and survivors”. The large positive coefficient for “old age and survivors” on GDP growth indicates that there is, at least, no large negative association between spending on “old age and survivors” and GDP growth. For “health” expenditure, we find no significant relationship with any of the outcome variables.

In the online Appendix, Table A.5, we run separate regression models for the different social expenditure variables including only one social expenditure variable in our model at a time. We do this because inclusion of all could lead to multicollinearity issues. This additional analysis shows that the only difference is that the negative coefficients of social expenditure on “incapacity” and “unemployment and ALMPs” on the Gini become statistically significant.

Sensitivity analysis. Finally, we ran a large number of additional robustness checks. The results are almost the same for the effects of “total public and private mandatory social expenditure” (online Appendix, Table A.6) and “total social expenditure” (including voluntary private social expenditure) (online Appendix, Table A.7). For net social expenditure, we find results that are similar to our results for gross total social expenditure (online Appendix, Table A.8 and Table A.9).

In the online Appendix, Table A.10, we consider the effects for a sample of OECD countries.⁹ The coefficient size of total public social expenditure on

9. Countries in OECD sample: Australia, Austria, Belgium, Canada, Chile, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Republic of Korea, Latvia, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. Excluding Israel, Mexico and Australia in our poverty and inequality models and excluding New Zealand and Turkey in our GDP growth models, for reasons of data availability.

poverty slightly decreases to -0.239 and the coefficient size of total public social expenditure on the Gini decreases substantially to -0.0017 ; both coefficients remain highly significant. For GDP growth, our positive coefficient of total social expenditure becomes statistically significant: a 1 percentage point increase in public social expenditure is associated with a 0.134 percentage point increase in GDP growth in the next three years.

For the different expenditure categories, presented in the online Appendix Table A.11, we find very similar results for the OECD sample compared to the EU sample. The only two differences are that, for the OECD sample, the negative coefficient of “unemployment and ALMPs” on the Gini becomes statistically significant and the positive coefficient of expenditure on “housing and others” on GDP growth turns statistically insignificant. Table A.12 in the online Appendix shows similar results when we include only one social expenditure category in the model at a time. The negative coefficients of “incapacity” expenditure on poverty as well as on the Gini turn significant now. When we separate “housing and others”, in Table A.12, we still find a positive significant coefficient for “others” (mostly social assistance) on GDP growth.

In Tables A.13–A.16 in the online Appendix, we show the importance of progressivity for the different expenditure types. Our base results already present the progressivity of the various expenditure types, because we are studying the effect of a 1 percentage point of GDP increase in spending for different expenditure types on poverty and inequality.¹⁰ Tables A.13–A.17 in the online Appendix supplement our analysis by using a progressivity index, which we have calculated based on the dataset from Caminada et al. (2017), which is based on Luxembourg Income Study (LIS) data. This progressivity indicator is calculated by taking the difference between the Gini before and after redistribution and by dividing this difference by spending on this expenditure type as a percentage of GDP. Table A.13 confirms that expenditure on “housing and others” is best targeted at the poor, which is in line with Table 1. Tables A.14–A.17 in the online Appendix present the results for the interaction effects between social expenditure as per cent of GDP and the progressivity of spending. The interaction effects on poverty and inequality are almost always negative, suggesting that the progressivity is indeed important to reduce poverty and inequality. However, these interaction effects are not statistically significant, most likely because the number of observations available for this progressivity index is small. Therefore, we should not draw strong conclusions based on Tables A.13–A.16.

10. For example, expenditure on “housing and others” has a higher level of progressivity than expenditure on “health” if a 1 percentage point increase in expenditure on “housing and others” reduces poverty much more than a 1 percentage point of GDP increase in expenditure on “health”.

In Table A.17, we show the results for the years 2008–2015. We find a smaller negative coefficient for total social expenditure on poverty and inequality and a larger positive coefficient, but statistically insignificant, for total social expenditure on GDP growth. Table A.18 in the online Appendix shows the results for the years 1990–2007 and confirms that our results are not driven by the Great Recession, as the differences between the results in Tables A.17 and A.18 are not statistically significant for poverty and GDP growth. Although not statistically significant, the coefficient size of total public social expenditure on GDP growth is more than twice as large for the years 2008–2015 as for the years 1990–2007. Hence, if the business cycle has any impact on the effect of total public expenditure on GDP growth it would probably be positive.

We also study whether our results are robust for the working-age population. In Table A.19 in the online Appendix, we find that the coefficient of total public social expenditure on the working poor is small and insignificant. However, we do find a negative association between total public social expenditure and the poverty rate and Gini coefficient for the age group 18–65. We find that spending on “family”, “unemployment and ALMPs”, and “housing and others” also have the strongest negative relation with poverty for the working-age population. Spending on “old age and survivors” and “family” are again negatively related to inequality when we consider the working-age population.

