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# Fiscal implications of population ageing

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## SUMMARY

In all developed countries the fiscal ties of the tax and benefit system serve to complement, and sometimes substitute for, traditional family bonds between young and old. Older people are major recipients of public pensions and public health care systems. Since these public transfers and services are financed primarily from the taxes paid by people of working age, the welfare system in effect transfers resources from young to old. But rather than see the fiscal interdependency between young and old as being analogous to the ties that bind children, parents and grandparents together in familial networks, it is often interpreted as an oppressive burden that the old place on the young. This paper examines arguments that population ageing will exacerbate this burden, and may lead to the collapse of public welfare systems. It shows that the financial problems currently associated with public pensions are a function of system design rather than demographic change, and that wholesale privatization of pension systems will do little to solve the major dilemma—of persuading people to transfer a larger part of their lifetime income to their later years in order to sustain a reasonable standard of living throughout an ever lengthening period of retirement.

## 1. INTRODUCTION

Demographers, philosophers and ethicists have frequently examined the nature and persistence of those ‘ties that bind’ between parents and children. ‘Am I my parents’ keeper?’ asked Daniels (1988) in an essay on justice between the young and the old. ‘Not directly’ would be the response of the Cambridge Group for the History of Population and Social Structure. Their historical research has demonstrated that, at least in north-west Europe, large multi-generational households providing close kinship support for elderly persons have been the exception rather than the norm for at least three centuries (Laslett 1996; Wall 1984, 1995). Ties did exist to bind older and younger people together, but they were mediated through sets of social institutions. These institutions varied in structure and performance over time and between places; in large parts of early modern continental Europe they were powerfully influenced by the religious virtues of charity and mercy, whereas in England they were part of a secular administration established by the Elizabethan poor law (Pullan 1996; Smith 1996). Since the late nineteenth century, common processes of secularization, state growth and the development of systems of social insurance have together created an historically unprecedented uniformity across developed countries in the nature of the intergenerational ties between old and young. These are the fiscal ties of the tax and benefit system.

Economic, social and health care support for older people in the developed economies is now organized and provided to a very large degree by public agencies, and paid for by public taxation. Yet the process of

population ageing is widely believed to be undermining the viability of this public support system. The World Bank has identified a ‘looming old age crisis that threatens not only the old but also their children and grandchildren, who must shoulder, directly or indirectly, much of the increasingly heavy burden of providing for the aged’ (World Bank 1994, p. iii). This paper examines the nature of this financial and fiscal ‘crisis’ of ageing, and questions both the presumed causes and the suggested solutions to the crisis. The second section presents some basic data which describes the evolution and the size of the fiscal ties that bind older and younger people together in modern welfare states. Section three addresses the demographic determinism which underpins much of the alarmist rhetoric about the ‘crisis’ of ageing, and section four examines the fiscal implications of public pension systems. The final section briefly examines proposals for pension system reform, and considers some broader political and social consequences of fundamentally changing the ties that currently bind generations together in a fiscal compact.

## 2. PUBLIC EXPENDITURE

In 1989 old age pensions accounted for between 32% (Ireland) and 60% (Italy) of total social expenditure in European countries, and on average pensions made up just under half of the total national welfare state expenditure (European Commission 1995). Pension expenditure has grown in all countries since the Second World War, and has consistently been the single largest item in the welfare budget. These figures need not signify that older people enjoy a disproportionate share

Table 1. *Age-specific public expenditure: proportion of service and transfer expenditure in relation to the proportion of the population in the age group*

(Source: Kruse (1997), p. 200.)

		age groups		
		0–15	16–64	65+
services	Britain	1.6	0.8	1.0
	Italy	1.6	0.9	1.0
	Sweden	1.3	0.7	1.6
transfers	Britain	0.0	0.8	2.8
	Italy	0.2	0.7	3.0
	Sweden	0.3	0.8	2.8

of the public expenditure cake. Whilst pensioners receive a major share of public transfer payments, they benefit relatively little from public consumption expenditure on services such as education. The attribution of public expenditure to distinct age groups is an inevitably approximate task, made more complex by a growing economic heterogeneity among older persons, with some almost wholly dependent on public support, while others enjoy high incomes and make substantial net tax contributions. A recent attempt by Kruse (1997) to apportion public expenditure by age group for Britain, Italy and Sweden, reported in table 1, shows that pensioners enjoy roughly three times the level of transfer payments that their population share would justify if strict proportionality were being adhered to, while their consumption of public services is at or a little above this parity level.

