



Nicholas A. Barr

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Reforming pensions: myths, truths, and policy choices

Nicholas Barr

Department of Economics,
London School of Economics and Political Science,
Houghton Street,
London WC2A 2AE, UK

Tel: +44-20-7955-7482; Fax: +44-20-7831-1840;
Email: N.Barr@lse.ac.uk <http://econ.lse.ac.uk/staff/nb>

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Reforming pensions: myths, truths, and policy choices¹

Nicholas Barr

London School of Economics

This paper discusses the building blocks of pension reform in the light of economic theory, and their application to different types of economy. The opening section sets out the simple economics of pensions. The second section discusses a series of myths which have proved remarkably persistent. Building on this analysis, the latter part of the paper sets out the foundations of effective pensions policy. The third section discusses the prerequisites which any pension reform must respect, i.e. those things which policy advisers can – and should – assert authoritatively. The fourth section turns to the range of choices facing policymakers, drawing on the very different arrangements in different countries. The main conclusions are threefold:

- *The key variable is effective government.*
- *From an economic perspective, the difference between Pay-As-You-Go and funding is second order.*
- *The range of potential choice over pension design is wide. One size does not fit all.*

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Over 20 years ago, in a paper called 'Myths My Grandpa Taught Me' (Barr, 1979), I addressed a particular myth – that funded schemes are less vulnerable to demographic pressures than Pay-As-You-Go schemes. Since then a major debate has erupted about the necessity/desirability/urgency of a move towards private, funded pensions. This paper is a contribution to that debate, intended as a bridge between economic theory and policy design. The opening section sets out the simple economics of pensions. The second section discusses a series of surprisingly durable myths. The building blocks of reform are discussed in two parts: the third section draws together the conclusions for policy design of earlier theoretical discussion and sets out a series of prerequisites for *any* pension scheme; the existence of such prerequisites does not, however, mean that the choices facing policymakers are limited; the large range of choice is set out in the fourth section. Throughout the paper there is explicit discussion of how the arguments apply in different types of economy (though such discussion is intended neither as a survey nor as formal comparison, but to show how the analytics play out in different contexts).

¹ The material in the second section draws on my time as Visiting Scholar at the Fiscal Affairs Department at the IMF. I am grateful for the Department's hospitality and for helpful discussions with many people at the IMF and outside. The arguments in this paper are set out more fully in Barr (2001, Chs 6-9), which integrates them within the broader microeconomic foundations of the welfare state; an earlier version (Barr, 2000) can be downloaded from the IMF web site. Responsibility for the views expressed and for remaining errors is mine.

The simple economics of pensions

Three themes recur throughout the paper: the centrality of national output; the pervasive risk and uncertainties faced by pension schemes; and problems of imperfect consumer information.

The centrality of output

The economics of pensions can be confusing because it concentrates on finance. I shall try to simplify matters by concentrating on the core economic issue – the production and consumption of goods and services.

There are two (and only two) ways of seeking security in old age (Barr, 2001, Ch. 6). It is possible to *store current production* for future use. Though this is the only way Robinson Crusoe could guarantee consumption in retirement, the approach is inadequate: it is costly; it does not deal with uncertainty (e.g. about how one's tastes might change); and it cannot be applied to services deriving from human capital, medical services being a particularly important example. Storing current production is thus not a promising approach.

The alternative is for individuals to exchange current production for a *claim on future production*. There are two broad ways in which I might do this: by saving part of my wages each week I could build up a pile of *money* which I would exchange for goods produced by younger people after my retirement; or I could obtain a *promise* – from my children, or from government – that I will be given goods produced by others after my retirement. The two most common ways of organising pensions broadly parallel these two sorts of claim on future output. Funded schemes, where pensions are paid from a fund built over a period of years from the contributions of its members, are based on accumulations of financial assets; Pay-As-You-Go (PAYG) schemes, where pensions are paid (usually by the state) out of current tax revenues, are based on promises.

Given the deficiencies of storing current production, the *only* way forward is through claims on future production. What matters, therefore is the level of output after I have retired. The point is central: pensioners are not interested in money (i.e. coloured bits of paper with portraits of national heroes on them), but in consumption – food, heating, medical services, seats at concerts, etc. Money is irrelevant unless the production is there for pensioners to buy.

Risk and uncertainty

It is important to distinguish risk and uncertainty. With risk, the probability of potential outcomes is known or estimable, with uncertainty it is not. The distinction is critical, among other reasons, because actuarial insurance can generally cope with risk but not with uncertainty.

Risk and uncertainty facing pension schemes. Pension schemes face both problems. There are at least three sorts of uncertainty.

- (a) Macroeconomic shocks affect output, prices or both. Since funding and PAYG are simply different ways of organising claims on future output, it should not be surprising (myth 1, below) that a fall in output adversely affects any pension scheme.
- (b) Demographic shocks, it will turn out, also affect all pension schemes.
- (c) Political risks affect all pension schemes because all depend critically – albeit in different ways – on effective government.

Alongside these common shocks, private funded schemes face further risks.

- (d) Management risk can arise through incompetence or fraud, which imperfectly-informed consumers generally cannot monitor effectively.
- (e) Investment risk: pension accumulations held in the stock market are vulnerable to market fluctuations. At its extreme, if a person must retire on her sixty-fifth birthday, there is a lottery element in the value of her pension accumulation.
- (f) Annuities market risk: for a given pension accumulation, the value of an annuity depends on remaining life expectancy and on the rate of return the insurance company can expect over those years. Both variables face not only risk but also significant uncertainties.

Risks facing individual pensioners. Given these uncertainties and risks, a separate question is how they are shared. With individual funded accounts (also called *defined contribution* schemes), the contribution rate is fixed, so that a person's pension is an annuity whose size, given life expectancy, etc., is determined *only* by the size of her lifetime pension accumulation. Thus the individual faces all the uncertainties, (a) - (c), and risks, (d) - (f), just discussed.

Under a *defined benefit* scheme, often run at firm or industry level, a person's pension is based on his wage and length of service. A key feature is the way wages enter the benefit formula. In older schemes, pension was often based on a person's final salary. That arrangement, however, has distortionary effects on wages and labour mobility. The trend has therefore been to base benefits on a person's real wages averaged over an extended period. Whichever way wages are calculated, a person's annuity is, in effect, wage indexed until retirement. The employee contribution is

generally a fraction of his/her salary. Thus the risk of varying rates of return to pension assets falls on the employer, and hence on some combination of the industry's current workers (through effects on wage rates), its shareholders and the taxpayer (through effects on profits), its customers (through effects on prices) and/or its past or future workers, if the company uses surpluses from some periods to boost pensions in others.²

With *social insurance*, risk is shared yet more broadly. The costs of adverse outcomes can be borne by the pensioner through lower pensions, by contributors through higher contributions, by the taxpayer, through tax-funded subsidies to pensions, and/or by future taxpayers through subsidies financed by government borrowing.

Imperfect consumer information

The advantages of consumer sovereignty assume that the individual is well-informed. This is by no means always the case.

Individuals are imperfectly informed, first, because of *uncertainty* about the future in the face of the common shocks just discussed – individuals are not well-informed because nobody is well-informed. Individuals are imperfectly informed, second, in the face of *risk*, for example about longevity. This is not a problem where risks can be covered by insurance.

