Paying for pensions: An international comparison of administrative charges in funded retirement-income systems

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Paying for Pensions

An International Comparison of Administrative Charges in Funded Retirement-income Systems

Edward Whitehouse

FSA Occasional Paper

Biographical note

Edward Whitehouse is Director of Axia Economics – a consultancy specialising in the microeconomic analysis of public policy – and joint Manager of the World Bank's Pension Reform Primer programme. He was previously leader writer and social affairs correspondent of the Financial Times and has also worked at the Organisation for Economic Co-operation and Development and the Institute for Fiscal Studies.

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Executive summary

High charges for personal pensions were one factor in the personal pensions mis-selling debacle in the United Kingdom. They continued to arouse concern among politicians and commentators. The Labour government, with its new flagship 'stakeholder' pension, chose to regulate both the structure of charges and their level. This paper assesses the international experience of charges in funded retirement-income systems, drawing on evidence from fourteen countries with very diverse policies.

The paper discusses alternative measures of charges (Section 2 and Annex A). Measuring the price of financial services is more difficult than comparing the cost of other goods or services. Providers can levy many different kinds of charges. These can include one-off and ongoing charges; proportional and fixed-rate fees; some based on contributions, some on the value of assets in the fund and some on investment returns. These different charges accumulate and interact in complicated ways over the membership of a pension plan. The most familiar summary measure of charges is the 'reduction in yield'. This adds together all the charges over the lifetime of an example pension policy and expresses them as a percentage of assets. Measuring charges as a proportion of contributions is the alternative. This turns out to be the same as calculating lifetime charges as a proportion of the balance accumulated at retirement. This second measure is known as the 'reduction in premium' or the charge ratio.

The fourteen countries surveyed (Section 2) adopt very different approaches. At one end of the spectrum, Australia and the United Kingdom (with personal pensions) have completely liberal policies on charge levels and structures, but require providers to set out the effect of charges in a standard format. Most Latin American countries, including Argentina and Chile, restrict the charge structure: in these cases, allowing a fixed fee plus a charge as a proportion of contributions. Poland, too, limits the types of fee that can be levied, but also limits funds to charging 0.6 per cent of assets, while other charges are uncapped. Sweden, Kazakhstan and the United Kingdom (with stakeholder pensions) restrict both the charge structure and the charge level. In the last two, there is a fixed ceiling while Sweden varies the cap using a complex formula based on the amount that providers charge to manage voluntary savings. Finally, Bolivia auctioned the rights to manage its mandatory pension fund assets to international fund managers.

The empirical evidence from these countries (Sections 2.1-2.7) shows very different charge levels. In countries with systems based on individual accounts and individual choice among competing pension providers, average charges vary from under 15 to above 30 per cent (Section 2.8).

The paper assesses the options and the arguments for controlling charges (Section 3). Measures to increase transparency comprise requirements for providers to disclose the level of charges, public provision of information in charge 'league tables' and allowing charges to be levied on top of rather than out of mandatory pension contributions (Section 3.1). If governments choose to restrict charge structures, to facilitate comparisons between different providers, the most important policy choice is between contribution-based levies and asset-based fees. Latin American countries have tended to opt for the former, the United Kingdom has chosen the latter for stakeholder pensions. The main issues in this choice are the time profile of providers' revenues, fund managers' incentives to maximise returns and the incidence of the charges on different providers (Section 3.2). Restricting charge levels raises some important concerns, particularly about governments' ability to choose the 'right' level for the ceiling and the trade-offs in terms of restricting competition and individual choice of fund (Section 3.3). Many of these policies to limit charges are aimed particularly at protecting low-income workers. But some countries have adopted alternative policies: for example, excluding low-income workers from the requirement to contribute and protecting them with safety-net pensions in old-age or cross-subsidising low-income workers directly with a minimum contribution from the government (Section 3.3).

Some commentators have suggested alternative institutional structures for managing funded pension assets to reduce costs (Section 4). However, empirical evidence shows that publicly managed pension funds have generated poor returns (Section 4.1). Also, the evidence on economies of scale in fund management suggests that the minimum efficient scale is relatively small and does not imply the presence of efficiency gains from a monopoly in managing funded pensions except in small economies (Section 4.2). Again, there are important trade-offs in these policies, including corporate governance problems and the restriction of competition and individual choice (Sections 4.3 and 4.4).

Introduction

Measuring the price of financial services is more difficult than other goods and services. Fees can take many different forms. Different kinds of charge interact and accumulate in complex ways, particularly with long-term products, such as pensions and life insurance. This often means that the price of financial services is not transparent.

Measures of price are, of course, very important for consumers. Mistakes due to misunderstandings or the expense of collecting information can be costly, especially with long-term contracts. Furthermore, private pensions will for most people be their most valuable asset or second most valuable after their home.

In the United Kingdom, charge-disclosure requirements were tightened in 1995 and the Financial Services Authority has begun a welcome initiative to produce 'league tables' of price and quality indicators for different financial products. The chancellor of the exchequer, announcing the initiative in his 1999 budget speech, said that it would "guarantee a better deal for the consumer and avoid the mis-selling of the past."

Administrative charges are also of central interest to policy-makers, for whom adequacy of retirement incomes is an important goal. Whether adequacy is defined as a basic, minimum income level or a minimum level of earnings replacement, charges on funded pensions will have an important effect. This is especially important when, as in the United Kingdom, private pensions provide a large and growing part of retirement incomes.[1]

Funded pensions in the United Kingdom and the other countries discussed in this paper are 'mandatory' in an important sense. All workers must have a funded pension in three of the countries covered[2] while elsewhere, (at least some) people have a choice between remaining in a (reformed) public pension programme or switching to the new pension funds.[3] Because of the mandate in these pension programmes, governments have an implicit fiduciary duty to ensure participants get reasonable returns. This

1 Private pension and investment income has risen from around a quarter of pensioner's total incomes in 1979 to 40 per cent in 1997-98. Department of Social Security (2000).

2 Bolivia, Kazakhstan, Mexico.

3 See Disney, Palacios and Whitehouse (1999) and Palacios and Whitehouse (1998) for a discussion.

fiduciary duty is stronger than governments' responsibility for voluntary savings. In addition, with explicit public-sector guarantees of pension values or implicit guarantees through means-tested social-assistance programmes, the government has a financial interest in ensuring that funds perform well. Finally, high charges might discourage participation and encourage evasion, as people treat contributions as a tax rather than savings. These arguments provide a case for potential government intervention to control charges for funded pensions.

With voluntary funded pension systems or those that will only provide a small part of retirement income, the case for intervention is weaker. Nevertheless, there may be equity concerns. If high fixed elements to charges were to discourage lower income workers from participation, then some kind of regulatory action might be justified. Some governments also offer explicit guarantees of the size of funded pension benefits or implicit guarantees through means-tested social assistance programmes.[4] Low net returns can then affect government finances directly.

It is easy to lose sight of the key policy objective — ensuring retirement-income adequacy — in the often complex, technical and involved issues in administrative charges. The main determinant of adequacy in defined-contribution pensions — the net rate of return — is determined by many different factors. Government regulations of pension fund managers' structure, performance and portfolios, for example, can have a powerful influence.[5] Administrative charges are part of a broader set of policies that affect the net rate of return on pension contributions.

1. A brief guide to the paper

The remainder of the paper is structured as follows. Section 2 presents an empirical comparison of charges for thirteen countries whose pension systems have a mandatory defined contribution element. These consist of eight Latin American countries, plus

4 See Pennachi (1998) and Turner and Rajnes (2000).

5 See Srinivas, Whitehouse and Yermo (2000).

Poland and Kazakhstan among the transition economies and Australia, Sweden and the United Kingdom among the OECD.[6] The section begins with a survey of countries' different approaches to the charges issue and then goes on to provide detailed charges numbers.

I have avoided discussion of the United States deliberately. First, because a good deal has been written elsewhere. Secondly, because it does not currently have a mandatory funded pension system, although voluntary private pension provision is widespread. Finally, because the debate over reforming the public pension programme in the United States has become extremely heated, particularly as reform has already become an important issue in the presidential election campaign. Consequently, the issue of charges has become a particular contention.[7]

Section 3 assesses a range of policies to control charges. The countries in section 2 include examples of many different approaches: improving the transparency and disclosure of charges, restricting the structure of charges, imposing ceilings on charge levels and direct cross-subsidies to low-income workers' pension accounts.

Section 4 looks at policy issues in controlling pension fund management costs.[8] It examines alternative institutional arrangements to the individual-based schemes operating in the majority of the countries that are covered in this paper. Two collective alternatives are assessed: employer-based schemes and centralised, public management of pension fund assets. Passive investment or 'indexation' of funds and the impact of regulation and supervision on fund managers' costs are also covered here.

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6 Denmark, the Netherlands and Switzerland also have large mandatory or quasi-mandatory funded pension systems. Most plans in the Netherlands, however, have a defined-benefit formula. Hong Kong will make its employer-based defined contribution plans mandatory fund in 2000. Other countries in various stages of introducing mandatory defined-contribution pensions include Costa Rica, Croatia, Latvia, Macedonia, Nicaragua, Romania and Venezuela.

7 The NBER will shortly publish the proceedings of a conference on administrative costs (Shoven, 2000). This will include updated versions of Diamond (1998) and James et al. (1999). The Employee Benefits Research Institute has produced a relatively balanced analysis of the United States system (Olsen, 1998; Olsen and Salisbury, 1998), as has the General Accounting Office (1999a,b,c,d). Examples of more politicised positions are Genetski (1999), John and Davis (1998) and two debates: one between Orszag and Orszag (1999) and Bartlett (1999), the other between Aaron (1997) and Kotlikoff and Sachs (1997).

8 I have tried to be consistent in the use of the term 'charges' to mean the fees individuals pay to managers and the terms 'costs' to mean the expenses of the fund management company.

An annex presents a formal analysis of measuring charges. It sets out the characteristics of different charge measures used in the empirical evidence and their inter-relationship. This analysis shows that some measures can be very sensitive to changes in parameters such as the rate of return or the rate of individual earnings growth.

2. Pension fund institutional structures and charges: international experience

The focus of this paper is on mandatory funded pension plans.[9] The most familiar example internationally is Chile, which replaced its 'traditional' defined-benefit, public, pay-as-you-go scheme with individual retirement-savings accounts in 1981.[10] Much of Latin America now has mandatory funded pension programmes, although these differ substantially in structure, size and scope.[11]

There have also been many pension-reform initiatives in the former socialist countries. Hungary and Poland introduced new schemes in 1998 and 1999.[12] Other countries — such as the Czech Republic — have opted for a mainly voluntary approach to private pensions initially. Fundamental reforms have been seriously discussed elsewhere, but changes to the public scheme — such as changing pension ages, accrual structures, indexation procedures etc. — have been the focus of efforts so far.

Finally, OECD countries have also focused on reforming public programmes. Australia, Sweden and the United Kingdom have introduced new systems of mandatory individual

9 Most countries' schemes are not strictly mandatory, in the sense that all workers must participate in the funded, defined contribution scheme. But most require employees to make some provision, often with a choice between continued participation in a public pay-as-you-go scheme or diverting some of their contribution to an individual pension account, such as the choice between Serps and personal pensions in the United Kingdom.

10 There is a large literature on the Chilean reform. Prominent examples include Arrau, Valdés-Prieto and Schmidt-Hebbel, Diamond (1994), Arrau and Schmidt-Hebbel (1994) and Edwards (1999).

11 Queisser (1998) is a good survey.

12 See Palacios and Rocha (1998) and Chlon, Góra and Rutkowski (1999) respectively.

pension accounts.[13] Australia's scheme, known as the superannuation guarantee, originated in the mid-1980s as part of a national industrial-relations deal. The government, concerned about low savings rates and inflation, wanted to hold wage increases down. The unions agreed to a payment into pension accounts as a substitute for a wage rise. But this agreement applied to (mainly) large employers covered by the centralised bargaining system. In 1992, the scheme was extended throughout the economy, with a mandatory superannuation contribution that will be phased in over a decade or so. The United Kingdom extended the framework for opting out of the public pension scheme to individual pension accounts in 1988. Sweden introduced its reform in 1999.

There are many differences in the structure of pension systems in these different countries. Those with a long history of funded provision — such as Australia, the United Kingdom, and the United States — have very diverse systems. Some funded pensions have a defined benefit formula, where the pension value depends on years of membership of the scheme and some measure of earnings. Most employer-provided pensions in the United Kingdom and around half in the United States are of this sort. Others schemes are defined contribution, where the pension depends on the accumulation of contributions and investment returns. These include a minority of employer-provided pensions in the United Kingdom (often called 'money purchase' schemes) and plans covering around half of members in the United States (usually 401(k) plans, named after the relevant clause of the tax code). Defined-contribution provision has been growing at the expense of defined-benefit in both countries, although more rapidly in the United States. The new superannuation guarantee in Australia and stakeholder plans in the United Kingdom are also of this type. Individual plans, such as personal pensions in the United Kingdom and individual retirement accounts in the United States are also defined contribution vehicles.

In contrast, the new systems in Latin America and Eastern Europe are less diverse. They have just a single defined-contribution programme, usually based on individual accounts with member choice of provider, along with a public scheme of varying size. These differences in pension-industry structure are likely to have important effects on the level of costs and charges.

13 See Bateman and Piggott (1998, 1999) on Australia, Whitehouse (1998) on the United Kingdom and Scherman (1999), Sundén (1999) and Palmer (2000) on Sweden.

Moreover, countries have taken very different approaches to charges. Table 1 tries to characterise these with a single, simple metric. The most liberal regimes (subjectively determined) are at the top, the most restrictive at the bottom.

The richer countries — Australia, Hong Kong, the United Kingdom and the United States — tend to have few, if any, restrictions on charges. This is explained in part by the fact that private pensions in the United States remain voluntary and the other countries built on pre-existing voluntary systems.

Other countries limit the charge structure. Only one or two types of charge are permitted from the possible menu (e.g., fixed versus variable rate, contribution versus assets based charges etc.). Poland is slightly more restrictive, in that companies are limited to two charges, one of which is subject to a ceiling although the other can take any value. Sweden has a single charge up to a ceiling, but the limit varies with a complex formula to try to allow for pension fund managers with different costs. Finally, the United Kingdom, with its new stakeholder scheme will have a single charge with a low ceiling. This is also the regime in Kazakhstan.

The Table also shows some alternative approaches. Many of the restrictions in the countries listed above are designed to cross-subsidise lower paid workers. Without restrictions, pension funds might charge relatively high fixed charges to reflect their fixed costs. These would bear particularly heavily on low-paid workers, and, at the extreme, could even take up all of their contributions. Mexico takes a more transparent approach, subsidising low-paid workers directly with a flat-rate government contribution paid on behalf of all workers. Australia and the United Kingdom exclude many lower-paid workers from their system.

Table 1. Possible approaches to pension industry structure and charges

Strategy	Country examples
No restrictions	Australia (superannuation guarantee) Hong Kong United Kingdom (personal pensions) United States (401(k) plans)
Cross-subsidies to low-paid workers	Mexico
Limits on charge structure	Argentina Chile Hungary
Limits on charge structure and partial ceiling	Poland
Variable ceiling on charges	Sweden
Competitive bidding, multiple portfolios	United States (thrift savings plan)
Fixed charge ceiling	El Salvador Kazakhstan United Kingdom (stakeholder pensions)
Competitive bidding, single portfolio	Bolivia

more restrictive

The final generic approach to charges is to hold a competitive auction to manage pension assets in which charges play a prominent role in the selection process. The Thrift Saving Plan, a defined-contribution scheme for employees of the United States federal government, holds periodic auctions for the rights to manage a small number of portfolios for its members. Bolivia licensed just two managers for its funded pension system, after an international bidding process.

The following sections discuss estimates of charges (drawn from a variety of sources) in thirteen different countries. The countries follow (loosely) their appearance in Table 1. First, however, it is useful to summarise the discussion of issues in measuring charges from the Annex. Most countries' systems have a range of different charges, which can include fixed fees, levies on contributions, assets and/or investment returns and exit charges. The paper uses two techniques for summarising this array of different types of charges.

In the first, all of the levies are subsumed into a 'reduction in yield'. This is the difference between the gross return that the fund earns and the net return, after charges. This measure is most commonly used in the financial-services industry, with the charge usually expressed in the reduction in yield in 'basis points' (hundredths of a percentage point).

The second combines the charges into a 'reduction in premium', the proportion of contributions paid in fees. This is equivalent to the 'charge ratio', which shows the difference between the total accumulation in the pension fund with and without charges.

The Annex sets out the relationship between the two measures and their sensitivity to underlying assumptions. The results below are presented using both measures.

2.1 Australia

Australia's superannuation-guarantee system was established in 1992. In 2002, the phased increase in contribution rate will be complete, and employers will then be required to contribute 9 per cent of employees' pay. Low-income workers — earning less than A$5,400 a year — are specifically excluded on the grounds that fees would eat up their contributions.

Charges for superannuation funds are typically a combination of a fund-management fee as a percentage of assets plus flat-rate administrative fees per account and/or a charge as a percentage of contributions. Neither the structure nor the level of charges is regulated.[14] Moreover, although fees must be set out in a 'key-features' statement before purchase, it is often difficult to work out how much has been paid until an annual benefits statement arrives.

The superannuation mandate encompasses a wide range of different funds. In practice, most workers are members either of collective schemes known as industry funds or so-called master trusts, which are individual pension accounts. There are over 100 industry funds and 350 master trusts.[15] Table 2 shows typical charges for these two types of plan.

14 The only exception is the protection of small accounts: charges are not permitted to reduce the account balance below A$1,000.

15 See Australian Prudential Regulatory Authority (1999).

Table 2. Typical charges on collective and individual pension funds, Australia, 1999

	Industry fund (collective plan)	Master trust (individual plan)
Flat rate	A$45 per annum	A$70 per annum
Proportion of contributions	–	4.5%
Proportion of assets	0.45%	1.3% (administration) 0.6% (fund management) less bonus for large funds

Source: Bateman and Valdés Prieto (1999). See also Bateman, Doyle and Piggott (1999)

Note: *assumes 9 per cent contribution rate, real return of 5 per cent a year and earnings growth of 1 per cent a year. Industry funds are not required to disclose asset-management fees (usually paid to a subcontractor): anecdotal evidence suggests 0.4-0.5 per cent is typical.*

Table 3 shows how these fees translate into the standard measures of charges. The difference between the two types of plan is now stark. Investment in an industry fund reduces the return by 0.5 per cent a year, compared with 1.9 per cent a year for master trusts.

Table 3. Charge measures for collective and individual pension funds, Australia, 1999

Per cent	Industry fund (collective plan)	Master trust (individual plan)
Reduction in yield	0.5	1.9
Charge ratio	11.2	35.5

Source: Bateman, Doyle and Piggott (1999)

Note: assumptions as for Table 2. Contributions taxed at 15 per cent, investment returns at 8 per cent. Also includes approximately A$65 per annum insurance premium.

It is easy to see from Table 2 why the government chose to exclude low-income workers. In a master trust, the fixed fee and the contribution-based levy would total

over 19 per cent of contributions for a worker earning the A$5,400 minimum. This would translate into a total charge ratio of 46 per cent. Indeed, the government is considering making contributions optional for employees earning between A$5,400 and A$10,800.

The large difference in charges between the two types of scheme — by a factor of three or more — could have many potential explanations. Bateman, Doyle and Piggott (1999) propose 'a combination of differences in governance, historical ethos, institutional practices and industry structure'. Industry funds were established as part of a national industrial-relations agreement. Trades unions pushed for a low-cost form of pension provision. These funds have a mutual structure, with trustees drawn from participating employers and employees. They have essentially a captive membership, so there is little need for marketing and no need for a sales network.

Master trusts, in contrast, are offered by traditional (generally profit-making) financial services companies. Although the board that runs the schemes includes some independent trustees, the latter have no direct relationship with the plan's members. There is a substantial degree of marketing and a broad sales and distribution network. Service levels, including communication, information and choice of portfolio, tend to be better than in the industry-fund sector. Master trusts are also often sold as part of a complete package of financial services by financial conglomerates and they offer tailored insurance options that are not available from industry schemes.

The government introduced a new instrument in July 1997, known as retirement savings accounts (RSAs). These accounts, provided by banks, building societies and other financial institutions, are designed to be a simple, low-cost, low-risk way of saving small amounts for retirement. The funds are invested in deposits and taxed in the same way as superannuation. Investors are warned that they should graduate to more diversified investments once their assets exceed A$10,000. RSAs therefore remain a small part of the Australian pension sector, with just 1½ per cent of total pension assets.[16]

16 See Australian Prudential Regulatory Authority (1998*c*).

2.2 Latin America

There are three basic structures of charges in Latin American countries.[17] First, pension funds in four countries — Colombia, El Salvador, Peru and Uruguay — levy a charge only on contributions. Secondly, in Argentina and Chile, funds levy a mix of a fixed administrative fee and a charge on contributions. In Argentina, five funds do not levy a fixed fee, while the other eight levy an average of $3.85 a month. In Chile, all but one funds have a fixed charge, averaging just $1 a month.

Finally, Mexico's charges are the most complex in Latin America. There are five different structures. Three funds levy a fee just on contributions. Nine firms make charges both on contributions and on the value of assets in the fund and one company levies a fee only on the investment returns. Eight firms also offer discounts to long-term members of their funds.

There are two complications with comparing charges between these seven Latin American countries. First, in four countries — Chile, Colombia, El Salvador and Peru — charges are levied on top of the mandatory contribution. In Chile, for example, the compulsory contribution is 10 per cent of pay. With the average charge level on top, the total contribution is 11.6 per cent. Elsewhere, the charge is taken out of the gross contribution. In Argentina, for example, the compulsory contribution is also 10 per cent of earnings, but a charge averaging 2.3 per cent is deducted from this, giving a net inflow to pension funds of 7.7 per cent of pay.

Secondly, all of these systems also include mandatory private disability insurance. The insurance premia are collected as part of the charge, even though pension managers usually pass this straight on to separate insurance companies. The disability premium has been deducted from charges.

Table 4 shows the results. There is considerable variation in the mean level of charges, ranging from a charge ratio of 13.5 per cent in Colombia to 26 per cent in Mexico. These are equivalent to reductions in yield of 0.65 and 1.4 per cent respectively.