This bias of transfer payments towards older people exists in all countries with well-developed public pension systems, but it is not simply a creation of recent welfare state growth. Figure 1 shows that the share of public pension to total public expenditure in Britain was high relative to the size of the pensioner population before the First World War, and that the expansion of this pensioner population since the 1960s has not been matched by any sustained increase in the share of public expenditure devoted to pensions. This figure makes clear that there is no necessary proportionality between the size of the pensioner population and the level of public pension expenditure. Public pensions are a product of political choice, and the fiscal ties that bind older and younger people together in a tax-benefit system can be either loosened or tightened to accord with popular or administrative pressure.

A primary reason for the disproportionate allocation of public transfer payments to older people is their relative poverty. Cross-sectional analysis of living standards of elderly and non-elderly households in European Union countries shows that the elderly have lower mean equivalent expenditure and income than their non-elderly compatriots, despite their receipt of substantial public pension transfers (Tsakloglou 1996). In Britain it is only among the richest 20% of pensioner households that income from earnings, investments and private pensions together outweighs income from the public sector, which is derived both from public pensions and from other social security benefits (Johnson *et al.* 1996). Any loosening of the fiscal ties that results in reduced public financial support for elderly households will necessarily have a detrimental impact on the welfare of at least some older people in

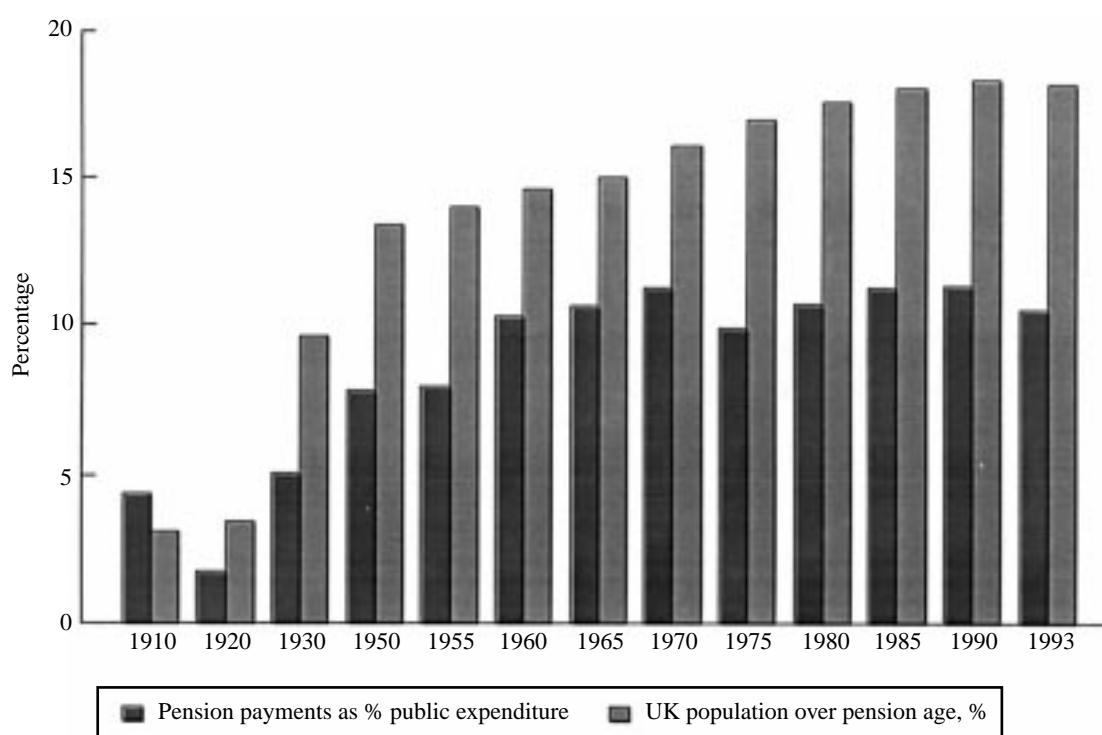


Figure 1. Public pension payments in the UK, 1910–1983. Source: Johnson &amp; Falkingham (1986); DSS (1993).

the short run. On the other hand, larger public transfers towards older people can be achieved only by increasing the overall tax burden, and this is disproportionately borne by prime age workers. Public pension systems therefore embody what appears to be a competitive trade-off of the interests of younger and older age groups. Rather than seeing fiscal interdependency between young and old as being analogous to the ties that bind children, parents and grandparents together in familial networks of exchange and support, it can be interpreted as an oppressive burden that the old place on the shoulders of the young. Exactly this analogy is used by the World Bank to motivate its assessment of the ageing 'crisis', but we should be aware from the outset that the rhetoric of 'burden' is a highly selective and subjective way of describing relationships between age groups.