A third type of imperfect information applies particularly to defined-contribution schemes. Private pensions are complex, based on an array of financial institutions and financial instruments. Even in the USA, arguably the country with the greatest public knowledge of financial markets, there is considerable ignorance. Orszag and Stiglitz (2001, p. 37) quote the Chairman of the US Securities and Exchange Commission as stating that over 50 per cent of Americans did not know the difference between a bond and an equity. Similarly, a report by one of the largest UK banks pointed out that 'lack of investment growth is a significant risk even if the fund is secure. However, there is little evidence that this basic truth has been understood' (National Westminster Bank, 1997, p. 19). The problem has equity as well as efficiency implications, since the people who are worst-informed are disproportionately the least well-off – i.e. information poverty and financial poverty go hand in hand.

² For detailed comparison of defined-benefit and defined-contribution schemes, see Bodie *et al.* (1988).

Some ignorance can be reduced by public education. However, some is inherent. Even financial sophisticates cannot necessarily be regarded as well-informed consumers.³ Given the high potential cost of mistaken choice, imperfect information creates an efficiency justification for stringent regulation to protect consumers in an area where they are not well-enough informed to protect themselves. The Maxwell scandal (the illegal use by a failing UK firm of assets in its pension fund – see UK Pension Law Review Committee, 1993; UK Treasury Select Committee, 1998) illustrates the need to tighten regulation even in advanced industrial countries.

Misleading guides to policy

Like many myths, those discussed here may have an element of truth. On closer inspection, however, that element is either tenuous or based on restrictive assumptions, and is thus a misleading guide to policy. Some readers may regard these myths as caricatures which nobody takes seriously. However, I have come across all of them in recent policy debate. The following discussion examines three sets of myths, concerning the macroeconomics of pensions (myths 1-5), pension design (myths 6-9), and the role of government (myth10).⁴

Myth 1: Funding resolves adverse demographics

'Some degree of pre-funding is desirable in an old age security system. This helps to insulate the system from demographic shock' (James, 2001, p. 63).

Consider a balanced PAYG scheme, where:

$$sWL = PN \tag{1}$$

where s = the PAYG social security contribution rate

W = the average nominal wage

L = the number of workers

P = the average nominal pension

N = the number of pensioners.

In such a scheme, current contributions of the workforce exactly cover current pension payments.

³ At a conference on strengthening the regulation of UK private pensions, a Professor of Finance concluded that she was not a well-informed member of the UK university teachers' pension scheme, nor even a *potentially* well-informed consumer.

⁴ For fuller analysis, see Barr (2001, Ch. 7), Orszag and Stiglitz (2001).

To show the effects of adverse demographics, suppose that a large generation in period 1 is followed by a smaller generation in period 2. As a result, the smaller period 2 workforce has to support the large generation of retired period 1 workers. It is helpful to consider separately the cases of static output and growing output.

Static output. Suppose that, because of a decline in the birth rate, L halves. Other things being equal, a PAYG scheme can remain in balance in various ways. Halving the average pension, P , imposes the entire cost of demographic shock on pensioners. This is problematical because it breaks past promises and risks pensioner poverty. Another option is to double the contribution rate, s , imposing the entire cost on workers. This is problematical because of its potential adverse incentive effects. Other options are discussed shortly.

It is sometimes argued that funded schemes get round this problem: period 1 workers build up pension savings; the savings of a representative worker exactly cover his pension stream (i.e. the present value of his pension stream exactly equals the lump sum he has accumulated by the time he retires); if there is a large number of period 1 workers, this is not a problem, it is argued, because each worker accumulates enough to pay for his/her own pension.

The problem with this argument is demonstrated in Barr (1979). The key point is that the underlying problem caused by demographic change is a fall in output. This affects a PAYG system by shrinking the contributions base, WL . With funding the mechanism is more subtle, but equally inescapable, operating through a mismatch between demand and supply in either the goods market or the assets market. The mechanism merits explanation. Discussion starts with a closed economy; subsequent extension to a global economy does not change the result.

If a large generation is followed by a smaller generation, there will be a large accumulation of pension funds belonging to the older generation at a time when the workforce is declining. The older generation draws down its accumulated savings to finance its desired level of consumption in retirement. That desired spending will exceed the desired pension contributions of the smaller younger generation. If output does not rise, the resulting disequilibrium manifests itself in either of two ways.

- (a) Suppose that pensioners seek power over future production by accumulating monetary assets such as bank accounts or government bonds. In that case, desired pensioner consumption exceeds desired saving by workers. Excess demand in the goods market causes price inflation, reducing the purchasing power of period 2 annuities.

- (b) Suppose, instead, that pensioners accumulate non-money assets such as equities. In that case, desired asset sales by pensioners exceeds desired asset purchases by workers. Excess supply in the assets market reduces asset prices, reducing pension accumulations and hence the value of the resulting annuity.

Under either outcome, pensioners do not get the real pension they expect. Funded pensions face similar problems to PAYG schemes, and for exactly the same reason – a shortage of output. The only difference is that with funding the process is less direct and hence less transparent.

Growing output. Returning to equation (1), with static output the problems of PAYG could be resolved by halving P , by doubling the contribution rate, s , or by a combination of the two. An alternative solution arises where output, and hence the average wage, W , doubles, but P remains constant. Though this implies a fall in the replacement rate, P/W , pensioners – crucially – get the real pension they were promised.

Equally, increased output is a complete solution for funded schemes. Cases (a) and (b) now play out as follows.

- (a) Goods market: a decline in the savings rate at full employment increases aggregate demand; but if aggregate supply increases sufficiently, there is no excess demand and hence no inflation. Though P/W falls, period 2 pensioners get the real pension they expect.
- (b) Assets market: higher output generally implies higher wages; if period 2 workers want a pension of (say) 50 per cent of their previous wage, their demand for assets to hold in their pension accumulation will increase in line with their wages. At its simplest, L halves but W doubles, so that the demand for assets equals desired sales by pensioners. Hence there is no deflation of asset prices. Again, period 2 pensioners get the real pension they expect.

Policies in the face of demographic change. Thus the central question – and the reason for the earlier emphasis on output – is how to encourage growth, and the part funding might play in bringing this about. In principle, output can be increased in two ways.

One approach is to increase the productivity of each worker, thus increasing W in equation (1). Policies include (a) more and better capital equipment and (b) improving labour through education and training. A second approach is to increase the number of workers, thus increasing L in equation (1), for example, (c) introducing policies to increase labour supply, (d) raising the age

of retirement, (e) importing labour directly, e.g through more relaxed immigration rules, and (f) importing labour indirectly by exporting capital to countries with a young labour force.

What impact does funding have on these policies? The impact of funding on capital accumulation via policy (a) is controversial, a topic taken up in more detail below (myth 3).

The effect of funding on (f) requires discussion. Pensioners can consume goods made abroad so long as they can organise a claim on those goods. If British workers use some of their savings to buy Australian factories, they can in retirement sell their share of the factory's output for Australian money to buy Australian goods, which they then import to the UK. Though useful, this approach is no panacea. The policy breaks down if Australian workers all retire; thus the age structure of the population in the destination of foreign investment is important. Second, if large numbers of British pensioners exchange Australian dollars for other currencies, the Australian exchange rate might fall, reducing the real value of the pension. Thus the ideal country in which to invest has a young population *and* products one wants to buy.

Accumulating assets in countries with younger populations is thus one way to maintain claims on future output. Overseas investment by pension funds is one way to implement this policy. But there are other ways: I could, for example, hold part of my saving in Australian equities or mutual funds. Funding per se is not paramount – what is paramount is saving.