There are also large differences between countries in the variability of charges. The relatively small number of funds in Peru, El Salvador and Uruguay levy very similar fees. In Mexico and Argentina, in contrast, there is much greater variation. In the former,

17 Bolivia's very different system is discussed separately.

for example, three funds charge the equivalent of 19 per cent of contributions while four funds levy 30 per cent or more.

Table 4. Pension charges in Latin America

		Unweighted mean charge		Weighted mean charge		Range of charges	
	Number of funds	Reduction in yield	Charge ratio	By assets	By members	Lowest	Highest
Colombia	8	0.65	13.5	14.0	14.1	11.9	16.7
Uruguay	6	0.72	14.7	14.4	14.6	13.2	15.8
El Salvador	5	0.85	17.1	17.0	17.0	16.1	18.4
Chile	8	0.88	17.7	16.2	16.1	14.5	20.4
Peru	5	0.96	19.1	19.0	19.1	18.6	20.0
Argentina	13	1.20	23.1	24.4	24.6	17.4	27.9
Mexico	13	1.39	26.0	24.5	26.2	19.3	35.4

Source: author's calculations based on Federación Internacional de Administradoras de Fondos de Pensiones (2000)

The columns showing the weighted mean charge provide some evidence on the relationship between fund size and the level of charges. One might expect a negative correlation between these two variables. First, if fees reflect costs and there are economies of scale in managing pension funds, then larger funds would levy lower charges. Secondly, if consumers shop around for lower charges, then cheaper funds would attract more members.

If there were a negative relationship between charges and fund size, then the weighted mean charge would be below the unweighted mean. This is rarely the case in practice. In Argentina, for example, the weighted mean charge ratio is 1 to 1.5 percentage points higher than the unweighted average. There is a positive rather than a negative correlation between charges and fund size: the correlation coefficients are 0.54 and

0.62 weighted by value of assets and number of members respectively. Note that this does not rule out a negative relationship in practice because the measure of charges is based on an example worker. High earners will be attracted to funds with relatively high fixed charges and low variable charges. If this 'streaming' of workers into different funds operates in practice, actual charges will be lower than measured. Unfortunately, the micro data on individuals in particular funds necessary to examine this effect is not available.

In Chile, the reverse relationship to Argentina holds, with a weighted mean charge ratio 1.5 percentage points lower than its unweighted value. The correlation coefficients are −0.95 and −0.82 respectively. This suggests that larger funds are cheaper. Among the other countries, Colombia exhibits a fairly strong positive relationship between charges and fund size, with similar correlation coefficients to Argentina. In El Salvador, Peru and Uruguay, there is a weak negative relationship. In Mexico, the results are more complex. There is no relationship between the charge level and the number of members in a fund, but there is a positive correlation between charges and the value of assets under management. There are two potential explanations for this pattern. First, there are economies of scale with respect to assets under managed and not to the number of members. Secondly, members with larger funds are more responsive to price. Both of these explanations are, of course, speculative.

A related study, mainly of Argentina (FIEL, 1999), looked at the relationship between charges and the inflow and outflow of members in particular pension funds. The authors regressed for 1994-97 the numbers moving into a fund, the numbers moving out and the net overall flow on charges, loyalty bonuses awarded by the funds and relative fund performance. There appeared to be no effect of charges on flows of new members into funds in either direction, but higher charges are associated with a larger loss of existing members. The relationship with marketing, sales and advertising expenditure was the other way round. Higher promotional spending seemed to result in higher inflows, but had no significant effect on outflows. Considering these two effects together, the authors conclude that it pays more to increase spending on advertising etc., even if this means higher charges, because the elasticity of net flows of members is approximately twice as large relative to marketing spending as it is to charges. However, the paper also finds that the competitive effect of charges has grown over time.

The results in Table 4 makes the very strong assumption that charges remain unchanged throughout the lifetime of the pension contract. But the schemes differ in their maturity: El Salvador's was introduced in 1998, Mexico's in 1997, Uruguay's in

1996, Argentina and Colombia's in 1994 and Peru's in 1993. Chile's funded pension system has been operating the longest: since 1981. This offers an opportunity to look at the development of charges as the pension system matures. Table 5 shows how the structure evolved in the late 1980s and early 1990s.

Three different types of charges were permitted initially: a monthly lump-sum payment, an additional payment as a percentage of salary and an annual levy of a percentage of the outstanding balance in the fund. In 1988, the last of these charges was prohibited.

Table 5. Pension charges in Chile

	Fixed charge (US$ per year)	Variable charge (per cent of earnings)	Annual charge (per cent of fund)	Charge ratio (per cent)
1987	10	3.4	0.33	30.3
1988	11	3.6	—	26.4
1989	8	3.3	—	24.8
1990	6	3.0	—	23.1
1992	4	2.9	—	22.5

Source: author's calculations based on Valdés-Prieto (1994)

The most striking feature of the charging structure in Chile is the declining importance of the fixed monthly payment. Since 1988, this has fallen by two-thirds, while the average overall charge has fallen by a quarter. The short-term response to the prohibition of asset-based fees was a rise in the other charges. But within two years, the pension fund managers themselves had absorbed the loss of revenues, and both fixed and contribution-based levies were below their 1987 level.

This suggests caution is required in comparing charges between countries. All measures of charges are based on the strong assumption that their value does not vary over time, which the Chilean example refutes.

2.3 Poland

Poland will allow both contribution and asset-based fees, but not flat-rate charges. The asset-based charge will be limited to 0.05 per cent per month (0.61 per cent of assets per annum at a five-per-cent return). The charge must be set out in the articles of association of the fund, and almost all levy the maximum. There is no ceiling on the levy on contributions, but providers are not allowed to discriminate (for example, for larger contributions) except on the length of participation in the fund. This last provision was designed to minimise the excessive 'churning' characteristic of many Latin American systems. The typical levy is 7-to-9 per cent of contributions initially, usually falling to 5 per cent after two year's participation. Table 6 summarises the impact of these charges on the standard measures using the baseline assumptions. The majority of the overall charge comes from the levy on assets (around 70 per cent after a full lifecycle of contributions).

Table 6. Pension fund charges in Poland

Asset-based fee	Variable charge	Annual charge	Charge ratio
0.61	9	20.5	1.05
0.61	7	18.8	0.95
0.61	7 then 5	17.1	0.85

Source: Chlon, Góra and Rutkowski (1999)

Note: Data for typical fund in 1999. Assumes 40 year contribution period, 5 per cent real return and 3 per cent real individual earnings growth.

Some 11 million Poles have now chosen one of 21 licensed pension funds. Chlon (2000) reports the results of two surveys asking people why they chose the particular pension fund they did. In the first study, charges were cited as the ninth most important issue out of a total of 14, behind the size of the pension fund, the experience of its shareholders, information provision and service. Just 4 per cent mentioned fees to the second survey, behind 11 other factors. Consumers rarely choose between competing pension funds on price.

2.4 Sweden

The issue of charges is particularly important in Sweden because the contribution rate to pension funds — 2½ per cent of earnings — is lower than in any other country with mandatory funded pensions.[18] The Swedish government therefore took a number of steps to avoid charges eating up all the contributions.

Rather than establishing separate pension funds, the new regime builds on the existing infrastructure of collective investment institutions. All mutual funds can participate, subject to levying fees set by the public pension agency. There is a complicated formula to determine charges, which depends on the price charged for voluntary savings in the mutual fund, the value of mandatory contributions attracted and the total value of mandatory pension assets managed. The marginal fee as a proportion of assets, for example, is given by

$$a_s + \beta_s(\upsilon - a_s) \qquad (1)$$

where a and β are parameters set by the agency that depend on the size class of the fund (s) and υ is the charge levied in the voluntary sector. Table 7 shows the schedule.

Table 7. Regulated marginal charges as a percentage of assets for mandatory funded pensions by fund size class, Sweden, 1999

Value of assets (US$ million)	a	β	Full formula for charge (per cent of assets)
0-10	0.40	0.75	0.4+0.75(v-0.4)
10-40	0.35	0.35	0.35+0.35(v-0.35)
40-60	0.30	0.15	0.3+0.15(v-0.3)
60-350	0.25	0.05	0.25+0.05(v-0.25)
250-850	0.15	0.05	0.15+0.05(v-0.15)
850-	0.12	0.04	0.12+0.04(v-0.12)

Source: Swedish public pension agency. See also James, Smalhout and Vittas (1999)

Note: *translations to US$ from SKr rounded for clarity. Limits of the bands (in millions) are SKr70, 300, 500, 3000 and 7000 respectively*

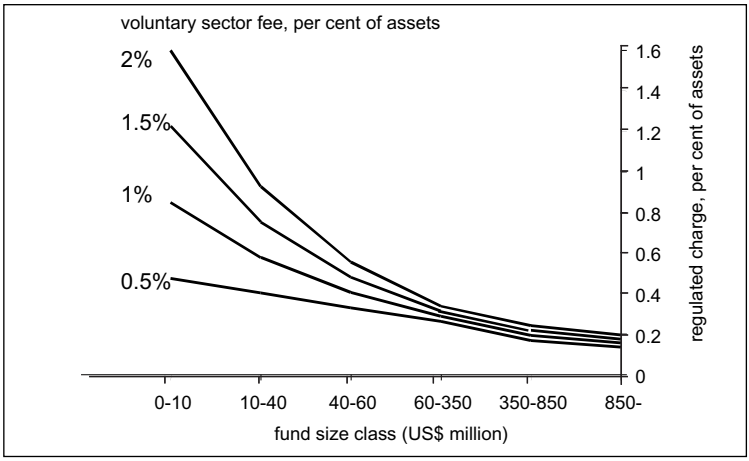
18 The guaranteed minimum contribution (the mandatory minimum) in the United Kingdom is less than 2½ per cent for workers under 30. But it currently averages around 4 ½ per cent across all ages: workers now in their 20s will make a higher mandatory minimum as they get older. See Whitehouse (1998) for an

The implication of this schedule for the ceiling on fees is shown in Figure 1. With a one-per-cent charge on assets in the voluntary sector, the funds in the smallest class of assets of mandatory members can charge 0.85 per cent at the margin, while the largest funds can charge just 0.15 per cent.

The Figure covers the range of charges in the voluntary sector: Dahlquist, Engström and Söderlind (1999) find fees vary between 0.4 and 2 per cent of assets, with an average of 1.5 per cent. The net result is that the most popular funds will be able to charge less than 0.2 per cent at the margin and 0.2-0.3 per cent on average, somewhat less than the lowest fees in the voluntary sector. On top, 0.2 per cent of assets or so can be levied to cover trading commissions etc. The public pension agency will also charge for contribution collection and record keeping. The agency will spread the fixed costs of establishing the new system over a 15-year period. The charge for these services will be around 0.3 per cent of assets. So the total fee for investment in a large fund will be about 0.75 per cent, about half the average in the mutual-fund market.

The reasoning behind this complexity is as follows. First, the ceiling should be low enough to discourage excessive marketing. Secondly, the ceiling should allow firms to recover their marginal costs, but provide at maximum a small subsidy to their fixed costs. Thirdly, the regime should not rule out particular portfolios. Emerging markets, smaller companies funds etc. imply higher costs. By relating the ceiling to the fund's charge in the voluntary sector, the government does not rule out these more expensive investments. But they are subject to some price limitation that, at the same time, does not allow leeway for cheaper funds (e.g., those investing domestically in large-capitalisation equities) to charge excessive prices. Finally, the variation with fund size is designed to ensure that any benefits from economies of scale accrue to members rather than providers. Funds that do not attract much of the flow of mandatory contributions will be cushioned. This reduces the risk for funds deciding whether to enter the new market or not.

Figure 1. Regulated marginal charges by size class of fund and by voluntary sector charge, Sweden, 1999



Source: calculated from data in Table 7

The low level of these mandatory fees will leave little if any room for marketing expenditures. The public pension agency will collect contributions and keep records of them. Indeed, the agency will aggregate individuals' contributions and make a single transfer to each fund. The funds will not keep records of individual contributions and will not even know who their contributors are. This is designed to reduce marketing opportunities still further.

Sweden also has a system of occupational pension schemes.[19] The four main programmes together cover 90 per cent of employees. Recent reforms have shifted the benefits in the scheme for blue-collar workers in the private sector from a defined benefit formula to a defined contribution scheme. Employers contribute 2 per cent of employees' salaries up to a ceiling to the new SAF-LO scheme, which accounts for 35 per cent of total occupational pension coverage. The smaller ITP scheme for white collar workers is more complex. Since 1999, it has been a combination of defined benefit and defined contribution elements. This division of mandatory pension contributions into three different programmes — the public, pay-as-you-go pension scheme, individual accounts and occupational plans — is unlikely to result in efficient administration.

19 See Whitehouse (2000*d*).

2.5 United Kingdom

The United Kingdom has a variety of pension options. Employees can comply with the mandate for a second pension (beyond the flat-rate basic state pension) with any of the following:

- Personal pensions. An individual pension account operated by an insurance or other financial-services company. The charges set out below relate to this sector, which covers around a quarter of employees
- Final-salary occupational pensions. Around 95 per cent of members of employer-run schemes are in plans with a defined-benefit formula. This includes all public-sector schemes. Private-sector schemes are all funded but many public sector plans are unfunded. Around 45 per cent of employees are members of occupational schemes
- Money-purchase occupational pensions. Only a minority of employees in employer-run plans are in defined-contribution plans.
- Group personal pensions. Many personal-pension providers offer concessionary rates of administrative charges for group schemes relative to individual plans. Employers typically contribute to group schemes, but pay into individual plans less often. Various regulatory changes have made group personal pensions more attractive to employers than money-purchase occupational schemes. Coverage is low, but has recently been growing fast
- State earnings-related pension scheme. Serps, the public, pay-as-you-go plan, still covers around a quarter of employees. It has a defined-benefit formula

Reforms to the system, announced at the end of 1998 (Department of Social Security, 1998), will introduce another option, called a 'stakeholder' pension. This new plan is described in more detail below.

2.5.1 Charges for personal pensions

Analysis of personal-pension charges is complicated by the bewildering array of different types of levy.[20]

20 These data are from Walford (1998).

- Policy, plan or administration fees are a regular flat-rate charge, usually payable monthly or annually. A typical levy is £30 a year, usually uprated in line with average economy-wide earnings or prices
- Bid-offer spreads act as an entry and/or exit charge from the fund. Units in the pension fund are sold at a higher price than the fund will pay to buy them back. This usually adds up to a charge of 5 per cent or so, and acts as a levy on contributions
- Unit allocations work in a similar way. The provider credits the personal pension account with only a proportion of the units bought. Unallocated units are usually up to 10 per cent, and often depend on the number of years spent in the scheme. Again, this operates as a levy on contributions. Often the allocation rate depends on a range of variables, such as the size and frequency of contributions (with discounts for larger and less frequent payments) and the term to retirement (higher charges for shorter terms)
- Fund management charges, as a percentage of assets, are the most familiar kind of levy. The range of typical charges is 0.5-1.0 per cent
- Initial charges and capital levies are one-off, up-front charges payable in the first one or two years. They tend either to be a fixed fee (£60, for example) or a percentage of contributions (5 per cent)

The middle column of Table 8 shows the 'average' charging structure used by the Government Actuary. (The Government Actuary uses these figures to advise on the adjustment to the rebate of national-insurance contributions for people contracting out into personal pensions to compensate for average fees paid. Thus the GAD figures are applicable to rebate only cases, which tend to be relatively small contracts.) This translates into a charge ratio (reduction in premium) of around 25 per cent and an equivalent charge as a proportion of assets of 1.3 per cent (the reduction in yield).

Table 8. Typical charges on personal pensions in the United Kingdom

Levy	Government Actuary	Money Management
Flat-rate	£30 a year	£12 a year
On contributions	8%	6%
On assets	0.9%	0.9%
Charge ratio	25	23
Reduction in yield	1.3	1.2

Source: Government Actuary (1996), Walford (1998)

Analysis of detailed charging data collected by Money Management magazine[21] — reported in the final column of Table 8 — reveals lower charges than the Government Actuary's figures.[22] The charge ratio, for example, is 2 percentage points lower, equivalent to a reduction in yield of 1.2 per cent.

Furthermore, nine companies offer so-called 'level-commission' plans, which have marginally lower charges than full commission. The charge ratio for these schemes is 1.4 percentage points lower on average. Commission-free plans, which levy substantially lower fees, are available from seven firms. The charge ratio is over 8 percentage points lower on average. The overall (unweighted) mean charge ratio including all these plan types is 22 per cent. This is 3 points lower than the 25-per-cent result of Murthi, Orszag and Orszag (1999)[23] and from the Government Actuary's assumptions.

2.5.2 Distribution of charges

These averages disguise a very broad distribution of charges. Table 9 summarises the charges levied at different points of the contract. More than two out of five funds levy no fixed fee while more than one in ten levies in excess of £30 a year. The most common levy on contributions is 5 per cent, but a few funds make no charge while some extract more than 10 per cent. Charges on assets are typically either 0.75 or 1 per cent a year, but the range is between 0.36 and 1.5 per cent.

21 Walford (1998).

22 There are other complications is ignored in this analysis. A small proportion of firms (15 per cent) levy one-off, up-front fees. These very between £15 and £150. The average is about £60, but averaging across all plans (including the 85 per cent that are zero) gives just £8. Three-quarters of firms also offer 'loyalty' bonuses. This can be a proportion of the fund at retirement given a minimum number of years' contributions, a reduction in the charge or an increase in unit allocations once a number of years' contributions have been made. These bonuses could reduce the overall charge ratio by 10 per cent, but I do not yet have sufficient information about the eligibility conditions to make a firm estimate of the impact on charges.

23 See also Orszag and Orszag (1999) and Center on Budget and Policy Priorities (1999) for a discussion of these results.

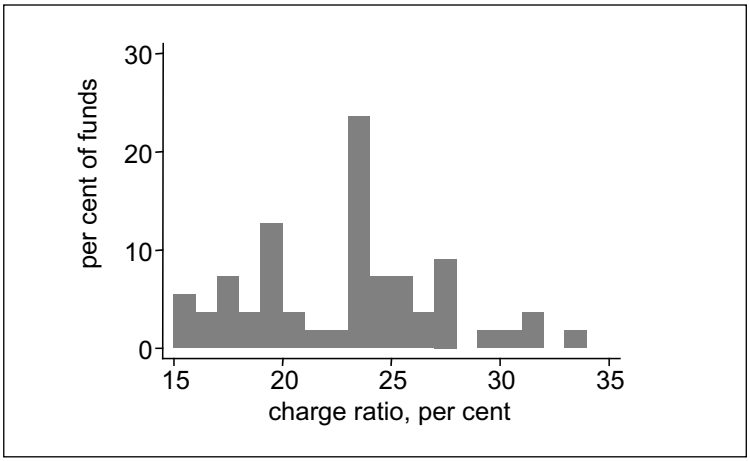
Table 9. Frequency distribution of different charges, United Kingdom

Fixed annual fee		Charges on contributions		Charge on assets	
charge, £	per cent of funds	charge, per cent	per cent of funds	charge, per cent	per cent of funds
zero	42	0	4	<0.5	2
1-5	4	1	0	0.5	7
6-10	9	2	2	0.51-0.74	4
11-15	20	3	2	0.75	27
16-20	4	4	2	0.76-0.99	5
21-25	5	5	51	1.0	32
26-30	5	6	9	1.01-1.25	9
31-35	4	7	5	1.26-1.5	12
>35	7	8	9		
		9	7		
		10	9		
		11	0		
		12	2		

Source: author's calculations based on Walford (1998)

The distributions in Table 9 translate into a very broad range of charge ratios, as illustrated in Figure 2, because there is no clear trade-off between the level of charges at different points. The lowest charge ratio is 15 per cent, the highest 33 per cent, with a mean of 23 per cent. This translates into a reduction in yield of between 0.72 and 1.87 per cent, averaging 1.2 per cent.

Figure 2. Distribution of charge ratios in the United Kingdom



Source: author's calculations based on Walford (1998)

Note: excludes level-commission and commission-free plans, which tend to have lower charges

There appears to be no systematic relationship between charges and the size of the pension fund manager (measured either by assets under management, by contribution income or by number of policies). The weighted average charge ratio is just 0.13 percentage points below the unweighted mean. The only difference of any magnitude is between mutual and proprietary managers. (Around a third of pension firms were mutually owned at the time of the survey, though many of these have either 'demutualised' or been taken over by shareholder-owned firms since.) The charge ratio for mutual providers averages 21.6 per cent, compared with 23.7 per cent for proprietary providers. (This difference is significant at 8.6 per cent.)[24]

There is evidence of a decline in charges since the early 1990s. Table 10 gives the mean charge ratio since the late 1980s. Since a peak in 1992, the average levy has fallen by one sixth, from 28½ to 24 per cent of pension accumulation. Analysis of different firms' charges shows that this is mainly due to cuts in some of the very highest charges. The

24 The difference in charges with organisational form has been examined in the United States (Born et al., 1995). Unfortunately, space prevents me from discussing their fascinating results.

charge ratio of the lowest quartile of funds has fallen by only one percentage point, while the upper quartile has declined by more than five points.

Table 10. Average charge ratio, United Kingdom, 1989-98

per cent of accumulated fund									
1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
27.6	27.9	28.0	28.5	27.5	27.3	25.9	24.8	24.3	23.7

Source: author's calculations based on Money Management magazine's surveys

2.5.3 Pension transfers

People can and frequently do shift between the different types of provision set out at the top of section 2.5. For example, occupational pensions are required by law to accept transfers into the scheme (which can buy either a defined contribution or a defined benefit right) and to provide transfers out. It is also possible to change between different plans within a particular type. This complicates the measurement of personal-pension charges.

Transfers of funds within the personal pensions sector are more complex than in Latin American countries, for example. In the latter, any transfer involves both accumulated funds with the original provider and any new contributions. But in the United Kingdom, people are able to leave their accumulated fund with the original provider and pay only new contributions to the new provider. (The account with no new contributions is known as 'paid-up' in the financial-services industry's jargon.)

'Official' data on transfers, collected by the Personal Investment Authority (PIA)[25], are unfortunately inappropriate for measuring the charge on mandatory pension contributions. (This is because the data were collected for a different purpose: low short-term persistency rates are an indicator of poor selling practices that is easy for regulators to collect.)