### 3. AGEING AND RESOURCES

Neither public pension systems nor disproportionate public transfers to older persons are new phenomena. The introduction of a public pension in Britain in 1908, and its extension to the entire population in 1948, at the time was hailed as a great achievement. Why do many people now argue that these achievements have turned sour? Underpinning much of the revisionist literature is the fact that the population is ageing, and it is doing so not just in Europe but in virtually all countries in all continents. The argument involves an element of demographic determinism of an 'inverse-Malthusian' kind. The problem arises not from people breeding too fast but from them breeding too slowly. The tail end of the twentieth-century demographic transition causes an acute problem of old age dependency, and a burgeoning support 'burden' for younger cohorts.

The substance of this argument is by now fairly familiar, but it is worth examining some of the assumptions which underpin this pessimistic outlook. In the past 40 years the world's population has grown substantially, but this growth has occurred in all age groups, both young and old. However, projections for the first quarter of the next century indicate that the fastest growth will occur amongst adult age groups, especially those over age 50. Whereas the number of 0–4-year-olds will barely change, the number of 60-year-olds is expected to more than double, whilst those over 80 will almost treble in number (United Nations 1991).

It is not immediately obvious why this demographic transition should be seen as a problem. After all, the developed economies of Western Europe already have population structures of the sort projected for the entire world in the mid-21st century. Moreover, the population planning programmes in developing countries since the 1960s have been explicitly designed to slow down population growth and increase the number of adults relative to children. Why should a shift in the demographic structure of the rest of the world towards that already achieved in Western Europe, and achieved without significant social or economic disruption, now be seen as an incipient problem, rather than as a significant achievement?

Table 2. *Time taken to double population aged 60+*

(Source: World Bank (1994) p. 26; United Nations (1991).)

	years taken to double 60+ population from 9–18%	date at which 18% of population are aged 60+
France	140	1976
Italy	100	1982
Sweden	86	1962
Australia	80	2009
United States	73	2008
Hungary	59	1979
UK	45	1965
China	34	2026
Japan	31	1992
Egypt	30	2049
Venezuela	22	2035
Singapore	21	2013

Two aspects of this age transition have induced the World Bank, and other agencies, to identify the makings of a crisis—they are the speed and the scale of change. The speed of the age transition will be much more rapid in developing countries than it has been in the majority of the old world industrial economies. Table 2 shows that it took the United Kingdom and Hungary roughly two generations to double the share of their populations aged 60 and above from 9–18% of the total, in Sweden this occurred over more than three generations, in Italy over four and in France over almost six generations. But in developing countries this same proportionate transition will occur more rapidly—within one generation. If it takes a long time for social institutions—families, communities, labour markets, welfare systems—to adjust to major population age transitions, then the speed of change in the future may generate crises that were avoided by the more sedate pace of age transition in the developed countries in the past.

This line of argument may be true, but it is based on speculation rather than evidence. It can be seen from table 2 that Japan has undergone this age transition in only one generation, yet without any dramatically adverse social or economic consequences. Therefore it is far from certain that outcomes will be any worse in Venezuela, or Singapore, or Egypt, or China or any other rapidly ageing country, although as Laslett (this volume) points out, the very different economic circumstances of less-developed countries means that the secular shift in ageing may produce social and economic consequences very different from those experienced in developed societies. Moreover, the type of analysis presented in table 2—the number of years taken to shift from one arbitrary threshold to another—gives a misleading impression of abrupt transition. Societal ageing is a continuous and dynamic process, mediated through the experience of individuals born into different cohorts but living in a world of complex multi-generational relationships, both within the family and the broader community. In the past these family and community relationships have shown

themselves sufficiently flexible to adapt to major and rapid changes in fertility, migration and employment, and there is no *a priori* reason why they should be incapable of adapting in the future to an upward shift in the age structure.

The second reason for the generally pessimistic assessment of population ageing is the sheer scale of the age transition—‘the numbers will be enormous’ (World Bank 1994, p. 30)—over a quarter of a billion Chinese over age 60 within 30 years, over 30 million in Brazil and Indonesia, and over 16 million in Bangladesh and Nigeria. These numbers are impressive, but they do not demonstrate the existence of an ‘old age crisis’. If the issue is that of old age support ratios—the ‘burden’ of the old on the young—then what matters is the relative proportions of contributor and dependent populations, not the absolute size of these populations.

