CURRENT COST PENSIONS SYSTEMS AND INTERGENERATIONAL EQUITY

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Professor Myers makes important points, revolving around his concern with the future of social security. He insists, as do I, on the importance of long term calculations. These are made in the United States but in very few other countries, and without them we would be only vaguely aware of deepseated troubles, and in no position to seek solutions. Economic as well as demographic changes need to be anticipated in the analysis of prospects and the search for solutions.

As Myers says, social security started out when mortality was high, and a low age of retirement was therefore appropriate; a time comes when life expectancy is too high to permit universal early retirement, yet change to older retirement ages meets resistance. It is hard to explain to a man whose father retired at age 65 that he will have to wait until 69 because that will give him the same number of years of leisure. People insist on counting age from birth, not backward from death.

To go on with Myers's points, it is certainly true that in the long run fertility has more effect on costs than has mortality--at least in the ranges we have known in the past. My own calculations show that for costs in the year 2060 future fertility matters about 4 times as much as future mortality, though for costs in 2020 the effects are nearly equal. It is true also that if fertility remains low there will be a temporary very high cost for pensions as the baby boom moves into the retired ages about 2020, and then a possible decline in cost as

the population approaches stationarity.

Myers goes on to show how the declining labor force participation rate, in effect further lowering the age of retirement, is also making things hard for the social security program. He does not believe, nor do I, that the effect of medical advances has been to keep sickly people alive but dependent, nor that medical advance is the cause of participation rates being low at the later labor force ages.

Yet there are puzzles in the relation between health and work. The notion that better medical services pay for themselves by keeping people fit and working longer is still repeated in print, overlooking that health costs have increased simultaneously with falling labor force participation. In cross-section the people who retire early claim poor health as a reason, yet over the past generation, although people have become healthier, they still want to retire early. People who have retired early, obviously influenced by the favorable social security provision at age 62, may well call themselves unable to work, but that is so slippery a condition to define that like Myers I do not trust it to be the real explanation of anything. Like him I believe there should be incentives to work well past age 62 or 65, given modern conditions of health and longevity.

I say that there is nothing in the Myers analysis with which any reasonable person can quarrel. The difficulties that he describes are real, perhaps even more deep-seated than he gives us to understand. We are now, 50 years after the introduction of social security into the United States, able to have a vision of

the maturity of our system, in which its real drawbacks come into view.

Professor Myers's exposition is excellent as far as it goes, but it stops too soon, and my objection is to what he leaves unsaid. This comment is an attempt to correct some impressions that follow from his silence on certain of the implications of his exposition.

Generous Early Pensions: Who Pays?

Pay-as-you-go arrangements favor early entrants against later ones. In one instance (which happens to be my own case) a person in the 1910-15 cohort retiring in 1983 obtains $14,000 per year on a contribution of no more than $15,000 in all, say $30,000 if the employer's contribution is included. That is an expected benefit of over $150,000 obtained for a payment of $30,000. Someone is going to have to pay the difference between $30,000 and $150,000; after all the social security scheme does not produce anything but only transfers money. Who will pay for the part of my social security not covered by my contributions?

To ascertain who pays for those generous early pensions needs a study of the demographics of transfer schemes. It is obvious who pays when a scheme is liquidated--the last people to contribute, who get nothing in return. If B hands $1 to A, C hands $1 to B, ..., Z hands $1 to Y, then it is fair to say that Z is paying A, all the intermediate individuals just breaking even. It is in this sense that someone living centuries later can pay the generous pensions of today. The lucky people present

at the start are subsidized by descendants not yet born.

Only a disaster that no one contemplates would bring total liquidation, but anything that shrinks the scheme is a partial liquidation. If liquidation is the scheme dropping to zero and leaving the last contributors with nothing, 50 per cent liquidation is the scheme being reduced by half. The Railroad Retirement program referred to in the Myers paper was reduced by more than half, with the ensuing difficulties that we know about.