Referring again to the online Appendix, Table A.20 gives the results for a poverty rate of 60 per cent rather than of 50 per cent. Most interesting is the negative relation between “old age and survivors”, which becomes stronger and statistically significant, with a coefficient of -0.504 . When we compare the differences in results between the 50 per cent and 60 per cent poverty rates, we can infer the following: “housing and others” are most effective in reducing poverty among the poorest decile of the income distribution, whereas “old age and survivors” expenditure reduces poverty among the second decile.

Tables A.21–A.23 in the online Appendix show that our results are robust when we consider different time lags for our explanatory variables. Finally, the online Appendix shows that the results remain robust if we exclude Greece from our sample (Table A.24), if we use only one demographic control variable (Table A.25) and if we estimate our model without control variables (Table A.26).

Conclusion

In this article, we have studied how different social expenditure schemes are related to poverty, inequality and economic growth. First, we find that total public social expenditure is negatively related to poverty and inequality, but not related to GDP growth. Hence, the results do not support a trade-off between reducing

poverty and inequality through total public social expenditure on the one hand and GDP growth on the other hand. This result adds to a growing number of studies that reject the existence of a trade-off between equity and efficiency at a macro level (Belletтини and Ceroni, 2000; Thewissen, 2013; Berg et al., 2018).

Second, we find substantial differences between the effects of various types of social expenditure. These differences allow policy-makers to achieve better targeting and thereby increase the effectiveness of reducing poverty and inequality, without detrimental effects on GDP growth. Studying which expenditure categories are most effective answers the call of Ostry, Berg and Tsangarides (2014) for more research on the mechanisms at play to make redistribution as efficient as possible. Although the relationships presented in this article can help policy-makers to set priorities, some caution is justified. One issue is that the underlying models are not sufficient to make strong causal claims. A second is that there are wider policy goals that must be considered other than merely poverty, inequality and growth.

Our results suggest that the strongest negative relation with both poverty and inequality is found for social expenditure on “families”. Social expenditure on “unemployment and ALMPs” and “housing and others” (mostly social assistance) are also effective ways of reducing poverty, but not for reducing the Gini for income inequality. Social expenditure on “old age and survivors” is negatively related to the Gini for income inequality, but the negative relation with poverty is not statistically significant. Hence, social expenditure on “family”, “unemployment and ALMPs”, and “housing and others” are on average better targeted at the poor, while social expenditure on “old age and survivors” has a more universal character to the benefit of a larger group of people. However, the budgets of the expenditure schemes that are best targeted at the poor are relatively small. Therefore, spending on “old age and survivors” may still be important for reducing poverty in absolute terms, because much larger amounts are spent on this category.

For GDP growth, finding a strong positive relationship with social expenditure on “housing and others” indicates that the social expenditure type best targeted at the poor is positively associated with GDP growth. This is in line with Cingano (2014) and OECD (2014) who show that the negative impact of inequality on growth mainly can be explained by the gap between the bottom and the middle of the income distribution. Possible explanations for the positive association between spending on “housing and others” and GDP growth are the positive effects of the safety net on the potential of the poor, the development of skills, levels of risk-taking and the stabilizing effect on aggregate demand. Potential negative effects on labour supply may be compensated by higher levels of productivity when a greater share of the potential of poor people is released. Furthermore, expenditure on housing may have a large fiscal multiplier as there are

non-negligible spillover effects from the housing market to the broader economy (Iacoviello and Neri, 2010), causing a relatively large positive effect on GDP growth.

Overall, we can conclude that there is no negative statistically significant relationship between any of the social expenditure types and GDP growth and that the expenditure type most effective in reducing poverty is positively related to economic growth. This suggests that, when social expenditure is used to reduce poverty and inequality, there is no trade-off with economic growth. Further, the expenditure types with the strongest negative relation with poverty are not the same as the ones that are most strongly negatively related with inequality. In line with Korpi and Palme (1998), our study shows that income inequality is most strongly negatively related to expenditure types that are directed to a broader group rather than just to the poor, which are the social expenditures on “old age and survivors” and “family”.

