

PENSION FUNDS
and Capital Markets

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Introduction

Pension funds, although not a recent financial innovation, remain in the centre of attention. The reason for that is that almost every country faces problems with its pension system and desperately seeks for a viable solution. In addition, although providing for income in retirement would seem to be essentially the same task in any country, there is a variety of approaches around the world.

In order to evaluate pension funds, it is necessary to get familiar with some of their basic features. Thus, this thesis begins with the most important economic issues pertaining to pension funds and social security (their main competitor). To highlight these issues, it examines the present pension systems of OECD and European countries as well as their regulatory and taxation regimes.

Next, the thesis discusses issues pertaining to corporate governance and finance as well as international investment, paying particular attention to the choice between defined-benefit and defined-contribution schemes. It then summarises the empirical evidence regarding the effects of pension funds on capital markets, paving the way towards the question that we will try to answer.

That is, do pension funds have any beneficiary effects on domestic capital markets? Note that this question abstracts from the potential benefits of pension funds on the pension problem.

In order to enlighten this question, the links between Pension Reform and Capital Market Development are stated as well as the economic and institutional reforms that may facilitate or condition the positive effect of pension fund reform on capital market development. In order to assess correctly the role of pension funds, it is also essential to examine the consequences of pension fund induced capital market development.

In order to examine all the above in a realistic environment, a study by Eduardo Walker and Fernando Lefort ‘‘Pension Reform and Capital Markets: Are there any

Hard Links'', assessing the importance of such effects from Chile, Peru and Argentina is reported. The evidence in general, seems to verify the hypothesis that pension funds have beneficial effects on capital markets.

The importance of whether pension funds have beneficiary effects on capital markets or not, is highlighted as the answer will decide whether they should be implemented or expanded to developing European and former communist countries.

In order to test this suggestion, this thesis expands the above-mentioned study to OECD countries. Pension funds have been implemented years ago in the UK and in some other European countries (e.g. The Netherlands). However it is only at recent years and due to the implementation of pension funds in developing countries that thoughts of their possible benefits for the capital market are expressed. This has happened because although pension funds existed before their implementation in less developed countries, their role was limited due to strict regulations.

The main question of the thesis is whether pension fund investment in the domestic equity market has a negative relationship with equity market volatility. Unfortunately, finding data for the empirical analysis proved a major challenge in this study, as in all its predecessors. In particular, only for the UK which is a country-frontier in the pension industry in a lot of ways, there were available data from 1965.

The UK was the first European country to promote pension funds as a substitute of social security and also lessen the regulatory burden imposed on them. The results of the empirical analysis are broadly consistent with the hypothesis that the UK is the most possible country to have experienced positive effects of pension funds in the volatility of its equity market. In particular, the analysis verifies that pension fund investment caused reduction of security price volatility in the UK market during the 1965-2000 period but not as significantly as we would wish.

The results of the panel analysis of seven OECD countries (U.S.A., U.K, Japan, Australia, The Netherlands, Sweden, and Switzerland), are qualitatively similar and the effect of pension funds on stock market volatility is more significant.

The above results suggest that pension funds may not only be an answer for the bankruptcy of social security but also a financial instrument that facilitates the growth of world capital markets. Such conclusions can not be hasty but they're interesting, especially for Greece, which faces serious problems with its pension system, and its capital markets have just been upgraded to "developed". It is possible that the effects of a pension reform in Greek stock market will demonstrate a composition of the results quoted in OECD and Latin American countries.

In the end of the study there is a presentation of the pension system of the Netherlands due to the fact that many specialists consider it the ideal pension system for the needs of a European country. The Netherlands, as the UK, has shifted from social security to pension funds quite early and with great success and therefore presents an interesting example.

SECTION A
GENERAL ISSUES

Chapter 1 / Pension Funds: Overview of Economic Issues

Broadly speaking, most countries' arrangements can be described under the "three pillars" concept. Pillar one usually represents the state provision that is available to all. Pillar two represents pensions that are linked to individuals' employment (whether in the public or private sector). Pillar three usually consists of personal pensions that individuals can set up if they choose to. In addition, approaches to pensions can also be classified into state and private sector, and into funded and unfunded arrangements. More often than not, state systems are unfunded and operate on a "pay-as-you-go" (PAYG) basis (using current tax revenue to pay current pensioners). On the other hand, private sector arrangements are almost always funded while in many countries there are also funded arrangements for the employees of public sector organisations.

Pension funds are of two main types: defined-benefit and defined-contribution which differ in the distribution of risk between the member and the sponsor. In the former, the sponsor has to pay members a pension related to their salary and the risk is shared (members trade wages for pension and sponsor has investment risk) while in the latter the members pay fixed contributions to receive varying - with market returns - benefits and all the risk is borne by the employee.

In pension funds employees gather funds for their pension. In contrast, in pay-as-you-go systems (social security), today's employees pay today's pensioners creating some form of intergenerational transfer. No such transfer exists in pension funds. In addition, they suffer from small liquidity risk as they receive regular inflows and have long term liabilities. Furthermore, they usually benefit from tax-deferral and have more liberal portfolio regulations than life-insurers. To be more specific, contributions are tax-free, as are accumulated interest and capital gains. Tax is only paid on receipt of a pension after retirement. As for portfolio regulation, they are allowed to hold greater percentage of risky assets -such as equities- in their portfolios than insurance companies are.

The key economic view of the pension funds is the retirement-income insurance they provide, especially for the defined benefit schemes. Insurance against inadequate replacement rate (pension/final earnings before pension), social security cuts, longevity, investment risk and risk of inflation.

The advantages of a company's pension fund (pillar 2) versus a financial institution's (pillar 3) are that employers know their future income, there are economies of scale and there are common interests as managers and workers are members of the same pension fund (as opposite to salesmen of insurance companies). Further advantages are that there is the possibility of implementation of enforced saving and therefore low danger of low replacement ratio; and there are no agency problems. Pension funds are actuarially fair as the present value of the benefits equals the present value of the contributions and the only existing risk is the risk of default of the company.

Pension funds will not cause increased saving if the life-cycle hypothesis that there is smooth consumption during working and not working life holds; (with the use of borrowing in early years of life and the assumption that individuals plan for their retirement). The hypothesis however does not hold as there are liquidity constraints and empirical data has shown that it is likely to have a positive relationship between

pension funds and saving. However some other factors need to be discussed, as countries with sizeable pension funds do not present higher savings than others and there seems to be a different effect for different income groups. Furthermore, it is not sure that an increase of personal saving will lead to an increase of national saving as the positive effect could be offset by tax deferral (revenue lost for the state), while the higher saving from companies in the form of pension funds could be offset by dissaving elsewhere in the company. The overall conclusion is that pension funds must have a minor effect on total saving but affect more the composition of saving towards long-term saving.

Pension funds also affect labour markets as they reduce labour turnover (early leavers loose rights and actually subsidise long stayers) and affect the retirement decision. The first effect is a positive one although it could cause labour market inflexibility. The second effect is caused by the fact that pension funds, especially defined-benefit schemes, offer increasing benefits until the first optional retirement date and then benefits decrease. A fact that undermines these effects is that many employees are not well informed about details of their pension funds. For example, Mitchell (1988), comparing worker descriptions of plans with actual formulae, found employers were poorly informed about details of the pension formulae including the type of plan they were participating.

Another question is whether pension funds help ensuring an adequate income to the elderly. The elderly nowadays have a satisfactory income mainly due to social security. Only 26% of retired individuals in the U.S.A receive pensions from pension funds and these account for 20% of their income. These percentages will increase with plan maturity but pension funds are not actuarially fair, they can not benefit the lifetime poor and therefore social security can not be totally replaced by them.

Other problems of pension funds, referring to the adequacy of retirement income, are the lack of indexation, the lack of health services and, if cash-out is allowed, it can be taken and leave small pensions. Furthermore, their coverage is typically under 50% of working population in most countries and they are accused of favouring the rich as workers with higher income and long job tenure in large firms are more likely to be covered by pension funds. Women, who have more broken work history, and the poor do not benefit as much by pension funds.

Many interesting issues pertain to corporate finance and capital markets. Defined-benefit pension funds, from a corporate finance perspective, are similar to corporate debt with the members acting as creditors who are interested in the investment strategy applied. As for their effect on capital markets, apart from the increase in saving and wealth, pension funds tend to invest in longer-term, riskier assets than individuals. That could cause an increase of the supply of long term funds to capital markets (switch to equities than bank deposits) leading to lower cost of long-term funds helping the growth of economy. Also, pension funds can be considered responsible for changes in the financial markets. Financial innovations like index futures were born by their need to hedge while their function caused changes in the regulation and infrastructure of financial markets as we will thoroughly see further on.

Pension funds have the advantages of providing income security for old age, flexibility, long-term saving and protect their members from political risks. On the other hand they offer low coverage, can't easily cover labour mobility, are unable to redistribute wealth where needed and suffer from investment risk and the risk of bankruptcy of the sponsor. The above pros and cons imply that social security and pension funds should be seen as complements and not as substitutes.

Chapter 2 / Social-Security: Overview of Economic Issues

Social Security offers compulsory, indexed, defined-benefit pensions and can be distinguished in two polar types: universal basic systems and insurance-based systems. The former offers flat pension for everyone in order to provide a minimum standard of living while the latter ties the pension with income and maintenance of living standards, financed by earnings-based contributions. They both share the defined-benefit approach and feature protection against inflation and longevity.

The justification of social security is that the state acts paternalistically, as it is afraid that individuals are myopic and will not cater for their retirement, while it also wants to protect them from possible failure of insurance companies. Social security also aims at redistributing wealth and has smaller transaction costs than individual retirement plans. There still remains the question of what is the ideal level of benefits provided by social security (perhaps basic for all?) and the problem that there is a lack of linkage between contributions and benefits, causing a distortion. That means that there is no way for an employee, paying contributions, to calculate what benefits he is entitled to in the future.

Anticipation of stable incomes over the life cycle may contribute to stability of aggregate demand, which may help protect the economy against cyclical instability. On the other hand, social security contributions cause an increase in non-wage cost of employment that could increase unemployment. Social security may also cause a decrease in savings as it guarantees an income after retirement and consequently lessens the need to save during the working life.

The major difference of pension funds and social security is that the former relies on "funding" while the latter on "pay-as-you-go". We define funding as setting aside and investing premia from each generation such that their pensions are paid from the streams of returns earned by the pension fund. In pay-as-you-go, retirement payments are paid by today's taxes and pensioners are actually financed by today's employees. The relative returns of the two systems depend for the former on the rate of return on assets and *years of retirement/working age* and for the latter on the growth of average earning and the *ratio of workers to pensioners*. By Aaron's rule¹, funding has showed more positive results in the past than pay-as-you-go (on time frame of quoted analysis). This result is strengthened by the effect of the ageing problem although funding remains sensitive to market crises. In pay-as-you-go systems, as pensions are funded by taxes, there is a decrease of competitiveness and a danger of fiscal deficits if contributions are not adjusted sufficiently. However, the system has no risk for the

¹Aaron's rule shows that, under the simplifying assumptions of a constant population and population distribution, the return to pay-as-you-go depends on the growth of average earnings (which determines growth in total contributions) and that of funding depends on the rate of return on accumulated assets. Hence funding can offer higher total benefits to retirees for the same outlay if asset returns exceed the growth rate of average earnings.

pensioner and is cheap to administer. The disadvantages of funding on the other hand is that it doesn't redistribute wealth where needed and it could also lead to a decrease of wages if employers cut wages to offset compulsory funding.

In all cases, a mixture seems like a better idea, but the transition from one system to the other is difficult.

Ageing of the population, the increase of benefits per person, the increase of unemployment and the changes in the structure of society have lead to intergenerational disequilibrium, amply illustrated by the table below. For example, in the Netherlands the population of 65 and over as a percentage of the population between 15-65 is expected to rise in 28,9% in 2020 compared to 18,5% today.

<i>Country</i>	<i>Population 65 and over as a percentage of population 15-65</i>		
	<i>1990</i>	<i>2020 (projection)</i>	<i>2050 (projection)</i>
UK	23.1	25.6	30.4
Germany	22.5	33.2	42.3
Netherlands	18.5	28.9	38.1
Sweden	27.4	33.0	35.8
Denmark	22.7	30.5	39.8
Switzerland	25.0	48.1	46.0
France	21.0	30.5	37.8
USA	18.7	25.0	31.8
Japan	16.5	33.7	37.6
Canada	16.8	29.0	36.4
Australia	16.6	23.7	32.0
Italy	20.3	28.7	37.8

Source: Hagemann and Nicoletti

This has caused an increase in expenditures and a decrease in competitiveness. The average ratio of pensions to GDP for the G-7 countries rose from 4.8% in 1960 to 8% in 1985. Furthermore, the expenditure for social security is estimated to have doubled as a percentage of GDP during the period 1985-2000. That made social security pensions the highest and often most rapidly growing share of government expenditures of all social programmes.

Governments are seeking to limit social security commitments but political consensus is difficult to achieve. There is severe opposition by the elderly and many problems of transition. As a consequence, only moderate reforms aiming at decreasing benefit levels (reduction of replacement ratio and suspension of indexation), decreasing eligibility (increase of retirement age and abolition of mandatory retirement age) and increasing revenue (switch to general taxation), have been tried.

The right to opt out of social security is not supported and if there is transfer to funding, a generation has to pay twice. In pay-as-you-go, future workers will pay more while if funding is adopted, future pension will be lower. A social security trust fund could help but could also face a series of particular problems. It seems economically efficient to enact measures to encourage pension funds in order to absorb extra-savings of workers (who are in fear for the future and have started to save more), than have the extra-savings be absorbed by voluntary saving in personal pensions.

Although not perfect, funding is considered superior to pay-as-you-go especially if funds are invested in countries with younger populations. However, social security's ability to redistribute wealth and the different risks to which it is exposed, suggest that it remains necessary as a complement to funded schemes.

Chapter 3 / The Structure of Pension Provision in Twelve OECD Countries

Among the OECD countries, the UK, USA, Australia, Canada, Netherlands, Denmark and Switzerland have sizeable pension funds; certainly greater than Germany and other European countries while Japan is somewhere in the middle. Their differences reflect structural features of pension funds and the social security system of each country.

Pension funds flourish when there is compulsory membership to programmes and there are programmes so good that could act as an incentive for working in a firm. They also flourish where they manage to overcome imperfections in annuities market and there is a tax-deferral. Taxation regulations make it attractive or not for a firm to have a pension fund which could be used as a tool of personnel management, give the company a competitive position in job market and ensure workers' loyalty. The size of pension funds depends on social security, the size of personal pensions' programmes, the maturity of the schemes (if schemes are mature the growth of assets is expected to fall) and the coverage rate (employees covered by pension funds/employees).

The **US** pension market is the largest in the world and is very well established. There are three main types of pension provision:

- Social Security (pillar 1) – publicly funded insurance system that includes provision for retirement income.
- Occupational pensions (pillar 2) offered by private and public sector employers. These can be defined benefit (DB) or defined contribution (DC) schemes (including 401k).
- Individual retirement account program: IRAs (pillar 3) are a type of tax-advantaged savings account for retirement and other purposes.

Data about pension funds in the US can be obtained from a number of sources but no one source gives a complete picture of total assets and sufficient detail about asset allocation. The Federal Reserve Board's Flow of Funds Accounts cover all types of US pensions, except IRAs, and show total pension assets increasing from US\$2,915 billion 10 years ago to US\$7,773 billion at end 2000. The rate of increase in total assets has been rapid in recent years, partly as a result of the lengthy bull run in US domestic equities.

The **UK** pension system consists of the following:

- State pension (unfunded pay-as-you go system)
- Funded schemes of companies and local government.
- Personal pensions which are available to individuals who are self-employed or whose employers do not have a pension scheme.

The data cover the funded schemes of companies and local government. Total assets in these schemes have grown from £344 billion (US\$644 billion) 10 years ago to £755 billion (US\$1,128 billion) at end 2000.

Another form of pension provision has just been introduced in the UK. Known as the stakeholder pension it is aimed at low to medium earners who are not covered by a company scheme and for whom a personal pension is seen as too expensive. In practice, it may be used as a vehicle for tax efficient saving by the more affluent. An existing state earnings related scheme (SERPS) is being phased out. Another feature of the UK market is the gradual increase in defined contribution arrangements.

The **Japanese** pension system is quite complex and initially not obviously describable under the “three pillars” concept. However, on further examination it can be summarised:

- National Pension Insurance (Kokumin-Nenkin-Hoken) secures a basic retirement income.
- Supplementary schemes provided by the state include: the National Pension Fund (for self-employed), the Mutual Aid Association (for public sector employees) and the Employees’ Pension Insurance (for private-sector employees). Corporates provide further supplementary schemes: the Employees’ Pension Fund (EPF) and Tax Qualified Pension plans (TQPs).
- Personal pensions are also available: Insurance Pension Plans and Savings Pension Plans.

The total assets across all of these types have grown steadily at the last decade. The reserve funds of National Pension Insurance and Employees’ Pension Insurance make up over half of the total assets. These funds are deposited with the government trust fund bureau and are mostly invested in government projects, although a small portion is managed by the government pension investment fund, part of the ministry of health and welfare.

The pension system in the **Netherlands** consists of the following three tiers:

- The General Old Age Act or Algemene Ouderdomswet (AOW) is the primary basis for the state pension system and is a pay-as-you-go system.
- Three different arrangements within the “second pillar”: Industry-wide pension schemes, company schemes and insurance contracts. Combinations of these arrangements are possible within one fund.
- Individual savings schemes.

Successive governments have gradually scaled back the state pension which has encouraged the growth of assets set aside in the other types of pensions. Total assets (excluding insurance contracts) stood at DG415 billion (US\$243 billion) 10 years ago and at DG982 billion (US\$418 billion) at end 2000.

The **Swedish** pension system consists of the following three pillars:

- State system: AFP (basic flat rate pension) and ATP (contractual statutory scheme).
- Occupational system: for local government (public sector) employees and AMF/ITP (blue-collar workers/white collar workers) in the private sector.
- Individual savings schemes.

The total assets of Swedish pension schemes have grown steadily from SEK 482 billion (US\$ 87 billion) 10 years ago to SEK 820 billion at the end of 2000.

The **Swiss** pension system consists of the following three pillars:

- Compulsory pay-as-you-go (PAYG) social insurance system (AHV/IV).
- A highly funded occupational system - compulsory for all employees whose annual income exceeds a minimum level-.
- Voluntary individual retirement savings, which have favourable tax treatment.

The assets of Swiss occupational pension funds have grown steadily from CHF 240 billion (US\$ 177 billion) 10 years ago to CHF 522 billion (US\$ 322 billion) at the end of 2000. Much of the growth in total assets in the second pillar is due to the fact that it became compulsory in the early 1980s.