Ambiguity and Misunderstanding

At the time of inauguration of social security a reserve system was much referred to, but it turned out to be less expedient politically than pay-as-you-go. In the reserve system, the contributions of individuals are in a sense "theirs", and accumulate with interest on their behalf, or more strictly on behalf of their cohort. But it will be 40 years from now before such persons can retire with full contributions and full pensions, and the arrangement will be favored at the initiation only by the more farsighted members of the labor force. The retirees of 40 years from now do not influence elections held this year, and the farsighted among present voters are likely to be too few to influence anything.

The introduction of pay-as-you-go in any country will be warmly greeted by the persons who will retire on pension in the subsequent few years after making small contributions. In terms of 19th-century actuarial science it would be said that they are being pensioned at the cost of the young people, whose reserves are being appropriated. We recall that fraternal societies

operated on a current cost basis, and invention of the idea of a reserve was the kernel of actuarial science. I need not repeat here the discussion of the nature and purposes of reserves, known to everyone who has studied for the Society's examinations, but refer merely to the political attractiveness of the current cost arrangement.

This attractiveness exists not only at the start but for some time after as well, as long as the scheme can be expanded. Each expansion is a reenactment, at least partially a new beginning. Additional categories brought in, or the scheme being enlarged to provide higher benefits, is rather like adding a new scheme on top of the old one.

No one who sympathizes with the plight of older people can be against these actions at the expansion of the scheme, any more than they can oppose pay-as-you-go at its outset; the individuals concerned have worked hard and made their contributions to production in their time and it would be a heartless society that did not make them comfortable in their old age. The coincidence of political convenience and of humane concern for the elderly is complete. One might say that this is an example of our political system at its best: the realism of politicians leads to social welfare legislation that corresponds to voters' higher ideals and old people's very obvious needs.

If no good purpose was served by pay-as-you-go it would never have been instituted. But the retirees of thirty years from now also deserve sympathetic attention. The object of the present discussion is to preserve social security by eliminating those features that cause trouble. This comment will

conclude by suggesting three ways of securing equity and so making the scheme more durable.

Analyzing further the popularity of pay-as-you-go suggests that it means two things to the public. The worker regards the funds he contributes as providing for his own retirement. The existence of an entity called a "trust fund" encourages this perception. Young and old workers alike are consoled as they pay this part of their taxes by the thought that they are putting aside money for their old age, and this makes them more willing contributors than they would be if they thought of their payments as disappearing into the general treasury. Against this sense on the part of the contributor that he is somehow retaining that payment, the pensioner knows that he is receiving it.

To give the person contributing the impression that he is keeping certain sums of money, at the same time as those same sums are actually transferred to someone else, is political artistry of a high order.

As an individual who has $1000 in the bank, I must not promise it to two creditors, and even less write two cheques on it, each for $1000. Yet this is analogous to what happens through misunderstanding the nature of the social security tax.

Of course the misunderstanding is not necessary. Any member of the public who wants to enquire, or even ponder the matter with no other information than that the trust fund is adequate for only a few weeks of pension payments, can see for himself that the contributor retains no rights whatever to his contribution. His rights relate only to the expectation that

when he becomes old the taxing power of the government will be at his disposal up to a similar amount of pension.

Rate of Return

We need a metric to compare the cost/benefit performance of social security for different cohorts. It could be simply the ratio of the amount A receives to the amount he pays out, but that would disregard the time interval. The use of the rate of interest to say how any individual has come out takes proper account of time and seems the most suitable of all the infinite ways of making comparisons. If there is a series of payments p_1, p_2, ..., at times t_1, t_2, ..., and a series of benefits B_1, B_2, ..., at times T_1, T_2, ..., then the rate r that equalizes the discounted payments with the discounted benefits will be the effective rate of interest. Thus r is the solution to the equation

$$p_1 e^{-rt_1} + p_2 e^{-rt_2} + \ldots = B_1 e^{-rT_1} + B_2 e^{-rT_2} + \ldots ,$$

where the zero point on the time scale is arbitrary.

