

Elderly Poverty and Its Measurement

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Abstract: This paper examines various aspects of elderly poverty and its measurement. It first discusses some of the most important issues relating to measuring elderly poverty. It then reviews recent trends in elderly poverty, which show considerable heterogeneity in the extent of elderly poverty even among developed countries. Such cross-country differences are due at least partly to differences in the generosity of public old-age pensions and other social safety nets for the elderly. Empirical evidence also corroborates that the expansion of public pension programs has often played a key role in reducing elderly poverty.

Keywords: elderly poverty, population aging, poverty measurement, public pensions

JEL classification codes: H55, I32, J14

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1. INTRODUCTION

Individuals of all ages are vulnerable to poverty, but the elderly are especially vulnerable for at least three reasons. First, the elderly experience reductions in, or the total elimination of, labor income due to such factors as laws and customs regarding retirement and deteriorating health. Second, the elderly are more likely than younger age groups to incur substantial medical and long-term care expenses as their health deteriorates. Third, many countries do not have adequate public old-age pensions and/or other social safety nets for the elderly.

Population aging is occurring in many, if not most, countries, including developing countries, and it is a source of concern because it potentially entails a greater fiscal burden in terms of health care and pension-related expenditures. It is important to have an accurate understanding of elderly poverty so that ways can be found to maintain fiscal sustainability in the face of population aging without increasing the incidence of elderly poverty. The purpose of this paper is to discuss issues relating to the measurement of elderly poverty, to explore recent trends in elderly poverty, and to shed light on the role of social safety nets in reducing elderly poverty.

2. ISSUES RELATING TO THE MEASUREMENT OF ELDERLY POVERTY

There are a host of issues relating to accurately measuring poverty in general and elderly poverty in particular. In this section, we will briefly discuss some of the most important issues relating to measuring elderly poverty.¹

One of the biggest challenges to measuring poverty, whether in a relative or absolute way, is that we often need to measure individual wellbeing based on information on the household in which he or she lives. Income and expenditure are the criteria that are most often used to measure poverty, but income and expenditure data are typically collected at the household level. Translating household-level information to individual wellbeing involves many assumptions about the allocation of resources within the household, about the different needs of each household member, and about the extent of economies of scale (Deaton and Paxson 1998).

¹ See Expert Group on Poverty Statistics (Rio Group) (2006) and United Nations Economic Commission for Europe (2011) for a more detailed discussion of the issues raised in this section.

Measuring elderly poverty is likely to be particularly sensitive to what equivalence scales are used to control for differences in household size and composition. Some elderly live alone while others live with their spouses and other family members, and the choice of equivalence scale is crucial when comparing the elderly living in households of different sizes. Moreover, since the elderly tend to live in smaller households than other age groups, if we do not take account of economies of scale, we are likely to underestimate the poverty rate of the elderly relative to that of the general population.

Another issue relating to measuring poverty is what resources should be used to measure poverty. Income is by far the most commonly used measure of resources, partly because income data are often readily available. However, income may not be appropriate for measuring people's material wellbeing and poverty status because people can draw on previously accumulated wealth to smooth their consumption. This is particularly true in the case of the elderly who are likely to have accumulated wealth throughout their lives. Indeed, Hurd and Rohwedder (2006) find for the United States (US) that consumption-based poverty rates are considerably lower than income-based poverty rates, particularly among single elderly people, because of their ability to consume out of wealth. Similarly, Kuypers and Marx (2019) show for Belgium that a substantial share of income-poor elderly households own significant assets and therefore argue that assets also matter greatly for the analysis of poverty and financial vulnerability.

The treatment of health care costs has also received considerable attention in recent years as one of the issues for measuring elderly poverty, particularly in the US. In the case of the US, the Supplemental Poverty Measure (SPM) was introduced by the US Census Bureau in 2010 to supplement the official poverty measure. One of the differences between these two measures is that the SPM accounts for health needs by subtracting medical out-of-pocket (MOOP) expenditures from income. Treating MOOP expenditures as a nondiscretionary drain on household resources results in a significant increase in the poverty rate of the elderly (Chavez et al. 2018). From another perspective, Korenman et al. (2021) advocate using a Health Inclusive Poverty Measure (HIPM), which incorporates health needs and benefits as part of the poverty threshold, and counting health insurance benefits as a resource that can be used to meet those needs. They show that the HIPM poverty rate is nearly 2 percentage points lower than the SPM rate for the elderly.