The ‘old age crisis’ is not, therefore, a simple and direct consequence of population change. In the face of insistent demographic pessimism we need to remind ourselves of two key points. First, population ageing is a positive, not a negative, social phenomenon. Ageing implies a reduction in fertility to lower and more sustainable levels, a reduction in infant mortality, and longer life expectancy—these are some of the most significant benefits that we have reaped from the economic growth and medical and social advances of the past 50 years. Second, although ageing in the future will significantly change the shape of the world’s population, in most countries in Europe, North America, Japan and Australasia prospective ageing in the 21st century will be no more rapid, and in many instances considerably slower, than the ageing already experienced in the 20th century. In a purely demographic sense, the future for these countries may appear more benign than the recent past. If there are transitional problems to be met in the future, then there are good reasons for supposing that most of our existing social and economic institutions will be able to cope, since they have already shown themselves to be adequate to the task.

Why is it that this positive and welcome change in demographic structures is commonly perceived as an actual or incipient social and economic crisis? Much of the revisionist rhetoric depends upon a rather simplistic interpretation of dependency ratios. A standard way of representing the societal impact of population ageing is to calculate the demographic dependency rate, typically defined as the number of ‘dependent’ persons aged under 15 and over 64 per 100 persons of working age. This definition implies that all people aged 15–64 are self-supporting and productive, whilst those under 15 and over 65 are not, and this, of course, is not the case. The true economic dependency rate should take into account economic activity and unemployment propensities by age and gender, since changes in these may matter as much or more than any difference over time in the overall age structure. Today many adolescents and young adults contribute little or nothing to the productive economy because they are undertaking full-time education or training. Likewise, many people in their 50s and early 60s have left work permanently, either from choice or necessity. Changes in participation rates, which have

economic and social causes, frequently dominate the purely demographic effects.

This can be demonstrated in the case of Britain with simple shift-share analysis. If the population age structure had been stable since 1931 (in other words, if there had been no ageing of the population), then the male work force today would be 7.5% larger than it actually is. On the other hand, if age-specific participation rates had been stable since 1931, the male work force would be 13% larger (data derived from, Johnson 1993; Census of Great Britain 1991). In other words, over the past 60 years, socioeconomic developments that have altered the propensity of people to engage in paid employment have had almost double the impact of purely demographic effects in increasing male economic dependency rates in Britain.

It is true that the age structure of our populations is changing, but this is nothing new. Large-scale demographic changes of equal magnitude in the past have been accommodated within existing institutions, and other developments in social and economic relationships can have an impact on the size and shape of the work force of equal or greater magnitude to that induced by purely demographic forces. I do not wish to suggest that population ageing creates *no* problems of economic or social organization. There are general issues of resource distribution, and particular problems of pension and health-care financing, that need to be addressed. These issues are ones that require political resolution, but they are often presented as economic problems that are amenable to technical solutions, normally involving a shift from public to private finance. The next section examines the nature of these problems first in relation to pension financing, and then more generally in relation to the distribution of resources in society.

#### 4. FINANCING PUBLIC PENSIONS

The ‘old age crisis’ identified by the World Bank is, in reality, a perceived problem of financing public pay-as-you-go pension systems. The great majority of public pension schemes operate on a pay-as-you-go basis, with this year’s contributions from workers paying for this year’s payments to pensioners. For this type of pension to be sustained in the long run, successive birth cohorts must accept that they will pass through a phase of net contribution during working life before entering a phase of net benefit during retirement. There exists, in effect, an implicit contract between birth cohorts or generations to honour transfer obligations which are codified in national laws, but the specific terms of which can be altered by the passage of new laws or by administrative amendments. Whilst at any point in time resources are moving from younger to older age groups, the longer-term dynamic effect is to transfer resources from earlier to later-born generations. Within any annual accounting period the transfers appear to be unfair, with the old gaining at the expense of the young (as illustrated in table 1), but if, over the life cycle, average contributions into and benefits from the pension system balance, then equity has been achieved.

Table 3. Contributions and benefits of successive cohorts in a hypothetical pay-as-you-go pension system

cohort	A	B	C	D	E	F	G	H
cohort size	2	3	4	5	6	5	4	3
contributions per capita	0	10	10	10	10	10	10	0
total contributions	0	30	40	50	60	50	40	0
total benefits per capita	30	40	50	60	50	40	0	0
benefits per capita	15	13.3	12.5	12	8.3	8	0	0