Such work has its interest in application to transfer schemes in which we can make estimates of the sizes of the groups between which the transfers will take place. In our case it will be the number of persons of working age and the number of persons of retired age. We will see how the value of r will evolve in the future if the projected population turns out to be realized, and also what possible changes in the birth rate from that of the present time will do to the value of r.

The center column of TABLE 1 shows the return to the several

TABLE 1 IMPLICIT PERCENTAGE RATE OF RETURN ON SOCIAL SECURITY PAYMENTS FOR SUCCESSIVE BIRTH COHORTS, TAKING THE LABOR FORCE AS ALL PERSONS 20-64 YEARS OF AGE, WITH THREE LEVELS OF BIRTHS--US DATA, FIXED PENSION

	FRACTION OF 1979 BIRTH RATES		
COHORT	0.50	1.00	1.50
1960-5	0.89	1.05	1.17
1980-5	-0.55	0.49	1.12
2000-5	-1.84	-0.12	1.01
2020-5	-1.93	-0.22	1.16
2040-5	-1.54	-0.21	1.13

TABLE 2 IMPLICIT PERCENTAGE RATE OF RETURN ON SOCIAL SECURITY PAYMENTS FOR SUCCESSIVE BIRTH COHORTS, APPLYING LABOR-FORCE PARTICIPATION RATES, WITH THREE LEVELS OF BIRTHS--US DATA, FIXED PENSION

	FRACTION OF 1979 BIRTH RATES		
COHORT	0.50	1.00	1.50
1960-5	0.00	0.57	0.48
1980-5	-1.73	0.36	1.86
2000-5	-2.95	-0.77	0.78
2020-5	-2.94	-1.11	0.34
2040-5	-2.53	-1.10	0.32

cohorts over time. Persons born in 1960-65 obtain a positive interest of 1.05 percent on their contributions; these are the people who will be contributing between 1980 and 2025. Other cohorts up to the end of the century will likewise have positive returns, though they will be smaller in amount; cohorts born in the 21st century will suffer negative interest, as we see continuing down the center column of TABLE 1.

The baby boom explains this: any large cohort shares the payments for the old among more people, so each individual has less to pay than if the cohort were small. If payers are promised a given subsequent pension irrespective of their numbers, i.e., if the tax rates are later raised in proportion as the number of contributors falls, then the large cohort benefits; we assume that there will be no revolt of contributors at the moment when contributions need to increase by 70 percent from the 2010s to the 2020s.

Other columns of TABLE 1 show the effect of higher or lower birth rates. If the birth rate turns out in the future to be only half of what it was in 1979, then the negative rates of return rise to nearly 2 percent per annum (Col. 1). On the other hand, a 50 percent increase, that would give a natural increase of little over one percent, would raise the return to most cohorts to about 1 percent. While most investments on the bond or stock market seem to do much better than this, we must correct them for inflation to obtain a proper comparison, and our own calculation would need to be corrected for economic growth. Realism in these directions is not the aim here; our purpose is

to find the pure effect of demographic pa rameters on gains and losses from the transfer scheme.

In contrast to the decisive effect of variations in fertility, mortality makes relatively little difference. Negative returns appear beyond the year 2000 whatever the level of mortality assumed between life expectancies of 65 and 80 years. Immigration has a positive effect, though not as great as births.

Beyond these considerations of the effect of birth, death, and immigration, we may consider labor-force participation rates. These have been changing, with men in western countries declining at all ages, and in particular at ages in the 50s and 60s. A falling labor-force participation rate means a diminution in the contributions to the social security program, and if the individuals are above the age at which drawing is permitted they will also represent an increase in beneficiaries. Thus the financial condition of the scheme suffers in two ways. Only the change in contributors is here taken into account, and it explains the striking fall in the rate of quasi-interest obtained when participation rates are entered into the calculation, as is done in TABLE 2.

In both the above tables we worked with a defined and fixed benefit. It was as though one dollar was paid each year to each person over 65 and the tax was adjusted to provide exactly the sum needed for this. We saw how this advantages the large cohort.