Whatever the arguments about policies (a) and (f), funding clearly has no bearing on output-increasing policies (b) - (e). The conclusion to which this leads is threefold.

- In the face of demographic problems the key variable is output.
- Policy should consider the entire menu of policies which promote output growth directly.
- From a macroeconomic perspective the choice between PAYG and funding is secondary.

Thus the argument that funding insulates pensioners from demographic change should not be overstated. From an economic point of view demographic change is not a strong argument for a shift towards funding.

Myth 2: The only way to pre-fund is through pension accumulations

Since population ageing is known long in advance, it is desirable to have a long-term planning horizon. Moving towards funded pensions is one such a move. It is not, however, the only one.

Government can finance higher future pension spending by reducing other future public spending. One way is to pay off some public debt now. Rising pension expenditure will thus at least partly be offset by lower debt-servicing expenditure.

Second, government can set aside resources now to meet future demands. Norway puts part of its oil revenues into a fund to smooth taxes in the face of demographic change; similarly, the USA has a Trust Fund partly to cover future pension spending. However, unless such actions increase output these mechanisms are a zero-sum game between consumption by pensioners and workers.

Thus, if pre-funding is thought desirable, it does not follow that a move towards private pensions is the only way of doing so.

Myth 3: There is a direct link between funding and growth

It is often regarded as self-evident that saving, and hence economic growth, will be higher with funding than under PAYG. 'The core rationale for the multi-pillar recommendation ... [includes] funding to increase national saving' (James, 2001, p. 63). However, the link between funding and growth faces several major qualifications.⁵

First, increases in saving, if any, occur only during the build up of the fund – in a mature scheme, saving by workers is matched by payments to pensioners.

Second, saving does not *necessarily* increase even during the build-up phase. First, increases in mandatory saving may be at least partly offset by reductions in voluntary saving (see, for example, Gale, 1998). Second, a central question is what happens to the pensions of the older generation. If they are reduced, consumption falls, and hence, *cet. par.*, savings will indeed, rise. But if pensions are not reduced, they have to be paid from taxes or government borrowing. Extra taxation exerts downward pressure on saving; extra borrowing at least partially offsets additional private capital formation. These macroeconomic effects could swamp moves from PAYG to funding. It is therefore not surprising that an IMF study (Mackenzie, Gerson and Cuevas, 1997, p. 1) concluded that,

'[s]tudies of the U.S. economy, on which most research has been done, provide some moderately strong evidence that the introduction and development of the public pension plan have depressed private sector saving, although the extent of this impact has proved hard to estimate. Studies of other countries as a group have tended to be inconclusive...'

⁵ See Barr (2001, Ch.7), Thompson (1998), Mackenzie, Gerson and Cuevas (1997).

A third qualification is that saving does not necessarily lead to new investment: a British trade union once famously invested part of its pension fund in old masters. Fourth, increased investment does not *necessarily* increase output: investment in the latter days of communism was high, but growth low or even negative. Even in well-run economies it cannot simply be assumed that pension fund managers make better choices than other agents in channelling resources into their most productive use.

A separate line of argument is that funding contributes indirectly to growth by widening and deepening capital markets. As Diamond (1995) points out, though not an argument which applies to the OECD countries, it applies to transition and developing countries. However, the broader context is important: though a larger capital market may be a *component* of growth, it is not on its own a solution. A key lesson from Chile (to which the capital-market-development argument is often applied (Holzmann, 1997)) is the effectiveness of reform outside the financial sector.

To summarise a large, complex and controversial literature:

- The magnitude of the impact of funding on growth is controversial. Though there is some evidence that funding contributes to higher savings in the US, there is no robust evidence of a similar effect elsewhere; and even the US evidence is controversial.
- The issue, in any case, relates only to one of the sources of growth. Hence policies concerned with growth should consider the *entire* menu of policies discussed earlier.
- Though growth is important, the primary objective of pensions is old age security. As Mackenzie, Gerson and Cuevas (1997, p. 1) point out, 'It can hardly be overemphasized that the basic objective of a public pension program is not to raise the savings rate, but to provide income security – at the very least, a minimum income – for the elderly'.

Myth 4: Funding reduces public pension spending

Though private pensions can reduce public pension spending in the longer term when they are mature, they increase short-term budgetary pressures. If workers' contributions go into their individual pension accounts, they cannot be used to pay for the pensions of the older generation; thus, governments must finance pensions for the transition generation through taxation or borrowing.

Furthermore, the costs of privatising a bloated PAYG system are greater than those of privatising a sustainable scheme. An important conclusion follows: privatisation is no solution to fiscal problems. *If a state scheme is unsustainable, the only solution is to make it sustainable by*

increasing contributions, by cutting benefits or by a mixture of the two. A move towards funding, whatever its other merits, should not be undertaken to reduce short-run spending.

Myth 5: Paying off debt is always good policy

The argument runs as follows.

- (a) Members of a PAYG scheme have accumulated rights.
- (b) Those rights are an unfunded liability and hence can be thought of as implicit debt.
- (c) The scale of that debt is large; fiscal prudence therefore suggests that it should be reduced.
- (d) A move towards funding achieves this. The state requires younger workers to join funded schemes and pays the pensions of the older generation through taxation or borrowing. Such expenditure ceases once the older generation has died; accumulated debt, if any, is repaid by current and future taxpayers.
- (e) Hence a move towards funding is desirable because it reduces implicit debt.

In considering these arguments (for fuller evaluation, see Barr, 2001, Ch. 7), the underlying question is whether paying off debt is always desirable. More generally, should all anticipated future needs be pre-funded? I know that I will need to buy food for the rest of my life, but I do not accumulate a food fund, intending instead to pay my supermarket bills out of my future earnings. The reason for building a pension accumulation is different – namely that I intend to retire, i.e. to stop producing goods which I can exchange for other goods. No such accumulation is needed in a world without retirement, i.e. where people are immortal, or remain active in the labour force until their death. Such a world is mythical for the individual but is exactly the case for a country, which does not have to take action to anticipate a time when production will cease. The fact that countries are immortal is central: from an economic perspective, it makes pre-funding unnecessary unless it has a positive effect on output, about which, as discussed earlier, the arguments are equivocal.

Moreover, if the worry is the state's unfunded liabilities, why is the argument applied only to pensions? In all but the poorest countries, health care and education are largely publicly funded. Governments do not willingly break promises (which can be constitutional guarantees) to care for the sick and to educate the country's children. Such commitments are implicit debt just like pensions, and their scale is not dissimilar, yet there is no discussion of pre-funding.

If pre-funding does not increase output, its benefits are unclear. If I have savings of \$20,000 and debt of \$5000, my net worth is \$15,000. If I repay the debt, my savings fall to \$15,000; my net worth remains \$15,000. Repaying debt does not change my net wealth, but does mean that I have to tighten my belt. If there is no need to repay, the welfare gains from doing so are unclear.

This line of reasoning suggests two conclusions. First, what matters is not the gross magnitude of future liabilities but their sustainability. Second, the case for minimising debt is not strong; here – as elsewhere – its scale should be optimised, not minimised.