Australia has the following three tiers in its pension system:

- The Age Pension – a state pension provided on a pay-as-you-go (PAYG) basis.
- Two types of compulsory occupational superannuation schemes: industrial agreements and awards and the Superannuation Guarantee Charge. Both are funded by employers and are run by companies, industry-wide organisations, unions or public sector bodies.
- Optional top-up pensions – via occupational schemes or as stand-alone retail products. Contributions can be made by the employer and/or the employee.

Total superannuation assets have increased from A\$135 billion (US\$103 billion) 10 years ago to A\$504 billion (US\$280 billion) at the end of 2000. This rapid increase has been aided by compulsion. In 1992 it became compulsory for employers to contribute to their employees' pensions. This Superannuation Guarantee Charge (SGC) started at 3% of salary per annum, is now 8%, and is scheduled to increase gradually to 9% by 2002. Compulsion will mean that Australian pension fund assets will continue to grow strongly.

As a conclusion we could say that Switzerland, Sweden and Australia have sizeable pension funds because the schemes are compulsory and comprehensive. In a free market environment, the Netherlands, UK, USA, and in a lesser extend Canada and Denmark, favour pension funds as state pensions are not comprehensive, tax concessions for funding are generous and external funding is mandated. In all these countries, where pension funds account for a big part of retirement income, women and low paid workers are less well covered than in countries where social security is dominant. In Germany and in Japan, there are generous social-security promises and a tax disadvantage to pension funds; both leading to smaller schemes.

In next page's chart, one can see the summarised information for pension provision in OECD countries.

<i>Country</i>	<i>Form of benefits</i>	<i>Coverage</i>	<i>Maturity</i>
USA	Primary cover largely by defined-benefit schemes, based on final salary; increasing share of defined-contribution plans as secondary or as primary plans.	46% (voluntary)	Mature
UK	Largely defined-benefit based on years of service and final salary.	50% (company) 25% (personal) (both voluntary)	Mature
Germany	Largely defined-benefit with flat-rate benefit based on years of service; some schemes use career earnings or final salary.	42% (voluntary)	Immature
Japan	Largely defined-benefit based on years of service and career earnings or final basic salary.	50% (voluntary)	Immature
Canada	Largely defined-benefit based on final salary or flat rate benefits	41% (voluntary)	Mature
Netherlands	Almost exclusively defined-benefit based on final salary	83% (voluntary)	Mature
Sweden	Defined-benefit based on best-income years	90% (ATP compulsory; ITP/STP voluntary)*	Mature
Denmark	Largely defined-contribution	50% (voluntary)	Mature
Switzerland	Majority of schemes defined-contribution but with replacement ratio target to which contributions adjusted	90% (compulsory)	Mature (pre-BVG) Immature (post-BVG)*
Australia	Largely defined-contribution	92% (compulsory)	Immature
France	ARRCO/AGIRC defined-benefit, pay-as-you-go*	100% (compulsory)	Mature
Italy	Negligible scopes (certain banks etc.)	5% (voluntary)	Immature

*ATP is a compulsory, publicly directed pension scheme set up in 1960. ITP/STP are supplementary private schemes

*BVG is a compulsory occupational pension scheme instituted in 1985

*ARRCO/AGIRC are forms of pay-as-you-go occupational pensions (state-schemes)

Chapter 4 / Taxation

Ippolito estimates that, by making optimum use of pensions, workers can decrease lifetime tax liability by 20-40%. Therefore, it is needed to assess the reasons for introducing a fiscal treatment of pension-fund contributions, asset returns, and benefits, different from other types of saving and income.

Pensions can be taxed at three points: at contributions, when income is earned and when retirement benefits are paid. For comprehension reasons, from now on abbreviations will be used to describe the taxation policy versus the three points (TEE means that contributions are taxed while income and benefits are not / EET means that tax is paid when benefits are earned and contributions and income are not taxed).

Taxation follows two alternative principles: expenditure tax and comprehensive income tax. When TEE or EET is applied, leaving asset returns tax-free; we have expenditure tax regimes. That means that under this system, pre-tax rate of return equals post-tax rate of return and consumption is taxed at the same rate now and in the future. When TTE or ETT is applied (investment income is taxed as well), we have comprehensive income tax. Under that regime, income is taxed equally, regardless of source, causing a negative incentive for saving as post-tax rate of return is lower than

pre-tax rate. This system has also problems in dealing with inflation as there has to be distinction between nominal versus real returns and if capital gains are taxed in indexed manner and income is not, there is a distortion.

Expenditure tax regime seems more objectionable but it remains the question why should saving to provide income in retirement be specially favoured. The reasons are a) to help people to save enough to maintain post-retirement living standards, b) to cut the cost of social security benefits, c) to increase the general level of saving and d) because pension funds are superior to other financial institutions.

The above arguments can be criticised as follows: a) it is a paternalistic approach where individuals are thought myopic. One could say that other private saving can cover that lack of provision but other types of saving can be decumulated at will while pension funds are contractual annuities which are more appropriate for the use intended. b) it is not always applicable c) there is a minor effect but could cause decline in other type of savings d) pension funds are often run by other financial institutions but they are special due to provision of long-term funds to capital markets. The argument against favourable tax policy for pension funds is that mainly the rich, as they are the main members of pension funds, exploit these deferrals.

There is tax revenue forgone because of the subsidy of pension funds and to get an idea of the sum we are talking about, in USA for example, this represents 1% of its GDP. In practice ofcourse, sums of this nature could not be recouped in their entirety, as savings behaviour would adjust if tax concession were revoked.

It is interesting to study the fiscal treatment of pension funds in OECD countries as we can link this information to pension funds' development in each country. Next page's chart gives us a summary of the form of taxation applied in each country.

We must note however, that there is a trend of decreasing tax deferrals of pension funds in all countries for high-income members. Also, it must be noted that not only personal taxation but also tax-benefits of schemes to employers are important, since provision of such schemes is not obligatory in most countries. Furthermore, general tax reforms could also affect pension-funds.

As we can see from the chart, the common model applied is a pure expenditure tax treatment (EET) and as a general rule; changes in taxation usually face great opposition.

As far as the agreement that favourable taxation of pension funds benefits the rich, so does the tax system as a whole. Furthermore, tax-deferral could have the opposite result by making pension funds more attractive to lower-paid workers so that they will become members of them.

<i>Country</i>	<i>Form of taxation</i>	<i>Details</i>
USA	EET	Contributions and asset returns tax-free. Benefits taxed.
UK	EET	Contributions and asset returns tax-free. Benefits taxed, except for tax-free lump sum.
Germany	TET	Employers' contributions taxed as wages; employees' contributions and asset returns tax-free. Benefits taxed at low rate. (For booked benefits, employers' contributions tax free, benefits taxed at normal rate).
Japan	ETT	Contributions tax-free. Tax on real asset returns. Benefits taxed, except for tax-free lump sum. (Partial tax exemption of contributions to booked benefits).
Canada	EET	Contributions and asset returns tax-free. Benefits taxed.
Netherlands	EET	Contributions and asset returns tax-free. Benefits taxed.
Sweden	ETT	Contributions to ATP tax free; contributions to ITP/STP subject to social-security tax. Tax on asset returns of ITP/STP. Benefits taxed at low rate.
Denmark	ETT	Contributions tax-free. Tax on real asset returns. Benefits taxed, including 40% of lump-sum payments.
Switzerland	EET	Contributions and asset returns tax-free. Benefits taxed.
Australia	TTT	Contributions (15% on employers' contributions), asset returns (15% but on capital gains. Levied after adjustment for inflation) and benefits taxed (low rate).
France	E(E)T	Contributions to ARRCO/AGIRC tax free; separate funded schemes forbidden; insured pension contributions tax free
Italy	EET	Contributions and asset returns tax-free. Benefits taxed.

Chapter 5 / Regulation

Social security provisions are the ones that influence total precautionary saving the most. However, fiscal and regulatory environment can influence it also if pension funds are used for it.

The need of redistribution and the fear of market failure (caused by information asymmetries, externalities, and monopoly) create the need for regulation. Regulations are divided in **regulation of assets** and **regulation of liabilities** and it is also important to study the defining aspects of the **structure of regulation**.

Regulation of pension funds assets:

- a) Regulation of portfolio distribution: Quantitative restrictions on foreign and volatile assets are imposed with the aim of protecting beneficiaries but maybe also for ensuring demand for government bonds. There are also often limits on self-investment to protect against insolvency of the sponsor. Except for self-investment, other regulations are not necessarily good, as they don't allow diversification and choice of risk while creating no benefit to capital markets.
- b) Regulation of funding: Defined-contribution schemes are fully funded as contributions equal benefits at any given moment, whereas in defined-benefit schemes the pension plan (the rights of parties) doesn't equal the fund (assets to provide for the promised benefits). If the fund has lower value than the present

value² of promised benefits then we have underfunding and vice versa. The aim of regulation is to protect benefits in case of default and also to set upper limits on funding in order to prevent abuse of tax privileges. The reasons that companies may overfund are tax incentives and the provision of financial slack (when there is surplus) that can be used in difficult times.

In the U.S.A, several major failures of firms with underfunded schemes, led to ERISA (Employee Retirement Income Security Act) of 1974. The act provided minimum vesting and increased funding requirements, making funded schemes more costly. These caused the termination of schemes and slowed up the development of pension funds. By ERISA, the solvency level at which the firm can meet all its current obligations is known as the accumulated benefit obligation (ABO).

ABO is the present value of benefit owed to employees, omitting any projections of salary, discounted at a nominal rate of interest. If assets are below this level, the unfunded liability must be reported to the balance sheet, causing problems in raising funds. Underfunded schemes have to pay more to PBGC (Pension Benefit Guarantee Corporation) and are watched more carefully (however there is no concern for asset composition that can also cause problems).

Except ABO, we have PBO (projected benefit obligation) and IBO (indexed benefit obligation). PBO and IBO are better than ABO is, as they ensure advance provision for the maturity of plan. They are especially good when workers are less than pensioners are; they help the financial stability of the sponsor. Taxation plays an important role for funding (whether overfunding is taxed) as well as the rate of discount and wage growth we assume, as it could lead to accounting over/underfunding. We can solve the latter problem by supposing that interest rate assumption equals the bond yield.

- c) Ownership of surpluses: The need for regulation on the ownership of surpluses arises only in defined-benefit schemes. There are opposite opinions; if the company owns surpluses, we have abuse of tax-privileges and it seizes assets from members; but if the company pays for deficits why not take workers' surpluses? The fund is only a back up to keep promise of pensions. Another question on surpluses is what happens in take-overs.

Regulation of pension fund liabilities:

- a) Should provision be mandatory? Should firms be obliged to provide pensions or should it be voluntary and if it is voluntary for companies, should they be allowed to insist on participation of all employees? Arguments in favour of compulsion for the firm are that it would create a potential relief of social security, it would lead to coverage of all workers and it would increase national saving due to saving of low-income workers. Furthermore, it would cause an even spread of tax advantages, it would help the standardisation of portability and vesting, it would facilitate labour mobility and it would help annuity markets. Arguments against

² In order to calculate this present value we rely on assumptions about the assumed return of assets, the rate of inflation and the size of population.

are that competitiveness will not be evenly affected and that low-income workers will enjoy lower consumption during life. Arguments in favour of voluntary membership for employees are that it reduces the transfers from early leavers to long-stayers, as the former can opt out from the start, and it ensures that firms avoid excessively burdensome regulations on members, as employees would leave the plan.

- b) Insurance of benefits: Security is guaranteed by company's income, funding and public insurance. A question is how the insurer can control risk. He can monitor the market value of pension assets and have the right to seize and liquidate them if fund goes below a certain level (to be able to do this he need to have access to assets, market value of assets and a definition of levels plus frequent auditing). He can also require the existence of a cushion of overfunding and a connection of premium to risk.
- c) Integration with social security: There is need to ensure that workers gain adequate pension even if social security provisions change as well as ensure that savings anticipated for social security via the development of pension funds can be realised.
- d) Annuities versus lump sums: Shall we encourage annuities or lump-sum withdrawals? Annuities expose the retiree to considerable market risk. Lump sums raise the cost of annuities, undercut protection for survivors, can not be used for pensions and require a more liquid portfolio.
- e) Indexation of benefits: Should pre-retirement and after-retirement indexation be compulsory? Indexation is risky and costly for the firm. There are not many assets that can provide index-hedge and that causes restrictions in portfolio management; making it difficult to attain real return greater than wage growth.
- f) Vesting and portability: They play an important role in labour mobility. A study by Lazear and Moore has shown that if no pension funds existed, labour mobility would have been double than today in the U.S.A. To allow transfers of benefits there has to be a standardised treatment of assessing present value of future benefits and service credits must be indexed. High portability will make pension funds less desirable for companies and discourage training, as labour mobility will be high.
- g) Equity issues: There is a problem of internal transfers within schemes. Final salary schemes encourage managers to give themselves high rises during the last years at the expense of workers forced to early retirement. Generally, if contributions rely on expected average increases of salary, people with salaries above average will actually contribute less than they cost to the scheme. Furthermore, there will be an incentive for firms to retire workers early.

Regulatory structures:

- a) Protection against fraud: Many questions were raised after the Maxwell case on that subject - on the Maxwell case, quantities of assets of the pension fund were lent to private companies owned by him or were invested to them-. It is difficult for employees to protect themselves from a fraud as there are no prudential

standards against which they can monitor pension funds, there is no regulatory body to do so on their behalf and it is difficult for them to interpret relative data. Only the existence of independent custodians and employee trustees, together with limits on self-investment and frequent checks on minimal funding, can insure them.

- b) Information provision to members: It is necessary for a member to know vesting and portability rules of the pension fund together with its portfolio synthesis. Unfortunately only in U.S.A there is certain requirement by ERISA while in other countries, there are less statutory obligations.
- c) Employee representation: Employee representation in the management of a pension fund helps avoid abuse, but usually leads also to excessively cautious investment strategy.
- d) Organisation and regulation: regulatory structures and procedures and their link to organisational structure, influence the effectiveness of pension funds regulation. There may be conflicting interests between institutions. It is important to rely heavily to annual reports, accounts by auditors and full reports in greater intervals.

There isn't a consensus on Good Regulatory Practice although the objectives are the same. There is reasonable agreement on tax provisions (expenditure-tax treatment) and ownership of surpluses (company). However, there are strong divisions on portfolio regulations (prudent man rule or portfolio restrictions), funding (unfunded vs. ABO vs. PBO vs. IBO and regulatory rules vs. trustee responsibility), insurance, vesting, service, transfers, fraud and information disclosure and indexation of benefits.

There are not obvious right answers; but what everyone wants is regulations that allow flexibility and low costs to companies, ensure secure retirement income, provide desired labour mobility and avoid insurance losses. It is a fact that funds under strict portfolio restrictions have lower returns and volatility than funds under prudent man rule. Modern theory accepts only the danger of self-investment and the need of diversification as reasons for quantitative portfolio regulation. It is also a fact that funding rules as PBO or IBO offer greater security to members than alternatives. Another fact is that insurance against fraud is better than overall guarantees (it is less costly and more secure). It is also true that vesting, transfers, funding, ownership of surpluses and guarantees of benefits are not important for defined-contribution schemes. Apart from the choice of regulatory framework it is important for it to have continuity due to the long-term nature of pension funds. Retrospective changes on regulation, especially affecting liabilities, are undesirable mainly due to their impact on corporate finances.

Chapter 6 / The Structure of Pension Provision in the European Union

Here are the major characteristics of pension systems of EU countries that were not included in the previous analysis.

Austria

Pillar 1 – Flat-rate/social security pensions (pay-as-you-go/funded)

The principal form of pension provision in Austria is the State pension. With few exceptions, all Austrian citizens are compulsorily insured under the State scheme. This is the responsibility of several different organisations, for example the Pension Insurance Agency for Wage Earners.

Funding

The State pension is funded on a pay-as-you-go basis, with the contribution rate being dependent on the professional group. In 1997 the employer's contribution for employed persons (with the exception of civil servants) was 12,55% and the employee's contribution was 10,25%.

Retirement age and amount of pension

The retirement age for men is 65 and for women 60. For men from the age of 60 and women from the age of 55 there is the option of a premature old-age pension (early retirement). However, the retirement age for women is to be increased gradually from 60 to 65 or from 55 to 60, respectively. Taking retirement before the standard retirement age (60/65) entails a reduction in the pension.

The amount of the pension is calculated as a percentage of the basis for assessment which is dependent on the insured period. The 180 months with the highest contributions are taken as the basis for assessment. The level of the pension varies between 27% (with 15 years of contribution) and 80% (with 45 years of contribution) of the basis for assessment. The maximum contribution basis for 1999 was ATS 42.600 (EUR3.095,86). The pension reform of 1997 means that in future, State benefits are to be moderately reduced to take greater account of the insurance principle, the actual retirement age is to be increased and pensions for civil servants are to be reduced.

Pillar 2 – Occupational schemes (funded)

In Austria it is possible to join an occupational pension scheme voluntarily. 11% of the working population are covered by an occupational pension agreement. Conditions for establishing occupational schemes are laid down in the Company Pension Fund Act. Employees under contract (employees of the local and regional authorities employed under private law) may be included in company pension commitments, but not civil servants (employees with contracts of employment under public law). The establishment of a pension fund for employees under contract relates only to the practical implementation of this option; as already stated, the inclusion of employees under contract was already permitted and possible. In company pension schemes the age threshold for drawing a company pension should be in line with EU regulations and therefore the age of eligibility for a pension should be the same for men and women in these contractual agreements.

Providers of pension products

Companies, company and intercompany pension funds and life insurance companies have the right to manage occupational pensions. Commitments by companies where company pensions are funded by reserves (direct entitlement to benefits) are covered in some cases by securities. Firstly, the employee receives benefits (insolvency loss

payment) equivalent to a certain amount (12 or 24 monthly contributions) for his/her direct entitlement to benefits. The purpose of this act is to secure the employee's entitlements (financially) in the event of the employer becoming insolvent. Secondly, if the employer becomes insolvent the securities cover may only be used to satisfy the claims of the employees as a result of their direct entitlements to benefits, unless they have received payments from the "insolvency loss payment fund". Pension provision funded through pension funds or life insurance policies is based on the capital cover method.

Supervision and regulation of pension funds

The body responsible for supervising and regulating pension funds is the Federal Ministry of Finance, V/14 division. The legal basis for this is the Pension Funds Act. Supervision is essentially based on the following documents: quarterly report on asset investment, annual accounts and accounting reports for the pension fund and the investment and risk associations, actuarial audit report of the auditing actuary, business plan together with an actuarial opinion by the auditing actuary. Any other information which is required could be requested from the pension funds by the Federal Ministry of Finance. Although on-site inspections are possible, they have so far not been undertaken.