Population change may disrupt this condition of intergenerational equity; the effect on a hypothetical pay-as-you-go pension system in a static economy is illustrated in table 3. In this example each cohort lives for two periods, the first being a period of contribution, the second a period of benefit. Each member of each generation contributes £10 to the public pension system while working, and each generation draws a pension funded from the contributions of its successor generation (cohort B pays for cohort A's pensions, C pays for B, and so on). When the population is growing, each generation enjoys pension benefits greater than its pension contributions, and so the value of individual pension benefits is always higher than the individual contributions of £10 made during working life. Larger gains are enjoyed by the earlier cohorts because of their small size relative to the working population, and the greatest gains are captured by the initial generation which pays no contributions but receives windfall benefits. However, when the population begins to decline (from generation E) the pension funds available for each generation become smaller than their net contribution when working; per capita contributions now exceed benefits. If this negative rate of return induces generation H to abandon the public pension scheme, then generation G receives no benefits, despite having made contributions throughout working life. Pay-as-you-go pensions work like a chain letter; when the transfer chain is increasing everyone gains as each generation receives back more than it pays in, but when the transfer chain is decreasing everyone loses (Keyfitz 1988).

This hypothetical example demonstrates that an ageing of the population which first reduces the ratio of workers to pensioners, and then leads to an absolute decline in the number of workers, can progressively reduce, and ultimately render negative, the real rate of return produced by a pay-as-you-go pension system. However, historical experience reveals that there is no direct relationship between the problem of public pension finance and population ageing. Figure 1 shows that the pensioner share of the British population rose consistently from 1910 to 1990 (partly because of population ageing, partly because of a reduction in the minimum pension age), but this did not create any obvious crisis in the public pension system, and nor has it produced negative returns on pension contributions for past or current pensioners. This will change

in the future. Disney & Whitehouse (1993) demonstrate that younger cohorts, born in 1955 and 1960, and retiring in 2020 and 2025 can expect negative returns to their public pension contributions, but this is primarily because of internal changes to the rules of the British pension system rather than exogenous demographic trends.

The reason why population ageing does not automatically produce negative returns is that a number of separate factors affect the fiscal balance of a simple pay-as-you-go pension system. If we impose a condition of annual equivalence of contributions and benefits, then the system must operate according to the following accounting identity:

$$L(wt) = P(wr), \quad (1)$$

where  $L$  is the number of contributors in the labour force,  $P$  is the number of pension recipients,  $t$  is the average contribution or tax rate,  $r$  is the average pension replacement rate (i.e. the value of a pension as a proportion of the average wage), and  $w$  is the average real wage. Rearranging equation (1) shows that:

$$P/L = t/r, \quad (2)$$

so a demographically induced increase in the ratio of pensioners to contributors must either raise the contribution rate or reduce the level of the pension, either of which will lower the rate of return produced by the system. There is, however, one easy way to overcome this problem of declining returns—by increasing the number of contributors,  $L$ . When a new pay-as-you-go pension scheme is introduced, or the eligibility of an existing scheme widened, the immediate effect is substantially to increase the aggregate income of the scheme (more contributors) while barely changing the aggregate benefit expenditure (few additional pensioners) since people close to or above retirement age have usually not paid sufficient contributions to qualify for benefits. As the pension scheme matures, the initial contributors will approach retirement with a full contribution record and so a full pension entitlement; the cost to younger contributors will rise as they have to pay for a growing proportion of fully entitled pensioners. In most developed countries the eligibility for public pensions (and liability for social security taxes) has been progressively widened since the Second World War (Organization for Economic Cooperation and Development 1988). In general this kept pension scheme receipts rising faster than committed expenditure through the 1960s and 1970s, thereby allowing the real value of pensions to be increased despite an ageing population and without, apparently, increasing the tax burden on contributors. But once the entire population was enrolled, the scope for a further widening of eligibility disappeared, and with it the opportunity to expand the tax base. By the 1980s the chain letter had nowhere else to go.

It is the maturing of public pension systems, rather than population ageing, that has created the current funding problem that is common to almost all public pension systems. Ageing can exacerbate the problem, but the major impact of demographic change on public

pensions—the retirement of the post-war ‘baby boomers’—will not be felt until the early years of the next century. The immaturity of public pensions schemes allowed politicians from the 1950s to the 1970s to make extravagant promises about future pension benefits that could only be honoured by future generations accepting historically unprecedented levels of social security taxation.

Politicians have been able to make their promises seem credible because there is no established way of evaluating the long-term fiscal implications of government actions. Public accounts are balanced (or not) within annual accounting periods, and governments have typically paid little attention to the long-deferred revenue implications of current legislation; in the case of pension systems, the deferral period may be as long as forty years. Kotlikoff (1992) has argued that in order for politicians and voters to take rational decisions about long-term public expenditure commitments, it is necessary to draw up generation-specific public accounts, so that the scale and direction of any inter-generational transfers can be readily identified. Whilst the logic of this idea is attractive, the procedural difficulties are immense, and there are other, simpler ways of imposing fiscal discipline on public pension systems (Thompson 1996), most obviously by ensuring a quasi-actuarial linkage between personal contributions and benefits.