25 The Personal Investment Authority has now been subsumed into the Financial Services Authority, the new unified regulator.

First, the data only include personal pensions that receive contributions in addition to the mandatory minimum. Personal pensions that receive only the rebate for contracting out of Serps (the mandatory minimum) — around 55 per cent of the 5½ million personal pensions used to contract out of Serps — are excluded.[26]

Secondly, voluntary personal pensions account for around half of the 10½ million personal pensions. (These are mainly pensions for the self-employed and schemes to top-up occupational pension benefits.) Taking these first two effects together, the types of personal pension relevant to this paper account for less than a third of the data.

The PIA data are presented in six different categories, depending on the following three variables:

- whether they were sold by a representative agent of the pension provider or indirectly through an independent financial advisor
- whether there are regular contributions to the fund ('regular premium') or there is only a single payment, such as a transfer from an occupational or another personal pension ('single premium') or a lump-sum investment (from an inheritance, for example)
- individual or group personal pensions versus other pension plans, such as top-up scheme to occupational plans (known as 'free-standing additional contributions') or transfer plans

Figure 3 summarises these data in four categories. Working through the lines upwards, the first shows personal pensions with regular contributions bought directly from a pension provider. Over two out of five policies have lapsed on the PIA's measure after four years. Persistency rates are 12 percentage points higher for pensions bought through an independent financial advisor than for policies bought directly and 17 points higher for FSAVC or transfer contracts. For single-premium pensions, usually bought with the transfer value from another kind of pension, the lapse rate is close to zero.

26 Office of Fair Trading (1997) and Inland Revenue (1999).

Figure 3. Persistency rate by type of pension account in the United Kingdom, average 1993-98

Source: Personal Investment Authority (1999)

Note: all data are averages over a number of years' data: one-year rate based on pensions sold in 1993-97, two-year on 1993-96, three-year on 1993-95 and four year on 1993-94. Figures for regular premium FSAVC and single-premium policies average over pensions sold by providers and by independent financial advisors (IFAs). The weights are based on the Association of British Insurers' figures of a two-thirds share of single premium business and a half share of regular-premium business attributable to IFAs.

Murthi, Orszag and Orszag (1999) extrapolate from these four years of data to a full-career 40 years. The following equation, fitting a curve to the four data points,

$$\log(\text{persistency}) = -0.15 \times \text{duration}^{0.9} \qquad (2)$$

provides a (naïve) 'model' of persistency in subsequent years. This approach obviously requires heroic assumptions and the lapse rates in later years are determined almost wholly by the choice of technique and not by any data.[27]

27 Note even that alternative standard distributions used by econometricians to analyse survival data produce different results. The mean persistency is 2.1 years shorter for the Weibull than for three others (log-logistic, lognormal, and exponential).

2.5.4 Impact of transfers on charges

The next step in assessing the impact of transfers on charges is to determine what happens to lapsed pensions.

Transferring the accumulated balance from one personal pension fund and paying new contributions into a different plan involves substantial extra costs. Murthi, Orszag and Orszag (1999) assume that each transfer involves the purchase of both a single-premium and a regular-premium policy with the new provider and that people transfer five-to-six times on average across their working life. Each transfer therefore involves two extra sets of up-front and fixed costs. They estimate that this costs an extra 30 per cent relative to someone who remains with the same provider across their working life. However, turning back to Figure 3, we see that single premium policies very rarely lapse. This suggests that nearly everybody would make only one transfer, not five or more.

A second transfer scenario involves people leaving their accumulation with the existing provider, and paying only new contributions into the new scheme. One might expect this to be more costly than the previous option, since there are two or more funds on the go; all levying fixed management charges. However, Murthi, Orszag and Orszag (1999) assume people pay two sets of charges when they switch to a new fund, which more than offsets the impact of two sets of fixed management fees. They estimate a reduction in the final pension of 17 per cent if people leave their previous fund with the original provider and put future contributions into a new policy.

Finally, people might leave their personal pension account inactive and join a different type of pension scheme. They might either move to an employer with an occupational plan and choose to join that scheme, revert to Serps[28] or leave the labour force altogether. The extra cost depends critically on the duration to retirement. Murthi, Orszag and Orszag (1999) suggest an average extra cost of 32 per cent compared with someone with a full contribution record.

2.5.5 Personal pensions versus defined-benefit occupational pension schemes

One of the main reasons the United Kingdom government introduced personal pensions was to provide a portable pension vehicle suitable for a mobile workforce.

28 Until age-related rebates for contracting out of Serps were introduced in 1996, it was in personal pension scheme members' interest to return to Serps when they reached their mid 40s. See Disney and Whitehouse (1992a,b) and Dilnot et al. (1994), chapter 5.

Defined-benefit, employer-run pension schemes were the major form of private pension provision before the introduction of personal pensions. A few defined-contribution plans and the very limited number of average-pay based schemes apart, pension benefits in these schemes depend on some measure of 'final' salary in the scheme. People with short tenures in 'final-salary' plans are heavily penalised compared with their less mobile colleagues. Short-stayers' pensions are fixed with reference to their earnings when they leave the plan, uprated in line with price inflation (up to a ceiling). People who stay see their accrued pension rights grow in line with their own earnings.

Whitehouse (1999, 2000d) estimates the pensions cost of transfers between defined-benefit occupational pension schemes.[29] Most schemes pay 1/60th of final pay for each year of scheme membership. So, people with a full 40 years in one scheme would get two-thirds of their final pay. Someone who joined two schemes would get a third of final pay from the second and a third of his or her last earnings in the first scheme. Since these earnings have only been uprated in line with prices for 20 years, the replacement rate relative to 'final' pay (i.e., just before retirement) is much lower. If earnings grow at three per cent a year, then the pension is 52 per cent of final pay. The transfer cost, along the lines of the calculations for personal pensions in the previous section, is 22 per cent.

However, most people have substantially shorter job tenures. A study for the National Association of Pension Funds (Meadows, 1999) found that people spent an average of five years six months in a job, down from six years one month in 1975. This is confirmed by analysis of the job and pension histories in the Department of Social Security's Retirement Survey.[30] The transfer cost for someone joining three occupational schemes is 29 per cent. Membership of four schemes increases this to 33 per cent and eight (the number implied by Meadows, 1999), to 37 per cent.

This lack of portability underlies the economic theory of why employers offer pension plans. The 'backloading' of remuneration with a defined-benefit pension plan is an incentive not to 'shirk' when people are averse to putting effort into their work.[31] The

29 See also Blake and Orszag (1997).

30 See Disney, Meghir and Whitehouse (1994) and Johnson, Disney and Stears (1996). The retirement survey is described in Bone et al. (1992) and Disney, Grundy and Johnson (1998).

31 The theoretical literature includes Lazear (1981, 1985), Viscusi (1985) and Ippolito (1991). See also the discussion in Disney and Whitehouse (1994, 1996) and Dilnot et al. (1994), chapter 3.

pension scheme, conditional on repeated effort, rewards longer tenures.[32] It is, then, counter-intuitive that the cost of pension transfers is nearly as high in defined-contribution schemes than it is in defined-benefit.

2.5.6 Pension transfers: evidence from the British Household Panel Study

It is possible to avoid the heroic assumptions of extrapolating the PIA data by using a complementary source of data on personal-pension transfers: the British Household Panel Survey (BHPS). Respondents were asked in waves 2 to 7 of the survey (1992-97): 'In the past year...have you paid any contributions or premiums for a private personal pension, or had such contributions paid on your behalf by the Department of Social Security?'

This source has three major advantages over the PIA's data. First, the BHPS survey question picks up people who have rebate-only personal pensions, which the PIA data deliberately exclude. Rebate-only personal pensions are of central interest in comparing the United Kingdom with other systems of individual pension accounts.

Secondly, there is no formal cut-off in the membership durations. The BHPS has annual data on personal pension membership between 1992 and 1997 and asks people when they first joined the scheme. This sampling method involves both 'left censoring' (the data excludes shorter durations of membership before 1992) and right censoring (many people are still contributing). Nevertheless, these are not difficult issues to treat econometrically. This gives us a sample of pension membership that, unlike the PIA data, includes spells longer than four years.

Finally, each survey wave asks people when they joined the pension. Thus, it is possible to separate gaps in contributions to a single plan from transfers between plans.

The BHPS contains 2,930 episodes of personal-pension membership. Over three-quarters of these began after 1988, when it was possible to contract out of Serps using a personal pension. (Personal-pensions before 1988 were bought either by the self-employed or by employees as top-ups to Serps or occupational schemes.) Around 55

32 McCormick and Hughes (1984) is the classic paper on the United Kingdom; see also Henley, Disney and Carruth (1994) and the last references in the previous footnote for a further discussion of the UK. The United States literature, as ever, is more voluminous: Schiller and Weiss (1979), Mitchell (1982), Wolf and Levy (1984), Kotlikoff and Wise (1987), Lazear and Moore (1988) and Allen, Clark and McDermed (1988, 1993) and Gustman and Steinmeier (1989, 1993) are prominent examples. These papers (generally) find stronger effects of pensions on job mobility than studies of the UK.

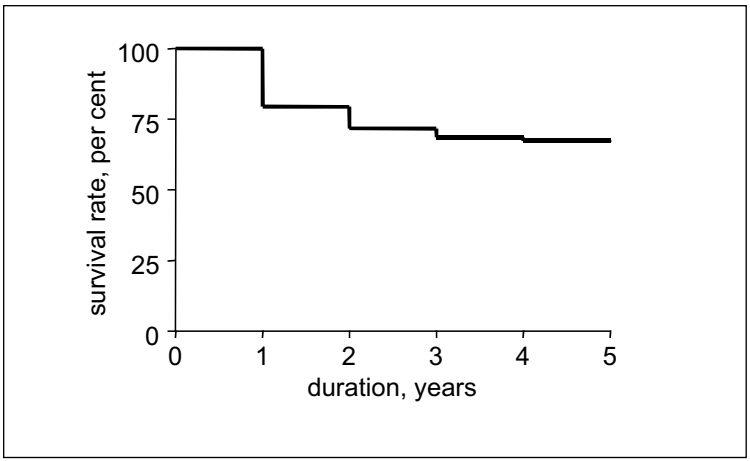
per cent of the 2,930 personal pensions were still 'active', i.e., people contributed in 1997 (or the last wave in which they responded to the survey).

Nineteen per cent of BHPS respondents report gaps in contributions. The PIA data treat such gaps as a policy lapse, despite the fact that people contribute to the same plan later. This significantly understates the persistency rate.

A related problem results from right censoring in the BHPS data. For example, someone who contributed to a personal pension until 1996 and reports no contribution in 1997 may have contributed again in 1998, after the final survey wave. It is possible, however, to correct for this by looking at the length of completed contribution gaps.[33] Figure 4 presents Kaplan-Meier estimates of the duration *not* contributing to a personal pension based on the 1,300 or so past contributors in the BHPS observed not to be contributing currently. Contribution gaps enter the sample as completed durations. Where contributions appear to have ceased, the durations appear as right-censored observations. Figure 4 shows that around a quarter of the personal pension that are observed as 'lapsed' in the BHPS data can be expected to receive a contribution at some point in the future.

33 This methodology is similar to that of Meghir and Whitehouse (1996) and Disney, Meghir and Whitehouse (1994). The problem in these papers is assessing whether, say, out-of-work 57-year-olds are 'retired' or whether they will subsequently take another job. In the personal pension context, the question is whether people who have not contributed to for a year or more will do so again in the future.

Figure 4. Policy lapse or contribution gap? Survival function for duration not contributing to personal pension

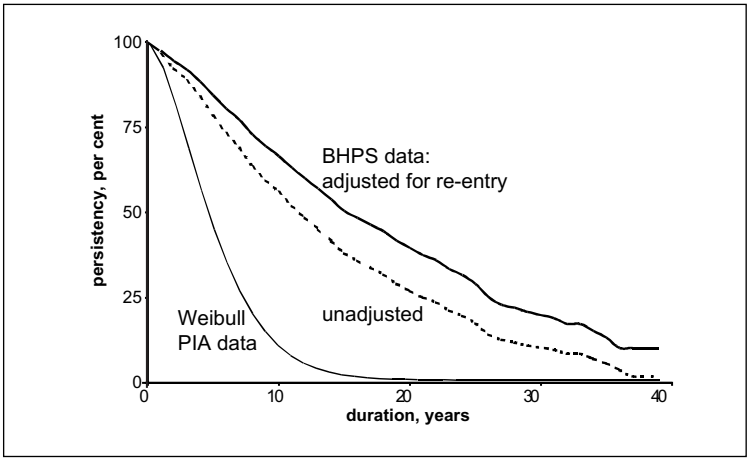


Source: author's analysis of British Household Panel Survey data (see Taylor et al., 1999 for a description)

Figure 5 gives Kaplan-Meier survival estimates of the duration of personal pension membership in the BHPS data (controlling for censoring) and the Weibull extrapolation of the PIA data for comparison. Starting with the data unadjusted for 're-entry' to personal pensions, the BHPS gives a four-year persistency rate of 84 per cent, compared with less than 60 per cent in the PIA data. The extrapolation exaggerates this difference still further. At 25 years, persistency rates are nearly 18 and less than 7 per cent respectively.

Another data source confirms the BHPS-based result. Chapman (1998) reports that 'about one-in-six [i.e., 17 per cent of personal-pension members] keep their plans up to maturity' based on data with a 25 year time horizon. Overall, the mean duration of membership is twice as high in the BHPS as in the PIA data.

Figure 5. Persistency rates: comparison of Personal Investment Authority and British Household Panel Survey data



Source: author's analysis of Personal Investment Authority (1999) and British Household Panel Study data

The upper curve in Figure 5 adjusts the estimates of personal-pension persistency to allow for re-entry. The effect of the adjustment is fairly small at short durations, but peaks at 12 percentage points between 15 and 25 years then falls back slowly to 8 points. The four-year persistency rate is 88 per cent, compared with 84 per cent unadjusted and less than 60 per cent in the PIA data. The 25-year rate increases from 17 to 29 per cent, compared with 7 per cent in the extrapolation of the PIA data.

The BHPS also provides evidence on transfers between pension funds. The survey indicates that switching between different personal pensions is very rare. There are only 60 or so instances in the dataset (2 per cent of personal pensions taken out). Furthermore, the majority of these switches are from plans taken out before 1988. Many are likely to be people exchanging an old pension policy for a new-style personal pension that they could use to contract out of Serps. This is therefore a one-off effect reflecting the institutional change. Only 25 people switched a post-1988 personal pension for another policy.

In addition, the BHPS sheds light on shifts between personal and occupational pension provision. Of the 1,300 people who had a personal pension but were not contributing at the time of the last survey wave, 580 (or 40 per cent) had joined an occupational pension scheme. In many cases, this represents rational behaviour contracting out using a personal pension will deliver a better return to an individual than Serps for most workers. People whose employer does not offer an occupational plan have only these two choices. Moreover, for individuals in their 20s with the option of joining an occupational pension scheme, a personal pension will usually deliver a better return than the occupational plan. This can even hold for older workers who do not expect to remain with their employer long. The assumption that people remain in the personal pension sector throughout their working lives is not borne out by detailed analysis of the BHPS micro-data.

2.5.7 Stakeholder pensions

The new Labour government in the United Kingdom shares with its predecessor a desire to extend the degree of private, funded pensions as a substitute for public, pay-as-you-go provision. However, the problem of mis-selling of personal pensions and the level of charges meant the new government was reluctant further to encourage membership of these plans.

The new stakeholder schemes aim to fix many of the problems of personal pensions. In particular, there are four main strategies to control the level of costs and charges.

First, all employers with more than five employees who do not offer an occupational pension plan or a group personal pension will have to 'identify a stakeholder pension scheme and facilitate access to it'.[34] This is designed to reduce administrative costs. In the main, it is employers who will choose among different stakeholder schemes (although employees need not necessarily join the plan offered by their employer). Since there are fewer employers than employees, this should reduce marketing expenses. Collective provision might also reduce the cost of supplying information and advice. The Partnership-in-Pensions discussion paper says: 'We see scope for schemes to make arrangements to offer general advice to members and potential members...by having advisors visit the workplace' (Department of Social Security, 1998). Employers should have greater bargaining power than individual employees, allowing them to secure a better deal. (Assuming, of course, that they have their employees' interests at heart or, in the economics jargon, that agency problems do not intervene.)

34 Department of Social Security (1999*b*). See Axia Economics (1999*b*) for detailed comments.

The comparison between master trusts and industry schemes within Australia's superannuation-guarantee system shows how collective schemes can have lower costs than individual-based plans. The reductions personal-pension providers offer for group schemes in the United Kingdom is a second illustration. Twenty-eight providers offer some concessions. Most common are lower charges (18 firms) reduced minimum premia (seven) and free life insurance (five). Many others offer group schemes some benefits by negotiation or on application.[35] Stakeholder schemes are designed to reap the same cost advantages as group personal pensions.

Secondly, some aspects of the regulatory regime will be simplified. The most important change is the streamlining of the taxation rules, which should reduce compliance costs substantially. The complex carry-forward and carry-back rules will be abolished and the requirement for proof of earnings removed for the vast majority of pension scheme members.[36]

Thirdly, stakeholder pension providers will be restricted to just one type of charge — a percentage of fund assets — rather than the multiplicity used now. This will facilitate comparison of charges between different providers. It will also eliminate costs, such as fixed management charges, that bear particularly heavily on low contributions.

A related government initiative is the consumer-education remit enshrined in the legislation establishing the new unified regulator, the Financial Services Authority (FSA). This encompasses both the 'league-tables' project, as discussed in the introduction to the paper, and broader projects to promote consumer financial literacy.[37] Together, these policies should increase the transparency of charges and empower consumers to shop around for lower-cost providers.[38] The government has argued that the 'simple and transparent charging structure' proposed will 'ensure that scheme members understand what charges they will pay and can make comparisons between schemes'.

35 Based on data from Walford (1998).

36 Department of Social Security (1999*c*).

37 See Financial Services Authority (1998, 1999*a*) and Whitehouse (2000*a*).

38 Consumers are least confident when buying pensions out of any of eight different financial products according to the National Consumer Council (1994). See also Whitehouse (2000*a*), section 4.11.

However, the government does not appear to believe that transparency of charges (compared with the Byzantine schedules of personal pensions) will be enough to facilitate competitive pressure to reduce administrative costs. The final proposal therefore is a ceiling on charges of one per cent of fund assets.[39] This is equivalent to a charge ratio of 19.7 per cent. It compares with an average of 1.2 per cent of assets and a charge ratio of 23 per cent for someone who remains in a personal pension throughout their career. Of course, the main benefit from stakeholder schemes will accrue to people who stop and start contributing at different points in their career. The reduction in charges will be larger than the saving for a full-career pension contributor.

The charge limit could also feed through to lower costs. The government argues: 'The reassurance provided by minimum standards will reduce the need for detailed financial advice when people join schemes'. Since the one-per-cent ceiling is rather lower than the median personal-pension charge, it will also tend to reduce the very high variance in charges observed now. Ernst & Young, the accountants, agree with the government — 'In theory, this could make tied salesmen and independent financial advisors redundant and strip out most up-front, advice-related costs' — as does the Institute for Fiscal Studies.[40]

Analysts expect stakeholder pensions to lead to a radical restructuring of the pensions industry. Ernst & Young again: 'Most UK life assurance companies will be unable to make money from stakeholder pensions without radically changing their current business model. Their expense base is too high to support the proposed charges.' Only around a fifth of providers are below the proposed charge ceiling. OSI, a management consultancy, expects 'a tidal wave of mergers' in the industry. The firm estimates a minimum of 500,000 contributors is necessary to reach the cost target.[41] This would imply just five-to-ten providers in the medium-term, compared with roughly 90 currently offering personal pensions.

The effect, then, will be to limit choice of pension provider substantially. Moreover, since the low level of the charge will probably preclude (more expensive) active investment strategies, portfolio choice will also be severely curtailed. The government

39 Department of Social Security (1999*a*). See Whitehouse (2000*a*) and Axia Economics (1999*a*) for an assessment.

40 Financial Times (1999*a*) and Disney, Emmerson and Tanner (1999).

41 Timmins and Brown-Humes (1999).

seems happy to accept this restriction. It argues: 'We expect some schemes to offer individual members no separate choice in the way their money is invested...In general, we do not expect members will want to make complex investment choices' (Department of Social Security, 1999a).

2.5.8 Basic pension plus

It is also worth mentioning briefly the rather different approach to administrative costs embodied in the previous, Conservative government's proposals for pension reform. Under basic pension plus, as the plan was called, the government would continue to collect social-security contributions under the same schedule.[42] At the time of the proposal, employees' contributions were 10 per cent of earnings between a floor of £3,200 and a ceiling of £24,200. Employers' contributions were 10 per cent of earnings with no ceiling (but with reductions for a minority of lower-paid workers). At the end of each year, the government would transfer £470 plus five per cent of earnings between the contribution floor and ceiling into individuals' pension accounts. This payment would be made even if it exceeded the social-security-contribution liability, so the transfer would be greater than employee contributions for people earning less than £11,400. It would exceed total employer and employee contributions for people earning under £6,000 a year.

These proposals were, in part, aimed at the problem of administrative charges and the low-income workers. First, the fixed part of the contribution would ensure that all workers, including low earners, would have an adequate flow of contributions into their fund. Secondly, unlike personal pensions, the scheme would be compulsory for all new labour-market entrants. This would obviate the need for promotional expenses to persuade people to take out basic-pension-plus plans. This marks a different approach to dealing with the problem of administrative charges in personal pensions from the Labour government's regulatory strategy.

2.6 Kazakhstan

Kazakhstan took the most ambitious approach to pension reform of the countries assessed here. All new retirement income rights for all workers will accrue in individual pension accounts. The contribution rate to the new system is 10 per cent, with a 15

42 See Whitehouse and Wolf (1997), Department of Social Security (1997) and Whitehouse (1998), section VI for a detailed discussion of the basic-pension-plus proposal.

per cent payroll tax used to finance existing pay-as-you-go pension liabilities. This tax will be phased out as the pay-as-you-go liabilities decline.[43]

People can choose from one of eleven private pension companies and a state pension manager, which also operates as the default for workers who make no nomination. These companies contract out investment to an asset management company, of which there are just three: ABN-Amro, the Dutch investment bank, Zhetisu and Narodny Bank, the largest Kazakh bank.[44]

Regulations require that fees cannot exceed 1 per cent of contributions plus 10 per cent of the investment returns of the fund. The latter levy, for a given rate of return, works like a charge on assets (the charge is 0.5 per cent of assets with a five-per-cent real return).