Operating a pension fund requires a licence from the Federal Ministry of Finance. Pension funds always have two actuaries working for them, whose appointment may be refused by the Federal Ministry of Finance if there are reasons for excluding them (e.g. lack of qualification or professional experience). The actuary is employed by the pension fund. He is responsible for drawing up the business plan, calculating the actuarial reserves on the basis of the business plan and similar actuarial matters. The auditing actuary is an independent expert who is responsible for auditing the actuarial conduct of the pension fund. The business plan and any changes to it have to be confirmed by the auditing actuary and authorised by the Federal Ministry of Finance.

The claims of those entitled to expect a pension and those entitled to benefits are managed in separate "investment and risk associations". These "investment and risk associations" have to be run independently of the other assets of the pension fund plc and are afforded special protection in the event of insolvency. This arrangement ensures that even if the public limited company is liquidated the claims of those entitled to expect a pension and entitled to benefits are secured. As the pension is paid by the pension fund the employer's insolvency risk cannot have any effect. Specific rules apply in some cases to the auditing of pension funds. The role of the auditor is more or less the same as in commercial law. There are special rules of disclosure that apply as a result of the separation between the plc and the investment and risk associations. The Pension Funds Act provides special rules for the auditing actuary and the audit has to be documented in an audit report that is subject to standard rules laid down in a regulation.

Pension funds are subject to a solvency margin and law regulates their investment. According to the provisions of the Pensions Fund Act, the minimum equity must be 1% of the mathematical reserves. At least 40% of the assets have to be invested in bonds, mortgage bonds, credits, loans, etc., denominated in euro (since 1 January 1999, where none of the currencies of EMU member states is worth more than foreign currencies). This category also includes investments in capital funds where the fund

provisions make it compulsory for more than 50% to be invested in the above mentioned assets. A maximum of 40% of the assets may be invested in stocks and similar securities. Within this ceiling, a maximum of 25% of the assets may be invested in stocks and securities if they are denominated in foreign currency. Investments in buildings and property are allowed up to a maximum of 20% of the assets and within this ceiling 10% may be invested in buildings and property located abroad. The total foreign component (securities and buildings and property) is limited to a maximum of 45% of the assets.

There are additional upper limits for specific individual risks. There is no currency-matching requirement. The investments have to be valued at their market value. A fluctuation reserve has to be created to offset the gains and losses from the investment and from the technical result. Precise rules are laid down in the Pension Funds Act governing allocations to and liquidation of the fluctuation reserve and the ways in which it is managed.

Taxation

Employers' contributions to pension funds are deductible as an operating expense within certain limits. In contribution-based systems this limit is 10% of the total wage or salary, in benefit-based systems the entitlement must not exceed 80% of the last amount earned. The employee may make contributions of his/her own up to the same amount as the employer and these are tax-deductible to a limited extent as special expenses (maximum income ATS 700.000 per annum, maximum amount ATS 40.000, of which only 25% is allowed). In addition, insurance tax of 2,5% of the contributions is payable. Interest and capital gains are not taxable. Pension benefits resulting from employers' contributions are subject to "normal" taxation.

Pillar 3 – Personal pensions/individual agreements

Individuals can arrange for private pensions on a voluntary basis. Life insurance companies offer personal pensions on terms that are suited to the requirements of the individual.

Belgium

Pillar 1 – Flat-rate/social-security pensions (pay-as-you-go/funded)

It is compulsory for all employees, civil servants and self-employed persons to belong to one of the State pension schemes. Civil servants are covered by a special State scheme, and employees and self-employed persons by a social security scheme. The National Pensions Office is responsible for calculating and paying employees' pensions. Under the self-employed scheme, the National Insurance Institute for the Self-employed processes applications, while the National Pensions Office handles the payments. Civil servants come under the Finance Minister's Pensions Office for processing of applications and the Central Fixed Expenditure Department for payment. The National Social Security Office handles collection and distribution of the funds.

Funding

In 1998, the employee's contribution was 7,5% of salary and the employer's contribution was 8,86%, to which a government subsidy was added. The salary on which the contributions are based is not subject to a ceiling. Contributions for the

Widows and Orphans Fund, healthcare and a special contribution to the National Social Security Office are deducted from civil servants' salaries. Civil servants' pension benefits are borne by the budget.

Retirement age and amount of pension

The retirement age is set at 65 for men and 61 for women. For women, however, it will be gradually increased to 65 years between now and 2009. Early retirement is possible from age 60 onwards, subject to proving a certain period of work that currently stands at 22 years and will be gradually increased to 35 years between now and 2005. Under the employees' scheme, the full pension for unmarried persons is set at 60% of their gross earnings for their working life. That rate is increased to 75% for married persons if the spouse is not entitled to a pension. A full working life is 45 years (for a man) or 41 years (for a woman) (to be increased to 45 years by 2009): the least favourable years over and above those figures are not taken into account. Entitlement is based on 1/45 of the pension (1/41 for women) for each year taken into account.

There is a minimum pension (for a full working life, as of 1 October 1997, the minimum pension stood at BEF 424.824 for a couple and BEF 339.972 for a single person. There is also a minimum per working year) and a maximum pension (since 1981 the pension calculation has taken remuneration into account, subject to a certain ceiling: BEF 1.386.533 for 1997). Civil servants' pensions are calculated on the basis of the last five years' contributions. They are therefore much higher than those of ordinary employees are. The self-employed scheme differs from those for employees and civil servants, particularly in regard to the methods used to calculate and finance the pensions.

Pillar 2 – Occupational schemes (funded)

These are non-compulsory pension schemes covering 31% of the working population. It is very often the employer who puts an occupational pension scheme in place and who determines its terms and conditions. If the employee makes a personal contribution to finance the pension plan, however, and if the plan covers all the employees, the scheme in question must be set up either under a collective agreement, if the company has a works council or a health, safety and workplace improvement committee; or, if no such structure exists, via an amendment to the staff regulations. An employee who already has a contract of employment binding them to the employer is not required to become a member of this scheme unless the plan is established via a collective agreement; however, any employee joining the company after such a plan is created is required to become a member.

The pensions provided must be financed by means of a funding system. Paying pensions by charging them to the employer's overheads has not been allowed since 1985 other than as a hangover from the past. The employee's contributions vary depending on the scheme. On average, such an occupational pension scheme enables the beneficiary to have a pension equal to 60% of gross earnings, including the pension received from a pillar 1 scheme. For tax reasons, it is not possible to exceed 80% of the gross earnings of the last year worked. By virtue of the law of 6 April 1995, the pension commitment cannot contain any discrimination between men and women in respect of years of service provided after 17 May 1990 (other than differences warranted by the respective life expectancies of men and women). In

particular, the retirement age in supplementary pension schemes must be the same for both sexes (pillar 2).

Providers of pension products

Specialist pension funds or insurance companies administer occupational pension schemes. The law does not permit employers to allocate book reserves to pensions.

Supervision and regulation of pension funds

Insurance companies and pension funds are regulated by the Ministry of Economic Affairs and the Insurance Supervisory Body. The latter is responsible for supervision, which it carries out by means of documentary verification and on-site inspections. An actuary must be appointed. That actuary's duties include reporting to the Insurance Supervisory Body on the operating reserves and advising the pension fund managers in relation to financing, operating reserves and reinsurance. The method used to calculate the minimum operating reserves is defined in the regulations and must comply with a number of criteria. The operating reserves are calculated on the basis of mortality tables and a maximum interest rate of 7%. An auditor is responsible for examining the annual report and reporting thereon to the Insurance Supervisory Body. Pension funds are subject to specific accounting rules. Assets are valued on the basis of their market value.

Since 1985, pension funds have been subject to a solvency margin requirement in relation to death and invalidity benefits; that margin is based on the capital risks insured. A draft bill currently under consideration, seeks to extend that requirement to the pensions operations of the pension funds that assume performance obligations; when the bill is passed, the solvency margin will be a percentage of the pension fund's reserves. The draft bill is at present before the Minister of Economic Affairs. The requirement for pension funds to invest 15% of their assets in Belgian government bonds is no longer enforced, and the aforementioned draft bill will formally abolish it.

The bill substantially modifies the pension funds' investment rules to bring them into line with those applicable to life insurance companies by virtue of the 3rd directive. The securities used to cover the operating reserves must be denominated in or convertible to the currency of the commitments. Pension funds are generally non-profit-making associations that cannot become bankrupt in the legal sense of the term. If they run into financial difficulties, the regulations impose a recovery plan on them, along with other measures.

Taxation

Contributions to occupational pension schemes are tax-deductible for both the employee and the employer. Capital-sum pensions are taxed at a flat rate of 16,5% and annuities are taxed at the standard rate

Pillar 3 – Personal pensions/individual agreements

Individuals have the opportunity to take out personal pension plans managed by insurance companies or banks. The terms and conditions applicable to such pension plans are determined on the basis of the individual requirements. These private pension schemes operate on a funded basis. Premiums paid into life insurance policies are tax-deductible under certain conditions.

Denmark

Pillar 1 – Flat-rate/social security pensions (pay-as-you-go/funded)

The State Pension is compulsory for all Danish citizens. It is administrated solely by the State. The State Pension is supplemented by a compulsory statutory supplementary pension scheme for employees, which is known as the labour market supplementary pension (ATP). ATP is managed by a separate fund and includes all employees, who work more than 9 hours a week and people temporarily out of work, and on a non-compulsory basis also early retired people, and people with a disability pension.

Funding

The State pension is a pay-as-you-go pension scheme financed through indirect and direct taxes. The ATP supplementary pension is funded solely by the compulsory contributions from the employer and employee. Individual contribution amounts are graded according to the weekly hours worked by the employee.

Retirement age and amount of pension

All Danish people who have lived in Denmark for 40 years between the age of 15 and 67 are entitled to full State pension from the age of 67. It consists of a basic amount and some additional amounts, which are given on the basis of other income. ATP can be paid out from the age of 67. The paid out amount is calculated on the basis of accumulated individual contributions.

Occupational schemes (pay-as-you-go/funded)

The Danish system of supplementary pensions is in general based on the defined contribution system. The employee and the employer pay a fixed amount of the salary each month. Thus, the variability of the return on the accumulated contributions is the risk of the employee not the employer.

In general occupational supplementary pension schemes are by collective agreements compulsory for the employee. The compulsory scheme can be based on collective agreements between employer organisations and employee organisations or on agreements made with the individual companies.

Traditionally only white-collar workers and certain civil servants have been included in occupational pension schemes. This has changed in the late eighties and nineties with the labour markets collective agreements in 1989 and 1991. Now 80% of the work force has a supplementary pension scheme. Self-employed persons are not covered by the occupational pension schemes. The contribution from the employers and the employees to the pensions is in general 9–15% of the salary. Furthermore there is a civil servant occupational pension scheme. It is a pay-as-you-go pension scheme administrated by the state. The amount paid at retirement is calculated on the basis of seniority. The general retirement age lies between 65 and 67, but it is possible to retire from the age of 60. There is a tendency towards early retirement.

Providers of pension products

Pension schemes are administrated by pension funds, life insurance companies or banks on a funded basis. There are two types of pension funds: national occupational pension funds with the ability of covering all employees and company pension funds

covering only a small amount of companies. The company pension fund is sort of a mutual company. Pension funds have no management connection with their sponsoring companies. About 2/3rds of occupational schemes are within life insurance companies. The rest are within pension funds or banks. Usually occupational pension schemes have an element of life insurance in them. It is common that 1/3 rd of the contributions are used for insurance.

Supervision and regulation of pension funds

The regulatory and supervisory body of life insurance companies and pension funds is the Financial Supervisory Authority. The Financial Supervisory Authority has the right to perform on-site inspections and file-base supervision on the basis of annual accounts, the audit book, and the report on the register of assets etc. Pension funds are submitted to management requirements and fit and proper conditions. The conditions for appointing administrators or trustees and the roles and powers of these are set in the articles of association of the pension fund.

The pension funds management must appoint an actuary. The role of the actuary is to ensure that the pension fund establishes appropriate technical provisions, review the actuarial content of the pension fund's activities and secure that the technical provisions are at all times in accordance with the requirements laid down by the law. Furthermore, the actuary is responsible for any contact to the Financial Supervisory Authority including annual reports and requests of information from the Authority. The actuary is entitled to request from the board of management all such information as is necessary for the performance of his functions.

The auditor of pension funds has the same role and powers as auditors of insurance companies. There are no specific accounting standards that are designed for pension funds. However, certain rules for asset valuation do exist. Fixed income securities are valued at amortised purchase price. Other assets are mainly valued at their market price. From 1998 all assets – except fixed income securities – are valued at market price. From 2002 fixed income securities will also be valued at market price. Pension funds, like life insurance companies, are subject to the rules in the Third Life Insurance directive. Concerning the investment restrictions a maximum of 50% may be invested in "high risk assets" – these include domestic equities, foreign equities and unlisted securities. At least 80% currency matching is required. In case of EU currency, up to 50% of liabilities can be covered by assets denominated in euro. Self-investment is not allowed.

Taxation

Contributions to an occupational pension scheme are not considered in the employee's taxable income. However contributions to lump sum pension can affect tax progression. The return on tax-privileged pension contributions is not considered as taxable income for the owner of the pension scheme as long as the commitment is not paid out as benefit. However, the return on most forms of pension capital is taxable under the Danish Real Interest Tax Act (as from 2000 Yield on Pension Capital Tax Act). The tax treatment of payments from life and pension schemes depends on whether the scheme is an annuity or lump sum scheme. Annuity payments are taxed as personal income; lump payments are taxed at 40%.

Pillar 3 – Personal pensions/individual agreements

It's possible for individuals to arrange a voluntary pension. In Denmark there exist individual pension schemes administrated by the employer and individual pension schemes, which have no relation to the labour market. These pensions can have an element of insurance connected with them and are administrated by pension funds and life insurance companies. There is no difference in the supervisory or tax treatment of pillar 2 and pillar 3 schemes.

Finland

Pillar 1 – Flat-rate/social security pensions (pay-as-you-go/funded)

Every citizen resident in Finland is compulsorily insured under the basic State pension scheme (the so-called national pension) from the age of 16. The pension is only paid to pensioners that do not have an occupational pension scheme or whose occupational pension is low (the statutory occupational pension and the national pension are viewed as a whole). The Social Insurance Institution administers the scheme.

Funding

The State pension is funded on a pay-as-you-go basis. As of 2000 the employer contributes from 2,4% to 4,9% of the salary. There is no maximum salary up to which contributions must be paid.

Retirement age and amount of pension

The retirement age for men and women is 65. If the pension is deferred the pension is increased by 0,6% per month. Early retirement is possible from the age of 60. The pension is reduced by 0,4% for every month before the age of 65. Full pension is received when the pensioner has been resident for 40 years. The pension will be reduced for every year of residence less than 40 years. The amount of pension does not only depend on years of residence, but also place of residence, family status and income from occupational pension schemes.

Occupational schemes

Compulsory occupational schemes (pillar 1 in Finland)

Membership of an occupational pension scheme is compulsory. The occupational pension system is regulated by law. Different schemes apply for different categories of persons. Employees enter the compulsory occupational scheme; if they have been employed for 1 month and either earns a monthly salary of at least EUR 189 or work at least 20 hours per week. There are occupational pension schemes on both pay-as-you-go and funded basis. The financing of the occupational scheme for employees is a mixture of pay-as-you-go and funded.

Occupational pensions for self-employed and agricultural workers are financed on a pay-as-you-go basis. As of 1999, the total contribution of the employee and the employer for the compulsory pension was on the average 21,5% of the salary. The employee contributes 4,7% of the salary. The employer pays the remaining part of the contribution. There is no maximum up to which contributions must be paid.

The retirement age for men and women is 65. Early retirement is possible. The pension is reduced accordingly. In voluntary occupational schemes the employer may reduce the retirement age from 65 to 55 years. The amount of benefit is calculated on the basis of years of occupation. The pension starts growing from the year of 23. For

the years before 1962 an employee acquires a pension rate of 0,5% p.a. For the years following 1962 the pension rate is 1,5% p.a. From the age of 60 an employee acquires a pension rate of 2,5%. Thus, the maximum pension is 60% of the pensionable salary. The pensionable salary corresponds to the average salary of the last 10 years of occupation. There is no upper limit for the amount of pension received.

Voluntary occupational schemes (pillar 2 in Finland)

It is possible for the employer to set up voluntary occupational pension schemes. As regards voluntary pensions, the employer is responsible for at least 50% of contributions. The additional pension systems play a minor role in Finland (in 1998 the technical reserves of the pension institutions referred to the previous section amounted to FIM 222 (EUR 37) billion, whereas the technical reserves of the additional pension arrangements referred to in this section totalled FIM 41 (EUR 7) billion). The pension foundations and funds carrying on additional voluntary pension insurance in Finland are as a rule closed; i.e. they do not accept new insurers. The pension liability of most of these institutions has already begun to decrease. Most of the pension foundations and funds are rather small and the major part of the total pension liability is concentrated in a few institutions. The pension institutions have been allowed a transitional period for the coverage of their technical reserves until the year 2010.

Providers of pension products

Compulsory occupational schemes (pillar 1) must be arranged in one of the following pension institutions: pension insurance companies (6), pension funds (8) and pension foundations (about 40). An employer may set up a fund or foundation of its own if the scheme has at least 300 members. Voluntary occupational pension schemes (pillar 2) may be arranged in pension funds (13) and foundations (about 120) and in life insurance companies. An employer may set up a fund of its own if the scheme has at least 300 members and a foundation if the scheme has at least 30 members.

Supervision and regulation of pension funds

(This section only deals with the additional voluntary pension cover and the term pension fund in the text below refers to an additional pension foundation or an additional pension fund.) The supervisory body, falling under the administrative sector of the Ministry of Social Affairs and Health, of insurance companies and pension funds is from 1.4.1999 the Insurance Supervision Authority. However, the Ministry of Social Affairs and Health is as before responsible for e.g. drafting of legislation concerning these insurance institutions as well as for intergovernmental issues related to this. The Insurance Supervision Authority has the power to deny a certain action, deny issuing permission to operate as a pension fund, order a penalty and has the right to attend the audit. Supervision of pension funds is done on the basis of annual accounts; actuarial statement and the statistical information received every year. The Insurance Supervision Authority has the right to inspect the pension fund at any time and attend certain meetings as an observer. The management of pension funds is not submitted to any special management requirements.

The actuaries of pension funds are to be authorised by the Ministry of Social Affairs and Health. The actuary is responsible for the measurement of liabilities and giving a statement of which impact the liabilities will have on assets. The actuary does the calculation of the technical provisions, but acceptance of the Insurance Supervision

Authority is needed. The method includes prospective reserving of accrued pension rights (the so-called ABO-method, or Accrued Benefit Obligation -method, is used). Premiums are yearly charged as much as is needed for changes in reserves. The interest rate used at the moment is 4,15%. In the near future the interest rate will be lowered gradually to 3,5%. Concerning the mortality predictions a model is used that is based on national-level mortality studies made for the statutory employment pension scheme.