TABLE 3 IMPLICIT PERCENTAGE RATE OF RETURN ON SOCIAL SECURITY PAYMENTS FOR SUCCESSIVE BIRTH COHORTS, WITH FIVE LEVELS OF BIRTHS--US DATA, FIXED CONTRIBUTION

	FRACTION OF 1979 BIRTH RATES		
	0.50	1.00	1.50
1960 - 5	-1.57	-0.14	0.91
1980 - 5	-2.14	-0.21	1.22
2000 - 5	-1.69	-0.21	1.14
2020 - 5	-1.32	-0.21	1.12
2040 - 5	-1.03	-0.20	1.11

The fixed contribution calculation (Table 3) is more equitable between cohorts on the type of calculation here presented, partly because we do not incorporate the baby booms of the future.

However the fixed benefit calculation is done, early entrants come out better than later ones. This

applies equally to hypothetical calculations based on nothing but population projections, like those above, and to calculations for real individuals under the actual operation of social security (Hurd and Shoven, 1983). At the start people were astonished at the sleight of hand that could take a tax of $60 per year--that was the maximum when the scheme started operating--and turn it into an annuity of $100 per month. They were pleased and delighted that they could so cheaply provide for their old age.

Yet if in 1940 there were nine contributors for one person drawing, the $60 per year could only provide an annuity of 9 times $60 or $540 a year, not $1200. After the initial restrictions had lapsed, someone else had to pay the difference--who might it be? No one thought to ask. Now they are starting to ask, and suspecting the answer: the unfortunate person who lives at the time when the economy and the population slow down their growth. We return again to the fact that people in the 21st century are going to have to pay for those folks who were collecting in the mid-20th century.

Political Advantage Reversed

Provided the program holds. If political advantage accrues to favoring those presently voting at the expense of future generations, that kind of advantage may still motivate politics in the 21st century. And if it does, then its direction will be reversed. For what will "favoring the present" mean then? No longer the further expansion of the scheme, for it already embraces substantially all elements of the work force. Once costs rise above a certain level political advantage could well

accrue to contracting rather than expanding the scheme. By 2020 a contraction of social security, or even its abolition and replacement by something else, could well be an advantage to the majority then alive and voting.

Without going so far as to contemplate abandonment of the scheme, one can imagine controversy as to whether equity requires that the generation coming up in 2020 is entitled to the same pension as their fathers had, which would be very expensive for those working, or whether equity consists only in those working paying in contributions as much as the drawers of 2020 had paid in their time, which would mean deep cuts in pensions. We talk of a social contract between the generations, but no one has specified the terms of such a contract; does it consist in constant payments across the generations, or in constant benefits? The existence of the baby boom makes the two far from equivalent, and constant payments (in real terms) would cut pensions by about half before the year 2025.

Under the ideology of population and economic growth we had the illusion that social insurance was cheap. After 20 years of low births, and 10 years of a sluggish economy, we have a more sober picture of costs. No one knows for sure--the birth rate might rise to the levels of the 1950s, and the pace of economic growth to those of the 1960s, but it would be foolish to count on this.

The 1983 Modifications

The 1983 modifications of the Social Security Act reflect many of these concerns, including fear that the population will

be stationary, and uncertainty about future rates of economic expansion. One group of modifications diminished what I call the "quantity" of social security, especially the normal retirement age from present 65 to 66 for those attaining age 62 in 2009-2020, etc., the new way of indexing, and subjecting half of the benefit to income tax. One cannot but approve such retrenchment.

How much social security do people really want, once they know its long term costs? I am not aware of any survey that asks respondents, "Would you rather retire at 65 with a social security tax of 20% of income, or at 70 with a tax of 10%"? Costs include the part apparently paid by the employer, most or all of which would otherwise go as wages to the employee. We need a survey in which people would not be offered free goodies, but rather that would ascertain their wishes taking full account of cost.