Fiscal indiscipline rather than ageing *per se* is the principal reason why many public pension schemes are currently in deficit. A pessimistic reading of this circumstance would identify this indiscipline as an inevitable consequence of the scope that deficit financing has given to politicians to offer unsustainable spending pledges in their competitive search for voter allegiance (Buchanan & Wagner 1977). A slightly different but equally forceful interpretation has been advanced by Thomson (1996) who sees the positive returns from post-war welfare states as having been captured to a significant degree by one particular generation. Using the specific example of New Zealand, but generalizing his argument to other countries including Britain, he shows that in the immediate post-war period welfare state resources were targeted particularly towards the generation born in the 1920s and 30s who at the time were adults with young families. By the 1980s, when this same generation was entering retirement, welfare states had refocused their spending towards the old. Thomson argues that this over-consumption of welfare state outputs by one generation is analogous to the general problem of the depredation of common goods, and it sends signals to other generations to either abuse or withdraw from collective pooling arrangements. Moreover he sees the general decline in fertility, and hence the process of population ageing, as itself partly a consequence of this welfare state imbalance. He has put the point starkly: ‘having a child is now to volunteer tens of thousands of private dollars to the collective pool, since the return on one’s personal investment in children is available to everyone through the future taxes and the like paid by those children. Parents enjoy no special claim on these ahead of anyone else, and the temptation

must be to free-load off the child investment of others’ (Thomson 1996, p. 212). Recent econometric estimates by Cigno and others for a number of European countries support this argument by showing that public pensions do indeed appear significantly to reduce fertility rates (Cigno & Rosati 1996, Cigno *et al.* 1997).

The repeated failure of some democratic regimes to face up to the necessary reform of their public pension systems lends weight to the pessimistic view that welfare states may be one-generation phenomena. However, the concerted and substantial revisions to public pension systems effected over the past decade in many countries, including Germany, Britain, the Czech Republic, Sweden and Japan, indicate that democracies are not inevitably condemned to fiscal irresponsibility and ultimate economic crisis.

There is, however, a second and quite separate argument against public pay-as-you-go pension systems, even if they can be shown to be operating according to the tenets of fiscal propriety. This is the claim that fully funded pension provision—that is, where a stock of capital is accumulated during working life and decumulated during retirement—can secure adequate old age income security at lower cost than in a pay-as-you-go pension system. In his address to the American Economics Association last year, Martin Feldstein, returning to a theme he first raised more than two decades ago, argued that the pay-as-you-go public pension system in the United States imposes massive costs on the American people. ‘Conservative assumptions’, he said, ‘imply a combined annual loss of more than four per cent of Gross Domestic Product (GDP) as long as the current system lasts’ (Feldstein 1996, p. 13). The primary reason for this loss is the low long-term rate of return on social security contributions compared to that achieved on investments in corporate capital: Feldstein estimates these annual yields over the 35 years since 1960 to have been 2.6% and 9.3%, respectively.

The impact of these different yields is shown clearly by the so-called ‘Aaron condition’, which identifies the circumstances under which the outcomes of a pay-as-you-go pension system dominate a fully funded system in a simple overlapping-generations model, and vice versa (Aaron 1966). As indicated in table 3, the rate of return in a pay-as-you-go pension is determined by the rate of growth of the public pension tax base, which can be thought of as the sum of the rate of population growth ( $g$ ) and the rate of growth of real earnings per worker ( $h$ ). In a funded system, the rate of return is established by the long-run market yield on investments ( $i$ ). Pay-as-you-go dominates (in the sense of being able to provide every contributor with a higher internal rate of return on their pension contributions) if  $g + h > i$ , but funding dominates if  $g + h < i$ . During the ‘golden age’ of postwar growth up to the mid-1970s both  $g$  and  $h$  were high and pay-as-you-go pensions were attractive, but the slow-down in both population and economic growth rates in the western economies over the last two decades has reversed this picture.

We should note, however, that Feldstein’s arguments have been robustly challenged by other social security economists. At the same meeting of the American Economics Association in 1996, Mitchell and Zeldes

rehearsed the same deductive logic as Feldstein, but concluded that 'it is unlikely that a privatized system's risk-adjusted rate of return, net of other new taxes, would exceed that promised under the current Social Security system' (Mitchell & Zeldes 1996, p. 366). Once adjustments are made for the greater riskiness of market investments and for the fact that some element of the public pension contribution is designed to support transfer payments from rich to poor, then the real yield in each system becomes more or less the same. Furthermore, Feldstein's estimate of the long-term yield on corporate capital seems over-optimistic. A study by Davis (1992) of pension funds in a range of industrial economies reports estimated real annual yields in the range 0.9–6.3%.