The auditor of pension funds is subject to special rules. The valuation of assets is based on their acquisition price or current value. Shares and real estates, as well as bonds with certain restrictions, can be valued at their acquisition price in the balance sheet. A pension fund cannot normally become bankrupt unless the employers behind it also become insolvent, since the employers have an unrestricted liability to pay the expenses of the pension fund. If one or more employers become bankrupt, the pension fund's position as a creditor of the bankrupt's estate is prior to (until the year 2011) its other creditors.

Pension funds are not submitted to any solvency margin or guarantee requirements. There are certain rules for the investment of assets. The Decrees concerning pension foundations' and pension funds' coverage of the pension liability came into force on 31 December 1998. The purpose of these Decrees is to diversify and decentralise the assets covering the pension liability in order to reduce risks relating to investments. The Decrees prescribe maximum amounts for different kinds of assets. For instance, real property may not exceed 40% and quoted shares 50% of the cover. There are no limits concerning the investments in the European Economic Area. Derivatives may be used for hedging purposes. The currency-matching requirement is 80%. In 1991 and 1995 new coverage requirements were made of pension foundations to the effect that the pension liability for retired persons shall be covered wholly by the year 2004 and that for active persons by 2010. There are no other solvency requirements in force at the moment for voluntary occupational pension funds. Additional group pension insurance under pillar 2 that are arranged by life assurance companies are governed by the EU provisions concerning life assurance companies.

Taxation

The employer's contributions to occupational pensions are tax-deductible. The conditions for this treatment in voluntary occupational schemes are that the pension is not paid out before the age of 55 and the total pension benefit should not exceed 66% of the individual earnings. The contributions of the employee can be maximum 75% of the premium.

Pillar 3 – Personal pensions/individual agreements

Individuals can arrange for private pensions. Insurance companies administer these. The conditions of the private pension are fixed up to the individual requirement. Private pension schemes are operated on a funded basis.

Greece

Pillar 1 – State pension scheme (pay-as-you-go/funded)

The state pension scheme forms part of the wider social security system that covers the entire labour force against the risks of old age, sickness, invalidity, unemployment, etc. It is governed by a number of statutory and compulsory rules

under which either the basic pension or a supplementary pension (basic component and supplementary component, both compulsory) are granted.

The independent funds cover:

- private-sector employees (general scheme – IKA – and special schemes, in particular for employees in the banking and press sectors, etc.)
- public-sector employees and those treated as such (in particular, special schemes for the civil service, public enterprises, etc.)
- the self-employed (standard scheme for craft workers, shopkeepers, automobile workers, special schemes for professions)
- seamen, and
- farmers.

Special supplementary pension schemes (statutory and compulsory) cover all the above categories of workers (employed and self-employed) except seamen and farmers. The main scheme providing the basic pension for employees is IKA. The corresponding supplementary scheme, which is both statutory and compulsory, is TEAM and covers all IKA members who do not contribute to another supplementary scheme.

Funding

The general state pension scheme and the supplementary pension scheme are financed on pay-as-you-go principle. In 1998, the IKA contribution, for persons insured before 31 December 1992, was 20% of annual salary, of which 13,33% was paid by the employer and 6,67% by the employee; the monthly ceiling was set at ECU 1.680 (GRD 524.250). Following the 1992 reform, for persons insured for the first time as from 1 January 1993, the contribution is 30%, of which 13,33% is payable by the employer, 6,67% by the employee and 10% by the State. There is no longer a ceiling on the salary used as the basis for calculating the amount of contributions. The contribution rate for TEAM, the supplementary pension scheme, is 3% for the employee and 3% for the employer.

Retirement age and amount of pension

For people insured before 31 December 1992, the retirement age is 65 for men and 60 for women. Following the 1992 reform, the retirement age for people' insured as from 1 January 1993 is 65 for both men and women. It is possible to take early or deferred retirement.

The pension amount is made up of a basic pension and a supplementary pension. For people insured before 31 December 1992, the basic pension, representing a percentage of the notional reference wage, ranges from 70% to 30%, in inverse proportion to the size of the wage. The notional wage is the one laid down for each of the 28 classes of insurance matched by the average gross wage in the 5 years preceding retirement (the classes of insurance set a ceiling above which the average gross wage in the last five years is not taken into account for calculating the pension). For people' insured as from 1 January 1993, the pension amount is based on the number of years of insurance. Each year is equivalent to 1,714% of the income conferring pension entitlement. Wages during the last 5 years are taken into account to calculate the pension. The amount of the supplementary pension is calculated on

the basis of the number of years for which contributions were paid. Both the basic pension and the supplementary pension are increased for dependants.

Pillar 2 – Occupational schemes (pay-as-you-go/ funded)

In Greece, occupational pension schemes are optional and are not very common, given that they cover only 5% of the working population. Only the large national or multinational companies offer occupational pension schemes. The amount of the pension depends on the pension plan taken out. Contributions are determined in accordance with the type of plan; most of these schemes are financed solely by the employer.

Providers of pension products

Occupational pension schemes are usually managed by life assurance companies under a deposit management contract.

Supervision and regulation of pension funds

The supervisory body for life assurance companies is the Ministry of Development. Supervision is carried out by means of documentary verification, but on-site inspections are also possible.

Taxation

Employees' and employers' contributions are deductible from income. Capital gains and interest are tax-exempt. Pensions are taxed in the same way as an individual's normal income. Employers' contributions to life assurance policies are tax-deductible up to a limit of 5% of annual wages. The benefits paid under such policies are tax-exempt.

Pillar 3 – Personal pension plans/individual agreements

It is possible to take out a personal pension plan with a life assurance company on terms and conditions agreed between the parties.

Ireland

Pillar 1 – Flat-rate/social security pensions (pay-as-you-go/funded)

The State pension system in Ireland consists of a compulsory contribution scheme and a non-contributory scheme.

Funding

The Irish State pension system is funded on a pay-as-you-go-basis through current tax revenues.

Retirement age and amount of pension

At the age of 66, Irish citizens are entitled to a contributory pension, based on social insurance, of IEP 83,00 (EUR 105,93) per week and an additional IEP 52,50 (EUR 66,60) per week for a qualified adult dependent. Those who do not have sufficient social insurance contributions to qualify for the contributory-based pension and who satisfy a means test are entitled to a non-contributory pension of IEP 72,50 (EUR 92,06) per week with an additional allowance for a qualified adult dependent of up to IEP 41,20 (EUR 52,31). Increases are also paid in respect of dependent children. The rates of pension payments are increased in line with annual budgetary improvements.

Pillar 2 – Occupational schemes (pay-as-you-go/funded)

The Irish occupational pension system consists of different types of voluntary schemes. There is no legal obligation for an employer to set up an occupational pension scheme, even though it is becoming more and more common. At the moment, 52% of all employers in Ireland provide an occupational pension scheme for their employees and 50% of the working population is covered by occupational pension insurance. The Government is committed to increasing supplementary pension cover, over time, to 70% of the workforce.

The occupational pension system includes both defined benefit and defined contribution schemes. The maximum pension limit set by the Revenue Commissioners for schemes to be approved is 2/3rds of final taxable remuneration provided there has been 10 years' service at normal pension age. This maximum is reduced for service less than 10 years. The maximum applies to both defined benefit and defined contribution schemes. In defined contribution schemes employees normally contribute an amount related to salaries or wages while the employer will contribute the balance of the cost necessary to meet the benefits promised. In non-contributory schemes the employers contribute the full cost.

Providers of pension products

Normally investment funds (pension funds) administrate whole schemes which mean pension schemes including several companies. These private schemes are on a funded basis. Public service schemes run on a pay-as-you-go basis.

Supervision and regulation of pension funds

The regulatory body of life insurance companies and pension funds is the Department of Enterprise, Trade and Employment. Life assurance companies are regulated and supervised under the Insurance Acts and Regulations on their overall life assurance business, which would include any pension arrangements provided by the companies. Such pension arrangements can be in the form of personal pension policies, payment of annuities or group pension policies.

The Insurance Regulations are based on the EU Life Assurance Directives and set down provisions, in relation to life assurance business in general (including pensions business), for the diversification of assets, the prudent valuation of assets and liabilities and the holding of a solvency margin. The calculation of the technical provisions is done on the basis of Actuarial standards and principles, in accordance with Article 18 of the EU Third Life Assurance Directive. Each life assurance company must appoint an Actuary who has statutory responsibility for undertaking an annual actuarial investigation of the life assurance company. Life assurance companies are subject to normal Companies Act requirements in relation to the audit of accounts.

The Pensions Board in accordance with the provisions of the Pensions Act regulates occupational pension schemes, which are not insured schemes. However, group pension schemes provided by life assurance companies are regarded as occupational pension schemes and, therefore, the Pensions Act applies to such schemes in addition to the Insurance Regulations. Life assurance companies can also manage, independent of their life assurance business, assets on behalf of a private occupational pension scheme and the Pensions Act would likewise apply in such cases.

Taxation

In Ireland the contribution from employers and employees to occupational pension schemes are tax-deductible. The investment income and capital gains are exempt from taxation. Furthermore, lump-sum payments are to some extent tax exempt. Pensions beside lump sums are subject to conventional income tax.

Pillar 3 – Personal pensions/individual agreements

Individuals can arrange for private pensions to make provisions for their own retirement and for their dependants on their death. Tax treatment of these schemes is similar to the treatment of occupational schemes.

Luxembourg

Pillar 1 – Flat-rate/social-security pensions (pay-as-you-go/funded)

The social-security pension scheme applies to citizens who are in work or who have taken out a policy voluntarily. The maximum amount for contributions and benefits is five times the statutory minimum wage, which today corresponds to a monthly amount of LUF 231.374. The pensions provided under this scheme consist of an element based on the contributions paid previously and a lump-sum element.

Funding

The scheme is based on the pay-as-you-go principle. The State, the employer and the employee each contribute an amount equal to 8% of the annual salary, making a total of 24%.

Retirement age and amount of pension

The retirement age is set at 65 for both men and women. It is possible, however, for an employee who has maintained contributions for 40 years to receive a pension from age 57 onwards. A scheme member who can show 40 years of effective or additional reduced cover periods can claim an early pension from age 60 onwards. The pension is reduced by half, or even withdrawn, if the pensioner is engaged in employment that pays more than one-third of the statutory minimum wage, set at LUF 15.425 per month. The pension is paid in full with effect from age 65, regardless of whether the recipient has another source of income. It is also possible to defer the retirement age to 68, in which case the amount of the pension will be increased by an actuarial factor.

The amount of the pension depends on the number of years on which it is based and the contributions paid. The proportionate additions accrue at the rate of 1,78% of the qualifying earnings. The flat-rate additions after 40 years of contributions amount to 22% of the reference amount. The flat-rate additions are applied at the rate of one fortieth per year of cover, and their total number cannot exceed 40. The pensions are indexed to the cost of living and adjusted in line with pay trends. On average, the pension is equal to 60 to 70% of the last salary in respect of which contributions were paid. This rate is reduced for high salaries, on account of the contributions ceiling.

Pillar 2 – Occupational schemes (pay-as-you-go/funded)

At the present time, the tax laws only implicitly regulate occupational pension schemes. Only 17,2% of the working population (1995 figure) are covered by such occupational pension schemes, which are not related to their salary. Most are

fixed-benefits schemes, but fixed-contributions schemes also exist. The retirement age is left to the employer's discretion and is often higher than that of the general scheme.

Providers of pension products

Occupational pension schemes are managed by life insurance companies, pension funds or the companies themselves through the book-reserves system. Pension funds are not common, however, due to the unfavourable tax treatment they receive and the fact that, from a prudential standpoint, they are treated in the same way as insurance companies; this is why the book-reserves system is the most widely used solution. Moreover, schemes of this type are not required to insure against insolvency.

Supervision and regulation of pension funds

The regulatory authority and supervisory body for life insurance companies and pension funds is the Insurance Commissioner's Office. Supervision is carried out by means of documentary verification, but on-site inspections are also possible. The pension fund managers must meet certain conditions with regard to competence and integrity. Appointment of an actuary is mandatory. The actuary must certify the operating reserves. The operating reserves are calculated on the same principles as those used by life insurance companies. The auditors are not subject to any particular rules, and special requirements only apply to pension funds with limited liability company (*società anonima*) status.

Pension funds are not subject to any particular solvency margin requirement. A number of rules nevertheless apply to investment of the assets, which must be diversified. In addition, a number of restrictions apply to the location of the assets, although there is no specific requirement regarding the currency in which investments are denominated.

Taxation

Employer's contributions are deemed to form part of the overheads and are therefore tax-deductible. All premiums paid on behalf of an employee are treated as notional income of that employee. The employee's contributions are only tax-deductible within certain very narrow limits. Pensions are taxed on the same basis as other income. Lump-sum payments receive preferential tax treatment: those made in connection with a directly-held insurance policy or an independent pension plan are tax-exempt, those made in connection with a pension scheme operating on a book-reserves basis are taxed at a special rate.

Pillar 3 – Personal pensions/individual agreements

Any individual can take out a personal pension plan, usually with a life insurance company.

Portugal

Pillar 1 – State pension scheme (pay-as-you-go/funded)

The state pension scheme is administered by the National Pensions Centre and the five regional social insurance centres. Membership of the scheme is compulsory for all employees and the self-employed. It is also compulsory for foreign workers to be covered by this scheme.

Funding

The state pension scheme is financed on the pay-as-you-go principle. Nevertheless, in 1989 the state established a capitalisation fund to provide financial stability for the pay-as-you-go system. Certain tax revenues have been transferred to the fund, which derives its income from the proceeds of financial investments and the transfer of any surpluses from the social security budget.

The employer contributes 23,75% and the employee 11% of the annual salary. The self-employed pay either 25,4 % or 32%, depending on whether they have chosen to contribute only to the basic compulsory pension or to the supplementary pension as well.

Retirement age and amount of pension

The retirement age is 65 for both men and women. Early retirement or deferral of retirement is possible. If a worker retires early, the pension payable at 65 is reduced in proportion to his age at retirement. If he retires after 65 years of age, the pension is increased for each year that he works up to the age of 70.

Pensions are earnings-related and also depend on the number of contribution years. At least fifteen contribution years are needed to qualify. The full pension is paid after 40 contribution years. Each contribution year entitles the beneficiary to 2% of his wage, calculated by reference to the best 10 years of earnings in the last 15 contribution years. The minimum pension is 30% of this average and the maximum pension is 80%. In 1997 the minimum pension was ECU 149 per month.

Pillar 2 – Occupational schemes (pay-as-you-go/funded)

Occupational pension schemes are not very common in Portugal. Employers are not obliged to set one up but, if they do, every employee is entitled to belong. The number of persons covered by pension funds has increased and the number of pension fund members as a proportion of qualifying workers under the general social security scheme increased from 4,4% in 1989 to 7,0% in 1998. In addition, in 1998 the total amount in pension funds represented almost 12,5% of gross domestic product at market prices. The employer normally pays the full amount of contributions, so that most pension plans are non-contributory. Almost 81% of the pension funds finance pension plans with defined benefits which are independent of the social security scheme, namely all pension plans plus the benefits granted in the banking and communications industries. In these two industries most of the pension funds finance pension plans which replace the social security scheme. Although some companies are beginning to abandon pension plans linked to the social security scheme, they still represent the second largest group in terms of the amount of closed-end pension funds.

Although the present tendency of the market is to create defined-contribution plans, as can be seen by analysing the type of pension plan financed by collective membership of an open-ended pension fund (almost 25% of pension plans have defined contributions), this tendency is not yet reflected in closed-end pension funds, which represent no more than 0,04% of the funds managed. However, some employers are choosing to convert defined-benefit plans into mixed plans, with defined-contribution plans being adopted for new participants, while the others retain the defined-benefits plans.

Providers of pension products

Usually companies set up a pension fund or a group life assurance contract to capitalise the sums contributed. For pension funds, Decree-Law No 475 of 9 November 1999 establishes the present system governing their establishment and operation, as well as taking up and carrying on the activity of managing such funds, and the general principles relating to their management. The Decree defines pension funds as a body of assets, allocated solely to the creation of one or more pension plans. Pension plans financed by a pension fund may provide only for the payment of a pension for early retirement, old age, invalidity and survival. It is nevertheless possible to pay part of the pension in the form of capital or to convert it, up to certain limits, into another type of income. The minimum age at which an old age or early retirement pension can be paid is 55 years, unless other conditions have been agreed by collective wage agreements.

Pension funds may take the form of open-end or closed-end funds. A pension fund is considered to be closed when there is only one associate or, if there are several, when there is between them a link within a firm, association, occupation or other social link and that their agreement is necessary for the admission of new associates into the fund. These funds may be set up on the initiative of a company or a group of companies, associations, particularly within a socio-professional framework, or by agreement between employers' and trade union associations. A pension fund is considered to be open when no link is required between the various members; the membership of the fund depends solely on acceptance by the fund manager. Open pension funds may accept collective and/or individual memberships and may be set up on the initiative of any entity authorised to manage pension funds, its overall net value being divided into whole units of account, or fractions thereof, which may be represented by certificates. Pension fund managers may be insurance companies which are lawfully engaged in life assurance in Portugal or pension fund management companies, i.e. companies created solely for this purpose in the form of public limited companies.

Since pension funds have no legal personality, it is up to the management company, pursuant to Decree-Law No 475/99, to act in the name of and on behalf of the member, affiliate, contributory and beneficiary organisations and, as the fund manager and its legal representative, to deal in movable or immovable assets, deposit money in the fund's bank account and exercise all the rights or perform all acts which are directly or indirectly connected with the assets of the fund. The managers may not transfer to third parties all or part of the fund management powers which are conferred on them by law. But they may use the services of third parties who are competent in the exercise of this activity, in particular the provision of specialist actuarial or investment advice, or the execution of acts and operations incumbent on them, under their supervision and responsibility. The managers, while retaining their responsibility towards pension funds, associates, participants and beneficiaries, may delegate the management of all or part of a pension fund's assets only to credit institutions and investment firms, legally authorised to manage assets in OECD member countries.

In addition, the goods representing pension funds assets must be lodged with one or more credit institutions established on the national territory and appointed by "the trustees". The financing of the fund is guaranteed by contributions paid by the

member organisation(s), and possibly by the affiliates (when they finance defined-contribution pension plans, in which case they are called contributory pension funds), by the income from uses of the fund assets and by the capital gains obtained from transactions in these assets.

Supervision and regulation

According to Decree-Law No 475/99, the Portuguese Insurance Institution shall be responsible for the supervision of pension funds and of pension fund management companies. The main objective of such supervision is to guarantee that each pension fund fulfils, in conformity with the rules in force, its duty to finance the relevant pension plan, namely the payment of pensions laid down by the plan, or the purchase of the necessary annuities. Supervision must therefore cover pension fund management companies and the funds themselves.

