Adequacy Issues on Social Security Pensions

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1 Introduction

Pension adequacy is one of two major requirements for social security pensions to satisfy ultimate desires of the public. This paper demonstrates the basic contents of pension adequacy from an economic perspective.

Section 2 defines the concept of pension adequacy with the simplest way. It is the widely-used traditional one, different from the 3-dimentional complex concept proposed by a holistic document; *the 2018 Pension Adequacy Report* of EU. Section 3 discusses major factors governing pension adequacy other than the level of income. Section 4 explains a wide variety of relationships to poverty alleviation. Section 5 refers to challenges ahead for inventing new indicators of pension adequacy on the macro basis.

2 Defining Pension Adequacy

In this paper, the present author adopts the traditional definition of pension adequacy, which has long been used in the pension academia.

Pension adequacy is identified with an adequate level of pension *benefits* for each individual (and/or couple) on the *micro* basis,[1,2] which ensures the decent standard of living in dignity as old-age pensioners. In other words, pension adequacy can be referred to as consumption smoothing before and after retirement.

The conventional index to measure pension adequacy is the replacement ratio, i.e., the level of pension benefits (in cash) compared to the income from work before retirement (excluding income in kind). In the strict since, benefits are confined only to social security pensions, but in a much broader sense, benefits from non-mandatory occupational and/or personal pensions can be also included. The denominator is usually specified by lifetime

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[1] Some others include *cost* elements, as well, in discussing pension adequacy by taking financial sustainability into account. This approach may complicate its discussions; it requires considerations both on the micro- and macro-basis, arguments of different objectives with different policy instruments, and handlings of trade-off problems (二律背反問題: see Section 2 of Takayama (2019)). Thus, it may induce a hard-to-understand explanation for a majority of non-experts in pensions. The present author rather separate pension adequacy from financial sustainability, setting the respective papers.

[2] Following *the 2018 Pension Adequacy Report* by EC, Zhao et al. (2019) wrote an excellent paper and examined three indicators of pension adequacy, reflecting poverty prevention, consumption smoothing, and financial sustainability. My understanding is that poverty prevention or financial sustainability can be measured appropriately to a greater extent by the more direct indicators such as the poverty line, the headcount ratio of poor people, their poverty gap ratio, and the present value of pension benefits divided by the present value of future contributions and tax revenues plus accumulated reserves, shown in the balance sheet of social security pensions of the society as a whole, taking the future 75 or even100 years into account. Thus, in a narrow sense, only consumption smoothing seems to be the right objective for measuring pension adequacy.

average wages and salaries (converted to their present value), while those amounts immediately before retirement are optionally used.[3]

An appropriate value of pension adequacy is given uniformly throughout the nation, ignoring regional differences.[4] This makes a sharp contrast with measures of poverty relief (public assistance). Incidentally, poverty relief requires immediate policy responses, whereas pension adequacy is a problem of prolonged administration.

Lower incomes yield higher reference standards of pension adequacy. This is because the propensity to consume in old age decreases as the income level of wages and salaries in the past went higher.

Furthermore, for the existing old-age pensioners, the higher the level of their income in the past is, they can have much greater availabilities of other income sources than social security pension benefits, such as wages and salaries, non-mandatory occupational and/or personal pensions, asset income (rent, interest, dividend, parking charges, etc.) and asset withdrawals. Then, the standard value of pension adequacy declines still more for the middle and higher income-classes who have other income sources than wages and salaries.

Figure 1 depicts varying values of pension adequacy. If the amount of consumption expenses is above the 45-degree line, then the standard value of pension adequacy indicates 100% or more, while if it is below the 45-degree line, the reference value lies down under 100%.

(Insert Fig. 1 about here)

In principle, the targeted replacement ratio as pension adequacy lies within 100% for the middle- and higher-income group. If someone of them with a peculiar privilege actually enjoys the replacement ratio of more than 100%, then it implies that he/she receives too generous pension benefits.

The most popular standard of pension adequacy is demonstrated by focusing on individuals with the median or average amount of wages and salaries.[5,6] Their modal amount has rarely been used, though it may present one of typical examples.

International Labor Organization once recommended three degrees of 40%, 45% and 55% as the reference standard of pension adequacy for typical workers at the point of their retirement (see ILO (1952) (1967a) (1967b)). The ILO standards were often referred to in the past to measure the degree to which the consumption is smoothed.

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[3] As for non-salaried persons (farmers, merchants, craftworkers, professional free-lancers, etc.), remunerations or earnings after deduction of expenses are used as the denominator.

[4] China might be an exceptional huge nation in the world. Each Province in mainland China might be equivalent to each nation in other major countries.

