Annuity for micro pensions

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There are many elements in the design of a micro pension scheme that the pension provider needs to consider carefully. One of the most important decisions concerns the distribution phase of the scheme. Given that the pension scheme is running smoothly and that pension premiums are already collected: in which way should the pension pay-out take place? Some questions and answers on this topic will help to review the possible solutions and understand why annuitization is the preferable option.

**What is annuity?**
In the pension context, annuity is a fixed sum of money that the person receives periodically, starting from the retirement date during the remaining period of life.

**What are the alternatives?**
There are several ways to deliver pension payment to retirees. For example, it can be a one-time lump sum payment that the retiree receives at the retirement date, or a phased withdrawal of the whole sum intended as a pension. Phased withdrawal means that the retiree receives a fixed part of the whole sum periodically, which ensures her income during certain amount of years.

**Why is annuity so important?**
Annuity is the only way to deliver a pension during the whole period of life of the retiree. Therefore it is the only financial instrument that can insure people from the longevity risk (the risk that you will live longer than expected without having sufficient funds to pay for your living).
For example, receiving a lump sum pension fee suggests that the retiree plans his/her consumption all by him/herself. This means that he/she needs to assume approximately how many years he/she is going to stay alive. Even though people often possess very specific individual information about their health conditions, family diseases, life style etc., this is a very hard prediction to make accurately. If the retiree makes a miscalculation and lives much longer than he/she thought, too little money is left for the last years of life. This can have disastrous consequences for the level of wellbeing, pushing the retiree behind the poverty line, especially given that the last years of life are usually the hardest in terms of health and physical capabilities.
The same holds for the phased withdrawal – this way of spending the whole sum intended for the pension only delivers income during a certain period of time, which depends on the withdrawal rate. The only difference compared to the lump sum payment is that the person is confident in his/her income at least during several years, but the uncertainty related to longevity remains in place.

**What does longevity risk really mean?**
Global aging is an issue that all the countries in the world need to face. For developing countries this problem looms even larger, because, according to US National Institute of Aging, the current growth rate of the older population in developing countries is more than double of the growth rate
in developed countries. As of 2008, 62 percent (313 million) of the world’s population of 65 and older lives in developing countries. By 2040, today’s developing countries are likely to be home to more than 1 billion people 65 and over, 76 percent of the projected world total. These striving statistics essentially entail that in several decades there will be many more old people, and that their life expectancy will increase as well. All these people will need financial support; social security system cannot handle the current load they are under, and the chances are slight that the necessary reforms will catch up fast enough. Therefore these people will need to participate in ensuring their own old age financial provision themselves.

What about the family support?
One can argue that there is no need to provide old persons with a periodical financial support, as there is an alternative to invest all the money intended for a pension provision into the family and then naturally rely on their care. Such an argumentation contains a serious delusion: the reason why relying on the family support at the old age is a very wide spread practice in developing countries is exactly the lack of financial resources to support the retiree on her own. Recent developments towards modernization of society have reached developing countries like India, where the life pattern is strongly influenced by historical habits and traditions. This causes gradual erosion of the joint family system, entailing the growing distance between generations and weakening the support seen in the past. Giving all the money intended as pension to the family bears another dangerous hazard: the misuse. There is wide-spread practice among rural poor in India, for example, to use relatively large sums of money for arranging a marriage of the children or buying a house. This decision is perfectly defensible in savings framework, but when talking about pensions it obviously violates the ultimate goal of the whole scheme.

How is the annuity scheme implemented?
During the active life of people, when they are able to work and make periodical contributions, the pension fund collects the premiums from all the people that want to receive an annuity pension and invests these premiums. After the retirement date, the fund starts paying out the annuity sum to the person that has subscribed for the scheme until the date of death. There is an actuarial principle which allows pension fund to ensure a stream of payments during an uncertain period of the life of the retiree. Pension providers, similar to life insurance companies, use mortality statistics in order to calculate the size of annuity, which they can promise to the subscribers. The principle can be described as follows: given the different ages within the group of people that are subscribed to the pension scheme, average life expectancy of the population, expected interest rates and the capital intended for the pension, the fund can calculate its liabilities on average at every particular year. The size of annuity is set in an actuarial fair way: for the person who does not know how long he/she will live this means that the expectation of the sum of discounted cash flows on until all the years passed after retirement are equal to the initial accumulated capital. The pension provider needs to have a certain initial coverage of people in order to implement the annuity scheme. The reason is that the mortality statistics can only be used when the amount of people subscribed for the scheme is large enough to represent the statistical trends in the whole of the society.
Why is annuity better than taking the lump sum and simply storing it on a risk-free bank account?