The procedure for supervising pension fund management companies comprises a check on the existence of rigorous criteria suited to the specific nature of the activity in question, without ignoring the pre-eminently social objective of pension funds. According to Decree-Law No 475/99, management companies must possess the right and proper administrative and accounting organisation and adequate internal control procedures. As part of the supervision of management companies, and in order to check whether the operations carried out for each pension fund can be identified with accuracy and transparency, it is important to examine their organisation and their operation, in particular the system of internal control. This examination takes the form of regular inspections of management companies with a view to examining the financial, administrative and IT procedures applied and checking the documents and tables sent to the ISP by the management company during each financial year. According to the same law; pension fund management companies must present to the Portuguese Insurance Institution the management report, balance sheet, profit and loss accounts and all the accounts presentation documents, certified by an accountant or checked by an external auditor. The solvency margin of pension fund management companies may not be less than that required for life assurance companies in respect of the activity of fund management.

As for supervision of pension funds under the legislation in force, the fund's assets (its contributions and pension plans) must at all times balance in accordance with actuarial funding systems under which equivalence can be established between (a) the assets and the forecast receipts for the pension fund and (b) the future pensions due to recipients and the future earnings from management and deposit. At any time, the size of the fund must be equivalent to at least the current value of the pensions being paid and the current value of the liabilities reflecting the services rendered, calculated by reference to ISP Rule No 21/96 of 5 December 1996.

The contribution amount is determined by actuarial calculations, with periodic reviews, at least every three years, of the basic forecasts. The manager must appoint an actuary responsible for each defined-benefit or mixed pension plan financed by a pension fund that it manages. Each year the responsible actuary must draw up an actuarial report that must be sent to the member and to the Portuguese Insurance Institution. The responsible actuary must certify: the actuarial valuations; the level of financing of the pension fund; the adequacy of the technical and actuarial plan; the current value of all liabilities in order to reveal an excess of financing; and whether

the nature of the assets which make up the net worth of the pension fund match the pension fund's liabilities.

Managers must also present to the Portuguese Insurance Institution the end-of-year documentation relating to the pension funds, certified by an accountant or checked by an external auditor. The conditions to be fulfilled by the accountants and by the external auditors who provide the above audit services are laid down by the order issued by the Minister for Finance, after having obtained the opinion of the Portuguese Insurance Institution. It is up to the Portuguese Social Insurance Institution to establish, by regulation, the accounting rules applicable to management companies and pension funds. Assets are valued by reference to the market value. Assets, which are not quoted on a regulated market, are valued on the basis of a prudent assessment of their probable sale value. Special rules apply to immovable property. The apportionment of investments must also obey certain rules; in particular, the rules of diversification and risk spreading must be observed at all times.

Taxation

Employees' contributions are tax-deductible up to a certain limit. Employers' contributions are taxed as income in the hands of employees unless the employee has no acquired rights over these contributions. Nevertheless, even in that case, the employee may deduct the employer's contributions from his own income (cancellation effect). The contributions paid by the employer are treated as operating expenditure and are tax-deductible up to a certain limit. Capital gains are tax-exempt. Pension payments are tax-exempt up to a certain limit.

Pillar 3 – Personal pensions/individual agreements

With a view to supplementing the social security and/or company pension, employees may subscribe to individual pension plans which will be financed by individual life assurance, individual membership of open and closed pension funds or by collective membership of open pension funds, when they finance contributory pension plans. As regards pillar 3, we should also mention the introduction of Pension Savings Funds and more recently of Share Savings Funds and Education Savings Funds, governed by specific legislation (Decree-Law No 205 of 27 June 1989, Decree-Law No 204 of 5 August 1995 and Decree-Law No 357 of 15 September 1999) and benefiting from fairly attractive tax rules from the individual point of view.

Spain

Pillar 1 – State pension scheme (pay-as-you-go/funded)

The state pension scheme forms part of the social security system, which covers all risks. It guarantees the beneficiary not only a pension but also social service benefits throughout retirement, including accommodation services. It is compulsory for employees and self-employed persons to belong to this scheme; (the members of a professional body may opt for its welfare insurance). The National Social Security Institute (INSS) manages the state pension scheme. The Social Security Office collects contributions.

Funding

The state pension scheme is financed on a pay-as-you-go basis. Social security contributions are used to finance the state pension's budget. The employer pays

30,8% and the employee 6,4% of the annual salary. These rates include contributions for shared risks, unemployment, the income guarantee fund and vocational training. There is a lower and upper limit on contributions. Supplementary benefits aimed at guaranteeing a "minimum pension" for the beneficiary who has paid into the scheme, and assistance benefits are levied directly from the state budget.

Retirement age and amount of pension

The retirement age is set at 65 for both men and women. Early retirement is possible, in which case the pension is reduced by 8% for each year of early retirement. Early retirement from the age of 60 is available only to persons who joined the social security system prior to 1967. On the other hand, the retirement age can be postponed, in which case the pension is increased by 2% for each additional year worked. The pension amount is determined on the basis of two interdependent elements: a) the basis of calculation, which is determined by the contributions basis (salary earned during working life) for the 15 years preceding the date of the pension application; b) the pension rate, which is applied to this basis of calculation, which is itself divided into three parts:

- 15 years of contributions, 50% of basis of calculation
- between 16 and 25 years of contributions, 3% more for each additional year;
- between 26 and 35 years of contributions, 2% more for each additional year.

If the insured person has paid contributions for 35 years or more, the pension rate reaches 100% of the basis of calculation, but may not exceed this ceiling. The minimum contribution period will increase to 15 years on 1 January 2002 while it is at present 8 years.

Pillar 2 – Occupational schemes (pay-as-you-go/funded)

Occupational pension schemes, in particular pension funds providing pension plans, are relatively new and still developing. These schemes operate on a voluntary basis and cover 15% of the working population. Any employee who has been with a firm for two years can join an occupational pension scheme paid for by his employer (pension fund). Certain categories of employee can receive different treatment if this occupational pension scheme is managed by a life assurance company-insurance contract. Agreements between companies and employees may include provisions making it compulsory to include a pension fund and/or the conclusion of an insurance contract. Internal funds and other similar instruments implying that the company remains the owner of reserves constituted under these agreements are prohibited. An exception is made, for a transitional period, for credit institutions, and insurance and investment companies. Employees are free to decide whether or not to join this kind of pension scheme. The contributions or premiums, which may be paid by the employer and the employee, are governed by collective agreements.

Providers of pension products

Life assurance companies, mutual providence societies and pension funds are authorised to manage company pension schemes. The direct payment of pensions and the constitution of provisions on the liabilities side of the balance sheet are prohibited, except, as stated above, for financial institutions. All these schemes must operate on the funding principle. As pension funds have no legal personality, these pension schemes must be administered by a management body established in Spain.

Supervision and regulation of pension funds

Life assurance companies and pension funds are regulated and supervised by the Finance Ministry (Insurance Division). Pursuant to Law No 39/195 of 8 November 1995, private companies (apart from financial institutions) may not finance their pension scheme internally, but are required to delegate this to external operators by means of life assurance schemes and/or pension funds. Pension funds are supervised by means of documentary verification, but on-site inspections are possible. As pension funds have no legal personality, they must combine two structures, a management structure and a structure acting as trustee of the pension fund, each of which is subject to special legislation.

Pension plans (indicating the contractual nature) and pension funds (indicating the assets element) are subject to the control of committees consisting of representatives of the plan's promoter, participants and beneficiaries. It is compulsory to appoint an actuary. He must review the pension fund's actuarial mechanism at least once every three years (every year if an aggregate cost evaluation method is applied). He must also certify the technical provisions and solvency margin and report to the Finance Ministry on his findings.

The technical provisions for defined-contribution schemes are not calculated in the same as those for defined-benefit schemes. For the former, contributions are capitalised. In actuarial terms, defined-benefit schemes offer two possibilities. One option is profit-sharing, where a fraction of the total benefit payable at retirement age is booked annually to a special account in proportion to the estimated number of years to run within the scheme or on the basis of the salary at the time of retirement. The other is cost sharing, where the cost of benefits is divided equally throughout the period during which the contributor pays into the scheme. This cost is constant or variable, depending on wage trends or other variables. For both types of scheme, the interest rates used are 6% maximum. No particular mortality table is applied. A plan to revise these features is under way. The interest rate would be limited to 4%, the mortality tables recast and collective capitalisation would no longer be permitted.

The auditor is not subject to any particular rule. His task is to verify the accuracy of the management and pension fund accounts, and to analyse the profit and loss account. Assets are valued at their market value. When they bear the risks themselves, pension funds must respect a solvency margin of 4% of the mathematical reserves and 0,3% of the risk capital in relation to death and invalidity risks. A minimum solvency margin of EUR 224.148 is also applied to defined-benefit schemes when the risks are borne by the fund itself and not by an insurance company. The investment policy of pension funds must respect the general rule of diversification. Investments are limited to 5% of the total securities in circulation of the company in question. An amount equal to 90% of the pension fund assets must be invested in quoted securities, deposits, and immovable property or mortgage loans. A minimum of 1% of the assets must be invested in current accounts or on the money market. There is no particular requirement as regards the currency in which assets must be denominated.

The sum of a fund's investments in the shares of a given company and of the risks assumed by the fund by virtue of loans granted to this company or guaranteed by it must not exceed 10% of the fund's total financial assets. This limit also applies to

securities issued and loans contracted or guaranteed by different companies in the same group. These limits do not apply to certain issuers, such as the State.

Taxation

Reference should be made to Law No 40/1998 of 9 December 1998 on personal income. In pension funds contributions paid by the employer and employee are tax-deductible while capital gains are tax-exempt. Pensions are taxed in the same way as other income; pensions provided, in the form of capital, are partly tax-exempt. The premiums paid under life assurance contracts can no longer be deducted from taxable income. The proceeds generated are deemed to be investment income and are taxable as such after deduction of the premiums from the capital or income due. For tax purposes, the benefits from company pension schemes – pillar 2 – under life assurance are deemed to form part of personal income. As regards mutual providence societies, when the insurance contracts fulfil the conditions of pension plans, they are taxed in the same way as pension funds.

Pillar 3 – Personal pension plans/individual agreements

Individuals may take out individuals' pension plans on terms to be determined between the parties. Individuals' pension plans – pension funds – are not subject to the prudential rules which apply to life assurance, but to those governing pension funds. These plans must not bear any risks and therefore do not have to meet any solvency requirements. The defined-contribution arrangements are the only ones authorised.

Associated pension plans are another option to supplement pensions. These pension plans, which may be defined-contribution or defined-benefit plans, are subject to the prudential rules applicable to pension funds. These private pension schemes together with the occupational pension plans – pillar 2 – may be managed by life assurance companies (authorised to manage pension funds) or pension fund management companies. Lastly, subscribing to personal life assurance contracts is another possibility but in this option the insured may surrender the contract before the retirement. The taxation of pension funds is applied to pension-plans of pillar 3.

Chapter 7 / Performance of Pension Funds

A crucial test of economic efficiency of pension funds is the rate of return and risk they offer versus what pay-as-you go would give. Asset allocation defines the rate of return and risk while it also affects capital markets. We therefore, review the levels of benefits, contributions and administrative costs; examine portfolio behaviour and its determinants; the effect of determinants in overall returns; the influence of management on fund behaviour and costs.

Pension funds should not be measured by benefits (any benefit can be given at a cost), as not comprehensive data are available and there is different inclusiveness of statistics. It is also wrong to view contributions independently (usually they are kept below 15% of salary). On the other hand, the higher the administrative costs, the lower the returns, leading to smaller pensions in defined-contribution schemes and higher costs in defined-benefit schemes. There are not sufficient data available but the basic conclusion is that large funds have lower costs than small funds, defined-benefit schemes (U.S data) have higher cost than defined-contribution ones and costs of personal pension are higher than that of company schemes.

Portfolio distribution and return and risk on assets determine company's cost to provide pension funds (the nature of benefits is also important). In a defined-contribution scheme, returns determine the pension.

1970-1990

There have been changes in portfolio distributions between 1970 and 1990. There was a slight increase of short-term assets and deposits and a significant increase on the percentage of equities in all countries. There was a decrease in mortgages, loans and property while bonds share increased in Japan, the Netherlands, Sweden and Germany and decreased in UK, USA and Australia. Generally, there was an increase of government bonds over corporate bonds and an increase in foreign assets. Changes in portfolio distribution can state changes in the aim of fund, changes on regulation or adjustment to market conditions.

Trying to estimate real total returns, there are mixed results. Almost half countries managed to provide a government bond yield while the other half didn't (taxes and transaction costs were not included). As for domestic assets, equities and property offered high returns with high risk while bonds low returns with low volatility. Foreign shares on the other hand offered higher returns than bonds with lower risk than domestic shares. Generally, liquid assets are not considered necessary as withdrawals are known in advance and a great percentage of the fund is invested on bonds (usually due to regulations). It is also a fact that public funds often have a greater percentage in bonds than private ones. The share of equity and bonds in a fund is greatly affected by tax rules, accounting conventions and the maturity of the scheme.

International diversification has its advantages and its disadvantages. It decreases systematic risk and allows investment into industries that are not present in a country; therefore increasing the efficiency of global capital markets. On the other hand, it increases exchange-rate risk, transfer risk, settlement risk, liquidity risk and faces restriction of investment in recipient countries.

Portfolio distributions and risks and returns on assets give estimates of a firm's cost to provide a given level of benefits or returns to members. Funds have generally outperformed government bonds and funds with a big share in equities have offered higher returns than those holding mainly bonds. In general, pension fund's returns don't outperform earnings growth so they have to be topped up to meet their target. The causes for that are regulation, restrictions and lack of diversification. Another important factor is the nature and the objectives of the board while, until today, only the relationship of trustees with fund managers is analysed. We would have much better results if there were no restrictions but prudent man rule.

To conclude, we could say that in defined-benefit schemes, prudent-man rule, flexible accounting and funding standards minimise the cost of sponsor while in defined-contribution schemes we have the same result with less risk. Since foreign investment lowers risk, portfolio restrictions may act contrary to benefits. Decentralised fund management has showed greater results than centralised.

Returns are calculated assuming that funds hold the market index while in reality there is active portfolio management and therefore questions of economic issues in

fund management cause associated costs and effects on pension funds returns. There are agency problems that lead to the need of high monitoring when managers lack reputation and the preference of internal over external managers as the firm can exercise more pressure on them. They also lead in higher efforts of monitoring by the firm on defined-benefit than on defined-contribution schemes as in the former the company bears the risk. Solutions to this problem can be short contracts with managers and performance-related fees.

The level of management fees charged by fund managers depends on the competitive structure of the market (22b.p in the U.K, 40b.p. in the U.S.A according to a study by Davis). The efficacy of management is affected by many parameters: where there is no competitive fund management and little incentive to exceed it we have lower returns. There is always a trade off between risk and returns and considerable benefits from diversification, which lead to the need of appropriate measures of risk-adjusted returns in order to evaluate fund managers' performance. Active management is outperformed by the indexes and the fact that it remains dominant can be related to agency problems (indexation reduces financial manager's prestige as well as his responsibilities).

Pension funds in the countries studied have sharply contrasting portfolios that can't be only a result of differences in liabilities. There is strong influence by portfolio regulations, accounting rules, and uncompetitive fund management sector. Different portfolios result to differences of cost, effecting the attractiveness of pension funds (if provision is voluntary) and labour costs and competitiveness (if provision is compulsory). In order for these problems to be solved, the liberalisation of portfolio regulations, accounting standards and fund management would be required.

1991-2000

It would be also useful to have a view on the investment practice and returns achieved in seven major pension markets: the US, Japan, Australia, Switzerland, Sweden, The Netherlands and the UK during the last decade.

US

For purposes of comparison with other countries, the asset allocation data that is presented are for private funds. These government statistics do not, however, split equities and bonds into domestic and international, nor do they include property (real estate). The domestic/ international splits have been estimated based on industry averages and property has been estimated at 3% of total assets throughout the 10-year period.

Asset allocation US

<i>year end</i>	<i>domestic equities %</i>	<i>international equities %</i>	<i>domestic bonds %</i>	<i>international bonds %</i>	<i>cash %</i>	<i>property %</i>	<i>total %</i>
1991	40	3	45	1	8	3	100
1992	43	3	43	1	7	3	100
1993	43	6	41	1	6	3	100
1994	41	7	42	1	6	3	100
1995	44	9	38	1	5	3	100
1996	47	10	35	1	4	3	100
1997	51	11	31	1	3	3	100
1998	52	12	29	1	3	3	100
1999	52	10	27	1	4	3	100
2000	52	10	29	1	5	3	100

The main feature of the data is the continuing dominance of domestic investment. Although international equity investment has increased significantly over the 10-year period – from just 3% of total assets to 10% – it remains a modest proportion of total assets. Anecdotally, there is a lot of variation in international weightings between funds. Given the vast size and heterogeneity of US equity and bond markets, this dominance of domestic investment is not particularly surprising. It is also interesting that the overall level of equity investment has gradually increased from 43% 10 years ago to 62% today. This places US pension funds among the world's most equity oriented funds.

The provisions of the Employee Retirement Income Security Act (ERISA) of 1974 cover all private US pension schemes. For this reason, ERISA is often used as a term to describe the whole private US pension market. ERISA does not impose any restrictions on US pension funds' asset allocations. The use of a wide range of external investment managers is the norm.

The return data for US pension funds have been calculated using the asset allocation data for private funds and suitable rates of return for each market. The relatively low inflation rate leaves real returns looking healthy, with the notable exception of 2000 where the equity market decline has severely dented returns. It seems that pension funds will continue to grow steadily in the US.

Pension fund returns US

<i>year</i>	<i>average pension fund nominal %</i>	<i>inflation %</i>	<i>real return %</i>
1991	20.5	4.3	16.2
1992	6.2	3.0	3.2
1993	11.6	2.9	8.7
1994	0.6	2.6	-2.0
1995	25.5	2.8	22.7
1996	13.6	2.9	10.7
1997	21.2	2.4	18.8
1998	21.9	1.5	20.4
1999	15.1	2.2	12.9
2000	-3.4	3.4	-6.8
10-year average % p.a.	12.9	2.8	10.1

A feature of recent years has been a move to defined contribution arrangements (also predominantly known as 401(k) plans) and this seems set to continue. Individual Americans are often keen to take control of their own asset allocation in their 401(k) plans. It has been suggested that this will lead to a reduction in equity weightings in favour of bonds. There is no particular evidence of this as yet, perhaps because the US equity bull market of recent years has, until very recently, encouraged members towards equities.