The issues raised in this section are some of the most important ones for measuring elderly

poverty. Despite these outstanding measurement issues, the following section reviews recent trends in elderly poverty using currently available data that are comparable across countries to obtain a comprehensive understanding of elderly poverty. However, further discussion and research on the measurement issues raised in this section will certainly help develop more appropriate measures of elderly poverty, which can then be used as a guideline for policies to address elderly poverty.

3. RECENT TRENDS IN ELDERLY POVERTY

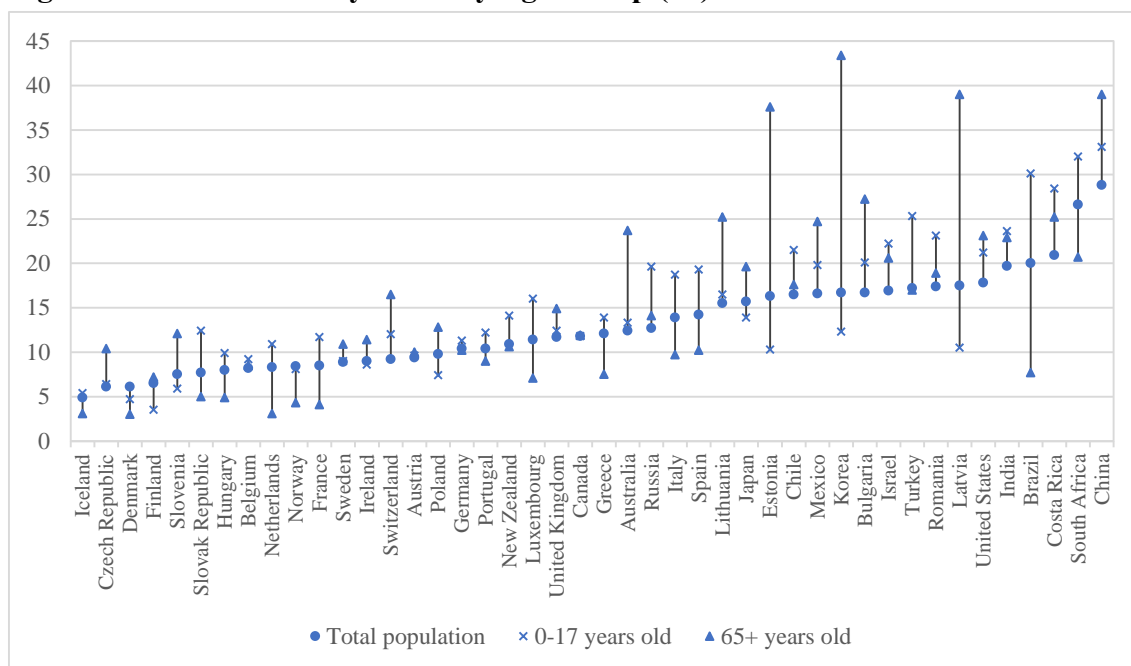
Unlike data on poverty at the national level, data on elderly poverty that are comparable across countries hardly exist. We therefore look mainly at elderly poverty in developed countries when discussing recent trends in this section. More specifically, we resort to the data that the Organisation for Economic Co-operation and Development (OECD) compiles for its member countries as well as for non-OECD G20 countries. The OECD uses the relative poverty rate, defined as the proportion of the population whose equivalized household disposable income is less than 50% of the median.

Following convention, we define the elderly as those who are aged 65 or older, largely because it corresponds to the mandatory retirement age in many countries. Nevertheless, it should be noted that whether one regards oneself as being elderly is a subjective matter, and thus it may depend partly on cultural factors and may change over time.

Figure 1 shows poverty rates by age group for 2018 or the latest available year for OECD and non-OECD G20 countries. There is significant heterogeneity even among OECD countries in the poverty rate of the elderly, and it ranges from 3.0% in Denmark to 43.4% in Korea.