Another group of changes made in 1983 increases the incentive to keep working past age 62; in particular bringing the pension at that age closer to the actuarial equivalent of that at age 65. What such an equivalent means in pay-as-you-go is far from clear, especially as regards the rate of interest to use in the calculation, but there is no doubt that the deduction for earlier than normal retirement has in the past been too small. Strong incentives to people to keep working are going to be needed as some contemporary culture traits regarding work and leisure establish themselves through the successive layers of the population.

Thirdly, an attempt was made to keep the scheme expanding, so as to produce, even if on a small scale, a renewal of the

chain-letter effect. New Federal employees and nonprofit employees are henceforth to be included. Moreover it reflects the disadvantage of the scheme as it approaches maturity that legislation was required to prevent those state employees who have come in from withdrawing.

In one sense it may be said that the large cohorts that will be in the work force from now to 2015 are not paying their way, insofar as their taxes are just sufficient to cover the pensions of the preceding rather small generation of retirees, who increase very slowly during the remainder of the century as the generation born in the 1930s retires.

Partial Funding to Secure Equity

Whatever formal legislation and government accounting say, there is a sense in which each generation derives its claim from the fact that it pays and the amount that it pays. Whatever the bond between the generations, if one pays less it is setting an example of inequity to the generation following it that it may in due course come to regret.

Equity between the generations can be achieved without full funding. In the partial funding here proposed one stays with pay-as-you-go, but raises the contribution by an amount that will turn out to be some 25 percent over the 1980 level. That will avoid a rise in the premium of about 70 percent in the 2020s. The calculation credits the interest drawn by the resultant reserve. If the interest was 2 percent then the tax need only be about 25 percent higher than at present for identical premiums and identical benefits over 100 years; if it is 4 percent, only

about 15 percent higher. Four percent may be high for the real rate of interest averaged over a number of decades; two percent would seem conservative.

I have tracked out the amount of reserve to see how much it changes over the course of the century, and find that at the peak, about the year 2020, the needed reserve would be about 10 years' benefits. The fund accumulates most rapidly in the first decade or so of the 21st century.

The peak reserve of 10 times the annual pay-out may well be more capital than the economy can absorb, and instead of raising the contribution by 25 percent one might be satisfied to raise it by half of that. This would still avoid a considerable part of the raise of 70 percent in contributions in the 21st century.

Perfect Equity With Zero Reserve

Aside from this there is a device by which perfect equity can be attained between generations without any reserve at all. All that is needed is to have large cohorts pay suitably smaller premiums and secure smaller benefits, and small cohorts pay larger premiums and obtain larger benefits. Suppose that we divide both contributors and beneficiaries by the cohort number, say as it stands at age 20. That makes all cohorts conceptually equal to unity; if the projection is with constant death and migration, it is as though we were dealing with a stationary population. In a stationary population with one person in each cohort under pay-as-you-go, all cohorts would pay the same contribution and draw the same benefit. By making the cohort rather than the person the unit, then translating to a per-person

basis by dividing by the cohort size, we achieve the simplicity and equity of a stationary population, and no reserve is required (Lapkoff, 1983).

No exceptional administrative difficulty would arise in implementing this. People of the same age would contribute and draw alike; the employer would use the information on the age of the employee in setting the contribution, and the Social Security Administration would do likewise in setting the benefit.

The complaint would be not on equity but on the inadequacy of benefits for members of large cohorts. To correct this the large cohort could have a funded supplement.

Funding Has Its Own Problems

Full funding is not worth considering, since for a transition period payments would almost double. In this sense pay-as-you-go is a trap--once in it there is no quick escape. Moreover, as James Hickman points out, the savings under full funding would probably exceed commercial investment possibilities. With the emergence of a post-industrial society in America, less savings are needed than in the factory era. Apparent unmet needs--the rebuilding of the railroads, for instance--that would use large amounts of capital, are not undertaken because despite appearances they are really not economic, not because the resources are lacking. Yet one finds it hard to believe that the Japanese economy can usefully invest 20 percent of its income, and our economy cannot use more than 4 per cent. Japan's social security arrangement is in principle wholly funded, and Sweden has a funded upper layer, with

mandatory contributions on which the retirees draw interest.