UK

Asset allocation UK

<i>year end</i>	<i>domestic equities %</i>	<i>international equities %</i>	<i>domestic bonds %</i>	<i>international bonds %</i>	<i>cash %</i>	<i>property %</i>	<i>total %</i>
1991	55	20	7	3	4	8	100
1992	56	21	6	3	4	7	100
1993	57	24	4	3	4	5	100
1994	54	23	5	4	4	6	100
1995	55	22	6	5	4	5	100
1996	53	22	6	5	6	5	100
1997	53	20	7	5	7	5	100
1998	51	20	9	6	5	5	100
1999	51	24	9	4	4	4	100
2000	49	22	12	5	5	3	100

Pension fund returns UK

<i>year</i>	<i>average pension fund nominal %</i>	<i>inflation %</i>	<i>real return %</i>
1991	17.7	4.5	13.2
1992	17.5	2.6	14.9
1993	25.5	1.9	23.6
1994	-3.0	2.9	-5.9
1995	19.6	3.2	16.4
1996	10.4	2.5	7.9
1997	16.8	3.6	13.2
1998	14.9	2.8	12.1
1999	20.4	1.8	18.6
2000	-2.7	2.9	-5.6
10-year average % p.a.	13.3	2.9	10.4

JAPAN

The reserve funds of National Pension Insurance and Employees' Pension Insurance (see chapter about pension provision) make up over half of the total assets. These funds are deposited with the government trust fund bureau and are mostly invested in government projects, although a small portion is managed by the government pension investment fund, part of the ministry of health and welfare.

For the purposes of comparing pension fund asset allocation in Japan to that in other countries, the most appropriate funds to look at are the EPFs, the corporate schemes. The asset allocation table shows the asset allocation history of the EPFs over the last 10 years. The last five years have seen quite a large reduction in domestic bonds,

mostly in favour of international equities and, particularly in 1999, in favour of domestic equities. This may in part reflect the strong recovery of the domestic equity market in 1999, which returned 47% in yen terms.

Asset allocation JAPAN

<i>year end</i>	<i>domestic equities %</i>	<i>international equities %</i>	<i>domestic bonds %</i>	<i>international bonds %</i>	<i>cash %</i>	<i>property %</i>	<i>total %</i>
1991	23	5	56	7	6	3	100
1992	22	5	56	7	7	3	100
1993	22	5	58	6	6	3	100
1994	24	6	55	6	6	3	100
1995	24	6	54	6	6	3	100
1996	24	6	54	6	6	4	100
1997	25	11	48	3	3	3	100
1998	29	12	42	3	3	3	100
1999	40	19	32	2	2	0	100
2000	38	19	31	3	3	1	100

In the past the allocation was heavily influenced by government regulations including the 5:3:3:2 rule. This stipulated that a minimum of 50% of pension fund assets must be invested in bonds, a maximum of 30% in equities, a maximum of 30% in international assets, and a maximum of 20% in property. This rule was abolished in 1997 and the new freedom felt by Japanese pension funds is obvious in the move from domestic bonds to international and domestic equities already noted.

The return data for Japanese pension funds in the following table have been calculated by taking the EPF asset allocation data and applying suitable market rates of return. Until 1999, the nominal returns were low compared with other countries. The main reasons for this have been the overall dominance of poorly performing domestic investments and of bonds in Japanese pension portfolios. In 2000, the return rate for international bonds was 17.7% but as they form only a small part of pension assets, this is not reflected in the total return for 2000.

Pension fund returns JAPAN

<i>year</i>	<i>average pension fund nominal %</i>	<i>inflation %</i>	<i>real return %</i>
1991	9.1	3.3	5.8
1992	2.1	1.6	0.5
1993	11.5	1.2	10.3
1994	-0.5	0.8	-1.3
1995	12.3	-0.1	12.4
1996	5.4	0.1	5.3
1997	5.4	1.8	3.6
1998	-1.0	0.6	-1.6
1999	20.8	-0.3	21.1
2000	-5.5	-1.0	-4.5
10-year average % p.a.	5.7	0.8	4.9

Recent years have seen massive deregulation of Japanese pension funds and a consequent rise in equity investment. Nevertheless, 1999 aside, returns have still been relatively low and companies are concerned about potentially underfunded liabilities.

To add to their concerns, new accounting rules require them to disclose such obligations from April 2001.

The state pay-as-you-go system also faces difficulties ahead. Japan has the worst dependency ratio in the industrialised world and the government has recently announced that pension payments are to be reduced by 5%. The government has also indicated that defined contribution plans, similar to US 401(k) plans, will be introduced in April 2002. Their introduction may help at least to arrest the growth of Japan's unfunded pension liabilities.

THE NETHERLANDS

In 1991 Dutch funds invested, on average, less than one-fifth of their portfolio in equities, but by the end of 2000 this had increased to 48%, nearly half. The increasing investments in equities have brought corporate governance issues to the fore. The most important factor in Dutch pension fund investment has been the introduction of the euro, which has led to a major shift away from the domestic investments in the last two years.

The asset allocation data presented cover all types of funded arrangement except insurance contracts. The most notable features are the dramatic increase in equity investment, both domestic and international, particularly over the last four or five years. International bond investment has also increased while domestic bond investment is less than a third of what it was 10 years ago. Cash and property allocations have remained relatively stable.

Asset allocation THE NETHERLANDS

<i>year end</i>	<i>domestic equities %</i>	<i>international equities %</i>	<i>domestic bonds %</i>	<i>international bonds %</i>	<i>cash %</i>	<i>property %</i>	<i>total %</i>
1991	7	9	69	3	2	10	100
1992	8	10	66	4	2	10	100
1993	9	12	63	4	3	9	100
1994	10	13	62	4	2	9	100
1995	11	15	59	5	2	8	100
1996	14	16	53	6	3	8	100
1997	15	20	46	10	2	7	100
1998	17	24	35	15	3	6	100
1999	12	38	22	19	3	6	100
2000	9	39	21	23	3	5	100

These dramatic changes in asset allocation have been brought about as Dutch pension funds have become increasingly aware of the importance of good investment returns. Many schemes, previously internally managed, have been outsourcing investment management to external asset managers. At the same time, restrictions on asset allocation that were a feature of many industry-wide schemes have been lifted, thus further encouraging the move to equities and to international investment.

The return data for Dutch pension funds have been calculated from the asset allocation data and suitable market returns. The recent changes in asset allocation have clearly had some positive effects on returns.

Pension fund returns THE NETHERLANDS

<i>year</i>	<i>average pension fund nominal %</i>	<i>inflation %</i>	<i>real return %</i>
1991	11.1	3.2	7.9
1992	11.6	3.1	8.5
1993	20.8	2.6	18.2
1994	-2.7	2.8	-5.5
1995	15.7	2.8	13.8
1996	14.9	1.9	12.9
1997	20.0	2.0	17.8
1998	12.1	2.2	10.1
1999	23.7	2.0	21.5
2000	1.7	2.2	-0.8
10-year average % p.a.	12.6	2.5	10.1

The main feature of the Dutch pension industry today is increased competition. The industry-wide schemes and the dominant pension providers face competition from each other as restrictions limiting companies to using only the scheme for their industry have been lifted. Every scheme is, therefore, looking to boost returns by making more equity investments, outsourcing investment to external managers and cutting costs.

SWEDEN

A decade ago, roughly three quarters of total assets were invested in domestic bonds. Since then, Swedish schemes have moved towards greater diversification of assets, in particular their allocations to foreign investments have increased markedly. By the end of 2000, the amount of total assets invested in domestic bonds and the amount in invested equities (domestic and foreign) were almost equal. The asset allocation figures shown in the table are estimates for the ITP plan.

Asset allocation SWEDEN

<i>year end</i>	<i>domestic equities %</i>	<i>international equities %</i>	<i>domestic bonds %</i>	<i>international bonds %</i>	<i>cash %</i>	<i>property %</i>	<i>total %</i>
1991	17	4	74	0	1	4	100
1992	18	5	72	0	1	4	100
1993	20	7	68	0	1	4	100
1994	21	9	62	1	2	5	100
1995	24	12	55	2	1	6	100
1996	25	13	52	3	1	6	100
1997	26	14	47	5	1	7	100
1998	24	15	44	8	2	7	100
1999	25	16	41	9	1	8	100
2000	22	15	44	10	1	8	100

Swedes have historically looked to the state for generous pension payoffs. All workers have therefore had to pay 8% of earnings to cover pensions. Pension benefits are mainly provided via the state system, which is financed through a combination of PAYG and premium reserves. The premium reserve covers the gap between the income stream from taxes and the outflow from the PAYG system. Recently the

outflow increased significantly and the government had to change the funding basis to defined contribution.

Supplementary pension plans in private industry form the second tier of Sweden's provision. Two separate schemes for salaried (ITP Plan) and waged (AMF Plan) employees cover 90% of the population and are effectively compulsory. These funds are either put into the book reserves of the Swedish Staff Pensions Society (SPP) or into insurance contracts. Corporate pension schemes are beginning to develop in Sweden, although the assets currently outsourced are still dwarfed by the liabilities that the largest companies hold on their balance sheets.

Pension fund returns SWEDEN

<i>year</i>	<i>Average pension fund nominal %</i>	<i>inflation %</i>	<i>real return %</i>
1991	17.2	9.7	7.5
1992	11.5	2.6	8.9
1993	30.9	4.7	26.2
1994	-1.5	2.3	-3.8
1995	17.2	2.8	14.4
1996	23.2	0.8	22.4
1997	18.9	0.9	18.0
1998	16.6	0.4	16.2
1999	28.0	0.3	27.7
2000	3.0	1.3	1.7
10-year average % p.a.	16.1	2.5	13.6

Providers of pension funds both in the public and private sectors have recognised the need to shift to defined contribution schemes. There is also a discernible trend from unfunded to funded arrangements.

SWITZERLAND

The asset allocation refers to the compulsory occupational system. Overall, Swiss pension fund investment has seen a shift from domestic bonds and property into domestic and international equities over the last 10 years.

Asset allocation SWITZERLAND

<i>year end</i>	<i>domestic equities %</i>	<i>international equities %</i>	<i>domestic bonds %</i>	<i>international bonds %</i>	<i>cash %</i>	<i>property %</i>	<i>other %</i>	<i>total %</i>
1991	8	3	37	8	24	17	5	100
1992	8	4	37	8	23	16	5	100
1993	10	4	35	7	23	17	4	100
1994	13	5	34	7	22	17	2	100
1995	13	6	32	8	22	16	2	100
1996	14	8	31	8	22	16	3	100
1997	15	9	29	9	21	14	2	100
1998	17	10	28	9	20	13	2	100
1999	18	11	28	10	19	12	2	100
2000	18	11	27	10	19	11	2	100

Switzerland has the third largest occupational pensions market in Europe after the Netherlands and the UK. While defined-contribution arrangements dominate, investment choices are made largely by employers instead of members.

Pension fund returns SWITZERLAND

<i>year</i>	<i>average pension fund nominal %</i>	<i>inflation %</i>	<i>real return %</i>
1991	9.3	5.8	3.5
1992	9.5	4.1	5.4
1993	16.8	3.3	13.5
1994	0.3	0.8	-0.5
1995	10.1	1.9	8.2
1996	10.6	0.8	9.8
1997	16.6	0.5	16.1
1998	9.4	0.0	9.4
1999	9.2	0.9	8.3
2000	3.1	1.6	1.5
10-year average % p.a.	9.4	2.0	7.4

The Swiss occupational market is highly regulated in terms of investment constraints and regulatory benchmarks. The BVG legislation requires that companies guarantee an interest rate of 4% p.a. on the statutory minimum level of contributions. PKB (Pensionskasse des Bundes) is the country's largest fund (for 146,000 federal employees) and is now to be spun off into a new independent entity called Publica which will also take responsibility for investment strategy within two years. Until then, the Bundestresorie (treasury department) of the Eidgenoessische Finanzverwaltung (EFV) will handle strategy in Bern.

The move from defined-benefit to defined contribution plans in Switzerland will continue but interest in the former remains high. Another trend is that insurance companies and private banks are setting up new investment vehicles to meet a rising demand for alternative investments.

AUSTRALIA

In 1992 it became compulsory for employers to contribute to their employees' pensions. This Superannuation Guarantee Charge (SGC) will cause the Australian pension fund assets to continue to grow strongly.

The asset allocation data shown below cover all types of funded superannuation arrangements. The main features of the allocation are the gradual increase in equity investment, particularly domestic equities, over the period; the gradual decrease in property investment; and the relatively high cash weightings. Note that for corporate funds, the international weightings are generally higher. There are no restrictions on how superannuation assets are invested although the tax system has tended to favour investment in domestic equities. Total superannuation assets grew 17.4% over the 12 months to September 2000. Member contributions increased by 22.8% over the past year to A\$ 20.1 billion.

Asset allocation AUSTRALIA

<i>year end</i>	<i>domestic equities %</i>	<i>international equities %</i>	<i>domestic bonds %</i>	<i>international bonds %</i>	<i>cash %</i>	<i>property %</i>	<i>other %</i>	<i>total %</i>
1991	27	12	29	2	12	11	7	100
1992	32	12	31	2	11	9	3	100
1993	36	14	29	3	8	7	3	100
1994	35	12	30	3	9	8	3	100
1995	38	14	27	1	10	6	4	100
1996	39	15	26	1	9	6	4	100
1997	38	14	24	2	11	9	2	100
1998	36	13	25	3	12	9	2	100
1999	39	16	21	3	12	5	4	100
2000	42	16	19	3	12	5	3	100

The return data for Australian superannuation funds have been calculated by taking the asset allocation data and applying suitable market rates of return. The “other” asset category has been treated as cash for the purposes of this calculation. The nominal rates of return are healthy and generally on a par with pension funds in other equity-oriented countries.

Pension fund returns AUSTRALIA

<i>year</i>	<i>average pension fund nominal %</i>	<i>inflation %</i>	<i>real return %</i>
1991	22.3	3.2	19.1
1992	4.7	0.9	3.8
1993	24.9	1.9	23.0
1994	-4.0	1.9	-5.9
1995	17.2	4.6	12.6
1996	9.7	2.7	7.0
1997	15.7	0.3	15.4
1998	14.2	0.8	13.4
1999	8.6	1.5	7.1
2000	5.6	4.5	1.1
10-year average % p.a.	11.6	2.2	9.4

Superannuation fund assets are set to continue to grow rapidly in Australia. Many small and medium sized companies are tending to wind up their own arrangements and instead give their employees access to an industry-wide scheme. Growth is also being seen in the optional top-up pensions including RSAs. Almost all industry funds and top-up pensions operate on a defined contribution basis; thus defined benefit is on the decline.

Recent data from the consultants, Rainmaker, suggest that superannuation savings will increase at an average annual rate of 11.8% to reach A\$1.5 trillion by 2010. Over the last five years total superannuation contributions paid by all Australians have increased from 11% of gross wages and salaries to 15%. Superannuation mastertrusts (private pension investments), industry funds and DIY (small pension schemes, often with less than five members) are projected to remain the fastest growing market sectors.

The next table summarises some of the key data from the seven countries we have focused on. In all seven countries, pension assets are at least 50% of GDP and, in the case of the Netherlands and Switzerland, over 100%. Australia's pension assets, currently at 75% of GDP are increasing rapidly since the introduction of compulsion in 1992. Of the seven, Japan is the least well funded – and has the population that is ageing most significantly.

	<i>US</i>	<i>Japan</i>	<i>Australia</i>	<i>Switzerland</i>	<i>Sweden</i>	<i>Netherlands</i>	<i>UK</i>
GDP 2000 (US\$ bil)	9,963	4,491	364	251	221	378	1,396
Total pension assets end 2000 (US\$ bil)	7,773	2,277	272	321	213	17	1,128
Total pension assets as % of GDP	78	51	75	128	96	10	81
10-year average real return to pension funds	10.1	4.9	9.4	7.4	13.6	10.1	10.4
Allocation to real assets end 1991	46	31	50	28	25	26	86
Allocation to real assets end 2000	65	58	63	40	45	53	79
Allocation to international assets end 1991	4	12	14	11	4	12	23
Allocation to international assets end 2000	11	27	19	21	25	62	26

<i>Country</i>	<i>pension assets (US\$ billion)</i>	<i>GDP (US\$ billion)</i>	<i>Pension assets as % of GDP</i>
Belgium	33	232	14
Denmark	187	163	115
Finland	60	121	50
France	64	1,351	5
Germany	294	1,989	15
Ireland	46	85	54
Italy	250	1,093	23
Netherlands	417	378	110
Norway	50	147	34
Portugal	12	102	12
Spain	29	556	5
Sweden	213	221	96
Switzerland	321	251	128
UK	1,128	1,396	81

Investment in real assets (equity and property) has in general had a positive effect on returns. In the ten years to 2000, countries with consistently high real asset weightings -such as the US and UK- were among those with the highest ten-year returns. An interesting exception is Sweden, which saw the highest ten year return to end 2000 with only 45% of its total assets in real assets by end 2000. Many countries have been increasing their real asset weightings in recent years – especially Japan and the Netherlands - and an associated uplift in returns can be observed.

The benefits or otherwise of international diversification are less clear-cut over the last ten years. International equity investment has clearly been beneficial to those countries with small domestic equity markets. UK and US pension funds have

benefited less from international investment over the period but the benefits of diversification in mitigating the volatility of returns remain.

Turning to the investment of pension assets, the table below gives an overview of the current asset allocation of pension funds in countries that have over 25% of GDP in pension assets.

<i>country</i>	<i>domestic equities %</i>	<i>international equities %</i>	<i>domestic bonds %</i>	<i>international bonds %</i>	<i>cash %</i>	<i>property %</i>	<i>other %</i>	<i>total %</i>
Denmark	16	13	58	2	2	9	0	100
Finland	15	4	57	9	8	7	0	100
Ireland	25	44	12	10	4	5	0	100
Netherlands	9	39	21	23	3	5	0	100
Norway	13	11	50	16	4	6	0	100
Sweden	22	15	44	10	1	8	0	100
Switzerland	18	11	27	10	19	11	2	100
UK	49	22	17	4	5	3	0	100

A wide range of approaches is apparent, from the still high bond orientation of the Nordic countries to the equity and international orientation of the UK, Netherlands and Ireland. Pension funds' preferences for domestic equity and bond investment have generally reduced with the introduction of the euro. This is particularly evident in the Netherlands.

There has been a general increase in pension funds' appetite for equities, and especially non-domestic equities. The two dominant countries leading this trend are Germany and the Netherlands. However, we have not witnessed clear evidence of a wholesale switch from bonds to equities, despite examples of rapid moves towards equity investments. The increased interest in equities, combined with a higher propensity to outsource, have led to a rise in the demand for fund managers with specialist skills and capabilities in all asset classes on a global basis.

Chapter 8 / Pension Funds and Corporate Finance

Evidence shows that there is high reliance of companies on institutional investors as sources of finance. In some countries pension funds can have decisive role in corporate activity. We could say that provision of funds to companies and their governance via control over management are the two key roles that pension funds play in corporate finance.