[5] For example, *Pension Adequacy Report 2018* of European Union, uses the median amount before tax and social security contributions deducted (in gross terms), while Japan currently adopts the average amount in gross terms, both as the numerator.

[6] Regarding economic variables, the median is higher than the mode, while it is lower than the average, in general. Consequently, the standard value of pension adequacy using the median will be a little bit higher than that obtained by the average.

There are several major factors other than income levels, which govern the standard degree of pension adequacy. Their examples are: balance of length between working years and retired years, net or gross income, early or later stages after retirement, individual or married couple unit, different components of consumption expenses between pension contributors and beneficiaries, and balance between solidarity and self-reliance. The next section describes these factors, respectively.

3 Other Factors Governing Pension Adequacy
3.1 Balance of Length between Working Years and Retired Years
The value of the reference standard for pension adequacy is higher, if a person works as an employee for longer years and receives pension benefits for shorter years. For example, let's assume that he/she works for 40 years and retires to receive pension benefits for 20 years. Then the required monthly amount of pension benefits will be two-thirds (66.7%) of monthly amount of wages and salaries for him/her to attain consumption smoothing throughout his/her lifetime. In a polar case where he/she works for a much shorter period of 30 years and receives pension benefits for 30 years, then the standard value of pension adequacy will be 50%, which is much lower than 66.7% in the former case.

Thus, the year of entrance to and exit from the labor market does matter. The normal pensionable age is also decisive.

Needless to say, the examples shown above are simplified ones. They assume no wage increases, no tax and social security contributions, no benefits indexation, nor any family formation. If these factors are taken into account, the reference standard for pension adequacy has to be accordingly adjusted.

3.2 Net vs Gross
Usually, income tax and social security contributions are imposed on wages and salaries, while the amounts of their payment from pension benefits are much smaller, or even just about nil in many cases. Consequently, pension adequacy in net terms is, more or less, higher than that in gross terms.

3.3 Early or Later Stages after Retirement
Consumption activities require physical energy which diminishes little by little over time in old age.

This fact will justify an implementation of CPI indexation of pension benefits, which is seen in many countries. The wage escalation rate is often higher than the increase of CPI. In these circumstances, the value of the standard for pension adequacy will decline gradually after retirement.

It should be borne in mind that in later stages after retirement, some special consumption expenditures on healthcare, long-term care, transportation, housing, heating, etc. may become huge, instead. But these expenses are better paid in kind by

respective programs. As stated above in Section 2 of this paper, pension adequacy is traditionally measured by income in cash (and not by income including in-kind benefits).

3.4 Individual or Married Couple Unit

There is a household scale of economy in consumption expenditures. The value of reference standards for pension adequacy then varies depending on whether the individual unit or the married couple unit is applied. The equivalized income is normally used for individualization, which is influenced by living habits and policy arrangements of life-related programs in each country. Take old-age Japanese pensioners, for example. On average, their monthly amount of basic consumption expenditures for a married couple is estimated to be equal to 1.4 or 1.5 times larger than that for an individual, and not be twice.

3.5 Different Components of Consumption Expenses

For actively working generations, consumption expenses generally contain raising and educational costs of their children, repayments of land and housing loans, necessary costs for daily works and commuting, all of which old-age pensioners can dispense with.

3.6 Balance between Solidarity and Self-reliance

In designing social security pensions, some redistributive elements are incorporated to mitigate the gap in past work income within generations. A universal flat-rate portion of benefits is the typical example. Other examples are guaranteed minimum pensions, supplementary pensions, progressive pension formulas, credits for family care periods, non-contributory social pensions, contributions based on upper earnings limits, and reduced or exempted contributions.[7] Means-testing or income-testing or even pension-benefits (of earned entitlements)-testing are introduced in some cases.

Each country has its own perceptions on income inequality in old age. The strength of solidarity among the members of a society varies from country to country, and levels and categories of income redistribution in social security pensions are consequently different, mainly due to the history, culture, and geographical conditions of the country.

4 Relationship to Poverty Alleviation

Consumption smoothing throughout a long lifetime requires young- and middle-aged persons to do forced savings. Social security pensions are invented to work as the major system to achieve this goal.

No funded reserves are not necessary for the social security pension program to perform this mission well. Indeed, almost all developed countries basically manage the program in the pay-as-you-go financing, and not by a funded scheme.

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[7] Levying personal income tax on pension benefits, can be another example, though this belongs in tax policy tools, beyond the framework of pensions.

The longer a person contributes, the more his/her monthly amount of benefits gets promised to be paid. Together with the tax advantages, these secrets operate as strong incentives to forced savings.