Myth 6: Funded schemes have better labour market incentive effects

'The core rationale for the multi-pillar recommendation [includes] ... defined contribution to provide good labor market incentives, especially regarding the age of retirement' (James, 2001, p. 63). Labour market distortions are minimized when contributions bear an actuarial relationship to benefits. Private pensions may have these characteristics, but so do state schemes which pay benefits proportional to contributions. In contrast, badly designed schemes – whether public or private – can encourage early retirement (see Gruber and Wise, 1999); and many employer schemes encourage labour immobility (public schemes, being universal, do not have this problem). The bottom line is that labour supply depends on pension design, not on whether a scheme is private or public.

Separately, this argument implicitly assumes that all that matters is labour supply. Analogous to earlier arguments about saving, however, what matters is not labour supply but economic welfare. It may be, for example, that a defined-benefit scheme reduces labour supply at the margin; but if the loss of utility resulting from lower output is more than offset by the utility gain from greater security, defined-benefit arrangements may be welfare improving even if they do reduce labour supply.

Myth 7: Funded pensions diversify risk

'The principal advantage of a multipillar pension scheme lies in risk diversification. Not all of the population's retirement portfolio will be held hostage to political and demographic risk' (Holzmann, 2000, p. 21).

The various risks and uncertainties facing pensions were discussed earlier. PAYG and funded schemes are both vulnerable to macroeconomic shocks. they are also both vulnerable to demographic shocks (myth 1). And, as discussed in myth 10, both depend critically on effective government, and are therefore vulnerable to political shocks.

Private pensions face additional risks. First, there is management risk. Management may be honest but incompetent, or deliberately fraudulent. Thus pension funds require regulation to protect consumers. Second, there is investment risk. Under a defined-contribution scheme, two people with identical earnings histories may end up with very different pensions. 'Benefits depend on the returns on assets (which are stochastic and with the right stochastic process in dispute) and on the pricing of annuities (which is also stochastic and also subject to dispute ...)' (Diamond, 2001,

p. 76). Burtless (forthcoming), compares workers who differ only in the year in which they retire, and finds substantial variations – e.g a replacement rate of 80 per cent for someone retiring in 1972 collapsed to just over 40 per cent for someone retiring in 1974. Miles (2000), using European data, concludes that 'some age cohorts would earn very low, and possibly, even negative returns.... These findings on the risk faced by pensioners are at odds with the position taken in much of the literature and suggests that the benefits of funded schemes tend to be overstated' (Royal Economic Society, 2000, p. 13). Reducing these risks, though possible and desirable, however, is a zero sum game: it does nothing per se to increase output; thus the gain in pensioners' consumption from selling their accumulations at the top of the market is at the expense of workers' consumption.

Finally, there is annuities market risk. A person who retires when interest rates are low will receive a lower annuity. In Chile,

'The collapse of long-term interest rates ... has had a dramatic effect on annuity rates. By way of example, 100,000 units of capital would have secured a life-long annuity of 8,000 per annum in July 1998. For the same 65-year old man, by October 1998, 100,000 units of capital would only have secured an annuity of 5,800 per annum' (Callund, 1999, p. 532).

These arguments suggest two conclusions. First, the risk-spreading argument is more complex than it appears: private pensions may or may not diversify risk; they certainly introduce additional risks. Second, if we *do* accept the argument, we should be clear that it is as much a defence of the state pension as of private pensions.⁶ Thus the risk-diversification argument is logically incompatible with the view (World Bank, 1994; James, 1998) that the first pillar should be minimised.

Myth 8: Increased choice is welfare-improving

Increased choice is desirable, but only where consumers are well-informed (on the central role of information, see Loewenstein, 1999). However, as discussed in section 1, pensions are complex even for financially sophisticated consumers, and the problem is even more acute in poorer countries.

The cost of allowing choice, particularly administrative costs, is equally important. Constrained choice (e.g. in a state scheme) opens up the possibility of administrative economies of scale; those economies are lost in a system with individual accounts from competing providers. It may be argued that competitive pressures keep costs down, but as Orszag and Stiglitz (2001, p. 35)

⁶ Merton, Bodie and Marcus (1987) argue that a mixed system can reduce risk relative to a fully-funded system.

remind us, competition 'only precludes excess rents; it does not ensure low costs. Instead, the *structure* of the accounts determines the level of costs' (emphasis in original).

The issue is important because the power of compound interest (one of the main arguments used in support of funded accounts) applies equally to administrative costs. The US Advisory Council on Social Security estimates that, under plausible assumptions, the *additional* administrative costs of a decentralised system absorb about 20 per cent of the value of a pension accumulation over a 40-year career (Orszag, 1999, p. 33). Thus it should not be surprising (see Diamond, 1998) that Chile and the UK, both of which rely to a significant extent on individual accounts, have high administrative costs.⁷ Additionally, administration is largely a fixed cost, and thus bears most heavily on small pension accounts, again a point of immense significance in poorer countries.

Myth 9: Funding does better if real returns exceed real wage growth

It is often argued that funded schemes provide larger pensions than PAYG systems because stock market returns are higher than that offered by state schemes.

'In contrast to the 2.6-percent equilibrium return on Social Security contributions, the real pretax return on nonfinancial corporate capital averaged 9.3 percent over the same ... period.... [As a result], forcing individuals to use the unfunded system dramatically increases their cost of buying retirement income' (Feldstein, 1996, p. 3).

However, a straightforward comparison between rates of return does not compare like with like. A fuller analysis needs to include the costs of the transition from PAYG to funding, the comparative risks of the two systems, and their comparative administrative costs. The following analytics draw on Orszag (1999), a non-technical summary of an important series of results originally established by Breyer (1989). The conclusion is that if proper account is taken of the costs of transition from a PAYG to a funded scheme the returns to the two schemes are equivalent.

Designing a system for a brand new world. The argument that pensioners are better-off under funding if the stock-market return exceeds real wage growth is, indeed, true in a brand new world. Mostly, however, what is being discussed is a move from an existing PAYG scheme towards funding. In that case, it is necessary to include the transition costs of the change.

Constant benefit rules; transition costs financed by public borrowing. In Table 1, taken from Orszag (1999), each generation pays \$1 in contributions when young and receives \$1 in pension

⁷ See also, the Report of the Panel on Privatization of Social Security, 1998, pp. 25-35.

when old. In period 1, the \$1 pension of older generation A is paid by the \$1 contribution of younger generation B. In period 2, when generation B is old, its pension is paid by the contributions of young generation C. Now suppose that the real rate of return on assets, i , is 10 per cent, and imagine that we are generation C. Under a PAYG scheme we pay \$1 in contribution in period 2 and receive \$1 pension in period 3; the real rate of return is zero. In contrast, with an individual account we save \$1 in period 2 and get back \$1.10 in period 3; the real rate of return, it appears, is 10 per cent.

[Table 1 about here]

The flaw in the argument is that if generation C contributes to funded accounts, generation B's pension must be paid from some other source. If that source is government borrowing, generation C receives a pension of \$1.10 but has to pay interest of 10 cents on the borrowing which financed generation B's pension. The real return – as under PAYG – is zero. The lower return on the PAYG system is not the result of some inherent flaw, but is precisely the cost of the initial gift to generation A. Formally (see Breyer, 1989, Belan and Pestieau, 1999), there is an equivalence between the two schemes if the move to funding is considered not in isolation but alongside the cost of financing the change. Thus generation C is not made better-off by a move to individual accounts.

'[F]alling money's worth in this model is *not* due to the aging of baby boomers, increased life expectancy, or massive administrative inefficiency, but rather to the simple arithmetic of the pay-as-you-go system' (Geanakoplos, Mitchell and Zeldes, 1999, p. 86, emphasis in original).