Principal agent problems are the difficulty equity finance has to face. Close monitoring of management that minimises the cost of agent problems is costly. Debt allows low monitoring costs but there are agency problems between equity holders and lenders, as the formers want higher debt than the former. Principal agent problems have implications for corporate governance as they imply the need for shareholders to exert control over management and at the same time remain distinct from it in order to do its job. If difficulties of corporate governance remain, equity becomes costlier and often subject to quantitative restrictions.

The extent that managers can depart from shareholders' will is limited by organisational structure. The principal alternative methods of exercising corporate control are:

- a) market control via equity (take-over mechanism): Those firms that deviate most from shareholders' objectives have lower market values than shareholders want and have greater likelihood of being acquired. The threat of take-over constrains managers' behaviour. Pension funds play a role as they complement take-over pressure; they act as a monitoring constraint on management behaviour and evaluate take-over proposals when they arise.
- b) market control via debt: Retention policies are always a major conflict for firms. High debt rises interest payments, which reduces managers' resources forcing them to issue debt or equity for financing new projects.
- c) direct control via equity: The board of directors and non-executive directors act as shareholders' representatives. Voting rights on choice of directors ensures shareholders' influence. Direct links from investors, such as pension funds, to management can also exist.
- d) direct control via debt: Banks are significant shareholders on their own right and as representatives of individuals and are represented on boards both as equity holders and creditors. Meanwhile, pension funds have limited control so the monitoring of management is left to the bank.

An evaluation of the above methods could be as follows:

- a) market control via equity (take-over mechanism): Changes in ownership lowers the ability for long-term relationships with suppliers, customers and workers. All these produce high cost regarding transactions and time and probably imply less training and poorer Research and Development programs. Empirical results show that there are not so many take-overs and firms without serious underperformance are not affected by their threat. To the question whether there are benefits of acquisition ability the answer from financial economists and industrial ones is different. The former think that there are, as shareholders of target company win and the ones of bidder do not lose, while the latter think that it damages corporate performance. Pension funds are major shareholders and play a central role in take-overs, as they are willing to sell shares in order to maintain their performance. However, empirical results show little effect of institutionalisation on take-overs where the size of the predator and pray play the most important role. Pension funds may have also a passive role as the absence of strict rules on reversion of pension-fund surpluses can attract raiders independently of the firm itself.
- b) market control via debt: a probable alternative method is the promise of dividends without making it obligatory. The disadvantage is that there is high gearing which lead to intense conflicts of shareholders and debt owners. Shareholders of high leveraged firms have the incentive of going for risky projects as the high risk of bankruptcy is mostly carried by creditors who will suffer most of the cost. Creditors know that and charge higher interest. High leverage therefore causes various deleterious economic consequences. At macro-level if there is high corporate fragility it can act as a multiplier in case of recession. That may lead to high inflation, as the authorities would fear to tighten monetary policy because of

fear of corporate damage. If pension funds were willing to accept cash for leveraged take-overs and buy-outs, they would help the process.

- c) direct control via equity: a direct discussion between institutional shareholders and company would lower the costs of monitoring while creating benefits. The free rider problem however (the fact that any pension funds' activism will benefit all shareholders) make the above less attractive together with the fact that such close relationship may restrict an institutions' freedom to make share transactions due to possible inside information. Analysts suggest that pension funds' influence is beneficiary and the authorities should offer inducement. Even without inducements however, pension funds present great activity.
- d) direct control via debt: It has the benefits that it compels to profit maximisation, bank representation removes asymmetries affecting credit rating and it facilitates the long-view of investment. On the other hand, the supervisory boards meet rarely, banks are also controlled by their shareholders and it could lead to a reduction of equity issuance as low liquidity increases the cost of equity. Furthermore, the double role of banks (both shareholder and creditor) leads to conservative investment strategy.

Usually in the U.S., banks are left to do the monitoring and pension funds are passive although their growing dominance of shareholding. In the mid-80s, the dissatisfaction from managers increased and take-overs, as a tool of control, lost power due to the difficulty of selling shares if owning a big volume. It became easier for companies to reach institutions and the activism of pension funds, especially public ones, increased. Demanding of managers' removal, calling for higher dividends and changes in legislation are some measures of pension funds in Anglo-Saxon countries. U.S pension funds that are shareholders in companies of Europe also pressure for changes leading to convergence in governance which perhaps will happen when domestic pension funds evolve.

The role of pension funds in the provision of corporate debt is restricted by fear of default. The lender must scan carefully potential borrowers before the deal and monitor them afterwards enduring costs that influence the choice between banks and market. Due to economies of scale only big borrowers can have access to bond markets and due to banks having better information, only big clients having a good reputation can go to markets. Furthermore, banks better influence the behaviour of borrowers and seize assets in case of defaults as well as form long-term relationships with firms. All the above makes it obvious that the role of pension funds in debt finance is much smaller than in equity market. Most fund managers think that debt plays a minor role in a fund due to the low returns compared to equity and sometimes debt makes holding equity difficult.

Pension funds' role in equity markets evolves from that of a passive investor to an active role and this move is seen as positive by many as it leads to the improvement of corporate governance and a convergence to a different model of management. In debt markets, the pension funds' role remains quite passive due to factors favouring banks.

Chapter 9 / International Investment

Today, international investment is a small proportion of pension funds but in the future its growth will be important for them and also for the global economy and the financial markets, with positive and negative implications. An important distinction that must be made is between *gross* (total volumes of cross-border transactions) and *net* (net resource flows) capital flows. International investment by pension funds can cause gross flows but not necessarily net as an increase of net flows means that there is also a shift between saving and investment in home country. Pension funds can cause increased saving in home country if they replace social security together with ageing of population.

International investment can fight systematic risk as national economic cycles are not correlated, shocks to equity markets tend to be country specific, profit share in national economies may move differently and there is imperfect correlation of demographic shifts. Furthermore, some sectors may not exist in the domestic market, the domestic market may be dominated by few large companies that are exposed to one type of risk and there could be a lack of certain financial instruments in the country.

Academic studies with data for long-term periods show that investors free to choose foreign assets may have a better risk/return trade-off than if they were restricted to assets of one country. However, in reality, 60% to 90% of portfolios are invested in domestic markets. This happens because international investment causes exchange-rate risk (futures can reduce the risk but their price lowers the gains), transfer risk (ability to repatriate returns), settlement risk (in less developed markets there is danger of delayed or failed transactions) and liquidity risk (transactions may move the market against the fund). However, all risks can be avoided by choice of markets and exchange-rate risk viewed in modern portfolio theory can contribute to benefits of offshore investment. The advantages of international investment apply more to equity than bonds and property. Bond markets are more globally integrated and there are fewer benefits from investment out of the country. Property is less liquid and relies on imperfect local information making it more risky to invest abroad. In practice, equity is the highest percentage of international investment.

All the above are based on the assumption that fund managers want an improved risk-benefit trade-off but sometimes that is not true. Precise matching of liabilities with assets may be the strategy of eliminating risks to solvency or the company may be forced by regulations to offer pensions with defined returns leading to cautious investment policy on domestic assets. In most cases when employee representatives help to decide asset allocation in defined contribution schemes, it leads to risk aversion and safeguarding of domestic employment. Sometimes domestic returns are high and risk diversification is ignored or authorities forbid foreign investment. Furthermore, there are crashes that international investment can't avoid (e.g. 1987 stock market crash).

Illustrative data shows that foreign investment up to 20% of portfolio, always reduces risk and sometimes lowers returns. International investment of 40% always lowers risk further while hedging to eliminate exchange-rate risk sometimes increases the total risk as movements of asset prices can not be offset by exchange-rate changes.

The data shows that the benefits of diversification have not declined, as some analysts support, as correlations between major equity markets are positive but below unity while there are lower correlations between OECD with Latin-American and Asian markets. Both above correlations tend to increase while home asset preference is confirmed by available data.

In most countries the abolition of exchange controls has led to a high percentage of external assets with foreign equity holdings exceeding bond holdings in most countries. Benefits of international investment were always there but diversification developed in 1980s for a number of reasons: a) the same factors as pension funds: better coverage, demographics, funding requirements, investment returns b) the development of pension funds c) the reduced transaction costs caused by improved global communications, liberalization and increased competition d) better hedging possibilities e) marketing of global investment and f) regulatory changes.

There are many benefits from international investment. Saving flows are directed to countries with demand for capital in excess of domestic saving. Countries in the process of economic development need flows and in order to get them they offer higher yields. This is how investment in low-income or middle-income countries occur, affecting of course the balance of payments' deficit. Imbalances between saving and investment can be solved by capital flows, especially by pension funds due to their long-term character. Institutional investors have also facilitated financing of budget deficits, as the constraint of domestic saving no longer applies. International investment facilitates the efficiency of capital markets by equalizing nominal and perhaps real returns as it is argued that gross flows equalize nominal returns and only net flows equalize real returns.

Furthermore, companies can find funding in other markets and pressure on domestic asset prices can be relieved by international investment. International investment also helps free trade, as countries will accept deficits that can be caused by free-trade more easily if they know finance will be available. It is unfair not to permit pension funds (representing low and middle income people) to benefit from international investment that high-incomes can explore on their own.

Disadvantages of international investment also exist. The authorities have less control over exchange rates and perception of funds can cause major shifts of funds. Consequently, there is concern about possible volatility of international capital markets and loss of monetary autonomy. Many asset managers have actually a short-term perspective that can easily lead to an exchange-rate crisis. However, these problems existed well before pension funds and only for equity market fluctuations, do pension funds play a more important role. A study by Howell and Cozzini has shown that the benefits of diversification by international investment decrease, as increased capital flows -a consequence of international investment- equalize returns and increase correlation of market movements. International capital flows also lead to increased potential for sharper daily movements and for prolonged shifts in share values away from the fundamentals.

There are increased capital flows in emerging markets in recent years and although the figures are still small, this trend is important for world development, internalization of financial markets and resolution of demographic problems.

Emerging markets offer high returns accompanied with high risk, higher volatility and low correlation with advanced markets. The abolition of capital controls, the economic reform, the privatization, the rapid economic growth, the excess of savings over investment in the advanced countries and the potential for higher gains lead to investment in the emerging markets. A short-term explanation for that shift can be the decrease of return of bank deposits which made people turn to mutual funds that invest heavily in emerging markets but much of flows are probably ‘hot money’ which will lead to high inflation, raising exchange rates and loss of international competitiveness. That could cause a crisis as shares are overvalued and no discrimination is made between countries having carried out reforms and those that have not.

There are many differences in international investment by pension funds due to the size of sectors, regulations and attitudes. Given the benefits of international investment to portfolio managers, in terms of reduced risk, restrictions are not justified (unless these are a demand of a minimum international investment and prevention of excessive exposure). The movement of capital leads to equalization of returns and a smoothing of consumption mainly to advanced countries, although now it is starting to affect emerging ones. However, banking and public sectors’ together with direct investments’ flows are more likely to help countries under development. Furthermore, the destabilization of capital flows leads to higher volatility and higher cost of capital together with instability of exchange-rates (there is special concern for developing countries). Short-term policy actions to reduce them will drive business offshore while the desirable solution is the development of domestic institutions.

Chapter 10 / Defined-Benefit and Defined-Contribution Plans **Economic Issues**

We have seen the major differences between the two types of plans and now we will develop the economic issues that arise from the choice between these types of fund.

There is an obvious distinction between the two plans. In defined-benefit plans there is distribution of risk between members and sponsor, having the benefit of risk sharing. In defined-contribution plans the investment risk is borne solely by the employee. If there is appropriate funding, a bankruptcy of sponsor changes a defined-benefit into a defined-contribution plan.

It may also exist a transfer of risk between young workers who can bear risk and older workers and pensioners. Volatility in the value of assets can co-exist with stable pension payments, as young workers are indifferent to current value of assets as long as the company is expected to fulfill its promise in the future. In defined-contribution plans the pension is paid from annuity bought at the time of retirement having interest-rate risk. In defined-benefit plans the annuity is paid from pension fund and its rate, nominal or real, is fixed in advance.

Defined-benefit pension funds provide security against factor-share uncertainty as well. Factor-share uncertainty is caused because human capital can’t be traded, leading to economic inefficiency as people hold too much human capital relative to physical capital early in life while at retirement everything is invested in physical

capital. Defined-benefit schemes provide returns tied to wage rate at time of retirement while defined-contribution, tie workers only on returns of physical capital.

The advantages of defined-benefit plans are conceptualized by “retirement-income insurance”. Insurance is provided against inadequate replacement rate, social security cuts and risk of longevity. Defined-benefit plans are dominant because they provide superior insurance while defined-contributions plans are inferior in terms of protection against investment risk (mainly if there is high and volatile inflation). Defined-benefit plans provide *welfare-improving implicit securities* that can’t be obtained in the market- (e.g. deferred life annuities in fair rates, factor-share claims, and price-indexed claims). If financial markets were complete, the choice of pension fund would be irrelevant as employees could create on their own their optimal position but there is no market where wage uncertainty can be insured or claims to future wages can be sold. Defined-benefit plans usually also provide non-retirement income insurance (ill health and survivors’ benefits) that defined-contribution don’t.

Despite the benefits of defined-benefit schemes, defined-contribution plans are more attractive to firms due to lower costs, simplicity of administration (as no insurance to finance exists), lower risk and less regulatory burden than that of benefits’ funding rules. Defined-benefit funds impose sensitivity of pension to earnings late in life but the wage path is unpredictable and workers may prefer pension based on career average earnings than final salary (defined-contribution or career-average-based defined-benefit schemes offer that). They also impose more strict vesting conditions (one loses rights if leaves early), they are more sensitive to inflation and it is more difficult for them to achieve actuarial fairness.

Both type of funds benefit, from economies of scale in processing information and employing fund managers, compared with individual saving. Defined-contribution schemes can be seen as offering flexibility to individuals to select a risk-return strategy suited to their preferences while defined-benefit plans force employees to accumulate their pension portion of retirement saving as deferred life annuities (they limit risk-return choice). Information on replacement ratio (retirement benefits/income) is more precise for defined-benefit schemes as in defined-contribution plans one can only indicate the size of an annuity that may be available under different scenarios.

On the other hand, as the actuarial value of sponsor’s commitment is uncertain in defined-benefit plans, the present value of the fund is difficult to be calculated; a feature that reinforces the difficulty of transfer that characterize such funds. Defined-benefit schemes may be too complicated to understand while defined-contribution are easy, can be valued at any time and can aim in specific replacement rate by adjusting contribution rates according to actual versus assumed investment returns.

Information asymmetry, the one-off nature of transaction and the no bargaining power by purchaser make personal contribution very vulnerable to agency problems; a fact that could lead to high commissions along with low performance. There have been many cases where sellers have cheated individuals to contracts contrary to their interest and although occupational pension schemes overcome that, agency problems remain vis-à-vis the fund manager. It is obvious that the problem is a lot more crucial

in defined-contribution than in defined-benefit schemes as on the latter there is great incentive for the company to ensure returns.

Defined-benefit plans assist the employer by decreasing labour turnover (leading to labour inflexibility however), by providing incentive through the entire career as pensions are tied to final salary and by facilitating the creation of incentives to early retirement. On the other hand, it suffers from the problem of “backloading”, meaning that the present value of a year’s benefit accrual when one is near to retirement exceeds the equivalent accrual when one is young. This is bad for early leavers and it causes cross-subsidies from young workers to old. Furthermore, it creates a burden for firms with high average age of workers if funding has not been done in advance. Backloading can be diminished by index accrued benefits.

In defined-contribution schemes, if returns are higher than wage inflation, contributions to final pension will be higher for initial payments than later ones but early contributions is less likely to be made as young employees won’t be allowed or won’t choose to participate. An advantage of defined-contribution plans is portability, which makes it a better system if workers are expected to change jobs. If firms are under fear of take-overs, restructuring and high competition of new players or they fear that it is less likely to keep an employee as he will not be productive his whole life -considering his skill will become obsolescent due to technology-, then they will find a defined-contribution plan more appealing.

The corporate-finance perspective sees defined-benefit pension fund liabilities as corporate debt and fund investments as corporate assets which collateralize the pension obligation. Given tax-deductibility, companies are expected to manage pension funds in order to maximize benefits to shareholders. In defined-contribution schemes a risk-return trade-off is selected and the decision depends on provisions of tax-code. Corporate-finance perspective highlights that a deviation between the value of the fund and its liabilities can exist; a fact that makes the issue of minimum-funding rules and benefit guarantees necessary, measures not needed in defined-contribution plans where the scheme is fully funded. Any distortions by tax-rules can be seen as disadvantages of defined-benefit schemes.

There is also the issue of status of members as stakeholders of the firm; ownership of surpluses and liability for deficits rest with owners, but in take-overs we have stripping of surpluses and decrease of benefits (problem that doesn’t exist in defined-contribution plans as there are no surpluses to strip). All these issues do not have clear-cut answers and there are many different opinions about their solution.

Capital markets are affected by the choice of pension fund as the investment patterns differ for the two types of schemes. In defined-benefit schemes there are higher risk assets than in defined-contribution ones because there is risk sharing between young and old workers and companies have the incentive to pressure fund managers to maximize return. Furthermore, when employees have control in defined-contribution plans, usually they support investment to fixed-interest bonds. Both types of plans hold a greater percentage of bonds when they are near maturity as their payment obligations increase.

Possible consequences of a possible relative shift from equities to bonds by pension funds, as they approach maturity, can be an increase of price of bonds and a decrease of equity prices leading to an increase of capital cost which will not remain constant. This will happen because bond prices are tied to inflation and international yields while domestic equities are less close substitutes to foreign and more sensitive to supply shifts. The rise in the cost of capital should reduce investment. As a result of the adjustments in prices, the corporate sector will rely more on debt than equity that could cause problems during recessions. However, as bond-finance replace bank loans, there will be a partial offset of this as the maturity of debt would be longer and the companies would be less vulnerable to tightening of monetary policy.

The two types of funds have contrasting comparative advantages regarding insurance and labour mobility. The key determinant of the appropriate choice is the industrial structure. The choice has implications for capital markets and a possible solution is to provide workers with a combination of plans. An example is U.S.A where benefit plans provide “base-pension” and secondary contribution schemes supplement it.

Chapter 11 / Conclusions

Growth prospects of pension funds differ sharply between countries. Sweden and Netherlands for example have no prospects as there is 90% coverage and the schemes are mature. Anglo-American countries have mostly mature schemes so growth can come only by the increase of coverage. Denmark, Japan and Germany will show growth, as their schemes are far from mature. In Australia and Switzerland, the introduction of pension funds is recent so there will be growth. Growth can come by replacement of social security in many countries, mainly in continental Europe, that haven't decided the change yet (this transition involves sizeable sums). This expected growth of pension funds would lead to an increased demand for equities. Certain reforms in Europe will also happen due to European Union; reforms such as freedom to offer services across borders and liberalization of investment throughout the union (promoting at the same time labour mobility). Room for growth exists also in Ldcs while former communist countries are preparing similar plans.