The trouble with the Japanese and Swedish funding is that investments are made in worthy projects, such as housing, that draw less than the market rate of interest. The effect is to favor the buyers of houses against the pensioners of the next generation, and favoring the present over the future is exactly the objection to pay-as-you-go. Is there any way in a democratic context to avoid the bias of politically determined investment, including that in government loans floated for worthy projects that would not otherwise be undertaken?

A Sheltered Reserve

Of course there is. The only feature of social security that we have to preserve is the compulsory setting aside of some fraction of wages for old age. People either have a myopic perspective and think their old age will never come, or else they realize that they will not be allowed to starve, and see no need to provide for themselves. We cannot afford to let people suppose the community will look after them whether they prepare for their old age or not.

But the compulsory element can be implemented with a reserve scheme every bit as well as with pay-as-you-go. And the reserve can be held in a place where it is out of the reach of government. All that is needed is that the person be required to invest a certain fraction of his savings with a registered private institution, that would hold it until some specified age, say 65, and then provide an annuity. A receipt from the savings institution or insurance company would have to be included with

the person's income tax return each year. The institution could not be the person's employer; the person's job depends on the employer's solvency, so his pension ought to depend on something else.

The reserve system would lower the cost of pensions insofar as the rate of interest drawn is higher than the rate of expansion of the economy.

Economic Expansion to the Rescue?

Populations of industrial countries are settling down towards stationarity, and there is little hope that the load on social security will be carried by an infinitely expanding chain of people. The main hope of pay-as-you-go is in the expansion of the economy. If the economy were to grow indefinitely at 3 percent per annum, then pay-as-you-go is no dearer and no cheaper than funding that provides interest at 3 percent.

Judging from the past a real interest rate of 3 percent seems not unreasonable; what about the future? A survey of 17 established economists, asking the opinion of each on growth over the next 60 years in developed countries, gave the following results: -0.5%; 0.5%; 0.5%; 0.75%; 1%; 1%; 1%; 1.2%; 1.2%; 1.5%; 1.5%; 2%; 2%; 2%; 2.5%; 3%; 3%; or an arithmetic average of 1.5%, a median of 1.2%. Only for very brief periods has the real rate of interest been as low as 1.2% or 1.5%. On this and other grounds, it seems safe to take it that over the long term interest rates will be higher than economic growth (King and Zeitz, 1983). The intuitions on which this is based are hardly equivalent to facts, but they seem more trustworthy than those

models in which interest and growth rates are equal.

The Role of Advisors

Suppose for the sake of argument that professionals can agree that from the viewpoint of long-term soundness and durability of social security, there ought to be a reserve, even if only of one, two or three years' benefits, but that the powers that be refuse to establish one. What is the division of labor between advisors and rulers? The latter are perfectly entitled to overrule their advisors, but they must take responsibility when they do so. If the advisors concede a virtually zero reserve, then they are taking on themselves the responsibility that belongs to the rulers. The question I ask is whether the advisors should take account of what is politically feasible, or should they make their reports in innocence of political objectives. The more naive they are politically, the clearer will be the issues for the public.

A Tri-partite Solution

I have mentioned three ways in which equity can be approached: defined contribution rather than defined benefit; partial reserve; making the contribution and the corresponding benefit inversely proportional to cohort size. The use of any one of these alone to secure equity would be too drastic to be practical, but some suitable combination could surely be devised. Perhaps go half-way between defined contribution and defined benefit; perhaps not ten years' payout as reserve at the peak but two or three years; perhaps vary the premium and benefit with the

size of the cohort.

Professor Myers is far more able than I am to work out an actuarial plan. The considerations I have raised fall within the title of his paper, and they certainly fall within his competence. My reason for this comment is that by his silence on such matters he nour ishes the doubts that the public rightly feels about the bare continuance of social security, and fails to draw attention to feasible solutions to the underlying problem.

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