Of the total charge, the asset-management company receives 0.15 per cent of contributions and 5 per cent of investment income. The rest goes to the pension manager, who is responsible for collecting contributions, record keeping and marketing the fund to potential members.

These charges are low compared with most other countries: a charge ratio of 11.45 and a reduction in yield of 0.55 per cent at the baseline assumptions. There has been an intense debate between the government, pension funds and others about the level of the limits on fees. The funds indicate that they need 100,000-150,000 members to break even, and only one (Narodny Bank) has so far reached that level.

2.7 Bolivia

Bolivia's system is very different from the other Latin American countries. The government chose to auction the rights to manage two pension funds internationally. Of the 73 companies expressing an initial interest, twelve applied. These were whittled down to a short list of nine. Regulations and guarantees were then specified, which resulted in only three applicants at the final stage. The government picked two firms based on their asset-management fee.[45]

43 Data are from Andrews (2000). See also World Bank (1998) and Anderson et al. (1997).

44 Another fund had its licence suspended following an inspection by the supervisory authority.

45 See Von Gersdorff (1997), Ballivian (1997), Ewing and Goldmark (1994) and World Bank (1995) for a detailed discussion of the Bolivian reform.

The successful bidders have a five-year guarantee of their duopoly, and a guarantee of initial market share. People will be assigned at random to the two funds, and will be only permitted to transfer from 2000, three years after the new regime was introduced. New firms can enter the market after 2002.

This process has kept charges low: 5 per cent of contributions and 0.23 per cent of assets. This translates into a charge ratio of 9.8 per cent and a reduction in yield of 0.46 per cent.

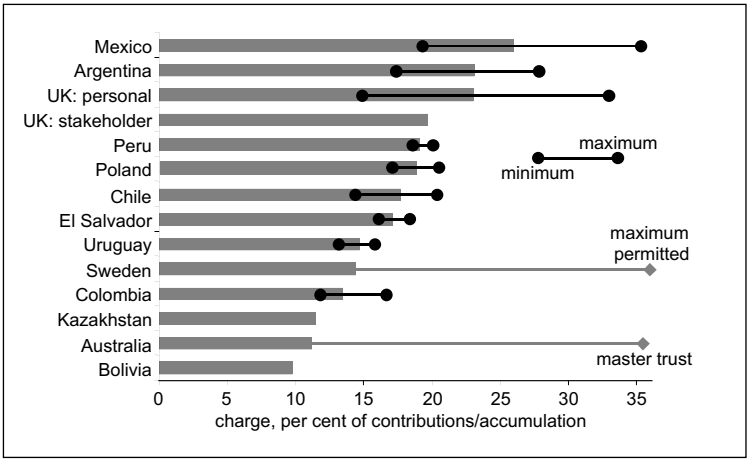
In part, this results from the structure of the market. With just 300,000 pension members, contributing under US$100 million a year, having only two managers allows them to take advantage of (limited) economies of scale. The initial guarantee of market share allows the companies to spread their set-up costs over a period and the absence of member choice limits the need for marketing. However, the successful firms were also given $1.7 billion of privatisation proceeds to manage, equivalent to 15 or more years of contributions to the mandatory pension system.[46] There is likely to be a significant cross-subsidy from the fee paid to manage these assets to the charges on pension accounts.

2.8 Summary

Figure 6 summarises the analyses of this chapter, comparing the charges in different countries. In most cases, the grey bars show the mean charge while the black dots show the range of charges. Sweden is one exception. The grey bar shows the minimum of the range of permitted charges, which depends inter alia on the size of the fund. As noted above, most people are expected to pay charges close to this minimum level. The theoretical maximum charge is shown by the grey diamond. The grey bar for Australia shows the charge in an industry fund, the grey diamond, in a master trust. Finally, note that the data for stakeholder pensions in the United Kingdom are the maximum: some providers have already announced lower charges than this level. Also, the main beneficial effect of stakeholder schemes on the burden of charges relative to personal pensions — flexibility in stopping, starting and varying contributions — is not captured in this picture.

46 These assets will finance the 'Bonosol/Bolivida' programme, which will pay a flat-rate benefit to all Bolivians over 65 separately from the funded scheme.

Figure 6. Charge ratio in funded pension schemes in thirteen countries



Source: see discussion in previous sections

The mean burden of charges in different countries varies over a substantial range. It is also interesting to note that the countries with the highest average level of charges — Mexico, Argentina and the United Kingdom — also exhibit the greatest variability.

The results in the chart are somewhat sensitive to changes in assumptions. The charge ratio measure does not vary with the rate of return if fees are levied on contributions. But pension managers in all the countries outside Latin America — Australia, Kazakhstan, Poland, Sweden, and the United Kingdom — and in some in Latin America levy some or all of their charges on assets. The charge ratio measure in these cases is higher with a higher rate of return. However, the distribution of charging levels in Figure 6 is broad enough to ensure that re-rankings with varying assumed returns are limited to two places.

3. Strategies to control charges in funded pension systems

Measuring the impact of administrative charges for pension funds is very complex. So it is essential, at the minimum, that governments set out a standard presentation of charges to ensure that consumers can make reasonably accurate comparisons between different providers.

Unfortunately, transparency alone may not be enough to ensure healthy competitive pressures to keep charges low. In the United Kingdom, for example, supervisory agencies tightened the so-called 'disclosure' requirements in the mid-1990s.[47] Charges have to be presented in a standardised way, illustrating, for example, the cost of stopping contributions prematurely. There is a standard assumption of investment returns, but the impact of charges has to be shown for the individual customer's characteristics, such as age and expected age of retirement. These data are a part only of the final quotation, so obtaining comparable information from a number of providers could be very time consuming. League tables of charges published in the media tend only to cover one or two example individuals. Given the huge variety of charging structures in the United Kingdom, these comparisons may be misleading because the impact of fees depends critically on individual characteristics.

Many consumers turn to an independent financial advisor to make comparisons for them. This saves time but can be costly. Moreover, the independence of 'independent' financial advisors is moot: in the terminology of economics, there is an agency problem.[48] The majority of advisors' income comes from commission on selling financial products. It is reasonable to conjecture that pension providers levy higher charges to cover at least some of a higher commission paid to the recommending advisor. Advisors' and consumers' incentives do not coincide and the government has admitted that advice given at the moment 'is of variable quality'.[49]

The IFA Association, the collective voice of independent financial advisors naturally disputes this analysis. The association argues: 'The commission paid by providers to this sector [tied agents] is generally at a higher level than would be paid on the same

47 See, for example, Personal Investment Authority (1995) and Office of Fair Trading (1992).

48 See Whitehouse (2000a), section 4.4, National Consumer Council (1994) and Office of Fair Trading (1999).

49 Department of Social Security (1998).

business if introduced by an IFA. This increase can be as high as 25 per cent.'[50] Despite this defence of commissions, the IFA Association has proposed a move to fee-based charging to underline their independence.[51] Currently, only one third of the sector will do *any* business on a fee basis, and the share of advice given in this way is much smaller.

3.1 Improving transparency

One way of ensuring the transparency of charges, in addition to their structure, is to levy charges on top of rather than out of mandatory contributions. This brings charges very clearly to consumers' attention because they reduce current net income rather than future pension income. Chile, Colombia, El Salvador and Peru all levy charges on top of the mandatory contribution of 10 per cent of pay, while in Argentina charges are deducted from the 10-per-cent contribution. The latter is also the practice in countries with mandatory funded pensions in other regions, including Australia, Hungary, Poland Sweden, the United Kingdom.

3.2 Restricting charge structures

A common solution to the lack of transparency of charges in complex fee structures is to limit the types of charges that can be levied.[52] If only one type of fee is allowed, then there is a single 'price' for taking out a pension that consumers can easily compare. It also removes many of the complexities of the variability of charges with different consumer characteristics. A single, proportional charge — on assets or contributions, for example — would not vary with the level of earnings or contributions. There are four important features of these two types potential charges.

First, a contribution-based charge is 'front-loaded': fees are heavier in earlier years than an asset-based charge, as illustrated in Figure 7. The higher early revenue flow to providers allows funds to recover their up-front costs of entering the pension market more quickly than under an asset-based levy. Quicker cost recovery might boost competition by encouraging more entrants when the system is established.

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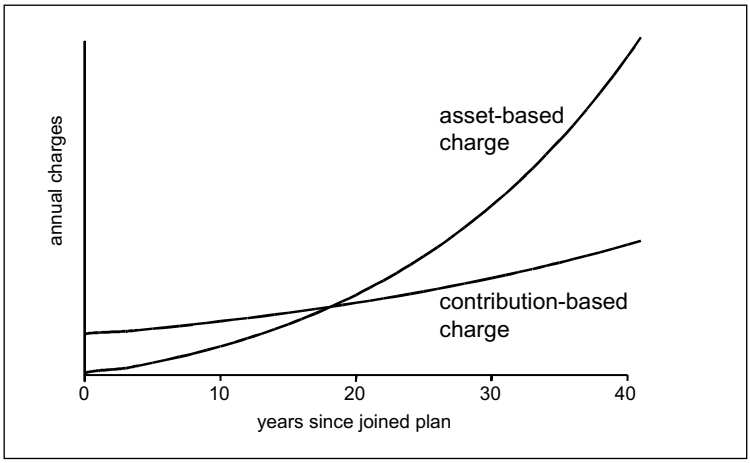
50 Original emphasis. IFA Association (1998). The Personal Investment Authority (1995) found an average differential in commissions between IFAs and tied agents of 23 per cent.

51 Financial Times (1999b).

52 Evidence on the impact of changing regulated charge structures in the United States is also interesting: see Chance and Ferris (1991).

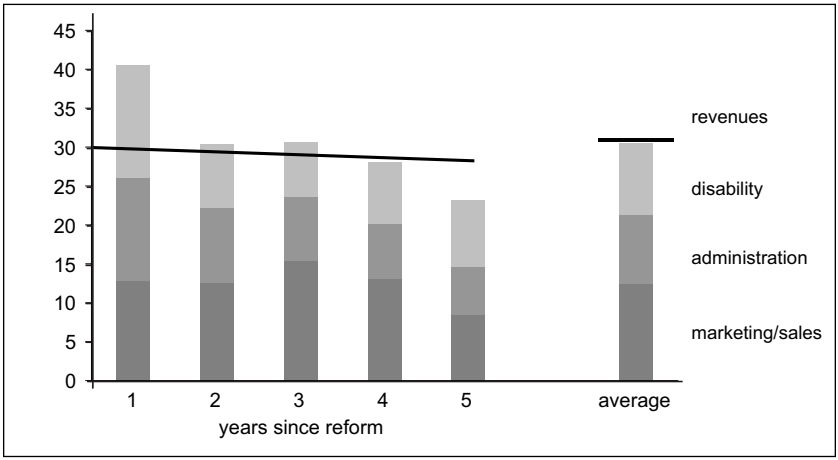
Figure 7. Time profile of payments of different types of charge



Most of the responses to the United Kingdom government's proposal — for a ceiling on charges as a percentage of assets — argue that cost recovery in the early stages of the new system will be insufficient.

Evidence from other countries shows that even contribution-based charges require a number of years of losses before set-up costs are recovered. Figure 8 looks at experience of the first five years of the new Argentine system. Overall, costs have fallen sharply over time. This was due to initial over-estimates in the cost of disability insurance by 40 per cent. Nevertheless, over five years, administrative costs have fallen by half and sales and marketing expenses by a third. System costs fell below revenues for the first time in the fifth year of the new regime. It is unsurprising that administrative charges have yet to decline. Now that the funds are profitable at the operating level, we might expect price competition to emerge in the next few years as the fund managers recover the cost of their initial capital. The pattern in Hungary has been more marked than Argentina. Fund charges have averaged about 8 per cent of contributions in the first year of the new system, while costs have averaged 24 per cent.

Figure 8. Costs and revenues in the Argentine funded pension system, 1994-99



Source: SAFJP

Returning to the comparison of contribution-and asset-based charges, a second issue is the different incidence of levies. In the presence of fixed costs per member, an asset-based charge redistributes from people with large funds to people with small funds. So older workers, who will tend to have larger funds, will cross-subsidise younger, for example. Contribution-based levies redistribute from people with large contributions to people with small contributions.

Indeed, revenues would be zero for people who suspended contributions. People might lose their job, withdraw from the labour market because of caring responsibilities or work in the informal sector of the economy. Providers would receive no revenues from these people, but would still bear the cost of administering their fund. Asset-based fees ensure a revenue flow even from inactive accounts, but, of course, it means that these fees bear more heavily on people who withdraw from work early.

Finally, there is the issue of fund managers' incentives. A charge on fund value encourages managers to maximise assets, both by attracting funds from other providers and, more importantly, by maximising investment returns. Contribution-based levies, in contrast, have no direct link between revenues and investment returns. Fund managers' basic maximand is obviously the value of contributions.

The choice between the two is finely balanced, and countries have taken different routes. Many governments in Latin America have opted primarily for contribution-based levies. The United Kingdom chose asset-based fees for the new stakeholder pensions, which the great majority of responses to its consultation supported.[53] The government's main arguments were funds' incentive to maximise investment returns and the fact that people who suspend contributions do not impose an excessive burden on other scheme members. This last argument is more significant in the United Kingdom than elsewhere: multiple choices of mandatory pension options mean that many people switch between funds, leaving inactive accounts (sections 2.5.3-2.5.7).

3.3 Restricting charge levels

The United Kingdom has opted for a ceiling on charges in its new stakeholder schemes. This approach is surprisingly rare: Table 1 shows that only Kazakhstan, Poland, Sweden and the United Kingdom have restricted the level of fees.

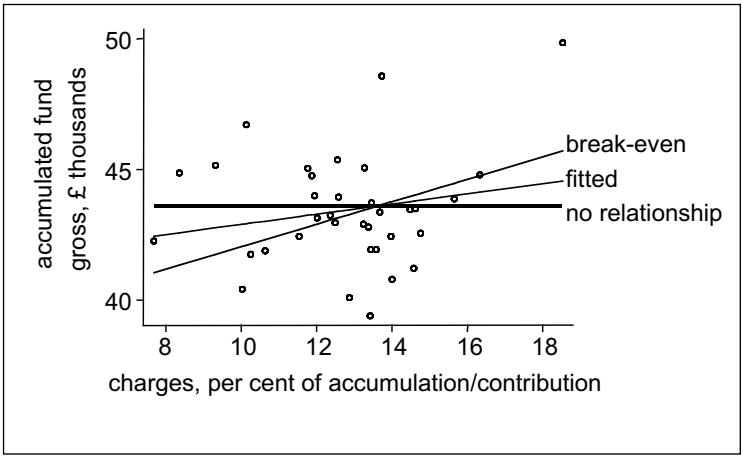
The obvious risk with this approach is that the government sets the 'wrong' ceiling on charges. This may not be too much of a problem in well-developed capital markets, because the government can observe the costs and charges of providers of very similar financial products. Governments of emerging economies, however, often have little to go on domestically. Even in this case, however, international evidence, of the sort presented in this paper, can be useful information.

Still, charges might be set at a 'wrong' level, either too high or too low. Too low and providers might be unable to cover their costs. This will substantially reduce the number of entrants to the pension market, restricting individual choice of provider and competition between different providers. It may even be low enough to result in failure of a pension fund manager, which will undermine public confidence in the pension system. There is also evidence that charge ceilings can become de facto charge minima as well. In Poland, for example, virtually all funds will charge the 0.61-per-cent-per-annum maximum on assets. This implies that price competition, beyond reaching the regulatory standard, might be limited, at least in the short term. In the longer-term, price competition might become more intense, as firms compete to attract relatively large amounts of assets that have built up in people's funds.

53 Department of Social Security (1999a), paragraph 23.

A low charge ceiling might restrict consumer choice in a number of ways. There may be fewer providers. Providers might also be forced to offer a very limited choice of investments to keep costs low, further reducing individual choice of portfolio (see below). Consumers might be willing to pay more, for example, for better information or service. But the ceiling prevents firms from offering these broader choices. Finally, there is some evidence of a relationship between personal-pension charges and investment performance in the United Kingdom. For a sample of companies, Figure 9 plots the charge-ratio measure against the gross accumulated value of a standard pension product. If there were no relationship, the fitted curve would be flat. In fact, the fitted curve shows a positive relationship between charges and performance, although the extra return from a higher-charging fund is not sufficient to offset the effect of the charge on net returns. The other curve on the Figure shows the break-even relationship. However, the coefficient on the charge in the performance equation is not significantly different from zero.

Figure 9. Personal pension charges and performance over ten years



Source: authors' calculations based on Walford (1998)

Note: comparison based on a regular premium of £2400 a year over 10 years. Fitted relationship: gross return = 40900 (2190) + 195 (169) x charge ratio (standard errors in parentheses). Sample of 38 providers

Most Western economies had eliminated the majority of price regulation by the end of the 1980s, and even regulation of prices in transition economies is now rare. Should pensions be treated any differently?

Most of the arguments for regulating pension charges in fact suggest less Draconian solutions. For example, lack of transparency can be dealt with by having a simple, easily comparable charging structure, strict regulation on the disclosure of charges to potential consumers, supply of comparative information from an official source and a programme to promote consumer understanding of financial services. The only argument of substance is that participation in the pension system is compulsory, and the government has a responsibility to ensure that charges do not wholly or largely take up people's contributions.

3.4 Cross-subsidies to low-income workers

Again, however, there are more appropriate, less restrictive policies to achieve this goal. A common approach is to exempt low-income workers from participation in the funded pension system. Australia, for example, excludes the lowest-paid workers from its superannuation guarantee. This applies to people earning less than A$5,400 a year, around 15 per cent of the average. (This is the same level as the starting point for paying income tax.) In addition, there are plans to make participation voluntary for people earning between 15 and 30 per cent of average pay.

All countries provide either a social-assistance income in retirement, a minimum pension guarantee or a universal flat-rate pension. People with persistently low earnings are unlikely to generate a pension above the de facto minimum inherent in any of these three programmes. This is equally true of most public defined-benefit pension systems as it is of defined-contribution plans.[54] It is better that safety-net programmes provide pensioners for persistent low earners than any defined-contribution or earnings-related defined-benefit scheme.

A second method is to cross-subsidise lower-income workers through the charging structure. Many of the costs of operating pension accounts are fixed. Collecting contributions and transferring them to accounts, for example, has the same cost regardless of the size of the contribution. Other activities, such as providing statements to members, also have fixed costs. So any regulations that prohibit fixed charges or allow only variable charges (on assets or contributions) imply a cross-subsidy from higher-income to lower-income members.

54 For example, see Disney, Emmerson and Tanner (1999) on the long-run impact of the new minimum income guarantee in the United Kingdom.

A third approach is to cross-subsidise low-income workers' pensions directly. The Mexican government, for example, ensures a minimum contribution of 5½ per cent of the minimum wage to pension accounts, coincidentally equal to one peso per day. Mexico also has a tax-credit system to boost incomes of low-paid workers, similar to the earned income tax credit in the United States and the new working families tax credit in the United Kingdom. Both of these policies encourage lower-income workers into the formal sector.

A similar policy to Mexico's in spirit was the previous Conservative government's basic-pension-plus proposal in the United Kingdom. This government would have paid £9 a week into all workers' pension accounts.

There are two key advantages of the direct-subsidy approach. First, the cross-subsidy is transparent. If firms can only charge proportional fees, then the revenues will be insufficient to cover costs for lower-paid workers and will exceed costs for higher paid. A direct subsidy from the government makes this redistribution clear. Secondly, as noted in the Mexican case, this can encourage low-income workers into the formal system.

4. Strategies to control costs of funded pension systems

The previous section explored four different approaches to regulating the charges in pension systems. This section looks, first, at the costs of alternative institutional structures to the systems considered above. Most of the countries discussed in sections 2 and 3 of the paper have what is called in American parlance 'individual accounts'. These regimes are decentralised, with a number of competing fund managers and worker choice between the different funds.

4.1 Alternative institutional arrangements for funded pension systems

An alternative to this model is to move to some kind of collective provision. Proponents point to the low charges in Australia's industry funds as an example of the cost savings that are possible. The United States' 401(k) plan has a similar structure. These schemes, which have spread very rapidly over the past two decades, are, however, not mandatory. The new stakeholder plans in the United Kingdom try to control costs in a similar way, by requiring employers to nominate a scheme rather than having employees choose.

4.1.1 Public management of pension funds

Some analysts have gone further than this model of collective but decentralised provision and have proposed public management of pension fund assets. Their rationale is in a large part to reduce administrative costs, but also because they believe that defined-benefit pension formulae are in some way superior to defined-contribution schemes.[55] Heller (1998) concludes that 'the principal source of old age support should derive from a well-formulated, public DB [defined-benefit] pillar, with a significant amount of pre-funding'.[56] And Orszag and Stiglitz (1999) argue for 'a more expansive view of the optimal second pillar — which should incorporate well-designed, public defined-benefit plans.'

Others are sceptical of this solution, because public management of pension funds has, in practice, delivered poor returns. James (1998) concludes: 'publicly managed pension reserves fare poorly and in many cases lost money because public managers were required to invest in government securities or loans to failing state enterprises at low nominal interest rates that became negative real rates during inflationary periods'. This argument is confirmed by the detailed analysis of 22 countries' public pension funds in Iglesias and Palacios (2000), of which I provide a brief summary.

4.1.2 Empirical analysis of the performance of public pension reserves

Over half of publicly managed funds have, in practice, delivered a negative annual real return, some of which are huge. Peru's fund, for example, shrank by 44 per cent a year between 1981 and 1987, and Uganda's by 33 per cent a year from 1986 to 1994. The highest returns were Korea (5.4 per cent a year) and Malaysia (3.2 per cent a year).

Although the absolute returns in these last two cases appear respectable, the relevant comparison should be with alternative investments. Figure 10 shows that pension funds' average return fell short of the bank deposit rate in 12 out of 20 countries, by an average of 2.5 per cent a year.