When the poverty rate of the elderly is compared to that of the total population, the poverty rate of the elderly is, in general, higher than that of the total population. Such a trend is particularly evident in countries such as Australia, Bulgaria, Estonia, Korea, and Latvia where the poverty rate of the elderly is greater than that of the total population by more than 10 percentage points. Cotlear and Tornarolli (2011) obtain a similar finding for 18 Latin American countries. Likewise, the poverty rate of children (0-17 years old) tends to be higher than that of the total population. These trends are in line with empirical evidence that generally suggests a U-shaped relationship between age and poverty (Marchand and Smeeding 2016).

Figure 1. Relative Poverty Rates by Age Group (%)



Notes: Figures are for 2018 or the latest available year.

Source: Based on data from OECD Income Distribution Database

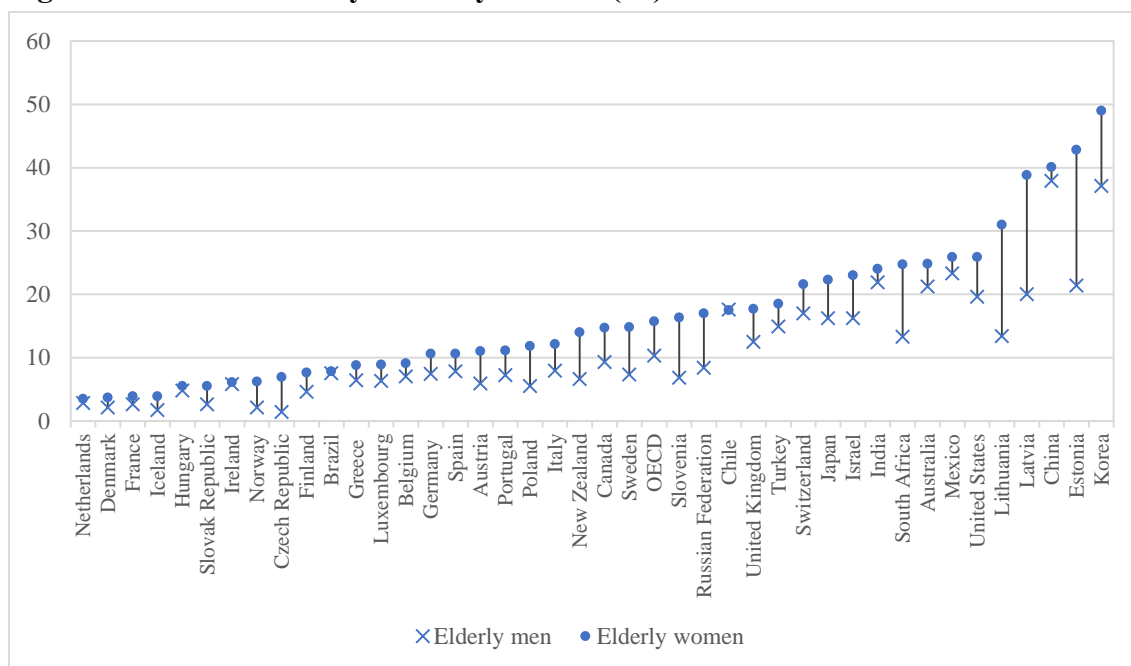
(<https://stats.oecd.org/index.aspx?lang=en/#>).

However, what Figure 1 tells us is that one cannot generalize about whether or not the elderly are poorer, on average, than the total population. As OECD (2019) points out, much depends on how generous public old-age pensions and other social safety nets for the elderly are and how strong the social norm that children take care of, and provide financial support to, their parents is. Given that social safety nets are not yet fully developed in many non-OECD countries, the poverty rates of the elderly as well as of the total population tend to be greater in non-OECD G20 countries than those in OECD countries (see Figure 1).

What is more consistent across developed countries is that the poverty rate of the elderly has declined over time relative to those of other age groups (Marchand and Smeeding 2016). In the US, for example, the poverty rate of the elderly was 35.2% in 1959, which was much higher than that of the working-age population (17.9%) and that of children (27.3%). While the poverty rate has declined over time for all age groups, the decline was most striking for the elderly, whose poverty rate had declined to 8.9% by 2019 as compared to 9.4% and 14.4% for the working-age population and children, respectively.²

² The poverty rates for the US are from the US Census Bureau (<https://www.census.gov/data/tables/time->

Figure 2. Relative Poverty Rates by Gender (%)



Notes: Figures are for 2016 or the latest available year.