Constant benefit rules; transition costs financed by taxation. Suppose that we are generation C: in period 2 we put our contribution of \$1 into an individual funded account; but in this case the \$1 pension of generation B is paid out of a budget surplus. The pension we receive as generation C is \$1.10. The real return is 10 per cent because, with tax funding, generation C and its successors do not have to pay interest on additional public debt.

Critically, however, we could achieve the same result by partially pre-funding the PAYG system. Suppose that in period 2, the \$1 of generation C is paid as pension to generation B, and *in addition* \$1 is invested in a social security trust fund. Generation C, and succeeding generations, receive a pension of \$1.10, of which \$1 is from PAYG financing, and 10 cents from the proceeds of the trust fund; the real return is 10 per cent. The higher return does not result from any move to individual accounts but from the injection of an extra \$1. 'Paying back' the gift to the first generation makes it possible to increase the rate of return to subsequent generations.

No benefits to the transition generation. Another way to finance the transition is to throw generation B out of the lifeboat by not paying their pension at all. Generation C and onwards enjoy a 10 per cent real return, but those gains are at the expense of generation B, on whom the entire cost of transition is concentrated. In this case, the cost of the gift to generation A is offset by the negative gift to generation B.

The fundamental point is that there is a zero-sum game between the first generation and subsequent generations. The burden of the gift to the first generation can be placed entirely on the transition generation of pensioners (generation B) by renegeing on PAYG promises; or entirely on the generation of workers at the time of transition (generation C) by financing generation B's pension out of taxation; or by spreading the burden over succeeding generations by financing the transition through borrowing. It is possible to alter the time path of the burden, but not its total. Again, the only way out of the impasse is if a move towards funding leads causally to higher rates of growth, an issue on which, as discussed earlier, controversy continues.

Completing the comparison. The costs of financing the transition is one element in the comparison between PAYG and funding. A second element is risk, discussed by Geanakoplos, Mitchell and Zeldes (1999). The key point is that the real return both to PAYG and to funded schemes should be adjusted downwards to account for risk. In countries with effective government, the tax base is less volatile than the stock market and, to that extent, even at face value the gain from a switch to funding is less than it appears. Finally, the comparison should consider any difference in administrative costs.

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The conclusion is *not* that a move to individual accounts is bad policy, merely that its desirability cannot be established by comparing the simple rates of return. Atkinson (1999, p. 8) points out that critics of the welfare state tend to consider its costs without taking account of its benefits.

'The emphasis by economists on the negative economic effects of the welfare state can be attributed to the theoretical framework adopted ..., which remains rooted in a model of perfectly competitive and perfectly clearing markets. [This] theoretical framework incorporates none of the contingencies for which the welfare state exists... The whole purpose of welfare state provision is missing from the theoretical model'.

The point here is precisely similar: that the benefits from a move to funding should not be considered in isolation but alongside the relevant costs. This is a point of which economists, of all people, should need no reminder.

Myth 10: Private pensions get government out of the pensions business

The importance of government is now recognised by the Washington consensus. Effective government is essential whichever approach to pensions is adopted. Government failure is most obvious with PAYG schemes built on fiscally irresponsible promises, coupled with an inability to collect contributions. Results include inflationary pressures and political instability. However, private pensions are also vulnerable. Fiscal imprudence leads to inflation which can decapitalise private funds; and inability to regulate financial markets creates inequity, and may also squander the efficiency gains which private pensions are intended to engender. As Thompson (1998, p. 22) puts it,

'It is ... too early to know how effectively the new systems based on the defined contribution model will be insulated from irresponsible behavior. Politicians are not the only people who are prone to promise more than they can deliver. The defined contribution model requires sophisticated oversight and regulation to ensure that one set of problems resulting from public sector political dynamics is not simply traded for a different set of problems derived from the dynamics of private sector operations.'

Two other issues are relevant. It is sometimes argued that funded schemes are safer from government depredations than PAYG pensions. While governments can (and do) break their PAYG promises, they can equally reduce the real return to pension funds, by requiring fund managers to hold government financial assets with a lower yield than they could earn elsewhere, or by withdrawing or reducing any tax privileges (the UK budget of July 1997 is an example of the latter).

Separately, it is argued that political pressure to repair ravages to a state scheme are stronger than those to put right adverse outcomes in private schemes. Where there is an explicit government guarantee (as in Chile) that argument is obviously false. Though ultimately the matter is empirical, the argument might fail more broadly: the larger the share of the population with private pensions and the greater the fraction of pension income deriving from private sources, the greater the pressure on government in the face of disaster. If PAYG is argued to represent implicit debt, the analogous argument is that mandatory private pensions have an implicit state guarantee.

Effective government is critical: to ensure macroeconomic stability, which underpins PAYG schemes and protects pension accumulations from unanticipated inflation; and to ensure regulatory

capacity in financial markets for reasons of consumer protection. There is an inescapable role for the state in pensions even if one distrusts politicians.

Pension design: essentials

When discussing pension design, it is useful to distinguish factors which apply to *all* reforms, over which policymakers have little choice (discussed in this section) from those features over which policymakers have explicitly to make choices (discussed in the next). Discussion is organised in this way not only for logical but also for operational reasons. When advising governments it is helpful to distinguish areas where advisers can legitimately thump the table (e.g asserting that public pension spending must be compatible with economic growth) from those where they should tread carefully.

This section draws together the central conclusions for policy design emerging from the theoretical discussion and then turns to core prerequisites for effective reform.

Policy design: lessons from economic theory

The central variable is future output. As discussed at the start, the possibilities for storing current output till old age are limited. Thus the only way to organise pensions is through claims on future output. PAYG and funding are simply different financial mechanisms for organising such claims. Two implications follow. First, it should not be surprising that they fare similarly in the face of output shocks. Second, since future output is uncertain, *all* pension schemes face uncertainty.

There is a large range of policies to increase output. As discussed in myth 1, policies to increase output increase the productivity of each worker, thus increasing W in equation (1), or increase the number of workers, thus increasing L . Policies of the first sort include (a) more and better capital equipment and (b) improving the quality of labour through education and training. Policies of the second sort include (c) policies to increase labour supply (better child care facilities, taxation which supports part-time employment), (d) raising the age of retirement, (e) importing labour directly, and (f) importing labour indirectly by exporting capital to countries with a young population.

A range of policies can contain fiscal pressures. The fiscal position can be improved by reducing future spending, PN in equation (1). Excessive reliance on reducing P may aggravate pensioner poverty and/create political pressures. A more desirable policy is to reduce N by raising the retirement age. This approach aims to keep taxation broadly constant, thus imposing the burden of adjustment on pensioners. A second approach seeks to finance higher future pension spending by reducing other expenditure. One way is to reduce public debt now, thus reducing interest repayments in the future. This policy levels up taxation to a point between present levels and those which would

apply in the future in the absence of any policy change. The cost of change is thus spread across generations of taxpayers. Another approach is to set aside resources now, e.g. building up a surplus on the state PAYG scheme. The three approaches can, of course, be combined, for example paying off some debt to assist fiscal smoothing, and raising the age of retirement to share some of the burden with pensioners.