Even if a switch to funded pensions did raise the level of GDP in the way believed by Feldstein, this would do little to resolve one of the fundamental problems of future pension finance, since this is a problem of distribution. Imagine that a change to the system of pension financing resulted in higher net investment rates, higher growth rates, and higher future real incomes. What would this do to the share of national income devoted to old age income support? In all probability, nothing. If the ratio of labour to total income, the ratio of average pension to average wage, and the ratio of retirees to workers all remain constant, this increase in national income would not affect the proportionate transfer to pensioners at all. If the ratio of pensioners to workers rises, as is projected for the next 50 years, then proportionately transfers to pensioners must increase, despite the rise in overall income.

It is sometimes suggested that the future pension costs of an ageing population can be reduced simply by switching from pay-as-you-go to funded pensions. This argument is false, and its falseness arises from what we can call the fallacy of composition. In any year the total consumption of a society cannot exceed total production (excepting the short-run possibility of a trade deficit). Individuals support their consumption by exercising a claim on current production. Workers do this by supplying their own labour and receiving a wage in return, but by definition retirees cannot do this (though they may supply much useful unwaged labour within households and the voluntary sector). Retirees exercise their claim on current production through the retirement income system which is a way of transferring to them resources from the current investment and consumption of the non-retired.

These claims can be exercised through financial instruments. For instance, a firm may be willing to trade future income for more current consumption. If so it issues stocks or bonds to today's retirement savers, agreeing to take their savings today in exchange for repayment out of the business's future income. Alternatively the claims can be exercised through implicit contracts with governments. I agree to pay my taxes today to support current retirees, in exchange for a promise that the government will tax future workers in order to transfer some of their income to me when I am retired.

Either way, saving for old age is very different from hoarding out of current income. Pensioner consumption

in the future has to be resourced from the output of future workers, and the accumulation of private funded pensions cannot make the retired population self-sufficient in any meaningful sense. Since the proportionate size of the retired population is set to rise, future workers will inevitably have to forego a larger share of investment and consumption than do current workers in order to sustain pensioner incomes. The only way to prevent population ageing leading to a rise in the share of national income transferred to the elderly is through a reduction in the relative incomes of older persons.

This is why I call the future of old age income security primarily a political rather than an economic issue. The income transfer costs associated with population ageing can only be reduced by preventing pensioner incomes from growing at the same rate as worker incomes, i.e. by consistently reducing the living standards of older people relative to younger people. Higher average incomes in the future will not directly resolve this distributional problem; an increase in the size of the national income cake does little to diminish or resolve arguments about how the cake is cut. Ultimately this is a matter of political choice, but politicians are reluctant to accept the logic of the public pension accounting identity which shows that both higher pensions and more pensioners necessarily imply higher taxes.

## 5. PROBLEMS OF PENSION REFORM

The notion that a shift from pay-as-you-go to funded pensions will raise growth rates and increase incomes is an article of faith rather than an empirically established proposition. Nevertheless, many governments are now considering ways of privatizing some or all of their public pension liabilities, believing that funded private pensions will solve the long-term problem of paying for retirement. In fact privatization cannot achieve this goal unless it is accompanied by substantial behavioural changes, regardless of what happens to the rate of economic growth, because pensioner incomes can only be sustained at their current relative levels in the future if people defer a larger proportion of their current income to consumption in old age. Whether they do this through the tax-benefit system by using a public pay-as-you-go pension, or through capital accumulation in a private funded pension scheme, is a secondary issue.

With paid employment for many people now not commencing until their early or mid 20s, and with retirement often beginning before the age of 60, 20 years of pension income entitlement need to be accumulated over perhaps 35 years of employment. Under this scenario, an efficient funded pension requires contributions of almost one-quarter of annual earnings over 35 years to generate a pension equal to half annualized average lifetime earnings (Falkingham & Johnson 1993a). In a stable pay-as-you-go pension the necessary contribution rate is much the same. This is a far higher rate of provision for old age income support than is common in developed countries, and there is little indication that people are voluntarily changing



their consumption behaviour in order to make better and more appropriate financial provision for old age. Furthermore, governments seem generally reluctant to increase personal taxation or to impose the requisite level of compulsory savings. In truth we should welcome rather than resent increased levels of taxation or saving for old age. Reduced relative consumption during working life needs to occur only because most people will survive to draw more pension income during a longer retirement. Put simply, this is the inevitable price we all have to pay for a longer life.