Source: Based on data from OECD (2019).

Despite the success in reducing elderly poverty in many developed countries, elderly women remain vulnerable. The poverty rate tends to be higher among women than among men: the OECD average was 15.7% for elderly women in 2016 compared to 10.3% for elderly men. What is striking is that the higher poverty rate of elderly women is observed in almost all countries, with the exception of Chile, as shown in Figure 2, though the gender gap varies greatly across countries. Women’s higher incidence of poverty is often called “the feminization of poverty” in the literature (Brady and Kall 2008; Pearce 1978).

Among elderly women, the oldest women (those aged 75 and above), particularly single older women who live alone, are found to be the most vulnerable to poverty (Smeeding and Sandström 2005). This is partly explained by women’s weaker labor market position and more fragmented careers, which is due to their larger share of family responsibilities. These, in turn, imply that women’s lifetime earnings and pensions will be lower. McDonald and Robb (2004) show that, in Canada, among unmarried elderly women, the separated and divorced are the poorest due largely to their limited receipt of private pensions while never married women are relatively better off as they exhibit similar career

series/demo/income-poverty/historical-poverty-people.html). Note that official US data on poverty rates are based on an absolute poverty measure.

patterns as men, and accordingly, private pensions comprise a higher share of their income in old age.

While the widowed are likely to benefit from the wealth left by their husbands, McGarry and Schoeni (2005) draw attention to the disproportionately high poverty rate of widows in the US. They note that surviving spouses, often women, face the risk of falling into poverty upon the death of their husbands/wives as married couples tend to spend substantial portions of their wealth on the health care of a sick or dying spouse.

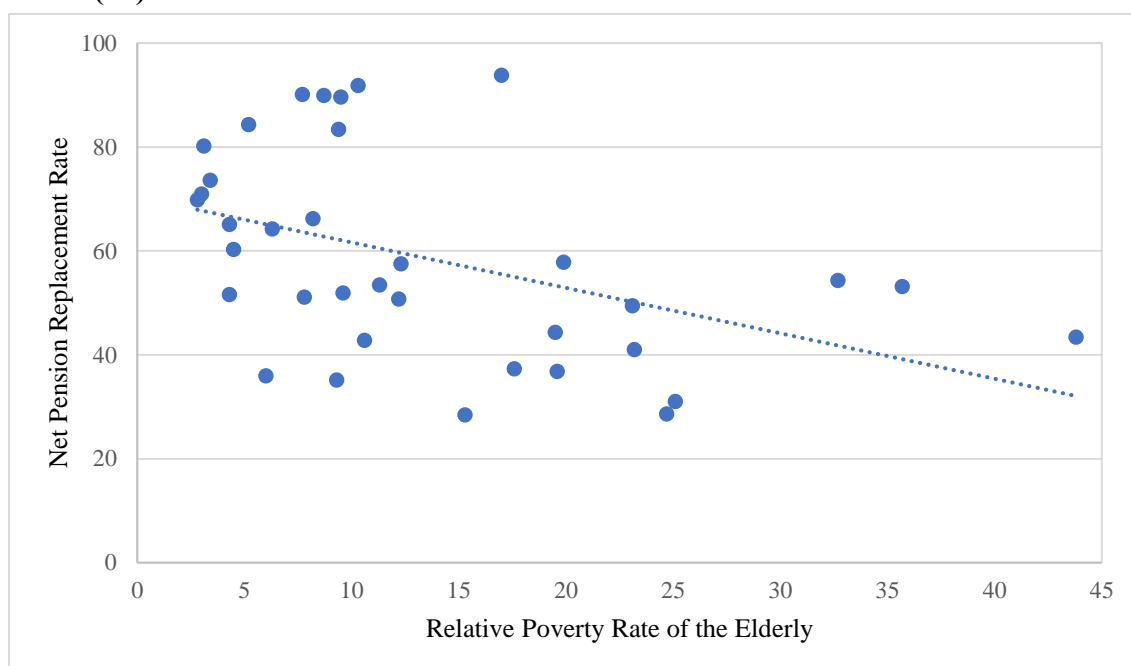
While developed countries have generally made progress in reducing elderly poverty over the last half century, there is great heterogeneity in the poverty rate of the elderly across countries and significant pockets of poverty remain, particularly among elderly women. We will turn, in the next section, to the role of public transfers in explaining why some countries do better than others in reducing elderly poverty.