Demographic change creates problems but not insoluble ones. It follows that there is a large range of policies to contain demographic pressures. It is possible to:

- Increase output as above, thus increasing W in equation (1).
- Reduce the average pension, P .
- Increase the retirement age, thus reducing N and increasing L .
- Take steps now to reduce future non-pension spending, making it possible to increase s without any increase in overall taxation.
- Set aside resources now to meet future needs, thus avoiding the need to increase s . Policies under this head may include private pension accumulations.

The debate over PAYG and funding concentrates on a narrow part of the picture.

- From a macroeconomic perspective the choice between PAYG and funding is secondary.
- The connection between funding and growth is controversial.
- The issue, in any case, relates only to one of the sources of growth.

Pensions design should take account of labour supply incentives. In contrast with debates about the incentive effects of pensions on saving and growth, the evidence on labour-market incentives is strong. Badly-designed schemes – whether public or private, funded or PAYG – create adverse incentives, both during working life and in respect of the age of retirement. Pensions should avoid such incentives, both through good design and through policies to ensure that perceptions (for example of an actuarial relationship between contributions and benefits) accord with reality.

Implementation: prerequisites for reform

This section discusses the prerequisites for effective pension reform, summarised in Table 2, starting with public-sector prerequisites.

State pension promises must be fiscally sustainable. Beyond a certain point the deleterious effects of high taxation are devastating, for example, the growth experience of the latter days of communism. Thus public spending, and within that public pension spending, must be compatible

with economic growth. This does not mean that state pension spending in the long-run should be minimised, as opposed to optimised. The World Bank's 1996 *World Development Report* (Ch. 7) correctly talks about 'rightsizing' government, and makes it clear that economies can function well with governments of different sizes – but only within fiscally sustainable limits.

[Table 2 about here]

Political sustainability has several ingredients. First, there must be sufficient strength of political will. Domestic ownership of reform is important, an aspect in which, it can be argued, the 1998 Polish reforms are on firmer foundations than those in Hungary.⁸ Second, the duration of political support is important. Reform is not an event but a process. Reform does not end when the legislation is passed, but needs continuing commitment from government, both to ensure adjustments to reform proposals as events unfold, and for political reasons, to sustain continuing public support. Reform which is regarded as a once-and-for-all event runs the risk of neglect, discredit and eventual reversal. Third, the depth of political support is important. Understanding must go deeper than the top echelons of government, otherwise the original plan risks being implemented badly or, at worst, actively subverted by lower levels of government or administration.

The achievement of fiscal and political sustainability requires government capacity of the following three sorts.

Administrative capacity to collect taxes and enforce contributions. Public and private schemes require government to collect or enforce contributions. A country which cannot implement even a simple payroll tax cannot run a pension scheme. The issue then is how to organise poverty relief in a context of limited fiscal and administrative capacity (for a survey, see Ravallion, 1996).

The capacity to maintain macroeconomic stability is necessary to foster economic growth and for the long-run stability of PAYG finance. It is also critically important for private pensions, which are sensitive to unanticipated inflation.

Effective regulatory capacity. Effective regulation of financial markets is essential for private pensions, to protect consumers in areas too complex for them to protect themselves. This requires regulatory procedures *and* people with the capacity to enforce those procedures. The latter task is more difficult than it looks: because private pensions are complex, regulators need to be highly

⁸ See Nelson (2000) for discussion of the politics of reform in Hungary; see also Gora and Rutkowski (1998) on Poland, and Simonovits (2000) and Augusztinovics *et al.* (2002) on Hungary.

skilled – the sort of skills with a high price in the private sector. There are at least three strategic problems: that the regulatory regime collapses (or is ineffective); that the regulatory regime becomes *de facto* state control; or that the management and regulation of pension funds crowds out other demands for scarce human resources.

These public-sector prerequisites are relevant, for the most part, both to state and private schemes. Private pensions have additional private-sector prerequisites.

Adequate public understanding of and trust in private financial instruments. Private pensions require that government and citizens are well-informed about financial matters. In some less-advanced countries there is still a belief, even at high levels in government, that if a fund is 'private' and the money 'invested', a high real rate of return is inevitable, with no understanding of the nature of the risk. Nor is this a patronising remark about poorer countries. Earlier discussion made clear the depth of ignorance about financial institutions even in the UK and USA. Alongside knowledge about private finance is a separate issue of public trust. Specifically, does the public trust the private sector at least as much as it trusts government?

Financial assets and financial markets. Equally obviously, private schemes require financial assets for pension funds to hold and financial markets for channelling savings into their most productive use. One apparent solution – the use of government bonds as pension fund assets – is a blind alley. The resulting schemes are, in effect PAYG, since interest payments and subsequent redemption both depend on future taxpayers. Thus there is no budgetary gain, no channelling of resources into productive investment, and considerable extra administrative cost.

Another apparent solution is to use the pension savings of a poorer country to buy western financial assets. Bulgarian savings would go into (say) German firms, or Bolivian savings into US firms. The argument against this approach is that it foregoes the growth of domestic investment and domestic employment which is part of the argument for private pensions. To get round this problem, it is argued (Kotlikoff and Seeger, 2000) that poor countries should buy low-risk western assets, offset by an inflow of western capital able to accommodate high-risk investments. The problem with this approach is the poor fit between capital inflows (frequently short term) and the longer-term investment needs of a poor country (for fuller discussion, see Barr, 2001, Ch. 8). Thus the prerequisites of financial assets and financial markets really *are* prerequisites.

Private-sector capacity. First, is private capacity adequate? If not, high administrative costs will erode the return to pensioners, an issue is of particular concern for small pensions. At worst,

deficient administrative capacity puts at risk the viability of private funds. Second, even if private capacity is adequate, are private pensions its most welfare-enhancing use?

Table 2 summarises the essential prerequisites, and serves as a check-list for policymakers contemplating pension reform and a guide to commentators assessing actual or proposed reforms. In meeting these prerequisites, advanced transition countries like Poland and Hungary have the capacity for the sort of sophisticated reforms they are proposing.⁹ It was precisely because of the demonstrable failure to meet several of the prerequisites that in 1998 the World Bank – courageously but correctly – withdrew its support for proposals to bring in mandatory second-tier private pensions in Russia. Reference to the same criteria calls seriously into question reforms in Kazakhstan which introduced private, funded pensions based largely on government bonds.

Pension design: policy choices

Building blocks

What are the choices facing policymakers? A widely-publicised study (World Bank, 1994) 'recommended a multipillar pension system – optimally consisting of a mandatory, publicly managed, unfunded pillar and a mandatory but privately managed funded pillar, as well as supplemental, voluntary, private funded schemes.... [W]e still conclude that the multipillar approach ... is the correct one' (Holzmann, 2000, pp. 12-13).

Taking a step back, the objectives of pension systems are threefold: poverty relief, consumption smoothing, and insurance. Rational policy design starts by agreeing objectives and then discusses instruments for achieving them. The problem with the World Bank analysis is that its categorisation starts from instruments rather than objectives, and thus presupposes the choice, and to some extent also the mix, of instruments.

⁹ Progress in Poland has been rapid. In January 1990, I was faced with a radical pension privatisation proposal at a time when the monthly inflation rate was 80 per cent and when – since there were no financial markets – there was no financial market regulation. At the time I wrote in a World Bank report: '[T]he need to restructure the state pension scheme [in Poland] is urgent Private pensions, in contrast, raise major issues which require detailed study ...; moreover, the time scale ... is longer term. For both reasons, this chapter seeks only to set out some of the central issues. Up to a point it indicates potential problem areas. The reason is not to discourage ... appropriately designed complementary private schemes, but to counter excessive optimism ... about how much can be achieved, and how soon.... The general thrust of the recommendations is that, over the medium term, the system of pensions should evolve into a system with three elements: a basic, state-run social insurance pension; a mandatory system of appropriately regulated complementary private pensions; and a system of voluntary private pensions. The balance between the three elements should be a matter for public debate' (World Bank, 1993, para. 277). By 1998 the time for reform was right.