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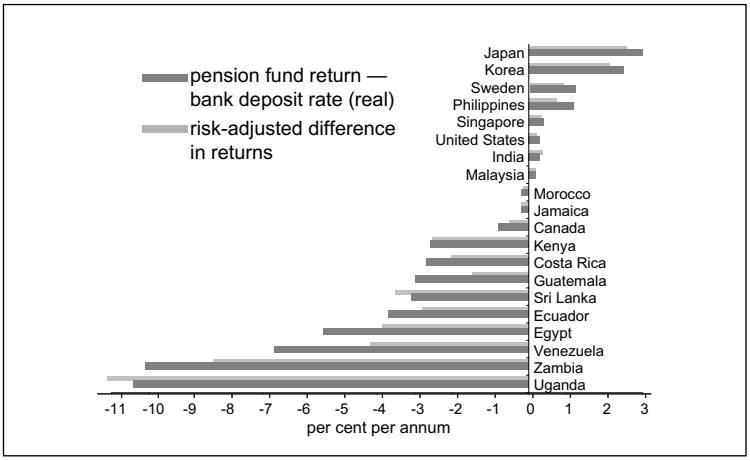
55 This issue has spawned a large literature, which mainly concludes that the purported advantages of defined-benefit plans are illusory. See Bodie, Marcus and Merton (1988) and the comments on their paper by Kotlikoff. Other studies include Disney and Whitehouse (1994, 1996) and Samwick and Skinner (1993).

56 Heller has two main concerns with defined contribution pension provision. First, the possibility of contingent or conjectural public-sector liabilities in the event that pension funds perform poorly because of systemic long-term declines in asset prices or short-term market turmoil. Secondly, the potential for complicating fiscal-policy management. For example, he worries that comparisons of relative tax burdens or public spending ratios between countries 'may be increasingly problematic'.

This comparison takes no account of differences in risk between the two returns. I have implemented a simple adjustment, multiplying the return shortfall by the ratio of the standard deviations of the two rates of return. In Japan, for example, the real return on the public pension fund averaged 1.4 per cent between 1970 and 1994. Over the same period, the real bank deposit rate averaged -1.6 per cent, giving an excess return to the pension fund of 3 per cent. The pension fund's return, however, was more volatile, with a standard deviation of annual returns of 5 per cent, compared with 4.3 per cent for deposits. The (simple) risk-adjusted excess return is therefore lower: 2.6 rather than 3 per cent a year. In some countries, such as India, the risk adjustment goes the other way: pension fund returns were less volatile than deposit rates.

The conclusion from Figure 10: pension fund returns have more often than not fallen short of bank deposit rates and have frequently been more volatile.

Figure 10. Difference between pension fund returns and bank deposit rates



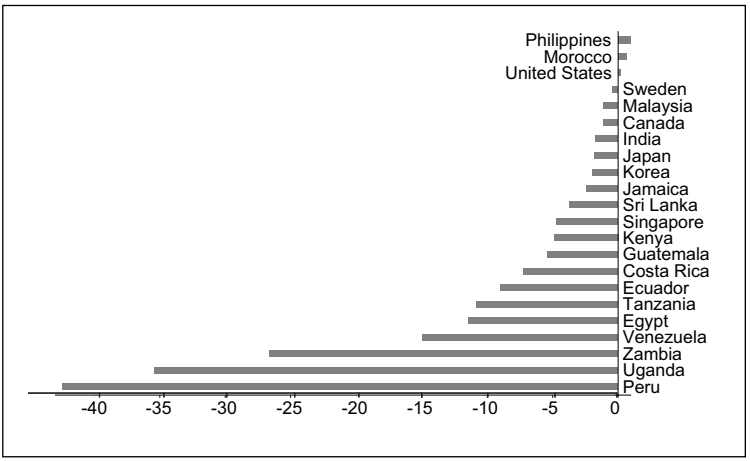
Source: Iglesias and Palacios (2000); Palacios and Pallares-Mirales (2000)

A second useful comparison is with the growth in national income per capita. This broadly measures the growth in an economy's ability to pay taxes and, more pertinently, to pay pension contributions. Aaron (1966), building on the model of Samuelson (1958), showed that the sustainable rate of return in a pay-as-you-go pension scheme is the sum of population growth and productivity growth.

Figure 11 therefore compares pension funds' real returns to the real growth of income per head in the same way as Figure 10. The difference is positive in only three cases and by small amounts: 0.2 per cent a year in the United States, for example. This suggests that funding pension liabilities with a publicly managed reserves has in practice increased the total cost of pension provision compared with a pay-as-you-go regime.

In fact, most of the countries in Figure 11 are young and their population is still growing. The feasible rate of return on a pay-as-you-go scheme is productivity growth plus population growth. So the true comparison between the returns on publicly managed funds and the sustainable pay-as-you-go return would be still worse. Indeed, the 'cost' of public management of pension assets has, in practice, proved to be much larger than the administrative charges levied on privately managed pension accounts.

Figure 11. Difference between pension fund returns and growth in real income per head



Source: Iglesias and Palacios (2000); Palacios and Pallares-Mirales (2000)

4.1.3 Government as fund manager

Heller (1998) ignores the problems inherent in having governments as fund managers entirely in his argument for a public, partially pre-funded defined-benefit plan. Orszag and Stiglitz (1999) do address the issue. They are sanguine about the prospects for public management.

First, they argue: 'If capital markets were perfect, then it would simply not be possible for funds to be badly invested...as long as the portfolio is sufficiently diversified'. Returns on different assets in this world of perfect markets are merely commensurate with their risk, and so risk-adjusted returns are the same for all investments. Empirical studies, however, find evidence of excess returns on equities over less risky assets (such as bonds and deposits), even adjusting for the difference in risk.[57] Capital markets, then, are not perfect and Orszag and Stiglitz (1999) concede that 'the assumption of perfect capital markets is not entirely convincing, especially in many developing countries.'

Secondly, Orszag and Stiglitz (1999) argue that 'how the government invests its trust funds is irrelevant' if 'individuals can 'undo' the public fund portfolio by adjusting their own portfolio'. Again, this is well established in theory,[58] but in practice most workers, even in richer countries, have few assets and are unable to borrow enough to reverse the effects of public financial policy.[59]

Finally, they look at institutional arrangements to avoid political investing, using the example of the 1998 reforms to the Canada Pension Plan (CPP).

4.1.4 The Canada Pension Plan

Since the beginning of 1999, the CPP has invested in the stock market rather than automatically buying public-sector bonds. It has a clear mandate to invest in the interests of members rather than with broader social or political goals. Equity investments, at least initially, will be in the constituents of one or more stock-market indices, both to reduce costs and to curtail the investment board's discretion. This avoids politicising investment decisions and any potential conflicts of interests for members of the board. Politicisation was not, however, entirely eliminated. Initially, the fund was to invest up to one fifth of the portfolio abroad. However, the Labour Party argued that the funds should be invested only in Canada. This debate has not yet been resolved.

Indexation is an important part of the proposal to mitigate political pressures on the CPP. But as funds grow, other players will be able to anticipate CPP investments,

57 The classic paper is Mehra and Prescott (1985). The literature attempting to explain the 'equity premium puzzle' is large. Constantinides, Donaldson and Mehra (1998), for example, suggest that liquidity constraints prevent younger workers from investing as much as they should in equities. Other relevant papers include Blanchard (1993) and Kotcherlakota (1996) and Jagannathan and Kotcherlakota. (1996).

58 Stiglitz (1983, 1988).

59 Banks and Tanner (1999), for example, find that median financial wealth in the United Kingdom is just £750.

distorting capital markets. The fund has some leeway to deviate from the index, but this, of course, re-introduces the potential for conflicts of interest and politically motivated investment decisions.

Canada's large institutional savings sector, including private pension funds worth 40 per cent of GDP, facilitates indexed investment. Even at its peak, the CPP will be smaller than private funds. In other countries, mature mandatory pension funds will own a more substantial proportion of the financial assets in an economy. Assume a ratio of two workers per pensioner in the medium term and that the target replacement rate is benefits of half of lifetime average earnings. With a labour share of GDP of 70 per cent, then pension assets would need to be around 140 per cent of GDP at scheme maturity.[60] Pension funds in Chile are 44 per cent of GDP and are still growing rapidly. In countries that have had funded pensions for longer, such as Ireland, the Netherlands, Switzerland the United Kingdom and the United States pension funds are proportionately larger than in Chile, averaging 85 per cent of GDP.

Publicly managed funds of this size would raise important issues for corporate governance, with profound implications for investment and economic growth. Canada considered mandating the CPP investment board to abstain its shareholder votes, but finally decided to retain voting privileges. Corporate governance is, of course, an important issue for privately managed pension funds as well.[61] However, having the government as the dominant investor in the economy raises far more serious governance concerns, even with strong institutional protection of independent investment decision-making.

4.2 Economies of scale: some evidence

Proponents of public management of pension funds base their arguments mainly on grounds of costs. For example, Murthi, Orszag and Orszag (1999) favour a 'centralised' approach that 'would aggressively take account of potential economies of scale through centralised provision'.

60 This assumes that average economy-wide earnings grow in real terms at one per cent per annum, and that the average real return on the fund as it accumulates is five per cent per annum. The pension is price indexed and we abstract from any tax treatment of income or assets. Out of interest, to generate a replacement rate of 50 per cent of average lifetime earnings under these assumptions, individuals would need to save just under nine per cent of their earnings each year.

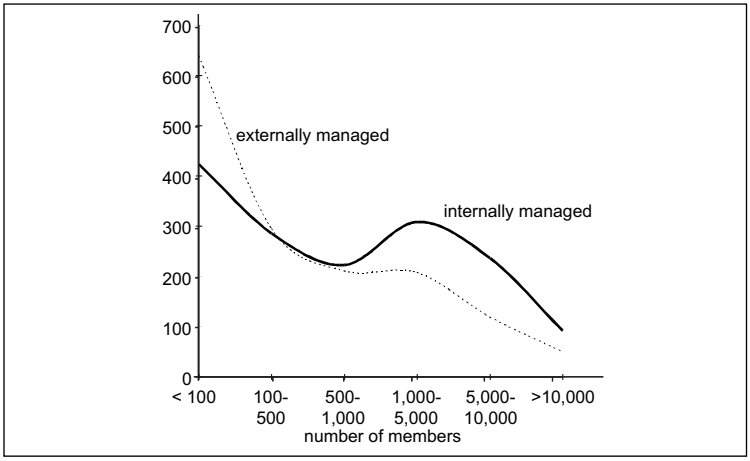
61 See, for example, OECD (1998a). This report argues that growing private pension funds and equity markets will improve capital markets by developing 'alternative governance channels', especially in systems where banks are the dominant source of capital, or where family holdings and cross-ownership are important.

Here is a sample of different studies' conclusions about economies of scale in financial markets.[62]

- The evidence in section 2 showed no significant relationship in Argentina, Mexico and the United Kingdom between charges and the size of funds, though that, of course, does not preclude a relationship between costs and fund size
- Turner and Beller's (1989) study of pension funds in the United States found economies of scale until funds reach $75 million in assets; thereafter, administrative costs as a proportion of assets remain constant
- James, Vittas and Smalhout (1999) look at mutual funds in the United States. Their regression analysis suggests that the fall in costs comes to a halt between $20 billion and $40 billion of assets under management. Collins and Mack (1997), in contrast, find a rather lower minimum efficient size
- Dermine and Roller (1992) suggest a minimum efficient size in the French mutual fund market of only $0.5 billion
- OSI, the management consultants, concluded that 0.5 million members would be sufficient to achieve available scale economies in the provision of stakeholder pensions in the United Kingdom (Timmins, 1999). With 10½ million personal pensions in the United Kingdom, even a minimum efficient size of 0.5 million members leaves room for a dozen or so providers.
- The Australian Prudential Regulatory Authority (1998b) finds evidence of economies of scale in the administration of the superannuation guarantee. Figure 12 shows that this effect is stronger for funds using external rather than in-house investment managers. External administration costs about 1½ times more per member for the smallest funds, but is markedly cheaper for funds with more than 1,000 members. This is surprising, because external managers can achieve economies of scale even by pooling together several small firms' funds. Perhaps this result reflects greater competition among external managers for larger accounts.

62 Indro *et al.* (1999) provide some interesting evidence that there are diseconomies of scale in active management of funds in the United States. Funds perform more poorly once they reach a certain size.

Figure 12. Annual administrative expenses per member by external or internal management, Australia, 1996-97



Source: Australian Prudential Regulatory Authority (1998b), Figure 3

The evidence on economies of scale is therefore inconclusive if not conflicting. Given its significance for the optimum structure of the funded pension industry, this is an important area for future research.

4.3 Pension fund portfolios and costs

Can fund managers consistently outperform their peers? This question is an extremely controversial one, within both the economic literature and the financial-services industry. Much of the latter, for example, has vociferously opposed the Financial Services Authority's (1999) proposal to exclude performance history from its 'league tables' of indicators of cost and quality of different fund managers.

Regulations require constant repetition of the caveat 'past performance is no guarantee of the future' or variations on this phrase in financial promotions. Yet, advertisements are littered with claims that suggest the opposite. My (highly unscientific) survey of recent newspapers found that the majority of financial adverts refer to past performance. Indeed, it seems the primary characteristic that fund managers use to distinguish themselves from their competitors. A couple of examples:

*** has produced a phenomenal track record

*** is in the top quartile for all periods since launch in 1990

Financial advisors, general and specialist financial media and consumers all show a voracious appetite for performance comparisons.

The numerous academic studies of the performance of pension funds and other institutional investors over time have, however, failed to find evidence of persistence under- or over-performance.[63] The Financial Services Authority has implicitly endorsed this view by rejecting past performance as one of the indicators for its league tables of financial-services firms.[64]

4.3.1 Index funds

The absence of evidence that fund managers can persistently out-perform the market, coupled with the additional costs of actively[65] managing assets (in research and dealing costs etc.), leads naturally to the concept of the index fund. Shah and Fernandes (1999) describe index funds as 'arguably one of the most successful ideas that have flowed from academic economics into the real world'.[66]

The simplest kind of index fund holds securities in proportion to their market capitalisation. The fund then only needs to trade when new shares are issued or firms

63 See, inter alia, Wyatt Company (1990, Brown and Goetzmann (1995), Blake, Lehmann and Timmerman (1997), Carhart 1997), Brown et al. (1992), Elton, Gruber and Blake (1996a,b). Bodie, Kane and Marcus (1989), however, point out that there is a serious measurement problem as the noise of market fluctuations drowns out fund selection ability. Say a fund manager outperforms by 2½ per cent a year. If performance were measured on monthly returns (+0.2 per cent), we would need 32 years of observations to be statistically sure of the out-performance. Some different measurement problems are set out in Ball, Kothari and Shanken (1995) and Chen and Knez (1995).

64 Financial Services Authority (1999b) and Bacon and Woodrow (1999). See also London (1999a,b,c).

65 Active management in this sense means picking stocks. Confusingly, the term active investment is also used to describe fund managers who buy stakes in under-performing companies and aim to improve performance through changes in strategy and/or management. Examples of managers using this approach include the California and New York funds for state employees and specialist firms, such as Lens. See Whitehouse (2000c) for a discussion.

66 The concept has even reached the 'Dilbert' cartoon strip. The unscrupulous Dogbert announces: 'I'm starting a mutual fund for investors who aren't bright enough to know their alternatives. It must be a huge market. Otherwise most people would invest in index funds.' 'What's an index fund?' asks Dilbert. Dogbert comments: 'Ouch, ouch, you're making me wag too hard'. Adams (1998), p. 185.

merge. WM Company (1999) found that actively managed pension funds in the United Kingdom traded between 40 and 80 per cent of their domestic equity holdings a year in the period 1989-1997. Turnover rates for index funds were typically less than 10 per cent a year.[67]

The first index fund was launched in the early 1970s, but the rapid growth of index funds had been more recent. Pensions and Investments magazine reported in February 1999 that $950 billion of equities in the United States were managed in index funds by 55 firms. The largest four managers — Barclays Global Investors, State Street, Bankers Trust and Tiaa-Cref (the fund for teachers and college professors) — held $625 billion of US equities in index funds, some two-thirds of the indexed total. Including bonds and international equities, the total assets held in index funds exceeded $1300 billion. WM Company (1999) estimates that index funds account for around 30 per cent of the equity market in the United States and around 20 per cent in the United Kingdom.

Index mutual funds' total costs in the United States are, in practice, much lower than actively managed funds. Good and Hermansen (1998) calculate that costs of 0.2 per cent of assets for large-capitalisation stocks, compared with 1.7 per cent for actively managed funds. Costs for investment in medium- and small-capitalisation stocks are 2.9 per cent of assets and 0.4 per cent of assets respectively. James, Smalhout and Vittas (1999) confirm these results. They find that total investor charges (weighted by assets in the fund) average 1.5 per cent a year for active mutual funds and 0.32 per cent a year for passive. (Note that these include reported expenses plus trading and sales charges.)

A strand of the literature that is related to the performance persistency question asks whether funds can consistently out-perform the market (not just other investment institutions). Again, there is little evidence of funds persistently beating the index.[68]

4.3.2 The downside of indexing funds

Index funds produce a guaranteed supply of capital for stocks included in the index. So if a substantial proportion of the asset-management market is accounted for by index funds, the prices of constituent shares might be pushed upwards. This would distort the market's allocation of resources by artificially lowering the cost of capital of index-component stocks.

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67 Turnover is defined as purchases plus sales minus net investment as a percentage of the average portfolio value. Net investment is excluded in order to measure voluntary trading.

68 See, inter alia, Lakonishok, Shleifer and Vishny (1992), WM Company (1999) and Budden (1999).

An efficient market, however, would undo the impact of these distortions. If an index stock exceeds its economically fair valuation, then active investors might then sell the stock. The net effect on the stock price might then be zero or close to zero. This can be and has been studied empirically. Lynch and Mendenhall (1997), for example, calculate that the price of a stock rises 3.8 per cent in the period between the announcement that Standard & Poor's will include a stock in the index and the date at which it is included.[69] That window is the period during which index funds must seek to buy the necessary stake. In the ten days immediately after the stock is included, the price falls by 2.3 per cent relative to the market. The reverse effect — when a share is removed from the index — is larger. The price falls by 12.7 per cent between announcement and effect, and then rises by 6.2 per cent in the immediate aftermath of deletion. So the permanent (or net) effect of inclusion in the index is partly offset by sales from non-indexing investors: a 1.5 per cent rise for a newly included share and a 6.5 per cent drop for a share that is removed.

Other problems are likely to emerge once index funds own a large part of the stock-market. Indexation is essentially 'free-riding' on the decisions of active managers. Once index funds, with their predictable strategy, dominate, then a contrarian investment strategy may well be very profitable (see also the discussion of the Canada pension plan above). Finally, in emerging economies, appropriate market benchmarks are often lacking.[70]

4.4 Constraining portfolios

Public management and collective provision share the characteristic that they restrict individual portfolio choice. In Bolivia, for example, people are currently allocated to a fund, and when choice is introduced, it will initially only be between the two present funds. Sweden restricts choice indirectly, by encouraging people to move to cheaper funds in its complex system of cross-subsidies.

The new stakeholder schemes in the United Kingdom are also likely to restrict member choice of investments to reduce costs within the government's charge ceiling. The government has said: "We expect some schemes to offer individual members no separate choice in the way their money is invested...In general, we do not expect members will want to make complex investment choices".[71]

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69 See also Harris and Gurel (1986) and Shleifer (1986).

70 See Master (1998).

71 Department of Social Security (1999a). See Shah (1999) for a general discussion of individual choice of pension portfolios.

In defined-contribution schemes, it is prudent for people to shift from a riskier (but higher return), equity-dominated portfolio when young to less risky investments when they near retirement. (Similar arguments apply if they choose to draw down their fund rather than convert to an annuity during retirement.) Such a strategy is both standard investment advice and shown to be optimal by a range of economic studies.[72] Moreover, this sensible shift in investments with age would not be possible with a 'one-size-fits-all' investment fund.

Individuals might well wish to avoid complex investment choices, but they can be expected to make simple choices from a short menu of investment options with different risk-return properties (e.g. equity or bond-dominated or balanced funds). This would enable people to reduce the volatility of the value of their pension fund as they neared retirement.

The main counter-argument is one of cost and complexity. Dividing individual pension contributions between different funds and transferring investments between funds on members' request adds to the administrative burden. Providing information on different investment options and educating people about their investment choices would also be costly. There is also the risk that workers make the 'wrong' choices, investing either too riskily or too prudently (dubbed 'reckless conservatism').

Experience with defined-contribution plans offered by employers in the United States, mainly 401(k)s, is useful evidence. In 1978, only 16 per cent of plans offered members a choice of investments, but now 94 per cent have more than one fund, and 58 per cent have five or more.[73] Australia is also moving in the direction of greater member direction of investments. Over half of superannuation guarantee members had some kind of investment choice by 1996-97.[74]

Table 11 shows the allocation of 401(k) investments from a large survey covering 18 per cent of 401(k) members.[75] Overall, nearly 70 per cent of funds are invested in

72 See, inter alia, Jagannathan and Kotcherlakota (1996) and Samuelson (1989a,b) and King and Dicks-Mireaux (1982).

73 Regulations protect plans and sponsoring employers from fiduciary responsibilities if members are allowed a sufficiently broad choice of investments with different risk and return characteristics. The vast majority of plans intend to comply with these regulations, allowing members to choose investments (94 per cent of schemes covering 92 per cent of members according to survey data: KPMG Peat Marwick, 1998).