4. THE ROLE OF PUBLIC TRANSFERS IN REDUCING ELDERLY POVERTY

Social safety nets play a key role in reducing poverty, and elderly poverty is no exception. Public pension programs, which insure people against lifespan uncertainty, are the most important component of social safety nets for the elderly in most countries.

To assess the role of public pension programs in reducing elderly poverty, Figure 3 plots net pension replacement rates against the relative poverty rates of the elderly in OECD countries. Net pension replacement rates are a measure of the generosity of public pension benefits and are defined as the ratio of net pension entitlements to net pre-retirement earnings where “net” means exclusive of taxes and social security contributions paid by workers and pensioners. Figure 3 shows a somewhat negative relationship between the two. For example, relative poverty rates are relatively low and net pension replacement rates are relatively high in such countries as Denmark, France, and the Netherlands, whereas relative poverty rates are relatively high and net pension replacement rates are relatively low in such countries as Korea, Lithuania, and Mexico. Lee (2014) indeed notes that the poverty rate of the elderly in Korea is by far the highest among the OECD countries, largely because public pensions are still very meager (and also because the social norm of children taking care of, and financially supporting, their parents has weakened dramatically over time).

Figure 3. Relative Poverty Rates of the Elderly (%) and Net Pension Replacement Rates (%)



Notes: Figures are for 2016 or the latest available year.

Source: Based on data from OECD (2019).

Further evidence on the poverty-reducing effect of public pensions on the elderly can be gleaned from empirical analyses. For example, Engelhardt and Gruber (2006) find that increased Social Security benefits can explain nearly all of the decline in elderly poverty rates in the US during the 1968-2001 period. Moreover, Jacques et al. (2021) find for 27 European countries over the 1995-2014 period that the elasticity of elderly poverty with respect to public pensions is significantly negative but only when per capita public pension spending exceeds 685 euros.

Similarly, Been et al. (2017) find higher public pension expenditures to be associated with lower levels of income inequality and poverty in old age based on data for 17 European countries over the 1995-2011 period. Interestingly, their analysis also shows that private pensions have the opposite effect to public pensions as private pensions are based on individuals' contributions and are therefore less redistributive than public pensions. This is worrisome given the general trend toward the privatization of pension schemes in many developed countries.

In the case of developing countries, pension programs tend to be less prevalent than they are in developed countries. One of the challenges facing developing countries is that

formal contributory pension programs often do not reach most informal workers who account for a large share of total employment. In response, an increasing number of developing countries are introducing noncontributory pension schemes as an integral part of poverty alleviation programs.

Empirical evidence generally suggests that such programs have poverty-reducing effects. Gasparini et al. (2010) conduct a simulation analysis based on microdata from 20 Latin American and Caribbean countries and find a strong negative relationship between public pensions and elderly poverty though they use coverage rates rather than net pension replacement rates as their measure of the generosity of public pension systems. Similarly, Cotlear and Tornarolli (2011) find using data for 18 Latin American countries that poverty rates are much lower among pension beneficiaries than they are among nonbeneficiaries. Finally, Barrientos and Mase (2012) find that excluding noncontributory pension income would raise both the share of households falling into poverty and that of households in persistent poverty in Brazil and South Africa.

Nevertheless, there is concern about whether the poverty-reducing effect of public pension programs is attenuated because they induce reductions in labor income and/or private transfers from family members. Galiani et al. (2016) find for Mexico that noncontributory pension schemes targeting the poor help improve the wellbeing of the elderly poor without having any indirect impact on the earning or savings of program participants. Similarly, Kaushal (2014) finds for India a large positive impact of the public pension program on household expenditures, thereby lowering elderly poverty, and only a modest effect of the program on elderly employment.