Bibliography

- Aber, J. L. et al.** 1997. “The effects of poverty on child health and development”, in *Annual Review of Public Health*, Vol. 18, No. 1.
- Adema, W.; Fron, P.; Ladaique, M.** 2014. “How much do OECD countries spend on social protection and how redistributive are their tax/benefit systems?”, in *International Social Security Review*, Vol. 67, No. 1.
- Alesina, A.; Rodrik, D.** 1994. “Distributive politics and economic growth”, in *Quarterly Journal of Economics*, Vol. 109, No. 2.
- Arjona, R.; Ladaique, M.; Pearson, M.** 2003. “Growth, inequality and social protection”, in *Canadian Public Policy/Analyse de Politiques*, Vol. 29, Suppl.
- Atkinson, A. B.** 1995. “Is the welfare state necessarily an obstacle to economic growth?”, in *European Economic Review*, Vol. 39, No. 3.
- Bakija, J. et al.** 2016. *How big should our government be?*. Berkeley, CA, University of California Press.
- Baldacci, E. et al.** 2008. “Social spending, human capital, and growth in developing countries”, in *World Development*, Vol. 36, No. 8.
- Banerjee, A. V.; Benabou, R.; Mookherjee, D.** 2006. *Understanding poverty*. Oxford, Oxford University Press.
- Barro, R. J.** 1996. *Determinants of economic growth: A cross-country empirical study* (NBER working paper, No. 5698). Cambridge, MA, National Bureau of Economics Research.
- Barro, R. J.** 2013. “Education and economic growth”, in *Annals of Economics and Finance*, Vol. 14, No. 2.
- Belletini, G.; Ceroni, C. B.** 2000. “Social security expenditure and economic growth: An empirical assessment”, in *Research in Economics*, Vol. 54, No. 3.

- Benabou, R.** 2000. "Unequal societies: Income distribution and the social contract", in *American Economic Review*, Vol. 90, No. 1.
- Berg, A. et al.** 2018. "Redistribution, inequality, and growth: new evidence", in *Journal of Economic Growth*, Vol. 23, No. 3.
- Blanchard, O. J.; Leigh, D.** 2013. "Growth forecast errors and fiscal multipliers", in *American Economic Review*, Vol. 103, No. 3.
- Brooks-Gunn, J.; Duncan, G. J.** 1997. "The effects of poverty on children", in *The Future of Children*, Vol. 7, No. 2.
- Caminada, K. et al.** 2017. *Income inequality and fiscal redistribution in 47 LIS-countries (1967-2014)* (LIS working paper, No. 724). Luxembourg, Luxembourg Income Study.
- Caminada, K. et al.** 2019. "Has the redistributive effect of social transfers and taxes changed over time across countries?", in *International Social Security Review*, Vol. 72, No. 1.
- Caminada, K.; Goudswaard, K.** 2009. "Effectiveness of poverty reduction in the EU: A descriptive analysis", in *Poverty & Public Policy*, Vol. 1, No. 2.
- Card, D.** 2001. "The effect of unions on wage inequality in the U.S. labor market", in *ILR Review*, Vol. 54, No. 2.
- Cingano, F.** 2014. *Trends in income inequality and its impact on economic growth* (OECD Social, employment and migration working paper, No. 163). Paris, Organisation for Economic Co-operation and Development.
- Connor, P. et al.** 2019. "Income inequality and white-on-black racial bias in the United States: Evidence from Project Implicit and Google Trends", in *Psychological Science*, Vol. 30, No. 2.
- Dabla-Norris, E. et al.** 2015. *Causes and consequences of income inequality: A global perspective*. Washington, DC, International Monetary Fund.
- Darby, J.; Melitz, J.** 2008. "Social spending and automatic stabilizers in the OECD", in *Economic Policy*, Vol. 23, No. 56.
- De Deken, J.** 2014. "Identifying the skeleton of the social investment state: Defining and measuring patterns of social policy change on the basis of expenditure data", in B. Cantillon and F. Vandenbroucke (eds), *Reconciling work and poverty reduction: How successful are European welfare states?*. Oxford, Oxford University Press.
- Easterly, W.** 2007. "Inequality does cause underdevelopment: Insights from a new instrument", in *Journal of Development Economics*, Vol. 84, No. 2.
- Feldstein, M.** 1974. "Social security, induced retirement, and aggregate capital accumulation", in *Journal of Political Economy*, Vol. 82, No. 5.
- French, E.; Song, J.** 2014. "The effect of disability insurance receipt on labor supply", in *American Economic Journal: Economic Policy*, Vol. 6, No. 2.
- Goudswaard, K.; Caminada, K.** 2010. "The redistributive effect of public and private social programmes: A cross-country empirical analysis", in *International Social Security Review*, Vol. 63, No. 1.