In the apparent absence of a widespread desire to pay this price—for reasons of ignorance or myopia or perverse incentives created by the social security system—most governments have embarked upon a strategy to reduce future public pension tax liabilities. As already noted, the proximate reason for these retrenchment policies is the fiscal imbalance of rapidly maturing public pension schemes, although population ageing over the next three decades will add considerably to these tax liabilities in the absence of systemic reforms. The most dramatic way of reducing future public pension liabilities is to privatize the entire pension system; this was done in Chile in 1981, has been strongly promoted by the World Bank, and was the basis of the (ill-fated) pension reform proposal for the UK floated by Peter Lilley in March 1997 (Singh 1996). There are, however, two significant barriers to the successful privatization of public pensions.

The first is the problem of transition. Because of the intergenerational transfers embodied in a pay-as-you-go pension system, termination of the system inevitably creates a generation of losers—the people who have paid in but never drawn out. In the hypothetical example in table 3, generation H decides to abandon the public pension system, and so makes no contributions; the consequence is that generation G receives no public pension, despite having made full contributions throughout working life. In order to obtain an income in old age, generation G would need to accumulate additional private savings—in other words, as the transfer generation, they would have to pay twice. The transition costs of closing down a pay-as-you-go pension can be thought of as the present value of the accumulated unfunded public pension entitlements, and these costs are substantial. The accumulated liabilities in the UK national insurance pension system—that is the pension promises we have made to ourselves in the past, in the hope or belief that future taxpayers will honour them—amount to well over £300 billion, or more than half of annual GDP (Falkingham & Johnson 1993*b*). It is possible to spread these costs over several generations, but it is not possible to make them disappear; I have estimated that an additional 2% on income tax would be required for a transition period of 45 years, in addition to fundamental changes in the taxation of private pension schemes, in order to cover the unfunded national insurance pension liabilities. A transition tax at this level is economically sustainable, but it would not be welcomed by any government committed to lowering the level of personal taxation.

The second barrier to pension privatization is that it fundamentally weakens the ties that currently bind

different generations to the state in an intergenerational fiscal compact. Libertarians may cheer at this prospect; others are concerned at the social and political implications. Milward (1992), for instance, regards the development of the public pension and welfare system as having been central to the reconstruction and re-legitimation of European nation states in the 1950s. If governments withdraw from the provision of income support and health care for key sections of the population, particularly for older people who have little or no prospect of participating in the labour market, then they may find it difficult to preserve a broadly based political legitimacy.

The withdrawal of governments from pension provision can also have a substantial impact on the welfare of the older population. As well as effecting large intergenerational transfers, public pensions involve significant interpersonal transfers from lifetime rich to lifetime poor, and this is something that market-based private pensions cannot achieve. In the absence of countervailing redistributive policies, a shift from public to private pensions would raise pension income for high earners and reduce it for low earners and people who have been engaged in non-waged work, such as caring for children or other relatives. Individualized private pensions would increase the demands that poorer elderly people would have to make on family members for support. Yet it was the unavailability or inadequacy of family support for most elderly people, and the contingent nature of Poor Law support for the aged, that provided a primary motive for the introduction of public old age pensions at the beginning of the twentieth century. Systems of familial support that were found wanting in the 19th century do not provide an obvious model for 21st century ageing.

The problems of paying for transition and ensuring adequate financial support for poorer retirees are not insurmountable obstacles to pension privatization. It is, for instance, possible to incorporate substantial redistributive elements in a fully-funded pension scheme, and to do so without imposing a traditional means test (Falkingham & Johnson 1993*b*). However, most proposals for pension privatization give scant consideration to distributional and welfare issues. The primary reform objective appears to be to relieve governments of future expenditure commitments rather than to raise old age savings rates. Shortening working life and increasing life expectancy mean that we must divert a larger share of current output to support a lengthening retirement. We can do this indirectly by saving more in private pension schemes, or collectively by paying higher social security contributions. The primary political argument in favour of privatizing public pensions appears to be that voters will more readily accept an increase in forced saving than an increase in payroll taxes, even if the overall financial consequences are identical.

We should, however, be wary of allowing short-term political goals to unravel the fiscal ties of the tax-benefit system before we have a clear conception of how bonds of mutual support may be reconstructed. As a member of the US Advisory Council on Social Security has recently remarked, 'Social Security has been a highly

popular program, conceivably the most popular government domestic program in the history of the United States' (Gramlich 1996, p. 361–362). When the fiscal ties of the public pension system are this important, it would be foolhardy to cut through them because of temporary financial imbalance or passing economic fashion.

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