

Risksharing in Pensions Systems

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I have been asked to say a few words to open this roundtable discussion on pension reform. I will try to frame the issues, to pose questions, and to throw out some possibly provocative ideas about the risksharing functions of pension systems.

What are the major risks that must be allocated by any pensions system, or indeed by any economic system? I find it useful to classify risks along three dimensions: economic vs. demographic, idiosyncratic vs. aggregate, and near-term vs. long-term.

Economic risks have to do with the level of income in the future, both national income and the incomes that accrue to particular factors of production. The most important distinction here is between risk to labor income and risk to capital income. The young disproportionately own human capital, so they are naturally exposed to labor income risk; while the old disproportionately own financial capital, so they are naturally exposed to capital income risk.

Demographic risks have to do with the number of people of different ages that will be alive in the future. The main distinction here is between longevity risk, driven by the mortality rate, and population risk, driven primarily by the fertility rate.

Aggregate risks concern the national economy or population as a whole, while idiosyncratic risks concern deviations for a particular individual from society's average. Idiosyncratic risks can often be handled by pooling – this is the function of the insurance industry – but of course moral hazard and adverse selection limit the effectiveness of this process.

Near-term risks are ones where uncertainty about an event is resolved close to the time at which the event itself occurs, while long-term risks are ones in which uncertainty is partially resolved in advance. For example, we may learn today about medical advances that will affect our longevity many years before we actually make use of them.

Mervyn King and Adair Turner have already circulated excellent papers that cover the most important aspects of demographic risk, so I will spend most of my time on economic risk. However I would like to make two points about demographic risk. First, it should be possible to insure idiosyncratic longevity risk, even in the presence of significant aggregate longevity risk, by pooling savers' assets and crediting the accounts of those who survive with the assets of those who die. This would be a return to a pure mutual form of annuitization, that would use the expertise of insurance companies but not their capital. Second, the problem of adverse selection in the annuity market can be reduced by pooling annuities with disability and long-term care insurance, and can be eliminated within systems that require annuitization for all pensioners.

I now turn to economic risk. To fix ideas, I will first lay out what we would expect to see in an ideal laissez-faire system in which all individuals save optimally for their own retirement, and in which financial markets are complete so all risks can be traded. To keep things simple I will assume that labor and capital income are exogenously given; that is, I will ignore the important processes by which human and physical capital are accumulated.

Perfect risksharing requires that shocks to aggregate consumption have an equal effect on the marginal utility of all those alive at each point in time. If all individuals have equal relative risk aversion, then this requires that shocks to aggregate consumption move all individuals' consumption in proportion. If aggregate consumption falls by 1%, then we should see the consumption of all individuals fall by 1%. If some individuals are more risk averse than others, then their consumption will move by less than average; in effect they will buy insurance from the risk tolerant. Differences in risk preferences may be innate (most economics professors are temperamentally more cautious than most real estate developers). Alternatively, they may result from consumption commitments or habits that make people more cautious when they are close to their minimal acceptable standard of living, or from uninsurable idiosyncratic risk in labor income that makes people more averse to financial risk. It is also possible that risk aversion increases with age, as Shiller (1999) has suggested.

How can perfect risksharing be achieved? First, risk-averse individuals must transfer risk to risk-tolerant individuals, in effect buying insurance from them against adverse economic shocks. Second, since the young tend to own human capital, while the old own physical capital, shocks to the returns on these two forms of capital have different effects on the incomes of the old and the young. To offset these effects, young and old must enter a swap of physical and human capital, and they must do so before the returns on capital are realized. This requires that the young enter swap contracts with the old at the very beginning of their adult lives.

In reality, a laissez-faire system does not produce outcomes like this. There are two reasons why not. First, many people do not save optimally for retirement. Second, the necessary financial instruments do not exist. These problems create a role for government in the establishment of a pension system.

There are several reasons why people fail to save optimally for retirement. They may be myopic, or have self-control problems that cause them repeatedly to delay saving that they know to be necessary. My Harvard colleague David Laibson has emphasized this problem. In addition, people of modest income may rationally anticipate that society will be unable to tolerate poverty among the elderly, and may plan to rely on means-tested welfare benefits. Means-testing creates a high marginal tax rate at the low end of the income distribution, thereby reducing the incentive to save. My colleague Marty Feldstein emphasizes this problem in his presidential address to the American Economic Association (2005).

To remedy these problems, it makes sense for the government to run a forced savings program. The difficulty with this is that if people do not understand the link between the savings they are forced to make today and the benefits they will receive in the future, they will react to forced savings as if they were taxes, and the program will distort the labor supply decision. To minimize this problem, there should be a clear link between savings today and benefits in the future; thus the rules of the system should be clear, the system should look to participants like a defined contribution system in which their savings are credited to an account with their name on it, and redistribution within the system should be carefully targeted to the low end of the income distribution where it can do the most good.