74 Australian Prudential Regulatory Authority (1998a).

75 Earlier studies used much smaller data sets. These include Yaboboski and VanDerhei (1996), who looked at 180,000 members with three large employers. Goodfellow and Schieber (1997) analysed 36,000 participants in 24 schemes. Other papers have investigated investment choices in the Thrift Savings Plan (a defined-contribution scheme for federal employees) — Hinz, McCarthy and Turner (1997) — and in TIAA-CREF (a plan for teachers and college professors) — Ameriks, King and Warshawsky (1997).

equities, with 15 per cent in bond or money-market funds and 15 per cent in guaranteed investment contracts. The pattern with age seems prudent. Older workers tend to reduce the proportion in equities and increase the allocation to bond and money-market funds and guaranteed investment contracts.[76]

Table 11. Asset allocation in member-directed 401(k) pension plans

Age	Equity	of which, own employer's stock	Bond/money funds	Guaranteed investment contracts
20	77	22	14	8
30	76	26	14	9
40	72	29	14	12
50	67	29	15	16
60	53	28	18	26
Total	68	28	15	15

Source: VanDerhei et al. (1999)

Note: investment in balanced funds is allocated 60 per cent to equities and 40 per cent to bonds, in line with the Investment Company Institute's data for the average balanced mutual fund

There are, however, some divergences from prudent investment in the United States. First, the large allocation to the stock of the employer: 28 per cent of the total invested in equities or 19 per cent of the total fund. A more diverse portfolio would be more sensible. Indeed, given individuals' future employment and wages are already dependent on the performance of their employer, any investment in the employer's stock seems imprudent. There is also evidence that a substantial minority is very

76 These contracts, provided by insurance companies, provide for a 'holding period' during which a fixed rate of return is paid, guaranteed for the life of the contract. Withdrawals can be made at book value to provide benefits.

conservative. Fifteen per cent of people have no equity investments at all, even through balanced funds or their own employer's stock. Although this may be a rational strategy for people in their 60s (25 per cent of whom have no equity investments), it certainly is not for people in their 20s (of whom 15 per cent avoid equity investments). More detailed analysis of this group, however, reveals that most are new to their jobs. It seems that people are willing to join their employer plan when young and starting a new job, but they delay making investment decisions for a couple of years.

The evidence from the United States is encouraging: the majority of defined-contribution scheme members make prudent investment choices. They take advantage of the flexibility schemes offer to adjust portfolios to suit individual circumstances, most importantly, how close they are to retirement.

5. Conclusions

Charges for pensions and other financial services have a major impact on the net returns to saving. Public policy towards such charges — both in theory and practice — covers a broad spectrum, from complete freedom for providers to set both the structure and level of fees through regulatory limits on fees to alternative institutional structures.

Even the most liberal regimes impose minimum disclosure requirements: providers must tell potential consumers the impact of charges on their investments in a standard form. As disclosure requirements for personal pension charges in the United Kingdom have been tightened (for example), there has been a modest decline in the average level of charges. However, there is little evidence that consumers shop around and compare different providers' disclosed fees. Also, the complexity of charge structures mean that the burden of fees can vary with age, planned age of retirement, value of contributions, value of the fund etc. 'League tables' of charges, which are based on example consumers, do not give relevant results for all.

This problem makes quite a persuasive case for restrictions in the structure of charges, a policy followed in some Latin American countries, such as Argentina and Chile. In

both of these countries the importance of fixed charges has declined. The system now offers something very close to a single price, that consumers can use to compare different providers, that varies little with the amount contributed. The consumer benefit from increased transparency very probably outweighs providers' costs in terms of loss of flexibility.

A second step to bring charges to consumers' attention is to levy charges on top of (rather than out of) mandatory contributions. This encourages shopping around because charges reduce current net income rather than future pension benefits. Four Latin American countries have adopted this approach.

Returning to the policy of a limit on charge structure, the important policy option is the type of charge to be permitted. There are three features of the two charges important in making this choice. First, the time profile of charge revenues. Fees on contributions generate more up-front revenues than fees on assets. This allows providers to cover their start-up costs more quickly. It might boost competition by encouraging more entrants to the pension market when the system is established. Secondly, the incidence of the levies across different types of consumer. If there are fixed costs per member—and the evidence suggests that these are sizeable—then levies on assets redistribute from people with large funds to people with fewer assets in their plan. Older workers, with larger funds on average, would cross-subsidise younger workers, for example. Contribution-based charges redistribute from people with high levels of contributions (typically higher earners) to people with low levels of contributions. Indeed, there would be no revenues from people who do not contribute. This might be because they have lost their job, withdrawn from the labour force or moved into the informal sector of the economy. But pension providers would still have to bear the cost of administering these people's funds. Asset-based fees ensure a continuing flow of revenues from non-contributors, but this means that the fees bear more heavily on people who withdraw from work early. Finally, a charge on fund value encourages providers to maximise assets, both by attracting funds from other providers and, more importantly, by maximising investment returns.

The choice between the asset-based and contribution-based approach is finely balanced. Unsurprisingly, different countries have taken different options. Levies on contributions are the norm in Latin America, while with stakeholder pensions the United Kingdom has opted for asset-based fees.

The next step along the spectrum of policy on fees for pensions is to set quantitative restrictions on the amount providers can charge. Only Kazakhstan, Poland, Sweden and the United Kingdom (in the new stakeholder plans) have such limits. The risk with this policy is that governments set the 'wrong' ceiling. Too high a limit would be ineffectual. Too low a ceiling might prevent fund managers from covering their costs. This will restrict competition and choice. It could even lead to the failure of weaker providers, undermining public confidence in the system. Ceilings all too often become a de facto minimum charge as well as the legal maximum. Price competition, beyond meeting the regulatory requirement, might be curtailed.

The availability of data to help setting an appropriate ceiling will vary. If capital markets are well developed, governments can see the costs and charges for similar financial services and make an informed choice of limit. But in emerging economies, there might not be an appropriate domestic yardstick, although international experience can be a guide.

Evidence from Argentina shows that pension providers attract more new members with extra spending on advertising rather than reducing their charges. In Poland, charges came well down the list of reasons members gave for their choice of fund. In a whole range of countries, there is no correlation between pension fund fees and the number of members attracted. Also, huge differences in charge levels between different providers have in some cases persisted for many years. These findings suggest that consumers are insufficiently informed about the large impact that charges can have on the value of their pension fund. This might be used to support a charge ceiling: at the very least, it justifies a major public education programme to inform consumers of the importance of charges.

The empirical evidence shows very different charge levels between countries with relatively similar systems, namely those based on individual accounts with individual choice of provider. The average charge varies from less than 15 per cent to more than 30 per cent. The countries with the most liberal policies on charges do seem to have relatively high mean charge levels, but the evidence is far from clear cut.

The paper also discussed alternative institutional approaches to charges, exemplified in practice by Bolivia. Instead of individual choice of provider, the government auctioned off two licences to manage pension assets. It is difficult, however, to extrapolate from Bolivia's experience because of the cross-subsidy coming from managing a large amount of privatisation proceeds. Nevertheless, countries with a small population and small, poorly developed domestic capital markets may find this

approach efficient. The performance of other institutional approaches to managing funded pension systems is generally negative. Publicly managed funds have generated poor returns. Even with good management, the state as a large shareholder raises corporate governance concerns that are very difficult to resolve.

I have avoided discussion of administrative costs of public, pay-as-you-go schemes. While some papers have compared the two directly, this can be very misleading. For example, funded pension providers are required to provide annual (or sometimes even more frequent) statements of the value of investments and projections of eventual pension benefits. No public pay-as-you-go scheme provides such a service (as far as I am aware).

It is easy to lose sight of the important issues in pensions policy in the detail of the analysis of administrative charges, which is necessarily complex and involved. The most important issues in pension reform relate to financial markets. How large is the equity premium? How volatile are long-term equity investments? Are stock-markets currently over-valued? Compared with these questions, administrative charges are a second-order, purely operational issue. Some analysts treat lowering administrative charges as the only goal of designing a pension system. I have tried to spell out the important trade-offs involved. Lower administrative charges can involve substantial constraints on individual choice of pension provider and of pension-fund portfolio and limits on competition. This conflicts with other goals of pension reforms and might adversely affect pension funds' net rate of return.

Annex – Measuring charges

Charges on long-term financial products, including pensions, are levied in many different ways. Some are one-off fees, usually a fixed sum payable up-front, although some initial charges can be proportional to contributions in, say, the first year. Other one-off fees are payable at the end of the term: one example is the charge for exercising an open-market annuity option in a personal pension plan in the United Kingdom.

Others fees are ongoing. They can be a fixed fee per period, a percentage of contributions or a percentage of the assets in the fund.

The variety of different levies means that it is impossible to measure of costs at any point in time: the only meaningful calculation has to be made over the lifetime of pension membership.

A.1 A formal analysis of administrative charges

Summarising the different charges in a single number raises a host of complex issues. This Annex, building on Diamond (1998, Appendix B), sets out a simple model to show the relationship between different summary measures of charges. This formal analysis is an important pre-requisite for choosing between different measures and understanding the implications.

Individual earnings are assumed to grow at a rate g. Earnings at a given period t in continuous time[77] can be written as a multiple of earnings in period 0, when the individual joins the pension fund

$$w_t = w_o\, e^{gt} \qquad (1)$$

Assume a pension contribution rate as a proportion of earnings of c. The first type of charge considered is one as a proportion of contributions, a_1. The net inflow into the pension fund at time t net of this charge is

$$c(1 - a_1)w_o\, e^{gt} \qquad (2)$$

77 Bateman, Doyle and Piggott (1999) present a similar model in discrete time.

These contributions earn an annual investment return, r. But an annual management charge, a_2, is levied as a proportion of the fund's assets. So the net accumulation in the fund at the end of the term (time T) from contributions made at time t is

$$c(1\text{-}a_1)w_o\, e^{gt} e^{(r\text{-}a_2)(T\text{-}t)} \qquad (3)$$

Integrating (3) from time 0, when the pension plan is started, to time T, when accumulated funds are withdrawn, gives the total fund as

$$c(1-a_1)w_o\, e^{\,(r-a_2)T}\, \frac{e^{(g+a_2-r)T}-1}{g+a_2-r} \qquad (4)$$

Any one-off charge, payable up-front (a_o), would have earned an investment return up to pension withdrawal. The pension benefit is therefore reduced by

$$a_o\, e^{\,(r-a_2)T} \qquad (5)$$

A proportional exit charge, a_3, can be deducted from the final accumulation in (4). Allowing for all these charges gives the total net accumulation as

$$\left[c(1-a_1)w_o\, e^{\,(r-a_2)T}\, \frac{e^{(g+a_2-r)T}-1}{g+a_2-r} - a_o\, e^{\,(r-a_2)T} \right](1-a_3) \qquad (6)$$

Finally, to evaluate the impact of charges, it is useful to show the pension benefit that would accumulate in the absence of any levies (i.e., setting all the a terms to zero)

$$cw_o\, e^{rT}\, \frac{e^{(g-r)T}-1}{g-r} \qquad (7)$$

To summarise, the equations above give lifetime pension contributions plus the investment returns they earn less four different types of charges: a fixed, up-front fee (a_0); a levy on contributions (a_1); an annual charge on the assets of the fund (a_2); and an exit charge as a proportion of the accumulated balance (a_3).

A.2 Alternative measures of charges

The Financial Services Authority's (1999) consultation paper on league tables for comparing different providers (based on the detailed analysis by Bacon and Woodrow, 1999) suggests three alternative measures of costs.

- The **reduction in yield** shows the effect of charges on the rate of return, given a set of assumptions about the rate of return, the time profile of contributions and the term of the plan. So, if the gross return assumed were 5 per cent a year and the reduction in yield 1.5 per cent, then the net return would be 3.5 per cent a year. In essence, equation (6) is calculated as it stands, and then solved for the value of a_2 that gives the same total accumulation assuming that the up-front charge (a_0), contribution-related fee (a_1) and exit charge (a_3) are all zero.
- The **reduction in premium** shows the charge as a proportion of contributions, again for a set of assumptions about investment returns etc. All of the other charges are in this case subsumed into a_1 in equation (6), rather than a_2 in the reduction-in-yield case.
- The third measure, called **MP1**, was developed within the Financial Services Authority (James, 2000). MP1 is the price of a *m*anaged *p*ortfolio that yields the market return, excluding charges, on £*1*.

A final measure is the **charge ratio**, set out in Diamond (1998) and used by Murthi, Orszag and Orszag (1999) in their study of the United Kingdom. The charge ratio is one minus the ratio of the accumulation net of charges to the accumulation without charges, i.e., one minus the ratio of equation (6) to equation (7).

These different measures are closely related. For example, the charge ratio is exactly the same as the charge measured as a proportion of contributions (the reduction in premium). To see this, write the accumulation, net of just a charge on contributions, a_1

$$c(1-a_1)w_o\, e^{\,rT}\, \frac{e^{(g-r)T}-1}{g-r} \qquad (8)$$

The charge ratio is one minus equation (8) divided by equation (7), which is simply a_1, the charge on contributions.

There seems to be some confusion about the inter-relationship between these different measures. Murthi, Orszag and Orszag (1999) argue: 'An alternative but fundamentally equivalent, approach [to the charge ratio] is to compute an "annual charge equivalent" that captures all costs and expresses them on an annualised basis'. They cite Rea and Reid's (1998) study of charges on US mutual funds as an example of this approach, which is the reduction-in-yield method. But the two measures can give different answers over relative charges when assumptions are constant, and move in different directions when assumptions change. The two measures, then, are not 'fundamentally equivalent'.

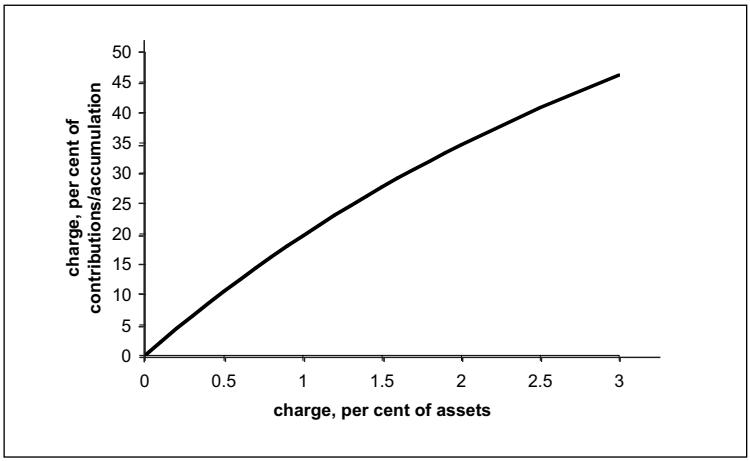
A.3 Empirical comparisons

The different measures can be compared in practice by calculating equation (6) for a variety of charges. The baseline assumptions are that individual earnings grow by 3 per cent a year and annual investment returns are 5 per cent. Contributions are paid for a 40-year term.

Figure A.1 compares the first two measures — reduction in yield and the charge ratio (or reduction in premium) — given a single charge as a percentage of assets. The horizontal axis varies this charge between zero and 3 per cent. The vertical axis shows the effect this charge would have on the final pension value (the charge ratio). As discussed previously, a charge on contributions of this rate would have exactly the same effect on the final pension value. The Figure shows that quite low charges on assets build up over the long period of a pension investment to reduce the pension value substantially. A levy of one per cent of assets, for example, adds up to nearly 20 per cent of the final pension value (or, equivalently, 20 per cent of contributions).

The relationship between the two measures is non-linear, but the deviation from linearity is not large. The choice of either measure would not make much difference in comparing either individual plans or countries' systems with different levels of charges for a given level of earnings growth and real returns. (These important conditions are discussed in the following sub-sections.) For example, the doubling in asset management charges from 0.5 to 1 per cent a year increases the charge ratio by nearly 90 per cent. So the comparison of reduction in yield gives very similar results to the comparison of charge ratios.

Figure A.1. The relation between asset charge and charge ratio

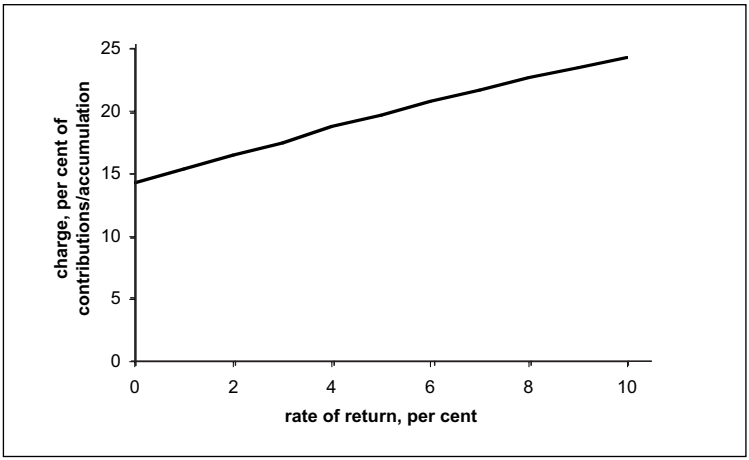


A.4 Robustness of charge measures to changes in assumptions: rate of return

The different measures exhibit different degrees of sensitivity to changes in assumptions. The first comparison varies the rate of return where charges are simply one per cent of assets. The reduction in yield measure is insensitive to changes: it is simply one per cent for all investment returns.

The reduction in premium or charge ratio, in contrast, is sensitive to the rate of return. Figure A.2 holds all other variables constant (including the actual charge of one per cent of assets). This measure of fees increases by about one percentage point for each one-point increase in the rate-of-return assumption.

Figure A.2. Charge ratio under different rate of return assumptions (charge of one per cent of assets)

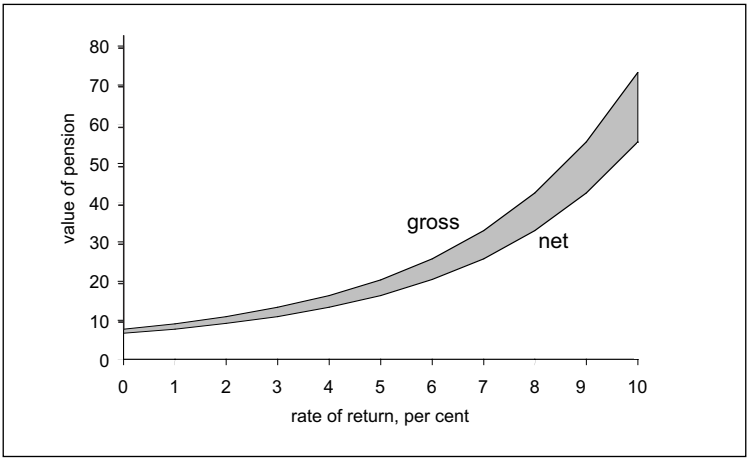


Is it desirable that the measure of charges should vary with the rate of return? Figure A.3 illustrates the issue. It shows the value of the pension before charges and net of charges (again assumed to be one per cent of assets) for different rates of return. The grey area in between is the absolute value of the charges. Total fees paid increase more rapidly than the gross accumulated pension: the grey area gets wider as the rate of return increases. This favours a charge measure, such as the charge ratio or reduction in premium, which varies with the rate of return.

However, the increased rate of return obviously increases both gross and net pension. An increase from the baseline assumption of five per cent rate investment returns to six per cent would raise the gross pension by 26 per cent and the net pension by 24½ per cent.

The extra pension from the higher return is more than the whole of the charge ratio. Yet the charge ratio increases by one percentage point as the rate of return increases by one point. And a higher charge ratio, of course, implies that the pension member is worse off, when in fact they are substantially better off. This is a significant disadvantage of the charge ratio (or reduction in premium) as a measure of the price of financial services.

Figure A.3. Gross and net pension under different rate of return assumptions (charge of one per cent of assets)



A.5 Robustness of charge measures to changes in assumptions: earnings

The second economic assumption is the path of individual earnings. This is important because contributions are assumed to be a constant fraction of pay, so the age-earnings profile determines the relative weight of contributions early and late in the working life. This feeds through to the overall charge burden. Contribution-based charges are 'front-loaded', that is, they are relatively heavy in early years. Asset-based charges are 'back-loaded', because the accumulated fund is much larger closer to retirement.

Studies of the impact of administrative charges have (generally) implicitly or explicitly based their computations on an estimate of average, economy-wide earnings growth. For example, Murthi, Orszag and Orszag (1999) take their assumption of 2 per cent annual real earnings growth in the United Kingdom from the rules of the Faculty and Institute of Actuaries. This growth rate is specified for the calculation of liabilities in defined-benefit occupational pension schemes under the Minimum Funding Requirement of Pensions Act 1995. This is used, in their words, to 'document the lifetime costs on an individual account for a typical worker'.

However, a typical worker's pay profile will not coincide with economy-wide earnings growth. Professional workers, for example, tend to have steeply rising earnings, especially when young, while manual workers' pay is relatively flat across the lifecycle. Disney and Whitehouse (1991) find that professional and managerial pay in the United Kingdom rises by 6 per cent a year and manual workers', by around 2 per cent a year. (Based on hourly wage rates using Family Expenditure Survey data for 1978-86.) The more complex pseudo-cohort analysis of Meghir and Whitehouse (1996) confirms this earlier result using an eighteen-year time series of data. Wage differentials have been increasing recently, suggesting that the difference between manual and professional earnings profiles is now probably larger.[78] Economy-wide earnings growth averages across a range of cohorts of different sizes. So there is no reason why the mean of any given cohort's lifecycle pay should coincide with aggregate changes in wages across the same period. The actuaries' assumptions, applied to defined-benefit plans, also average across a range of different cohorts. Their assumption is appropriate for this purpose, but not for computing an individual's pay profile.

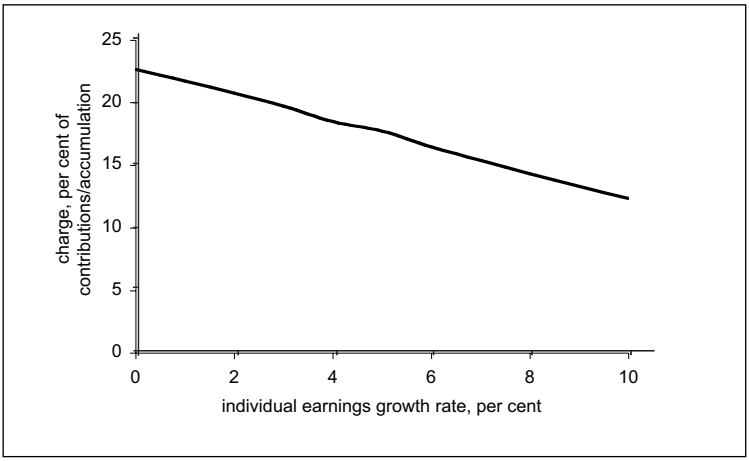
Age-earnings profiles vary between countries as well as between occupational groups. For example, cross-section data show a sharp decline in earnings at older ages in Australia, Canada and the United Kingdom. In France, Germany and Italy, the older workers tend to be paid the same or more than people of prime age are.[79]

Figure A.4 shows how the charge ratio measure varies with the assumed rate of earnings growth. Each one-point increase in earnings growth reduces the charge ratio by around one percentage point (when fees are one per cent of assets). With two-per-cent pay increases, the charge ratio is 20 per cent, but only 16 per cent with increases of six per cent a year. This higher growth rate, I argued, is more typical of workers in white-collar jobs.