I shall categorise pensions in terms of objectives to avoid such presupposition. The first-tier pension is intended primarily to provide poverty relief. It is mandatory. Though normally publicly organised and PAYG, its form can vary widely. The second tier provides consumption smoothing; it can be publicly or privately managed; it can be funded or PAYG; and it may or may not be integrated into the first tier. The third tier is private, funded and voluntary, intended to enlarge individual choice. This categorisation deliberately uses the word 'tier' rather than 'pillar' because it is linguistically more apt: pillars are effective only if they are all in place and all, broadly, of the same size; tiers, more appropriately, are additive, in whatever constellation one wishes.

The following questions about pension design far from exhaust the list.

How large a first tier? Should the first tier be a guarantee or a base on which other pension income builds? It could be a state guarantee to individuals in private schemes, as in Chile, whereby only the least-well off receive any state pension. Or it could be awarded on the basis of an affluence test (i.e. withdrawn from the best-off), as in Australia. Or it could be flat-rate (hence going to all pensioners) at below the poverty line (many poorer countries), equal to the poverty line (broadly the UK), or above the poverty line (New Zealand). Whatever the design of the first-tier, a minimum income can be guaranteed through income-tested social assistance (most OECD countries).

How redistributive should the first tier be? There is less redistribution the smaller the pension and the greater the proportionality between contribution and benefit. Pensions strictly proportional to contributions bring about no redistribution between rich and poor (except for the greater longevity of richer groups). Such proportionality can be achieved through flat-rate pensions financed by flat-rate contributions, or where both pension and contributions are proportional to earnings. A flat-rate pension financed by a proportional contribution will be more redistributive, and financed from progressive general taxation more redistributive still.

Should there be a second-tier pension? The second-tier pension provides consumption smoothing. A libertarian approach argues for mandatory membership only for poverty relief (see Barr, 1998, Ch. 6 for fuller discussion), i.e. a minimal first-tier plus a voluntary, private third-tier. The arguments for a mandatory second-tier pension are familiar: as a merit good (i.e. paternalism); because imperfectly-informed younger people will make suboptimal choices from the perspective of their lifetime as a whole; to ensure insurance against unknowable events;¹⁰ or to avoid moral

¹⁰ This is particularly an argument for social insurance, which can address uncertainty as well as risk.

hazard in the presence of a generous first-tier pension.¹¹ The issue has a significant normative dimension (see Agulnik, 2000). If the second tier is mandatory, a consequential question is whether compulsion should be applied only up to some ceiling and, if so, what ceiling.

Should a second tier pension be PAYG or funded? In the USA, the first and second-tier pensions are rolled into one, both mainly PAYG. In Canada, a first-tier state pension provides poverty relief and a mandatory, publicly-organised, PAYG second-tier pension provides consumption smoothing. Other countries, e.g. Australia and several in Latin America, have privately-managed, funded, mandatory second-tier pensions. The UK has a mixed system.

Should the second tier be defined-contribution or defined-benefit? The issue here is how broadly risks should be shared. As discussed in section 1, defined contribution schemes leave individuals facing the risk of differential pension fund performance. Individuals may also face the inflation risk, though this can be shared with the taxpayer if the state provides indexation. Occupational schemes are often defined-benefit, thus sharing risks more broadly.

Should the second-tier be managed publicly or privately? The second-tier is publicly-managed in some countries, e.g. the PAYG schemes in the USA and Canada. Singapore has a publicly-managed funded scheme. Many other countries, including Australia and Chile, have privately-managed second-tier pensions.

Should opting out of state arrangements be allowed? The first-tier pension, which is redistributive, is by definition mandatory. Beyond that, should people be allowed choice between consumption smoothing via a state pension or through private arrangements? In the UK, people can opt out of the state earnings-related pension and join a private scheme. In north America, in contrast, membership of the state earnings-related scheme is compulsory. Part of the argument against opting out is the possibility of adverse selection; the argument in favour is greater individual choice.

To what extent does the state assist with indexing pensions? Once a person has retired, pensions based on an annuity are vulnerable to inflation. A major question, therefore, is whether government protects pensions against inflation, and through what mechanism. Such participation by government introduces an unfunded element into funded schemes.

¹¹ The argument is that if there is a minimum guarantee, low-income people will have little incentive to make voluntary provision.

Fitting the pieces together

Pension design is controversial. Of the questions asked above, controversy swirls in particular round two questions: should the first-tier, mandatory, state PAYG pension be minimal or substantial; and how should the second tier be organised – in particular should it be mandatory, private, funded and defined-contribution?

The scale of the disagreement is illustrated by the following two quotes.

'The first pillar resembles existing public pension plans, but is smaller and focuses on redistribution – providing a social safety net for the old, particularly those whose lifetime income was low.... [T]his pillar is of limited scope.

'The second pillar ... links benefit actuarially to contributions in a defined contribution plan, is fully funded, and is privately and competitively managed.

'A third pillar, voluntary saving and annuities, offers supplemental retirement income for people who want more generous old-age pensions' (James, 1998, p. 275).

In contrast, in the context of the reforming post-communist countries, Eatwell *et al.* (2000, pp. 140-41) argue:

'Clearly there is no “ideal” model for pension reform. [H]owever, the arguments developed earlier indicate the following course as being ... the best approach for a country that has inherited a non-sustainable PAYG system:

- scaling down generosity towards pensioners...;
- if there is a positive political assessment of the net advantages of a FF [fully funded] system, [this argues for] its introduction ...;
- the promotion of a third pillar of voluntary private savings....

'The end result is a potential three-pillar system, apparently similar to that advocated by the World Bank (1994).... The third pillar of voluntary savings is, of course, always actually or potentially present ... and cannot be considered as a distinctive feature of any reform. There are, however, very substantial differences between the recommendations listed above and those of the World Bank (1994) in that here:

- the first pillar is strengthened and maintained in its own right and with its own function...;
- a FF component is introduced not as a technically superior solution but as a primarily political, though entirely respectable, solution'.

In many ways the potential range of choice is even wider. Even if each of the issues in the previous section is taken as a simple yes/no choice, the eight questions yield 256 possible combinations. The following thumbnail sketches are intended not as a survey, but as illustrations of the wide range of schemes in the OECD and other successful economies (for somewhat fuller discussion, see Barr, 2001, Ch. 8 and the references therein).

Chile. Pensions in Chile were privatised in the early 1980s. Employees must join an individual private, funded, defined-contribution scheme, with a state guarantee where a worker with 20 or more years of contributions has only a low pension. Thus the second-tier is a mandatory, privately-managed, individual funded account, with a residual first tier in the form of a guarantee. The Chilean reforms are widely-discussed (see Diamond, 1996; Callund, 1999). They are also controversial. To some, they are seen as a beacon of hope (World Bank, 1994); others are more sceptical (Beatty and McGillivray, 1995).