- Hooghe, M.; Oser, J.** 2016. "Trade union density and social expenditure: A longitudinal analysis of policy feedback effects in OECD countries, 1980–2010", in *Journal of European Public Policy*, Vol. 23, No. 10.
- Iacoviello, M.; Neri, S.** 2010. "Housing market spillovers: Evidence from an estimated DSGE model", in *American Economic Journal: Macroeconomics*, Vol. 2, No. 2.
- ILO.** 2014. *World social protection report 2014/15: Building economic recovery, inclusive development and social justice*. Geneva, International Labour Office.
- Jacques, O.; Noel, A.** 2018. "The case for welfare state universalism, or the lasting relevance of the paradox of redistribution", in *Journal of European Social Policy*, Vol. 28, No. 1.
- Kenworthy, L.** 1999. "Do social-welfare policies reduce poverty? A cross-national assessment", in *Social Forces*, Vol. 77, No. 3.
- Keynes, J. M.** 1937. "The general theory of employment", in *Quarterly Journal of Economics*, Vol. 51, No. 2.
- Korpi, W.; Palme, J.** 1998. "The paradox of redistribution and strategies of equality: Welfare state institutions, inequality, and poverty in the Western countries", in *American Sociological Review*, Vol. 63, No. 5.
- Krueger, A. B.; Meyer, B. D.** 2002. "Labor supply effects of social insurance", in *Handbook of public economics*, Vol. 4.
- Krueger, A. B.; Pischke, J.-S.** 1992. "The effect of social security on labor supply: A cohort analysis of the notch generation", in *Journal of Labor Economics*, Vol. 10, No. 4.
- Lupu, N.; Pontusson, J.** 2011. "The structure of inequality and the politics of redistribution", in *American Political Science Review*, Vol. 105, No. 2.
- Mani, A. et al.** 2013. "Poverty impedes cognitive function", in *Science*, Vol. 341, No. 6149.
- Milanovic, B.** 2000. "The median-voter hypothesis, income inequality, and income redistribution: An empirical test with the required data", in *European Journal of Political Economy*, Vol. 16, No. 3.
- Muis, J.; Immerzeel, T.** 2017. "Causes and consequences of the rise of populist radical right parties and movements in Europe", in *Current Sociology*, Vol. 65, No. 6.
- OECD.** 2007. *The social expenditure database: An interpretive guide SOCX 1980–2003*. Paris, Organisation for Economic Co-operation and Development.
- OECD.** 2014. *Focus on inequality and growth*. Paris, Organisation for Economic Co-operation and Development.
- OECD.** 2015. *In it together: Why less inequality benefits all*. Paris, Organisation for Economic Co-operation and Development.
- Okun, A. M.** 1975. *Equality and efficiency: The big tradeoff*. Washington, DC, Brookings Institution.
- Ostry, M. J. D.; Berg, M. A.; Tsangarides, M. C. G.** 2014. *Redistribution, inequality, and growth*. Washington, DC, International Monetary Fund.
- Perotti, R.** 1996. "Growth, income distribution, and democracy: What the data say", in *Journal of Economic Growth*, Vol. 1, No. 2.

- Persson, T.; Tabellini, G.** 1994. "Is inequality harmful for growth?", in *American Economic Review*, Vol. 84, No. 3.
- Piketty, T.** 2014. *Capital in the twenty-first century*. Cambridge, MA, Belknap Press of Harvard University Press.
- Rust, J.; Phelan, C.** 1997. "How social security and medicare affect retirement behavior in a world of incomplete markets", in *Econometrica*, Vol. 65, No. 4.
- Singh, A.** 1996. "Pension reform, the stock market, capital formation and economic growth: A critical commentary on the World Bank's proposals", in *International Social Security Review*, Vol. 49, No. 3.
- Solow, R. M.** 1956. "A contribution to the theory of economic growth", in *Quarterly Journal of Economics*, Vol. 70, No. 1.
- Thewissen, S.** 2013. "Is it the income distribution or redistribution that affects growth?", in *Socio-Economic Review*, Vol. 12, No. 3.
- Van Vliet, O.; Wang, C.** 2015. "Social investment and poverty reduction: A comparative analysis across fifteen European countries", in *Journal of Social Policy*, Vol. 44, No. 3.
- Wang, C.; Caminada, K.; Goudswaard, K.** 2012. "The redistributive effect of social transfer programmes and taxes: A decomposition across countries", in *International Social Security Review*, Vol. 65, No. 3.
- Wang, C.; Caminada, K.; Goudswaard, K.** 2014. "Income redistribution in 20 countries over time", in *International Journal of Social Welfare*, Vol. 23, No. 3.

Supporting information

Additional supporting information may be found online in the Supporting Information section at the end of this article.