78 See Meghir and Whitehouse (1996) on the United Kingdom.

79 See OECD (1998*b*) and Disney and Whitehouse (1999), section 8.2.2 for detailed data.

Figure A.4. Charge ratio under different earnings growth assumptions (charge of one per cent of assets)



A.6 Robustness of reduction in yield measure with contribution-based levies

Asset based charges are a common form of charge for many financial products. As section 2 illustrated, however, the managers of mandatory funded pensions in Latin America tend to levy fees on contributions. With asset-based charges, the reduction in yield is, by definition, unaffected by model assumptions, such as rate of return and individual earnings growth. The charge ratio or reduction in premium is, in contrast, sensitive to changes in these variables.

With contribution based levies, the reverse is true. Since the charge ratio is equal to the levy as a proportion of contributions, this is by definition constant as other variables are changed. The reduction in yield, however, is not. Figure A.5 begins by looking at the effect on this charge measure of varying the rate of return, assuming that the levy is ten per cent of contributions. (This chart can be compared with Figure A.2.) A higher rate of return reduces the reduction in yield measure, even though total charges paid remain the same. The absolute magnitude of the effect of a one-point change in the return is broadly similar to the impact on the charge ratio when levies are based on assets, although the effect is in the opposite direction.

Figure A.5. Reduction in yield under different rate of return assumptions(charge of 10 per cent of contributions)

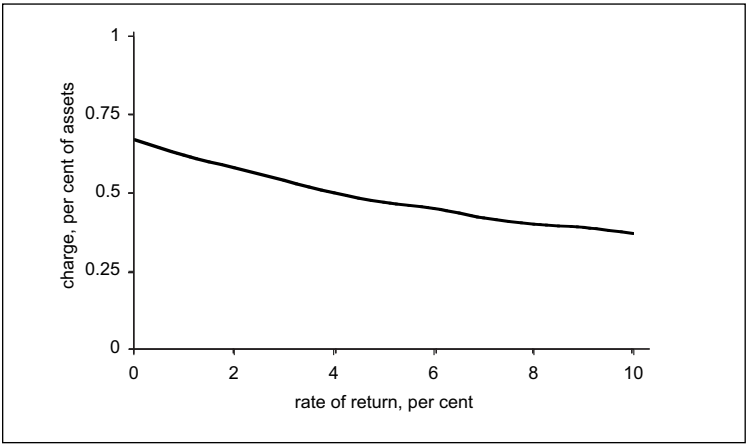
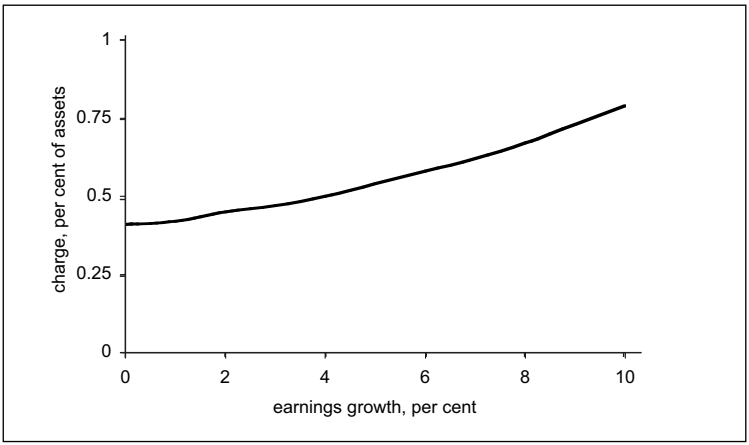


Figure A.6 shows a similar result for variations in the assumption of individual earnings growth. Again, the magnitude of the change in the measure is similar but the direction different from the effect of changes in earnings growth on the charge ratio with an asset-based levy.

Figure A.6. Reduction in yield under different earnings growth assumptions (charge of 10 per cent of contributions)



A.7 Charge measures and duration of the pension policy

The analysis so far has assumed a full 40 years of contributions to the pension plan. Yet many people do not have such as consistent contribution profile. Many of the issues raised in measuring charges when policy terms vary will be considered in more detail in section 4, which looks at which types of charge are optimal.

Figures A.7 and A.8 look at the impact on charges of a shorter period of contributions, assuming that the individual withdraws the benefit when contributions cease. This can be thought of as the cost of taking out a pension for someone already in the labour market (or, perhaps, someone who will retire early). As before, the reduction in premium measure is unaffected if charges (in practice) are levied on contributions and the reduction in yield is insensitive to the policy term if charges are asset-based.

Figure A.7 shows the charge-ratio or reduction-in-premium measure for a range of durations of pension membership, assuming that the charge in practice is one per cent of assets. The reduction in yield measure is, of course, constant, while the charge ratio increases linearly with the length of investments by 0.5 percentage points for each extra year. This is because a one-year policy is charged just once, while the first year's contributions for a two-year policy are in effect charged twice. For short-term policies, much of the pension benefit is made up solely of the contributions, while investment returns have a relatively small effect. When a pension is held for a long period, most of the accumulated value comes from the investment returns rather than the nominal value of contributions.

The relationship between net and gross pension for different policy periods and the charge ratio is very similar to the relationship with the rate of return illustrated in Figures A.2 and A.3. A pension held for a long period is much larger, because of the long-term impact of compound interest. So the charge ratio increases, but by much less than the increase in the net pension. This is an undesirable feature, because pensions are supposed to be long-term investments. By showing that shorter-term pensions are 'cheaper', this is not only counter-intuitive but also, if used by consumers or their advisors, could be misleading.

Figure A.7. Pension policy duration and the charge ratio (charge of one per cent of assets)

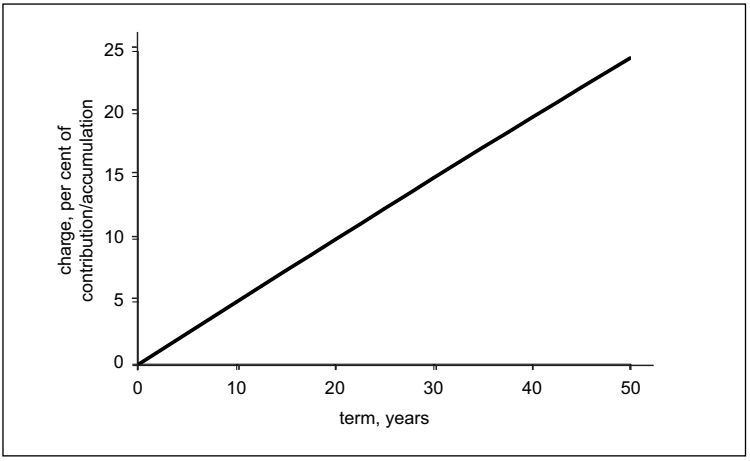
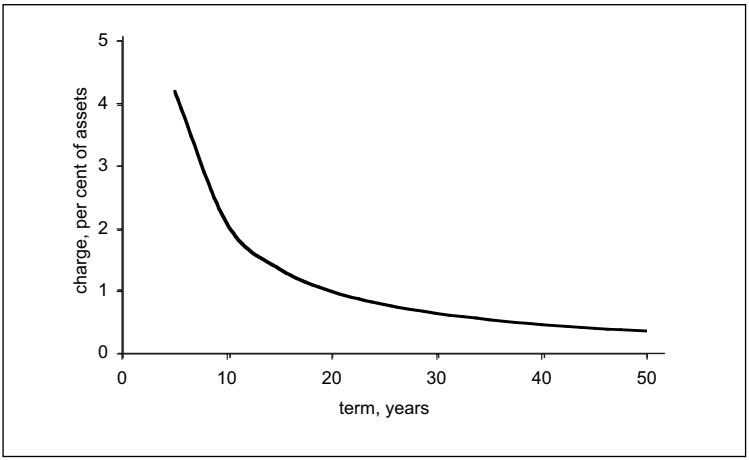


Figure A.8 shows the opposite case to Figure A.7. It shows the effect on the reduction in yield of differing policy terms when the charge in practice is ten per cent of contributions. The relationship is now in the opposite direction, with longer-term policies appearing to be cheaper. It is also non-linear. This is simply the inverse of the effect explaining the pattern in Figure A.7. Contribution-based charges are spread over many more years as duration lengthens, reducing their impact when measured against assets. This might also be construed as a misleading picture of pension costs. The absolute value of charges paid increases with a longer term and, in this simulation, the charge as a percentage of contribution is constant while the reduction in yield shows a decline.

Figure A.8. Pension policy duration and the reduction in yield (charge of 10 per cent of contributions)



A.8 Gaps in contribution profiles

The previous section showed the effect of a shorter period of contributions than the 40-year baseline assumption, but still one that terminated with the withdrawal of funds. People's contribution profiles in practice are likely to be a good deal more complicated, with gaps arising from periods of unemployment, working in the informal sector of the economy, caring for relatives etc.

During a gap in contributions, charges on the assets in the fund continue to be levied, but contribution-based fees are obviously zero. For simplicity, assume that the worker contributes for an initial period $(0...N)$ and then stops contributing, but the funds remain invested as before to time T (when the pension is withdrawn).

At the point when contributions are stopped, the accumulated fund, net of contribution and asset based levies (a_1 and a_2 respectively) is given by equation 4, substituting N for T

$$c(1-a_1)w_o\, e^{(r-a_2)N}\, \frac{e^{(g+a_2-r)N}-1}{g+a_2-r} \qquad (9)$$

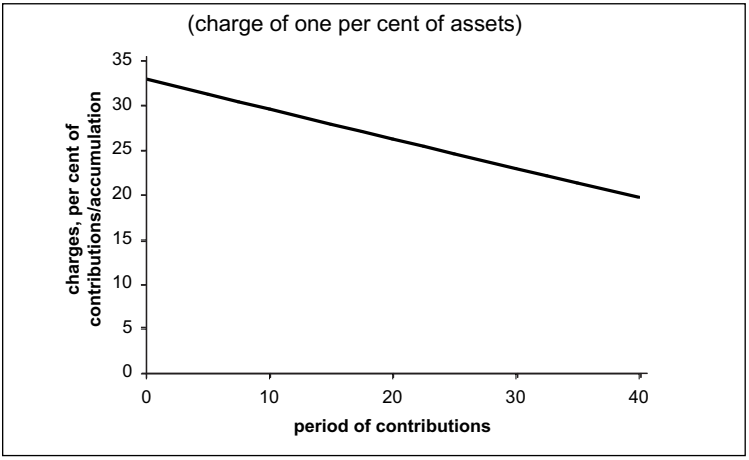
After N, when contributions are stopped, the fund continues to grow by the rate of return, net of charges, giving the total accumulation as

$$c(1-a_1)w_o\, e^{(r-a_2)N}\ \frac{e^{(g+a_2-r)N}-1}{g+a_2-r} \qquad (9)$$

Figure A.9 shows how contribution gaps affect charges as a percentage of contributions or the total pension fund accumulation. At 40 years, the result is the same as for a full lifetime contribution: the charge ratio is around 20 per cent. At the midpoint of the curve, the worker is assumed to contribute for 20 years, and then leave the fund for another 20 years. With the rate of return invested by the fund reduced by the assets-based charge over this period, the charge ratio is now 26 per cent.

In these cases, the reduction in yield measure is no longer simply equal to the asset-based charge. With 20 years of contributions and 20 years without, the reduction in yield is around 1.4 per cent. The effect on this measure of varying the period without contributions is very similar to the impact on the charge ratio.

Figure A.9. Gaps in pension contributions and the charge ratio (charge of one per cent of assets)



A.9 Conclusion: which is the appropriate measure of charges?

No measure of charges can summarise simply and accurately the many different kinds of fees that are levied on financial products. Our concern should therefore be to minimise the loss of precision in this process of simplification.

All measures — reduction in premium, reduction in yield, MP1 — deliver sensible answers much of the time. An increase in a levy of any possible type increases the measure and, in general, the measured increase is proportionate. MP1 has the drawback that it is not mathematically robust when net returns are negative zero or even small and positive.

Murthi, Orszag and Orszag (1999) argue that the charge ratio is best: 'Although expressing fees in terms of annual basis points may be most familiar to investors, that form is not necessarily the most insightful', they write. I would argue that the sensitivity of both charge ratio and reduction in yield to assumptions about the rate of return and individual earnings growth means that any single measure could be misleading. A first preference must be for both measures, along with an analysis of the sensitivity of the results to the underlying economic assumptions.

If a single measure of charges is required, the analysis above shows that the most appropriate choice depends on the type of levies used in practice and their relative importance. If, for example, most of the cost of a typical policy is due to levies on assets, then the reduction in yield measure gives the most robust results. Similarly, if charges on contributions (or exit charges) are a more important burden on the pension fund, then the reduction in premium will be more robust.

In the United Kingdom, for example, around 70 per cent of the total charge (on either measure) derives from the annual asset-management fee of 0.9 per cent. The remainder comes mainly from the contribution-based levy. The annual management charge would only be significant for a very small absolute value of contributions. This suggests that the reduction in yield would be a less distortionary measure of the impact of fees than the reduction in premium or charge ratio. It is more robust to changes in assumptions of the term the pension policy is held, the rate of return and the rate of earnings growth. The reverse is true in most of Latin America, where contribution-based levies predominate. There, the charge ratio would be a more robust measure.

When comparing funds or systems which rely on different types of charge, reliance on a single measure can be misleading, and the best approach is to use both the charge ratio and the charge as a proportion of assets.

I am grateful to participants at the workshop on charging for financial services at the Financial Services Authority, London on 9 December 1999 for a very useful discussion. Paul Johnson, Ros Benett, Malcolm Cook and two anonymous referees from the FSA, Estelle James, Robert Palacios and Roberto Rocha of the World Bank, Costas Meghir of University College, London and the Institue for Fiscal Studies, Keith Chapman of the Australian Prudential Regulatory Authority , Richard Disney of Nottingham UNiversity and the Institute for Fiscal Studies and Juan Yermo of the Organisation for Economic Co-operation and Development gave helpful comments and advice. The paper expresses a personal view.

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Bibliography

Aaron, H.J. (1966), 'The social insurance paradox', *Canadian Journal of Economics*, vol. 32, pp. 371-374.

— (1997), 'Privatizing social security: a bad idea whose time will never come', *Brookings Review*, vol. 15, no. 3, pp. 16-23.

Adams, S. (1998), *Journey to Cubeville*: *A Dilbert Book*, Andrews McMeel, Kansas City.

Allen, S.G., Clark, R. and McDermed, A. (1988), 'Job mobility, older workers and the role of pensions', *Research on Aging*, vol. 10, no. 4, pp. 459-471.

—, — and — (1993), 'Pensions, bonding and lifetime jobs', *Journal of Human Resources*, vol. 28, no. 3, pp. 463-481.

Ameriks, J, King, F.P. and Warshawsky, M. (1997), 'Premium allocations and accumulations in TIAA-CREF — trends in participant choices among asset classes and investment accounts', TIAA-CREF Research Dialogues no. 51.

Anderson, J.M., Kolberg, J.E., Vroman, W. and Evans-Young, T. (1997), 'The pension system of Kazazkhstan: policy, structure, operations and reform', report to the Ministry of Labour and Social Protection.

Andrews, E.S. (2000), 'Kazakhstan: an ambitious approach to pension reform', Pension Reform Primer series, Social Protection Discussion Paper, World Bank, Washington, D.C., forthcoming.

Arrau, P. and Schmidt-Hebbel, K. (1994), 'Pension systems and reforms: country experiences and research issues', *Revista de Analisis Economico*, vol. 9, no. 1, pp. 3-20.

—, Valdés Prieto, S. and Schmidt-Hebbel, K. (1993), 'Privately managed pension systems: design issues and the Chilean experience', Policy Research Working Paper, World Bank, Washington, D.C.

Australian Prudential Regulatory Authority (1998a), 'Member investment choice: analysis update', *Insurance and Superannuation Bulletin*, March.

— (1998*b*), 'Superannuation funds administration — latest analysis', *Insurance and Superannuation Bulletin*, June.

— (1998*c*), 'Update on retirement savings accounts', *Insurance and Superannuation Bulletin*, June.

— (1998*d*), 'Investment management expenses', *Insurance and Superannuation Bulletin*, September.

— (1999), *Superannuation Trends, June Quarter* 1999, Sydney.

Axia Economics (1999a), 'Comments on minimum standards for stakeholder pensions', London.

— (1999*b*), 'Comments on employer access for stakeholder pensions', London.

Bacon and Woodrow (1999), *Comparative Tables: Proposals for Discussion*, report prepared for the Financial Services Authority, London.

Ball, R. Kothari, S.P. Shanken, J. (1995), 'Problems in measuring portfolio performance: an application to contrarian investment strategies', *Journal of Financial Economics*, vol. 38, pp. 79-107.

Ballivian, A.. (1997), 'Pension reform in Bolivia: fiscal and social impacts', *mimeo*., World Bank, Washington, D.C.

Banks, J. and Tanner, S. (1999), *Household Saving in the UK*, Institute for Fiscal Studies, London.

Bartlett, B. (1999), 'Social security cost factor', *Washington Times*, 30 March.

Bateman, H., Doyle, S. and Piggott, J. (1999), 'Private mandatory retirement provision: design and implementation challenges', presented to the 21st annual research conference of the Association for Public Policy Analysis and Management, 4-6 November, Washington, D.C.

Bateman, H. and Piggott, J. (1997), *Private Pensions in OECD Countries – Australia*, Labour Market and Social Policy Occasional Papers, No. 23, OECD, Paris.

— and — (1999), 'Mandating retirement provision: the Australian experience', *Geneva Papers on Risk and Insurance*, vol. 24, no. 1, pp. 93-113.

— and Valdés Prieto, S. (1999), 'The mandatory private old age income schemes of Australia and Chile: a comparison', *mimeo*., University of New South Wales.

Blake, D., Lehmann, B.N. and Timmerman, A. (1997), 'Performance measurement using multiple asset class portfolio data: a study of UK pension funds', Discussion Paper no. 1618, Centre for Economic Policy Research, London.

— and Orszag, J.M. (1997), 'Preservation and portability of pension rights in the United Kingdom', in Office of Fair Trading, *Report of the Director General's Inquiry into Pensions*, London.

Blanchard, O.J. (1993), 'The vanishing equity premium', in O'Brien, R. (ed.), *Finance and the International Economy 7*, Oxford University Press.

Bodie, Z., Kane, A. and Marcus, A. (1989), *Investments*, Richard D. Irwin.

— Marcus, A.J. and Merton, R.C. (1988), ''Defined benefit versus defined contribution pension plans: what are the real trade offs?', in Bodie, Z., Shoven, J.B. and Wise, D.A. (eds), *Pensions in the US Economy*, University of Chicago Press for National Bureau of Economic Research.

Bone, M., Gregory, J., Gill, B. and Lader, D. (1992), *Retirement and Retirement Plans*, HMSO for the Office of Population Censuses and Surveys, London.

Born, P., Gentry, W.M., Viscusi, W.K and Zeckhauser, R.J. (1995), 'Organizational form and insurance company performance: stocks versus mutuals', Working Paper no. 5246, National Bureau of Economic Research, Cambridge, Mass.

Brown, S.J. and Goetzmann, W.N. (1995), 'Attrition and mutual fund performance', *Journal of Finance*, vol. 50, pp. 679-698.

—, —, Ibbotson, R.G. and Ross, S.A. (1992), 'Survivorship bias in performance studies', *Review of Financial Studies*, vol. 5, pp. 553-580.

Brown-Humes, C. (1999), 'Death of a salesman: the stakeholder pension may put many financial advisors out of business as they are forced to accept lower commissions', *Financial Times*, 22 April.

Budden, R. (1999), 'Low costs, few surprises and high returns. Index trackers: funds which mirror indices will not outperform their benchmarks, but then neither will they underperform. As a result, tracker returns frequently beat actively managed funds', *Financial Times*, 27 November.

Carhart, M.M. (1997), 'On persistence in mutual fund performance', *Journal of Finance*, vol. 52, pp. 57-82.

Center on Budget and Policy Priorities (1999), 'Administrative and other costs consume more than 40 per cent of included [*sic*] accounts in the United Kingdom new study finds', Press Release, 16 March.

Chance, D.M. and Ferris, S.P. (1991), 'Mutual fund distribution fees: an empirical analysis of the impact of deregulation', *Journal of Financial Services Research*, vol. 5, pp. 25-42.

Chapman, J. (1998), 'Pension plans made easy', *Money Management*, November.

Chen, Z., and Knez, P.J. (1995), 'Portfolio performance measurement: theory and applications', *Review of Financial Studies*, vol. 9, pp. 511-555.

Chlon, A. (2000), 'Pension reform and public information in Poland', Pension Reform Primer series, Social Protection Discussion Paper no. 0019, World Bank, Washington, D.C.

—, Góra, M. and Rutkowski, M. (1999), 'Shaping pension reform in Poland: *Security through Diversity*', Pension Reform Primer series, Social Protection Discussion Paper no. 9923, World Bank, Washington, D.C.

Collins, S. and Mack, P. (1997), 'The optimal amount of assets under management in the mutual fund industry', *Financial Analysts Journal*, vol. 51, pp. 70-79.

Constantinides, G., Donaldson, J. and Mehra, R. (1998), '"Junior can't borrow." A new perspective on the equity premium puzzle', Working Paper no. 6617, National Bureau of Economic Research, Cambridge, Mass.

Dahlquist, M. Engström, S. and Söderlind, P. (1999), 'Performance and characteristics of Swedish mutual funds, 1993-97', Discussion Paper no. 2166, Centre for Economic Policy Research, London.

Department of Social Security (1997), 'Guaranteed secure pensions for all, says Peter Lilley', DSS Press Notice no. 97/044, London.

— (1998), *A New Contract for Welfare: Partnership in Pensions*, London.