Annuity pension is like a fair gamble – if a person lives longer, he/she receives his/her pension money during all of his/her life. Should the person die earlier, his/her money is distributed amongst the subscribers who are still alive. This entails that the retiree, who has a longer life, receives a higher interest rate on her initial capital compared to the interest rate she could potentially receive with a bank (the so called *mortality premium*). It can actually happen that during an exceptionally long life the retiree receives more money than he/she had initially accumulated on his/her account. From the point of view of the retirees who die earlier, this may seem as an unfair arrangement, as they in a sense “sponsor” the long-living fellow citizens. However, the calculation of the annuity size is performed in such a way, that the chance to receive their money back is equal to all the participants of the scheme.

What are the drawbacks?

Pure annuity doesn’t allow the retiree to transfer any money that is left from the pension as inheritance to their family. This happens because the remaining funds are distributed among the group of the clients of the pension fund instead.

An annuity contract is also not suitable for the people who have a confirmed terminal illness. In this case they will a priori lose form subscription, as the chance to use all their accumulated capital is much lower than to gain from the subscription or even just to make use of the capital in the full amount. In this case lump sum option is much more beneficial.

From the side of the pension fund, the obstacle that can have distractive consequences is the lack of the accurate mortality data. Usual mortality statistics is reflecting the trends in the whole society, while micro pensions ought to be designed for a very specific target group. The solution can be to adjust the existing life tables to better reflect the real situation (similar to existing practice in micro insurance).

What does the theoretical research state?

Most of the existing theoretical research compares the financial and security benefits that the retiree receives from different contract options, and states that annuitization is a preferable option if the person is not certain about her age of death. Obviously, this is the case for the vast majority of people.

Menahem Yaari, a theoretical economist, putted the argument in 1965 as follows: “If income in retirement is the only goal of the investor, then for any choice of underlying investment scheme, full annuitization is always the best choice for a retiree as long as administrative costs and selection effects are not too strong.” To obtain this result, Yaari used the so called *Expected Utility* theory, which states that when making a choice under uncertainty, people behave rationally, making the best trade-off between the expected benefit and risk associated with it. Since that time, scholars have investigated the annuitization alternative in greater detail, and have refined the initial results of Yaari under a more relaxed set of conditions. The general conclusion remains the same – for the average person annuity is always a better choice.

From the perspective of every particular person it might seem that the individual information that he/she has about his/her own life style and health will allow him/her to make a better planning than the decision he/she is forced to take while subscribing to the annuity scheme. People tend to think that they can do better than average and make a perfect planning of the consumption during
retirement on their own. However, the research states that there is always a chance to make a miscalculation of a few years when calculating life expectancy, as it usually happens in the real life. The presence of this chance makes annuity a more beneficial choice, because the risk of staying without the provision on average overweighs the potential profit from making an accurate life prognosis.

An interesting angle on this problem is provided by the behavioral finance framework, founded amongst others by Nobel Prize winners Amos Tversky and Daniel Kahneman. As an opposite to Expected Utility, it is a descriptive theory, which states that people do not behave rationally but that their irrational behavior can be classified, and to a certain extend, predicted. Applications to the annuitization question show that one of the main reasons why annuity contract may seem unattractive to the retirees is the fear not to make use of the accumulated capital while dying earlier. Taking a lump sum gives retiree the feeling of control, while annuity leaves him/her totally dependent on the pension provider. This fear doesn’t have a rational background, but is based on the pure psychological effect that “loss looms larger than gains”. In the mind of the person, losing already accumulated capital is a more frightening perspective than consuming all of it too early. Of course, in reality, staying without any income at the sunset of life is a much more disastrous situation than dying at the early retirement and leaving out of the consumption a part of the capital intended for pension. This is a fair price that needs to be paid for insurance against the risk of longevity risk and (valuable) peace of mind.

Sources used for the article:

Bhattachary, P., 2008. Micro Pension Plan: Indian Perspective Presented at the Living to 100 and Beyond Symposium, Orlando, Fla.