Successful achievements in consumption smoothing eventually meet with poverty prevention. However, not a few persons fail to enjoy consumption smoothing. Examples are low-wage earners, females with longer family-care periods, immigrants, and those persons in unemployment or in poor health. They are forced to receive other benefits such as no-contributory minimum and/or social pensions, special pension credits, or even public assistance, as well, after retirement. These pension benefits/credits and public assistance are regarded as policy tools for poverty relief.

Regarding old-age pensioners, poverty prevention requires additional policy instruments from youth. More generous educational policies with grants and scholarships, effective employment machines, and health promotion measures, are also essential. Forced savings are not the exclusive means.

Poverty relief has to be provided to poor individuals and households, regardless of age. So many causes trigger the poverty problems. The harshness of nature, a large family with many children, marriage at a too young age, unexpected death of a father at his/her young age, incompetent parents, famine, malnutrition, ill health, injury, disease, low educational standards, economic slump, unemployment, old-age etc. are the typical causes. Each case should be treated with its relevant policy tool of a wide variety. It includes not only uniform benefits in cash through the nation, but also benefits in kind and area-specific or age-specific services. These benefits and services are financed by transfers from general revenue, with a means-test[8] in almost all cases.

The main policy-tool for poverty relief is public assistance, with which a sense of stigma is often associated. More or less, young- or middle-aged persons have opportunities after a period of time for getting away from receiving public assistance, whereas old-age pensioners have few opportunities for doing it. Due and valid reasons are there for many countries to have additional and complementary schemes for poverty relief *within* their pension program for old-age persons. They often set up top-ups of a minimum guaranteed pension, non-contributory supplementary pensions, and social pensions (allowances). In some cases, these pension benefits become eligible for them to receive from a higher age of 75 or 80.

As for the index of poverty, the poverty line and the poverty gap are commonly used. Needless to say, the poverty line is a level of income, and a person with income below the line is considered as poor. The poverty gap of any individual is defined to be the difference between the poverty line and his/her income. In addition, there are three more indices of poverty on the *macro* basis; the head-count ratio, the poverty-gap ratio, and the Gini coefficient of income distribution among the poor. The head-count ratio is

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[8] Means testing may have disincentive effects on savings for retirement before the normal pensionable age and/or on working longer.

the percentage of people below the poverty line. The poverty-gap ratio is the *per-person* aggregate short-fall of income of all the poor taken together from the poverty line.

These three indices are all insensitive mutually to the others, however. In order to avoid these shortcomings, Takayama (1979) derived his measure of poverty from an ordinalist axiomatic approach. That is, the Gini coefficient of the censored income distribution truncated from above by the poverty line (貧困線で切られた打ち切り所得分布), which includes three indices mentioned above as its indispensable components.

5 Challenges Ahead

The indicator of pension adequacy is currently given only on the *micro* basis by the reference standard of the replacement ratio. No indices of consumption smoothing on the *macro* basis have yet been invented.

A similar way of thinking in deriving the new measure of poverty on the *macro* basis, mentioned above, could be a great help to propose a new index of inadequacy (for consumption smoothing) on the *macro* basis.
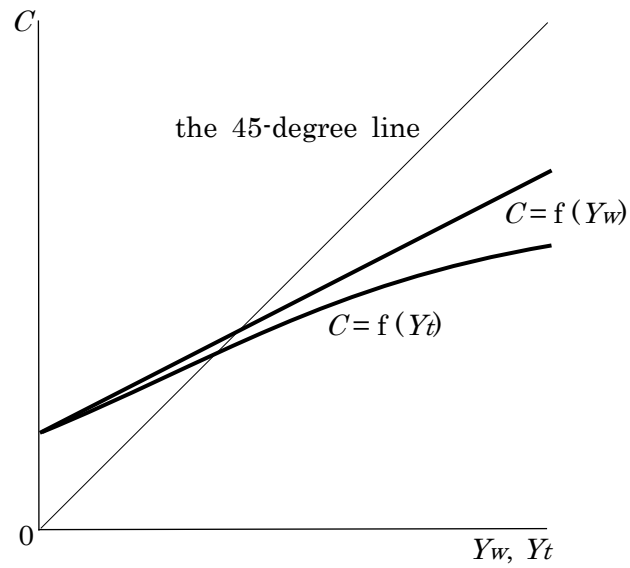
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Figure 1　Consumption Function and Degrees of Pension Adequacy

the 45-degree line

$C = f(Y_w)$

$C = f(Y_t)$

$Y_w,\ Y_t$

Note: C, Y_w, and Y_t denote the monthly reference standard (amount) of consumption expenses in old age, the monthly amount of lifetime-average wages and salaries, and the monthly amount of lifetime-average wages and salaries combined with income from other sources, respectively. It is assumed that the numerator of the reference standard of pension adequacy is given by the amount of consumption expenses.