As for the implications of public pension programs for private transfers, Amuedo-Dorantes and Juarez (2015) find that the noncontributory pension program in Mexico crowds out the support that the elderly receive from their families by about 37%, which dampens the welfare-enhancing effect of the program. On the other hand, Nikolov and Adelman (2019) find that the New Rural Pension Scheme (NRPS) in China has a crowd-out effect but that it is smaller in magnitude than that of previous studies for both middle- and high-income countries. They explain that the limited crowd-out effect may be due to the tradition of filial piety and close ties between parents and children in China and/or to the relatively small magnitude of the benefits.

One issue that needs to be taken into account when implementing noncontributory

pension programs as part of poverty alleviation measures in developing countries is that the poor tend to die younger and, as a consequence, tend to be underrepresented among the elderly. Pal and Palacios (2011) show for India that households with elderly members are not necessarily poorer than non-elderly households due partly to consumption-mortality differentials and a survivorship bias. They argue that it is important to carefully assess whether an older person is a good candidate for categorical targeting of poverty alleviation programs before implementing such programs. Kakwani and Subbarao (2007) also find for 15 sub-Saharan African countries that the poverty-reducing effect of *universal* noncontributory pension programs is limited and that substantial welfare gains can be obtained at low cost if a pension program is targeted specifically at the poor among the elderly.

These findings underscore the importance of ensuring that pension programs are well targeted so that they fulfill the goal of alleviating elderly poverty while maintaining the fiscal sustainability of such programs. However, Kaushal (2014) finds in the case of India the possibility that the most disadvantaged households are more likely to be left out of the pension system than other households. Unnikrishnan and Imai (2020) also find the welfare-enhancing effect of public pensions in India to have deteriorated after 2007 due partly to the worsened targeting performance of the program.

Empirical findings generally provide strong corroboration that generous public pension programs are one of the most effective ways of alleviating elderly poverty both in developed and developing countries. Nevertheless, the coverage and benefit levels of public pensions tend to be relatively limited and targeting them better remains a challenge in developing countries.

5. CONCLUDING REMARKS

In this paper, we examined various aspects of elderly poverty and its measurement. We first discussed some of the most important issues relating to measuring elderly poverty. We also looked at recent trends and found considerable heterogeneity even among developed countries in the extent of elderly poverty. Such cross-country differences are due at least partly to differences in the generosity of public old-age pensions and other social safety nets for the elderly. Empirical evidence also corroborates that the expansion of public pension programs can explain the decline in elderly poverty that has been observed in many countries.

As population aging is proceeding throughout the world, it is imperative for governments to establish fiscally sustainable public pension programs and, if necessary, to provide well-targeted poverty-alleviating programs to address elderly poverty. To do so, it is important to be able to accurately measure elderly poverty. Further discussion and research on the measurement issues raised in this paper will certainly help develop more comprehensive measures of elderly poverty, which can then be used as a guideline for policies to address elderly poverty.

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References

- Amuedo-Dorantes, C. and L. Juarez (2015), 'Old-age government transfers and the crowding out of private gifts: The 70 and above program for the rural elderly in Mexico', *Southern Economic Journal*, **81**(5), 782-802.
- Barrientos, A. and J. Mase (2012), 'Poverty transitions among older households in Brazil and South Africa', *European Journal of Development Research*, **24**(4), 570-588.
- Been, J., K. Caminada, K. Goudswaard and O. van Vliet (2017), 'Public/private pension mix, income inequality and poverty among the elderly in Europe: An empirical analysis using new and revised OECD data', *Social Policy & Administration*, **51**(7), 1079-1100.
- Brady, D. and D. Kall (2008), 'Nearly universal, but somewhat distinct: The feminization of poverty in affluent Western democracies, 1969-2000', *Social Science Research*, **37**(3), 976-1007.
- Chavez, K., C. Wimer, D. M. Betson and L. Manfield (2018), 'Poverty among the aged population: The role of out-of-pocket medical expenditures and annuitized assets in Supplemental Poverty Measure estimates', *Social Security Bulletin*, **78**(1), 47-75.
- Cotlear, D. and L. Tornarolli (2011), 'Poverty, the aging, and life cycle in Latin America',