As assets are accumulated within a government forced savings system, the issue arises of how to invest these assets. Since individuals differ in their attitudes towards risk, it makes sense to allow some individual choice about asset allocation so that more risk-tolerant individuals can bear a greater share of economic risk. On the other hand, many individuals make basic mistakes in investing. Some fail to participate in equity markets at all, contrary to the basic principle that risk-averse investors should take at least a small piece of any favorable gamble; while others fail to diversify, investing large amounts in a single stock, even the stock of their employer. Benartzi and Thaler (2001) and Brown and Weisbenner (2004) present evidence that many Americans make poor choices in their 401(k) plans. This suggests it makes sense to restrict the investments that can be chosen within a forced savings plan, and to establish a reasonable default option for those who do not make an active decision. It is also important to keep down the investment costs, which is easier to do when the menu of investment options is fairly limited.

So far I have described a conventional funded social security system. Such a system has the important benefits of increasing national saving and broadening the ownership of physical capital. The difficulty is that it does not allow for the swap of human capital against physical capital that would be possible in an ideal laissez-faire system. The financial assets do not exist that would create such a swap. As young people accumulate assets, they gradually exchange human capital for physical capital, but during this process they are exposed to human capital risk. By the time they reach late middle age, they have substantial physical capital risk but do not share in the human capital risk of the next generation. The empirical relevance of this is suggested by evidence that the consumption of the middle-aged is more volatile, and more sensitive to aggregate consumption, than the consumption of either the elderly or the young. The inability of the young to take on physical capital risk lowers the price of physical capital and increases the equity premium, an effect emphasized by Constantinides, Donaldson, and Mehra (2002).

To remedy this problem, there is a role for social security transfers to accomplish the exchange of human for physical capital. The most direct way to do this would be to run a pay-as-you-go social security system in which benefits are paid from the revenues of a payroll tax, giving the elderly a claim on the labor income of the next generation; but in which the payroll tax rate is negatively related to capital returns, giving the young an implicit share in the capital holdings of the previous generation. Shiller (1999) proposes

a system of this sort, contrasting it with the existing arrangement in which social security benefits are linked to the previous earnings of the elderly rather than the contemporaneous earnings of the young. Campbell and Nosbusch (2005) show that a risk-sharing social security system reduces the premium on risky assets by sharing risks more broadly.

Similar results can be accomplished within a funded social security system by offering social security participants a guarantee, backed by the government's power to tax future workers, that benefits will not fall below a wage-indexed minimum level. Marty Feldstein has discussed guarantees of this sort (Feldstein and Rangelova 2001), although his more recent work has emphasized private-market guarantees that would be purchased by social security participants from financial intermediaries. Another risksharing mechanism is to accumulate equities in a social security trust fund, then pay benefits that depend positively on the payroll tax base while cutting payroll taxes if investment returns in the trust fund permit. The recently established Canada Pension Plan may operate in this manner, although the rules for adjusting taxes and benefits are not entirely clear in the Canadian system. This lack of clarity is a general problem with real-world pay-as-you-go systems, which adjust taxes and benefits through an opaque and unpredictable political process (McHale 2001). Clarity about the rules is vitally important in a risksharing pension system.

So far I have described the way in which a pay-as-you-go social security system can be used to achieve perfect risksharing among generations alive at the same time. Such risksharing could also be accomplished in a laissez-faire system with fully rational agents and perfect capital markets. In principle, a pay-as-you-go social security system can do even better than this, by sharing risks among generations that are not contemporaries at all. Ball and Mankiw (2001) present the idea with particular clarity. With overlapping generations, a young generation whose elders experience a bad shock can compensate them even more generously than perfect laissez-faire risksharing would prescribe, and themselves be compensated in their old age by the next generation. That generation is not alive at the time of the original bad shock, but it shares the shock by giving more to the old than it otherwise would. Ball and Mankiw calculate the policy that maximizes a social welfare function defined over all generations, of the sort that might be agreed to in a hypothetical Rawlsian social contract. They find that it spreads the effects of shocks out over time in a manner analogous to the permanent income model of consumption.

It is tempting to interpret the establishment of US social security in the 1930's as a Ball-Mankiw device to spread out the pain of the Great Depression. Strong economic growth and capital returns in the 1960's and 1990's, of course, should have led to cutbacks in social security to allow future generations to share in the good fortune of the period. The fact that this has not happened highlights the political difficulties of implementing a Ball-Mankiw policy for sharing risks over many generations. In practice I think it makes sense to concentrate on establishing government policies that promote adequate saving and risk-sharing among contemporaries.

I would like to conclude with a few words on the design of private pension plans. Private defined benefit pension plans typically pay fixed real benefits, and the high cost of this obligation has often been disguised by accounting rules that favor equity investment by DB pension plans. In addition some countries back up their DB plans with taxpayer guarantees (provided by the Pension Benefit Guarantee Corporation in the US, and the new Pension Protection Fund in the UK). These guarantees tend to be mispriced, distorting the incentives of pension fund managers and promoting excessive risk-taking by pension plans. Given these problems, the trend in most countries towards defined contribution pension plans should be welcomed.

However, DC plans have their own problems. First, many participants make poor choices, so it is important to regulate the investment options in DC pension plans. Second, DC plans typically only allow investments in liquid assets that can be marked to market daily. This prevents pension saving from earning an illiquidity premium that would otherwise be available. Both public and private DC plans will benefit from institutional innovation to allow illiquid assets to be held within these plans.

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