— (1999*a*), 'Stakeholder pensions: minimum standards — the government's proposals', Consultation Brief no. 1, London.

— (1999*b*), 'Stakeholder pensions: employer access — the government's proposals', Consultation Brief no. 2, London.

— (1999*c*), 'Stakeholder pensions: the tax regime — the government's proposals', Consultation Brief no. 6, London.

— (2000), 'The pensioners' income series 1997-98', London.

Diamond, P. (1994), 'Privatization of social security: lessons from Chile', *Revista de Analisis Economico*, vol. 9, no. 1, pp. 21-34.

— (1998), 'Administrative costs and equilibrium charges with individual accounts', Working Paper no. 7050, National Bureau of Economic Research, Cambridge, Mass.

Dilnot, A.W., Disney, R.F., Johnson, P.G. and Whitehouse, E.R. (1994), *Pensions Policy in the UK: An Economic Analysis*, Institute for Fiscal Studies, London.

Disney, R.F., Emmerson, C. and Tanner, S. (1999), *Partnership in Pensions: An Assessment*, Institute for Fiscal Studies, London.

—, Grundy, E. and Johnson, P.G. (1998), *The Dynamics of Retirement*, Research Report no. 72, Department of Social Security, London.

—, Meghir, C.H.D and Whitehouse, E.R. (1994), 'Retirement behaviour in Britain', *Fiscal Studies*, vol. 15, no. 1, pp. 24-43.

—, Palacios, R.J. and Whitehouse, E.R. (1999), 'Individual choice of pension arrangement as a pension reform strategy', Working Paper no. 99/18, Institute for Fiscal Studies, London.

— and Whitehouse, E.R. (1991), 'Occupational and industrial earnings over time: the use of pooled cross-section data', Working Paper no. 91/7, Institute for Fiscal Studies, London.

— and — (1992*a*), *The Personal Pension Stampede*, Institute for Fiscal Studies, London.

— and — (1992*b*), 'Personal pensions and the review of the contracting out terms', *Fiscal Studies*, vol. 13, no. 1, pp. 38-53.

— and — (1994), 'Choice of private pension and pension benefits in Britain', Working Paper no. 94/2, Institute for Fiscal Studies, London.

— and — (1996), 'What are occupational pension entitlements worth in Britain?', *Economica*, vol. 63, pp. 213-238.

— and — (1999), 'Pension plans and retirement incentives', Pension Reform Primer series, Social Protection Discussion Paper no. 9924, World Bank, Washington, D.C.

Edwards, S. (1998), 'The Chilean pension reform: a pioneering program', in Feldstein, M. (ed.), *Privatizing Social Security*, University of Chicago Press for the National Bureau of Economic Research.

Elton, E.J., Gruber, M.J. and Blake, C.R. (1996*a*), 'Survivorship bias and mutual fund performance', *Review of Financial Studies*, vol. 10, pp. 1097-1120.

—, — and — (1996*b*), 'The persistence of risk-adjusted mutual fund performance', *Journal of Business*, vol. 69, pp. 133-157.

Ewing, A. and Goldmark, S. (1994), 'Privatization by capitalization: the case of Bolivia — a popular participation recipe for cash-starved SOEs', Finance and Private Sector Development Note no. 31, World Bank, Washington, D.C.

Federación Internacional de Administradoras de Fondos de Pensiones (2000), *Boletin Estadístico*, no. 7.

Financial Services Authority (1999), *Comparative Information for Financial Services*, Consultation Paper no. 28, London.

Financial Times (1999*a*), 'Warning on stakeholder costs: Life assurers unlikely to make money from proposed scheme', 12 April.

— (1999*b*), 'Pay-by-fee plan for independent financial advisors', 15 April.

— (1999*c*), 'With-profits funds "facing extinction". Financial services actuaries warn against complexity and high charges', 25 November.

Fundacion de Investigaciones Economicas Latinoamericanas (FIEL) (1999), *La Regulacion de la Competencia y de los Servicios Publicos: Teoria y Experiencia Argentina Reciente*, Buenos Aires.

General Accounting Office (1999*a*), 'Social security: individual accounts as an element of long-term financing reform', T-HEHS-99-86, Washington, D.C.

— (1999*b*), 'Social security: criteria for evaluating social security reform proposals', T-HEHS-99-94, Washington, D.C.

— (1999*c*), 'Social security reform: implementation issues for individual accounts', HEHS-99-122, Washington, D.C.

— (1999*d*), 'Social security reform: administrative costs for individual accounts depend on system design', HEHS-99-131, Washington, D.C.

Genetski, R. (1999), 'Administrative costs and the relative efficiency of public and private social security systems', Social Security Paper no. 15, Cato Institute, Washington, D.C.

Good, W.R. and Hermansen, R.W. (1998), *Index Your Way to Investment Success*, New York Institute of Finance.

Goodfellow, G.P. and Schieber, S.J. (1997), 'Investment of assets in self-directed retirement plans', in Gordon, M., Mitchell, O.S. and Twinney, M. (eds), *Positioning Pensions for the Twenty-First Century*, University of Pennsylvania Press, Philadelphia, Penn.

Government Actuary (1991), *Occupational Pensions in 1987: Eighth Survey*, H.M.S.O., London.

— (1999), 'Occupational and personal pension schemes in the UK: terms for contracting out of Serps', London.

Gustman, A.L. and Steinmeier, T.L. (1989), 'An analysis of pension benefit formulas, pension wealth and incentives from pensions', *Research in Labor Economics*, vol. 10, pp. 53-106.

— and — (1993), 'Pension portability and labor mobility: evidence from the Survey of Income and Program Participation', *Journal of Public Economics*, vol. 50, pp. 299-323.

— and — (1995), *Pension Incentives and Job Mobility*, W.E. Upjohn Institute for Employment Research, Kalamazoo, Michigan.

Harris, L. and Gurel, E. (1986), 'Price and volume effects associated with changes in the S&P 500 list: new evidence for the persistence of price pressures', *Journal of Finance*, vol. 41, pp. 815-829.

Heller, P. (1998), 'Rethinking public pension initiatives', Working Paper no. 98/61, International Monetary Fund, Washington, D.C.

Henley, A., Disney, R.F. and Carruth, A. (1994), 'Job tenure and asset holdings', *Economic Journal*, vol. 104, pp. 238-249.

Hinz, R., McCarthy, D. and Turner, J. (1997), 'Are women conservative investors? Gender differences in participant-directed pension investments', in Gordon, M., Mitchell, O.S. and Twinney, M. (eds), *Positioning Pensions for the Twenty-First Century, University* of Pennsylvania Press, Philadelphia, Penn.

Hsin, P.L. and Mitchell, O.S. (1996), 'Are public pension plans administratively efficient?' in in Gordon, M., Mitchell, O.S. and Twinney, M. (eds), *Positioning Pensions for the Twenty-First Century*, University of Pennsylvania Press, Philadelphia, Penn.

IFA Association (1998), *A Report on the Distribution Channels for Financial Services in the UK and the Case for the Retention of Polarisation Prepared for the Office of Fair Trading*, London.

Iglesias, A. and Palacios, R.J. (2000), 'Managing public pension reserves: evidence from the international experience', Pension Reform Primer series, Social Protection Discussion Paper no. 0003, World Bank, Washington, D.C.

Indro, D.C., Jiang, C.X., Hu, M.Y. and Lee, W.Y. (1999), 'Mutual fund performance: does fund size matter?' *Financial Analysts Journal*, pp. 74-87.

Inland Revenue (1999), *Inland Revenue Statistics 1999*, Government Statistical Service, London.

Ippolito, R. (1991), 'Encouraging long-term tenure: wage tilt or pensions?' *Industrial and Labor Relations Review*, vol. 44, no. 3.

Jagannathan, R. and Kotcherlakota, N.R. (1996), 'Why should older people invest less in stocks than younger people?' *Federal Reserve Bank of Minneapolis Quarterly Review*, vol. 20, no. 3, Summer.

James, E., Ferrier, G., Smalhout, J. and Vittas, D. (1999), 'Mutual funds and institutional investments: what is the most efficient way to set up individual accounts in a social security system', Working Paper no. 7049, National Bureau of Economic Research, Cambridge, Mass.

— and Palacios, R.J. (1995), 'The cost of administering publicly managed pensions', *Finance and Development*, vol. 32, no. 2, pp. 12-15.

—, Smalhout, J. and Vittas, D. (1999), 'Administrative costs and the organization of individual account systems: a comparative perspective', presented to the conference 'New ideas about old-age security', World Bank, Washington, D.C., 14-15 September.

James, K.R. (2000), 'The price of retail investing in the UK', Occasional Paper no. 6, Financial Services Authority, London.

John, D.C. and Davis, G.G. (1998), 'The costs of managing individual social security accounts', Backgrounder no. 1238, Heritage Foundation, Washington, D.C.

Johnson, P.G., Disney, R.F. and Stears, G. (1996), *Pensions 2000 and Beyond*, vol. 2, 'Analysis of Trends and Options', Retirement Income Inquiry, London.

King, M.A. and Dicks-Mireaux, L. (1982), 'Asset holdings and the life cycle', *Economic Journal*, vol. 92, pp. 247-267.

Kotcherlakota, N.R. (1996), 'The equity premium: it's still a puzzle', *Journal of Economic Literature*, vol. 34, pp. 42-71.

Kotlikoff, L.J. and Sachs, J. (1997), 'Privatizing social security: it's high time to privatize', *Brookings Review*, vol. 15, no. 3, pp. 16-23.

— and Wise, D.A (1987), 'The incentive effects of private pension plans', in Bodie, Z., Shoven, J.B. and Wise, D.A. (eds), *Issues in Pension Economics*, University of Chicago Press for National Bureau of Economic Research.

KPMG Peat Marwick (1998), Retirement Benefits in the 1990s: 1998 Survey Data, Washington, D.C.

Lakonishok, J. Shleifer, A. and Vishny, R.W. (1992), 'The structure and performance of the money management industry', *Brookings Papers on Economic Activity: Microeconomics*, pp. 339-93.

Lazear, E. (1981), 'Agency, earnings profiles, productivity and hours restrictions', *American Economic Review*, vol. 71, pp. 606-620.

— (1985), 'Incentive effects of pensions', in Wise, D.A. (ed.), *Pensions, Labor and Individual Choice*, University of Chicago Press for National Bureau of Economic Research.

— and Moore, R.L. (1988), 'Pensions and turnover', in Bodie, Z., Shoven, J.B. and Wise, D.A. (eds), *Financial Aspects of the United States Pension Scheme*, University of Chicago Press for National Bureau of Economic Research.

Lynch, A.W. and Mendenhall, R.R. (1997), 'New evidence on stock price effects associated with changes in the S&P 500 index', *Journal of Business*, vol. 70, no. 3, pp. 351-383.

McCormick, B. and Hughes, G. (1984), 'The influence of pensions on job mobility', *Journal of Public Economics*, vol. 23, pp. 183-206.

Master, S.J. (1998), 'The problem with emerging market indexes', *Journal of Portfolio Management*, pp. 93-100.

Meadows, P. (1999), 'The flexible labour market: implications for pensions provision', National Association of Pension Funds, London.

Meghir, C.H.D. and Whitehouse, E.R. (1996), 'The evolution of wages in the United Kingdom: evidence from micro data', *Journal of Labour Economics*, vol. 14, no. 1, pp. 1-25.

— and — (1997), 'Labour market transitions and the retirement of men in the UK', *Journal of Econometrics*, vol. 79, pp. 327-354.

Mehra, R. and Prescott, E.C. (1985), 'The equity premium: a puzzle', *Journal of Monetary Economics*, vol. 15, pp. 145-161.

Mitchell, O.S. (1982), 'Fringe benefits and labor mobility', *Journal of Human Resources*, vol. 17, pp. 286-298.

— (1996), 'Administrative costs in public and private retirement systems', Working Paper no. 5734, National Bureau of Economic Research, Cambridge, Mass.

— (1998), 'Administrative costs in public and private retirement systems', in Feldstein, M. (ed.), *Privatizing Social Security*, University of Chicago Press for National Bureau of Economic Research.

— (1999), 'Administrative costs in Mexico's AFORES pension system', Working Paper no. 99-1, Pension Research Council, Wharton School, University of Pennsylvania.

Murthi, M., Orszag, J.M. and Orszag, P.R. (1999), 'Administrative costs under a decentralized approach to individual accounts: lessons from the United Kingdom', Discussion Paper, Birkbeck College, London.

National Consumer Council (1994), *Consumer Concerns: A Consumer View of Personal Financial Services: The Report of a Mori Survey*, London.

Office of Fair Trading (1992), *Independent Financial Advisors and the Impact of Commission Disclosure*, a research report by London Economics for the Office of Fair Trading, London.

— (1997), *Report of the Director General's Inquiry into Pensions*, London.

— (1999), *The Rules on the Polarisation of Investment Advice: A Report by the Director General of Fair Trading*, London.

Olsen, K.A. (1998), 'Individual social security accounts and employers: potential consequences for administration, taxes, and employment-based pensions', submitted for the written record, House of Representatives, Committee on Ways and Means, Subcommittee on Social Security.

— and Salisbury, D.L. (1998), 'Individual social security accounts: issues in assessing administrative feasibility and costs', Special Report no. 34 and issue Brief no. 203, Employee Benefits Research Institute, Washington, D.C.

Organisation for Economic Co-operation and Development (OECD) (1998a), *Maintaining Prosperity in an Ageing Society*, Paris.

— (1998*b*), 'Work-force ageing in OECD countries', *Employment Outlook*, pp. 123-151, Paris. (Also available as Ageing Working Paper no. 4.1)

Orszag, J.M. and Orszag, P.R. (1999), 'Social security costs are key to reform debate', *Washington Times*, 11 April.

Orszag, P.R. and Stiglitz, J.E. (1999), 'Rethinking pension reform: ten myths about social security systems', presented to the conference 'New ideas about old-age security', World Bank, Washington, D.C., 14-15 September.

Palacios, R.J. and Pallares-Mirales, M. (2000), 'International patterns of pension provision', Pension Reform Primer series, Social Protection Discussion Paper, World Bank, Washington, D.C., forthcoming.

— and Rocha, R. (1998), 'The Hungarian pension system in transition', Pension Reform Primer series, Social Protection Discussion Paper no. 9805, World Bank, Washington, D.C.

— and Whitehouse, E.R. (1998), 'The role of choice in the transition to a funded pension system', Social Protection Discussion Paper no. 9812, World Bank, Washington, D.C.

Palmer, E. (2000), 'The Swedish pension reform model — framework and issues', Social Protection Discussion Paper no. 0012, World Bank, Washington D.C.

Pennachi, G. (1998), 'Government guarantees on funded pension returns', Pension Reform Primer series, Social Protection Discussion Paper no. 9806, World Bank, Washington, D.C.

Personal Investment Authority (1995), *Life Assurance Disclosure: One Year On*, London.

— (1999), *Fifth Survey of the Persistency of Life and Pensions Policies*, London.

PricewaterhouseCoopers (1998), '25 years of indexing: an analysis of the costs and benefits', research report for Barclays Global Investing.

Queisser, M. (1998), 'The second generation pension reforms in Latin America', Ageing Working Paper no. 5.4, OECD, Paris.

Rea, J.D. and Reid, B.K. (1998), 'Trends in the ownership cost of equity mutual funds', *Perspective*, vol. 4, no. 3, Investment Company Institute, Washington, D.C.

Samuelson, P.A. (1958), 'An exact consumption-loan model of interest with or without the social contrivance of money', *Journal of Political Economy*, vol. 66, pp. 467-482.

— (1989*a*), 'The judgement of economic science on rational portfolio management: indexing, timing and long-horizon effects', *Journal of Portfolio Management*, pp. 4-12, Fall.

— (1989*b*), 'A case at last for age-phased reduction in equity', *Proceedings of the National Academy of Sciences*, vol. 86, pp. 9048-9051.

Samwick, AA. and Skinner, J. (1993), 'How will defined-contribution pension plans affect retirement income?', Working Paper no. 6645, National Bureau of Economic Research, Cambridge, Mass.

Scherman, K.G. (1999), 'The Swedish pension reform', Issues in Social Protection Discussion Paper no. 7, International Labour Office, Geneva.

Schiller, B.R. and Weiss, R.D. (1979), 'The impact of private pensions on firm attachment', *Review of Economics and Statistics*, vol. 61, pp. 369-380.

Shah, A. and Fernandes, K. (1999), 'The relevance of index funds for pension investment in equities', presented to the conference 'New ideas about old-age security', World Bank, Washington, D.C., 14-15 September.

Shah, H. (1997), 'Towards better regulation of private pension funds', Policy Research Working Paper no. 1791, World Bank, Washington, D.C.

— (1999), 'Pension fund investments: individual choice versus control', *mimeo.*, World Bank, Washington, D.C.

Shleifer, A. (1986), 'Do demand curves slope down?' *Journal of Finance*, vol. 41, pp. 579-590.

Shoven, J.B. (2000), *Administrative Costs and Social Security Privatization*, National Bureau of Economic Research, Cambridge, Mass., forthcoming.

Siegel, J. (1992), 'The equity premium: stock and bond returns since 1802', *Financial Analysts Journal*, pp. 28-38.

Sinha, T., Martínez, F.and Barrios-Muñoz, C. (1998), 'Performance of publicly mandated private pension funds in Mexico: simulations with transactions costs', *mimeo.*, Instituto Tecnologico Autonomo de Mexico City.

Srinivas, P.S., Whitehouse, E.R. and Yermo, J. (2000), 'Regulating pension funds' structure, investments and performance: cross-country evidence', Pension Reform Primer series, Social Protection Discussion Paper no. 0018, World Bank, Washington, D.C.

Stilgitz, J.E. (1983), 'On the relevance or irrelevance of public financial policy: indexation, price rigidities and optimal monetary policy', in Dornbusch, R. and Simonsen, M (eds), *Inflation, Debt and Indexation*, MIT Press, Cambridge, Mass.

— (1988), 'On the relevance or irrelevance of public financial policy', in *Proceedings of the 1986 International Economics Association Meeting*.

Sundén, A. (1998), 'The Swedish pension reform', *mimeo.*, Federal Reserve Board.

Taylor, M.F., with Brice, J., Buck, N and Prentice-Lane, E. (1999), 'British Household Panel Survey: User Manual: Introduction, Technical Report and Appendices', University of Essex, Colchester.

Timmins, N. (1999), 'Pension move "to hit life companies": Providers could fall from 60 to six in a decade says OSI', *Financial Times*, 29 March.

Tuner, J.A. and Rajnes, D.M. (2000), 'Limiting workers' financial risk through risk sharing: minimum rate of return guarantees for mandatory defined contribution plans', International Labour Office, Geneva.

Turner, R. and Beller, D. (1989), *Trends in Pensions*, Department of Labor, Washington, D.C.

Valdés Prieto, S. (1994), 'Administrative charges in pensions in Chile, Malaysia, Zambia and the United States', Policy Research Working Paper no. 1372, World Bank, Washington, D.C.

— (1995), 'Vendedores de AFPs: producto del mercado o de regulaciones ineficientes?' Working Paper no. 178, Institute of Economics, Catholic University of Chile.

— (1999*a*), 'Las comisiones de las AFPs: caras o baratos?' *Estudios Publicos*, vol. 73, pp. 255-291.

— (1999*b*), 'Costos administrativos en un sistema pensiones privatizado', Development Discussion Paper no. 677, Harvard Institute for International Development, Cambridge, Mass.

VanDerhei, J.L., Galer, R., Quick, C. and Rea, J. (1999), 401(k) *Plan Asset Allocation, Account Balances and Loan Activity*, Employee Benefit Research Institute, Washington, D.C.

Viscusi, W.K. (1985), 'The structure of uncertainty and the use of non-transferable pensions as a mobility reduction device', in Wise, D.A. (ed.), *Pensions, Labor and Individual Choice*, University of Chicago Press for National Bureau of Economic Research.

Von Gersdorff, H. (1997), 'The Bolivian pension reform: innovative solutions to common problems', Policy Research Working Paper no. 1832, World Bank, Washington, D.C.

Walford, J. (1998), *Personal Pensions 1998*, Financial Times Magazines, London.

Whitehouse, E.R. (1998), 'Pension reform in Britain', Pension Reform Primer series, Social Protection Discussion Paper no. 9810, World Bank, Washington, D.C.

— (1999), 'Should people be forced to join occupational pension schemes?' Axia Economics, London.

— (2000*a*), 'Consumer financial literacy, public information and pension reform: a case study of the United Kingdom', Pension Reform Primer series, Social Protection Discussion Paper no. 0004, World Bank, Washington, D.C.

— (2000*b*), 'Consumer financial literacy and pension information: a case study of the United States', Pension Reform Primer series, Social Protection Discussion Paper, World Bank, Washington, D.C., forthcoming.

— (2000*c*), 'Corporate governance and funded pensions', Pension Reform Primer series, Social Protection Discussion Paper, World Bank, Washington, D.C., forthcoming.

— (2000*d*), 'The value of pension entitlements: an illustrative model of nine OECD countries', *mimeo.*, OECD, Paris.

— and Wolf, M. (1997), 'State retirement plans', *Financial Times*, 3 March.

Wolf, D.A. and Levy, F. (1984), 'Pension coverage, pension vesting and the distribution of job tenures', in Aaron H.J. and Burtless, G.T. (eds), *Retirement and Economic Behavior*, Brookings Institution, Washington, D.C.

World Bank (1994), *Averting the Old Age Crisis: Policies to Protect the Old and Promote Growth*, Oxford University Press.

— (1995), *Bolivia: Financial Markets and Pension Reform Technical Assistance Project*, Report no. P 6142, Washington, D.C.

— (1998), *Report and Recommendations of the IBRD to the Executive Directors on a Proposed Pension Reform Adjustment Loan of US$300 million to Kazakhstan*, Report no. P 7242 KZ, Washington, D.C.

WM Company (1999), *Comparison of Active and Passive Management of Unit Trusts*, Research and Consultancy division, WM Company, Edinburgh.

Wyatt Company (1990), *Investment Company Persistency Study conducted for the National Association of Securities Dealers*.

Yaboboski, P.J. and VanDerhei, J.L. (1996), 'Worker investment decisions: an analysis of large 401(k) plan data', Issue Brief no. 176, Employee Benefit Research Institute, Washington, D.C.

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