Singapore. Workers and employers contribute to a Central Provident Fund (Asher, 1999) run by the government, which offers consumption smoothing not just for old age, but also for housing and medical expenditures. As such it offers no guarantee of old age security. Singapore, like Chile, thus relies on a defined-contribution second-tier pension. In sharp contrast with Chile, however, the fund is publicly-managed.

Sweden introduced a 'notional defined-contribution' scheme in 1998 (Sweden: Federation of Social Insurance Offices, 1998). Its key feature is that the scheme remains mostly PAYG, financed through social insurance contributions. However, the pension a person receives bears a strict actuarial relationship to her notional lifetime pension accumulation (the amount being adjusted for the cohort's life expectancy). In addition, there is a safety net pension for people with low lifetime earnings and credits for periods spent caring for children.

Thus Sweden has a defined-contribution scheme with a safety net guarantee, and hence is a publicly-organised, PAYG analogue of Chile. This illustrates something that is often overlooked – that there is much flexibility *within* PAYG schemes. It might be argued that the Swedish approach risks government failure. However, it also avoids the risks specific to defined-contribution schemes; and though the scheme is individualistic in that it is defined-contribution, various credits (e.g. for

caring for young children) introduce a collective element; finally, being PAYG, the scheme avoids the transition costs of a move to funding.

Australia is like Chile in that its second-tier pension builds on mandatory individual funded accounts, but unlike Chile in that it has a much more fully-articulated first tier. The distinctive features of the latter are that it is paid out of general taxation, and is subject not to an income test (designed to restrict benefits to the poor), but to an affluence test, which has the more limited purpose of clawing back benefit from the rich.

New Zealand has a generous universal flat-rate pension (about 65 per cent of average weekly earnings) financed through general taxation, supplemented by voluntary, funded, defined-contribution pensions. There is discussion of a public fund partially to cover future pension spending. In a referendum in 1997, a proposal to move to a Chile-type system was heavily defeated (in an 80 per cent turnout, 91.8 per cent of voters rejected the proposal).

The UK has a flat-rate PAYG basic state pension. Under a 1980 reform, the pension was tied to changes in prices rather than wages; as a result, the basic pension is below the poverty line. Superimposed on the basic pension is mandatory membership of a second-tier pension, which can be the state earnings-related scheme or a private scheme.

The USA has an earnings-related PAYG state scheme which is generous relative to a minimalist view, though not in comparison with a number of European countries. Though people can retire earlier, full pension is paid when a person retires aged 65, rising gradually to 67. Many people also belong to a company or industry pension scheme and/or to an individual defined-contribution pension, such membership being voluntary so far as government is concerned. The US state scheme thus embraces both first- and second-tier pensions. Private schemes form a voluntary third tier.

Conclusion

This paper distinguishes three sets of factors:

- Those things which, for the analytical reasons set out in the second section, we should assert only with caution.
- Those things which we can – and should – assert authoritatively, notably the prerequisites for effective reform set out in the third section.
- Those areas, discussed in the fourth section, where – subject to the various prerequisites – there is room for considerable variation in the way countries organise their pension systems.

The following conclusions emerge.

The key variable is effective government, which is a prerequisite for well-run pensions, however they are organised (Ross, 2000, reaches a similar conclusion). It is not possible to get government out of the pensions business.

From an economic perspective, the difference between PAYG and funding is second order. There may, however, be political-economy differences (Cooley and Soares, 1999). It is argued, for example, that the political economy of raising the retirement age may be easier with a private scheme. In contrast, it is argued that a state scheme which combines poverty relief and consumption smoothing, by embracing middle-class voters, will retain electoral support. Whatever the political arguments, the gains in terms of economic welfare of one pension arrangement as opposed to another is equivocal. Since PAYG and funding, as discussed earlier, are simply different financial mechanisms for organising claims on future output, this should not be surprising.

A given set of objectives can be achieved in different ways. There is no one:one relationship between instruments and objectives. Consider a scheme whose objectives include actuarial, mandatory consumption smoothing with a safety net provision. The aim in this case is to have a fairly strict separation of consumption smoothing and poverty relief. In such a scheme, redistribution occurs only through the poverty-relief component. Chile pursues these objectives through competitive, privately-managed individual funded accounts with a residual government guarantee, Sweden through a publicly-organised PAYG notional defined-contribution scheme with a safety net provision. In major respects, therefore, the Swedish scheme is a public-sector analogue of Chile's private arrangements.

The range of potential choice over pension design is wide. The key message of the previous section is not merely that one size does *not* fit all – which was always a foolish proposition – but that, provided government is effective, there is a considerable range of choice.

- The state pension should be *optimised*, not *minimised*. It can be smaller, as in Chile, which has a minimum guarantee, or the UK, where it is close to the poverty line, or larger, as in the USA. It can be income-tested (Chile), affluence-tested (Australia), flat-rate (New Zealand), partially earnings-related (USA) or fully earnings-related (Sweden). In poorer countries, fiscal constraints point to a relatively small state pension; as countries become richer their range of choice increases.

- Consumption smoothing can be organised through a state PAYG scheme (Sweden), a state-organised funded scheme (Singapore), a mixture of state PAYG and private, funded schemes (the UK or USA) or almost entirely by private institutions (Chile, Australia). Such pensions can be occupational, defined-benefit (often in the UK) or individual defined-contribution (Australia). In developing economies, capital markets tend to be less well-developed, the capacity to regulate weaker, and the population less well-informed; with economic and institutional development, the range of choice widens.

That wide range of choice, however, does not mean that countries can pick and mix at will.

- Countries with mature PAYG systems which face population ageing should adopt the range of measures discussed earlier. The core policies (a) increase output and (b) reduce the generosity of PAYG pensions, for example by raising the retirement age. Prefunding could be one element in the policy mix.
- Countries with large, unsustainable PAYG systems have little choice: the *only* solution is to make the PAYG system sustainable, by reducing benefits, by increasing contributions or by a mix of the two. Since privatising a PAYG scheme is much more expensive when it is bloated, making the scheme sustainable is essential whether or not policymakers wish to move towards funded arrangements.
- Countries with limited institutional capacity also have little choice. There is a significant element of progression: in the poorest, administratively weakest countries the issue is how to organise poverty relief; as taxable capacity increases the next step might be a tax-funded citizen's pension; growing public administrative capacity makes it possible to implement a contributory system; with rising income and growing private administrative capacity, private pensions become an option.
- A country with a small public system and relatively solid public and private administrative capacity has the greatest potential choice. Provided it meets the prerequisites discussed earlier there is a genuine choice of balance between PAYG and funded arrangements. This paper has argued that from an *economic* point of view there is no dominant policy. That being the case, the right choice for a country is that which accords best with the political economy of effective reform. This, in turn, will depend on country specifics.

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Table 1: A simplified Pay-As-You-Go System

Period	Generation			
	A	B	C	D
1	+\$1	-\$1		
2		+\$1	-\$1	
3			+\$1	-\$1
4				+\$1

Source: Orszag (1999, p. 9)

Table 2: Prerequisites for pension reform

	Essential for state scheme	Essential for private schemes
<i>Public-sector prerequisites</i>		
Fiscal sustainability of state scheme	✓	
Political sustainability of pension reform package	✓	✓
Administrative capacity to enforce taxes/contributions	✓	✓
Capacity to maintain macroeconomic stability	✓	✓
Effective regulatory capacity		✓
<i>Private-sector prerequisites</i>		
Sufficiently well-informed population		✓
Financial assets		✓
Financial markets		✓
Adequate private-sector capacity		✓