- in D. Cotlear (ed.), *Population aging: Is Latin America ready?* (pp. 79-134), World Bank, Washington D. C.
- Deaton, A. S. and C. Paxson (1998), 'Measuring poverty among the elderly', in D. A. Wise (ed.), *Inquiries in the Economics of Aging* (pp. 169-204), University of Chicago Press, Chicago, Ill.
- Engellhardt, G.V. and J. Gruber (2006), 'Social security and the evolution of elderly poverty', in A. Auerbach, D. Card and J. Quigley (eds.), *Public policy and the distribution of income* (pp. 259-287), Russell Sage Foundation, New York, NY.
- Expert Group on Poverty Statistics (Rio Group) (2006), *Compendium of best practices in poverty measurement*, Brazilian Institute for Geography and Statistics, Rio de Janeiro, Brazil.
- Galiani, S., P. Gertler and R. Bando (2016), 'Non-contributory pensions', *Labour Economics*, **38**, 47-58.
- Gasparini, L., J. Alejo, F. Haimovich, S. Olivieri and L. Tornarolli (2010), 'Poverty among older people in Latin America and the Caribbean', *Journal of International Development*, **22**(2), 176-207.
- Hurd, M. D. and S. Rohwedder (2006), 'Economic well-being at older ages: Income- and consumption-based poverty measures in the HRS (Health and Retirement Study) ', RAND Labor and Population Working Paper Series, WR-410, RAND Corporation, Santa Monica, CA.
- Jacques, P., M. L. Leroux and D. Stevanovic (2021), 'Poverty among the elderly: The role of public pension systems', *International Tax and Public Finance*, **28**(1), 24-67.
- Kakwani, N. and K. Subbarao (2007), 'Poverty among the elderly in sub-Saharan Africa and the role of social pensions', *Journal of Development Studies*, **43**(6), 987-1008.
- Kaushal, N. (2014), 'How public pension affects elderly labor supply and well-being from India', *World Development*, **56**, 214-225.
- Korenman, S., D. K. Remler and R. T. Hyson (2021), 'Health insurance and poverty of the older population in the United States: The importance of a health inclusive poverty measure', *Journal of the Economics of Ageing*, **18**, 100297.
- Kuypers, S. and I. Marx (2019), 'The truly vulnerable: Integrating wealth into the measurement of poverty and social policy effectiveness', *Social Indicators Research*, **142**(1), 131-147.
- Lee, S. J. (2014), 'Poverty amongst the elderly in South Korea: The perception, prevalence, and causes and solutions', *International Journal of Social Science and Humanity*, **4**(3), 242-245.
- Marchand, J. and T. Smeeding (2016), 'Poverty and aging', in A. Woodland and J. Piggott

- (eds.), *Handbook of the economics of population aging*. Vol. 1B (pp. 905-950), Elsevier B. V., Amsterdam, Netherlands.
- McDonald, L. and A. L. Robb (2004), 'The economic legacy of divorce and separation for women in old age', *Canadian Journal on Aging*, 23(Supplement), S83-S97.
- McGarry, K. and R. F. Schoeni (2005), 'Medicare gaps and widow poverty', *Social Security Bulletin*, 66(1), 58-74.
- Nikolov, P. and A. Adelman (2019). 'Do private household transfers to the elderly respond to public pension benefits? Evidence from China', *Journal of the Economics of Aging*, 14, 100204.
- Organisation for Economic Co-operation and Development (OECD) (2019), *Pensions at a glance 2019*. Organisation for Economic Co-operation and Development, Paris, France.
- Pal, S. and R. Palacios (2011), 'Understanding poverty among the elderly in India: Implications for social pension policy', *Journal of Development Studies*, 47(7), 1017-1037.
- Pearce, D. (1978), 'The Feminization of poverty: Women, work, and welfare', *Urban and Social Change Review*, 11(1-2), 28-36.
- Smeeding, T. M. and S. Sandström (2005), 'Poverty and income maintenance in old age: A cross-national view of low-income older women', in A. Stark, N. Folbre and L. B. Shaw (eds.), *Explorations gender and aging: Cross-national contrasts. Feminist Economics*, 11(2), pp. 163-173.
- United Nations Economic Commission for Europe (2011), *Canberra Group handbook on household income statistics*. Second Edition, United Nations, Geneva, Switzerland.
- Unnikrishnan, V. and K. S. Imai (2020), 'Does the old-age pension scheme improve household welfare? Evidence from India', *World Development*, 132, 105017.