For the choice between social security and pension funds there are arguments both ways and a balance has to be chosen between conflicting priorities and associated benefits and costs. In no country, have pension funds provided the only form of old age support but there is always supplementary social security whose size has crucial effect on the development of pension funds. There are comparative advantages of pension systems as the table below shows and a sensible mixture is what is demanded. A mixture of pension funds and social security is considered sensible, given the conflicting arguments for funding as opposed to pay-as-you-go, as well as public versus private provision and the risk-diversification benefits of providing both. Social security should none the less provide basic instead of earnings-related benefits.

<i>type of pension system</i>	<i>saving</i>	<i>redistribution</i>	<i>Insurance</i>	<i>economic efficiency</i>	<i>principal risk</i>
Social Security		√	√		Political
Defined-benefit pension funds	√		√		Recession
Defined-contribution pension funds	√			√	Investment/ Inflation
Private Saving				√	Investment/ Inflation

The implications of the development of pension funds for economic efficiency include their effect on labour mobility, the distortionary effects of their taxation and the consequences for the capital market which will be analysed on next section. Appropriate regulatory design is needed to minimize these difficulties. Indexation, at least up to a certain level (subject to a prudent-man asset-management rule being in operation) and rules facilitating a degree of portability are particularly desirable (ideally “transfer-circuits” for defined-benefit funds should be introduced, as they minimize losses to early leavers). Standardized rules for calculation of present-day values of rights in defined-benefit schemes are important in this regard. However, arguments against perfect portability (such as reduced incentives of employers to train workers) should not be disregarded.

The role of government in promoting pension funds has been shown to be a crucial one. The level of state benefits, the ability of employees to opt out of the state scheme and personal pensions, legislation of the nature of benefits and on provisioning, all have an important role to play in making pension funds attractive to firms. Governments also have the dilemma whether to encourage defined-benefit or defined-contribution schemes, book reserves or separate funding. A degree of neutrality is advised allowing market forces and individual preferences to decide.

Other policy and economic issues also arise and in the interests of economic efficiency and equity, defined-benefit plans should be complemented by regulations to overcome the key problems, which arise notably for early-leavers. Labour mobility may also be facilitated by industry-wide defined-benefit schemes. If measures are not taken towards this direction, the balance of advantage may shift to defined-contribution funds despite the greater financial risks to which members are exposed. Only companies can offer a form of guarantee for defined-benefit plans and furthermore, for both types, company-based schemes are superior of personal pensions as they have lower transactions and agency costs and easier avoidance of market failures. Furthermore, separate funding is felt superior to book reserves not only because of its effects on the capital market noted above, but also due to the concentration of risk in book reserves.

The argument regarding the need for tax-privileges for pension funds relies on their provision of retirement saving although it is not clear why only pension funds and not other saving tools should be benefited. An answer could be that contractual annuities, as offered by pension funds, have unique features in retirement-income provision absent from other forms of saving (as pension funds can’t be dissipated prior to and after retirement). The advantage of contractual annuities is decisive and hence suggests that pension funds should be tax advantaged even if other forms of saving are not. Measures to minimize the abuse of tax privileges by high earners are none the

less justified, as well as limitations to the degree to which benefits may be taken as lump sums.

Another question is whether schemes must be mandatory. Compulsion is needed in order to avoid the biases in coverage but it will also impose an unavoidable burden on companies that would affect the competitiveness of the economy. It is thought that compulsion in social security is sufficient and an efficient company-pension sector with appropriate tax incentives should be sufficient to attract employers and employees. Social security should remain, as an essential back up for those not covered by private pensions. An alternative could be to make private pensions compulsory but not require their provision by companies so as those outside occupational schemes would then be obliged to take personal pensions.

The regulatory preconditions for the development of pension funds have been covered above, as well as their probable cost. The following rules can be proposed as an appropriate balance:

- a degree of mandatory indexation of pensions,
- prudent-man rules on asset allocation mandating diversification with a ban on self-investment,
- minimum and maximum funding rules tailored to the nature of the obligations but which do not discourage equity holding by penalizing temporary shortfalls,
- accounting rules along similar lines,
- independence of the fund from the employer,
- insurance against fraud,
- disclosure to members,
- indexation of accrued benefits for early leavers and
- vesting periods of two to five years.

A Dutch style supervisory structure (one regulator, annual checks on funding, oversight of rules, occasional on-site inspections), appears a good model to follow.

Summarizing, we could say that pension funds are a suitable supplementary means of old-age support for all countries at an appropriate state of development, to supplement basic social security. The appropriate state of development can be specified as where traditional means of family support for the old are breaking down and there is a reasonable degree of capitalist industrial development in which to invest. A degree of freedom to invest internationally is an essential counterpart, to avoid demographic difficulties and pressure on domestic rates of return.

SECTION B

PENSION FUNDS AND CAPITAL MARKETS

Chapter 12 / The Channels of Influence

The impact of pension funds on capital markets varies from country to country but common trends exist.

The effects of pension funds on capital markets can be traced in the creation of new financial instruments and innovations, in market structure and volatility, in issues of corporate finance and banking sector and overall, in the financial structure.

What we have to analyse first is through which channels pension reforms may help in the development of a capital market. Then, as there are many concurrent conditions to the process of pension fund reform, a list of these institutional and economic reforms that operate simultaneously is provided. Finally, the development of a capital market under some conditions may have consequences on economic growth, capital accumulation and other real effects on welfare, which are also mentioned in this section.

The processes of Capital Market Development are:

- **Accumulation of Institutional Capital**

It is argued that the accumulation of relatively large amounts of investable wealth by pension funds induces the authorities to improve the regulatory and institutional environment in which investors, firms and authorities interact with each other. This is a kind of public good that can be used in the process of “modernising” capital markets and can be considered as the return on institutional capital. Some components of this “modernisation” are a dynamic legal framework, transparency and integrity and a new corporate governance balance.

- **Increased specialisation in the investment decision-making process.**

Managing increasing volumes of funds justifies increasing levels of specialisation and professional, well-educated management. This process of specialisation and professionalization of pension fund management also implies a “spillover effect” onto other related agents (investment bankers, firm managers and regulatory authorities).

- **Higher incentives to invest in financial innovation**

If significant amounts of funds accumulate, there are natural incentives to creating new financial instruments (including long-term instruments and securities from new sectors of the economy) and allow investment in foreign markets. It can be argued that defined-benefit systems provide incentives for different kind of innovation than defined-contribution systems do, due to different degree of risk-aversion but nevertheless, funded schemes create incentives for creating longer-term instruments and derivatives that help matching the maturity structures of assets and liabilities.

The above are the channels through which pension fund reform may be expected to affect capital market development. However, pension reform seldom takes place in isolation and that creates two implications: on the one hand, other reforms that take place simultaneously confound the possible incremental effects of pension reform. On the other hand, it may be the case that without other concurrent conditions, pension reform turns out to be unsuccessful in terms of developing a well-functioning capital market. The list below describes the institutional and economic reforms that may

facilitate or condition the positive effect of pension fund reform on capital market development (concurrent conditions).

- **Macroeconomic stability in the context of a market-oriented economy**

The role of capital market and the impact of pension reform could be limited by the lack of macroeconomic stability. Also, well functioning credit markets, indexed fixed income instruments and non-distorted fundamental prices are required, such as price levels, real exchange rates and real interest rates. However, it is likely that pension reform will directly contribute to macroeconomic stability by possible reduction of interest rate volatility and alleviation of political and demographic pressures threatening financial stability (long term effect).

- **Adequate tax regime**

In general, the development of a capital market greatly depends on tax-incentives and therefore, the kind of tax regime in place is an important variable to be controlled for, when the impact of pension reform on capital markets is measured.

- **Progressive capital control liberalisation**

It isn't certain that the impact of pension reform on capital markets depends or not on the extent of freedom in capital flows. It is however likely that restrictions negatively affect the overall development of the market and in that context, liberalisation can have a joint positive effect.

- **Adequate regulation and competition in the financial services industry**

Over-regulation or lack of competition in the financial services industry can curtail the growth possibilities of capital markets.

- **Clear property right laws, including bankruptcy legislation and investor protection**

In capital markets, contingent-claims on the value of firms are traded and if they are not well delimited, security prices will be penalised making the issuance of such claims expensive for firms seeking funds. It is obvious that a condition for a capital market to evolve is that property rights are well established. It is also important for regulators to understand the need for investor protection and bankruptcy legislation in order for the new institutional investor to gain the public trust.

- **Privatisation of state-owned companies**

Privatisation of state-owned firms is likely to have important effects on the development of both bond and equity markets. Pension fund participation may enhance these effects.

Institutional investors can influence the demand for capital-market instruments a) by the increase of total supply of saving, b) by influencing the rest of the personal sector portfolio distribution between bank deposits and securities and c) via their own portfolio choices.

As long as the increase of total supply of savings via pension funds, there are not clear results as the increase of personal saving could be offset by the decrease of national saving due to tax-incentives. The effect of pension fund reform on savings depends on many characteristics of the reform and the economy; the financing of the transition towards a new pension system, the extent of crowding out voluntary savings by

mandatory savings, the strength of intergenerational transfer motives and redistribution effects between groups with different marginal saving rates and borrowing constraints.

Differences in behaviour between institutions and personal sector exist, as pension funds hold a higher percentage of uncertain and long-term assets and also hold greater percentage of foreign assets than individuals. Also, personal sector holds more liquid assets than banks. These differences are caused mainly by different time-horizons as pension funds have a long horizon, which allows them to attain long-term assets with higher yields. Furthermore, pension funds have an advantage in compensating for increased risk by pooling across assets whose returns are imperfectly correlated. Pension funds lead to higher supply of long-term assets to capital markets and reduce deposits as long as households don't increase the liquidity of the remainder of their portfolios (on which there are ambiguous empirical results).

Securities are held mainly by large institutions that probably have efficient allocation of funds and accurate valuations of securities -when costs are low and the regulation loose-. Empirical results show that pension funds could change volatility and relation between saving and real interest rates. An increase in real rates could lead to a decrease of total saving if it made total-benefit fully funded and decreased the need for contributions and also increased the supply of long-term capital market instruments which would lead to compression of yield differential between equities and bonds. This is a significant implication, as the issuance of equities will become cheaper relative to bonds than before.

Financial innovation is closely related to development of pension funds. Increased demand for hedging (especially in U.S) lead to the development of immunisation strategies caused by the asymmetry of treatment of pension funds' deficits and surpluses. These consisted of strategies of duration matching, leading to new products like zero-coupon bonds and spurred the development of markets for index options and futures that facilitate sharing of risk. These strategies don't apply to householders, as they don't hedge them against inflation. If pension funds were obliged to index pension to inflation, asset demand would be different. One solution is to immunise via indexed instruments leading to an increase of demand for such instruments. However, in G. Britain where indexed pension are a fact, there was no increase of demand as equities' higher returns are felt to compensate for less precise matching and regulations allow that. Other effects are the increase of securitization and the development of passive indexation strategies.

There is argument that the creation of a fully funded pension system may imply that the cost of funds for firms' decreases. That is caused by pooling of long-term financial savings that otherwise -without the intermediation of financial markets-would become private equity, land, gold or others. As we mentioned before, there is little evidence to prove increases of saving attributable to pension funds so, if pension funds simply substitute other sources of private savings, why would this imply a lower cost of capital? Possible answers are: a) lower direct costs of issuing securities (due to the overall development of the capital market), b) lower "term premia" (the average maturity of financial securities would be lengthened) and c) lower "risk premia" (pension funds manage other people's money and as the absolute volatility doesn't have an effect on the welfare of managers, it is likely that the average risk

tolerance of the capital market will increase). All the above, along with other less important arguments, imply that the cost of capital should fall and therefore, even if pension funds may not increase total saving, they may have a positive effect on growth and welfare caused by a better allocation on investment funds.

There is evidence that financial integration –an alignment of the risk-return trade-off with the rest of the world’s- increases the depth of financial system, inducing higher economic growth. The creation of an institutional environment that favours the development of the pension fund industry is likely to give incentives to international integration as it will create increased liquidity, transparency and will offer better protection of minority shareholders’ rights. Also, since pension funds can become quite large relative to the size of the domestic capital market, the possibility of allowing the investment of local funds abroad becomes likely.

It is, however, important to keep in mind that financial integration per se, independent of pension reform, can lead to a reduction in the cost of capital for firms. That makes it necessary to control for this in order to verify empirically if the implementation of pension funds reduce the cost of capital.

Pension funds demand liquidity so as they can transact in large size without moving the market against them and at low transaction costs. On the other hand due to the size of funds accumulated by pension funds, we can understand that there will be a reduction of transaction costs and increased liquidity. They are not concerned by the firmness of investor protection regulation as they have sufficient power to protect themselves. The above lead pension funds to invest mainly in wholesale markets.

Some argue that pension funds can lead to lower security-price volatility. That could happen due to a wider investor base together with access to more information and analysis. These two facts would imply that prices fluctuate more closely with fundamental values and small deviations cause large volumes of trades. From a theoretical point of view, more liquid (less expensive) stock markets increase incentives to invest in long-duration projects as investors can more easily sell their stake before the project matures. Good investment projects with long duration increase economic growth and furthermore, because of economies of scale, there may be a virtuous circle in the relationship between transaction costs, liquidity and volatility in that they can be presumed to reinforce each other. In addition, it is possible that new institutions -such as new electronic security trading systems- will be created in order to handle increased transaction volume and there will be more competition among alternative markets.

On the other hand some say that institutionalisation increase capital-market volatility, thus raising the cost of capital and discouraging retail investors. They even think that there was interaction between pension funds’ manager portfolio insurance and index arbitrage for causing volatility at 1987 crash. This is most probably wrong as there was a crisis in the cash and not in the futures’ market and insurance tactics were used only in the U.S while the markets collapsed world-wide due to “bubble effect”. Issues that could induce capital market volatility are frequent performance checks (funds move before checking period in order to show good results) and the fact that institutions infer information by each other’s trades and react in the same way in information received simultaneously, leading to sizeable portfolio shifts due to

uncertainty. Other strategies, contrary to fundamentals, like trend-chasing or positive feedback trading combined with herding could drive prices further away from fundamentals.

There are however some positive effects of herding; it speeds up the markets' adjustment to new equilibrium price and offset irrational shifts in behaviour by other investors. Allocation and use of futures facilitate flows. Although such strategies aim at lowering risk, the focus on a small number of leveraged instruments may lead to destabilisation. Volatility also increases with maturity as the latter causes large shifts from equities to bonds. However, there are no systematic evidence for or against the above.

As long for the corporate finance, two issues affect it: short-termism and the fact that pension funds do not invest easily on small firms. Frequent checks underpin the short-term hypothesis as companies are interested in showing good results on the short-term although there are mixed empirical results on that point. Pension funds avoid investing in small companies due to the illiquidity or lack of marketability of their shares, the high levels of risk that are difficult to diversify away, the high cost of research for companies with no tracking record and the limits on the proportion of firm's equity that can be held. Low investment in small firms doesn't help growth and lead to a biased economy towards sectors with larger firms (e.g. financial sector) that could be contrary to the comparative advantage of the economy as a whole.

The development of pension funds may imply different forms of development and organisation for other competing or complementary industries such as banks and life insurance companies.

The banking sector is affected by the fact that the activity of institutional investors and corporate treasurers make bank crisis more possible than in a purely interbank system. The reason for this is that they are more prone than banks to run away from issuers or markets in difficulty due to stricter fiduciary responsibilities, less detailed information about the credit risk, being subject to more strict criteria of performance and having no relationship reasons to maintain the viability of a given market or borrower. For traded instruments, herding by institutions may give rise to volatility of market prices, generating market risk. Institutionalisation has been one of the catalysts of banking difficulties in 1980s.

Trying to analyse the crises, one should start by the debt crisis of Latin American countries that lead the banks to reduce credit ratings of their major corporate customers and widen the spreads of their borrowing. This lead to a reduction of competitiveness of banks as suppliers of funds to highly rated firms, compared to securities markets that were meanwhile improving themselves. Banks, as a result, focused in off balance sheet and fee-earning activities that endure higher risk. If that risk was priced correctly, there would not have been any problem but major losses of banks suggests that risk pricing was not accurate. However, there are opposing opinions as where banks or pension funds and other institutional investors will dominate financial markets in the future.

The question remains whether large pension funds have lead to well-organised securities markets or well-organised securities markets allowed the development of

pension funds? The second guess is most probably the right one but it is certain that pension funds have helped tremendously the development of equities markets as well.

Some countries have “bank-dominated” models and pension funds that are not willing to be subordinate to banks could lead to a convergence on the “Anglo-Saxon model”. That would lead to a primacy of equity holders as ultimate owners of the firm over the creditors. This may lead to pressure for higher dividend and more information from companies as well as easier firing of managers if not bringing the desired results assured by laws and regulations. The most probable scenario is that the position of European banks will be weakened but not wholly compromised.

We can say that pension funds increase the supply of long-term funds and affect their allocation as well as inspire financial innovation and modernisation. On the other hand, there are mixed opinions on whether they increase or lower volatility and cost of capital, they treat shares with short-termism and show low interest in small companies. Banking difficulties can be attributed up to a point to institutional investors but all the above drawbacks come from institutionalisation as a whole and not from pension funds in particular. Any remedies should aim at general policy, as any particular policy only for pension funds would disadvantage them without solving the problem. Pension funds may cause changes in financial structure in sectors now “bank-dominated” and perhaps that could lead to a convergence to the “Anglo-Saxon model”.

Chapter 13 / Pension funds in developing countries **General framework**

The successful development of private pension funds in developing countries requires a certain prior level of development of the financial sector, the absence of political interference, a degree of administrative efficiency in the economy and availability of skilled personnel.

Less developed countries face the same demographic problems and the same economic difficulties as OECD countries but to a greater degree. Traditionally, old people were cared in the extended family and then by social security systems (covering 20-50% of population). Social security is difficult to sustain as the evasion of wages is easier due to “black economy”, due to the delay of payments (high inflation makes delayed payments, less valuable) and reserves are disbursed as housing loans at low interest rates which are actually negative due to high inflation. All the above lead to the consideration of setting up private or public funds to replace or supplement social security. However, if there are no reliable financial instruments (annuities) there is no chance for pension funds to develop.

There have been many efforts to reform financial systems and create bond and equity markets, as pension funds are attractive because of all the reasons mentioned in previous chapters. They provide long-term finance and support innovation, improve the infrastructure of securities market, increase saving and therefore help to lower the cost of capital, helping the industrial development and privatization. Pension funds press for improvements in accounting, auditing, brokerage and information disclosure. The development of pension funds need not be a long process but in order for them to

have a beneficial effect, funds must use external funding, other financial assets must be taxed and they should not be used as source of cheap financing from governments.

The experience of Selected Ldcs

In **Chile** there is now a mandatory retirement scheme (similar to that of Austria and Switzerland) which replaced an insolvent social security scheme. The value of funds evolved from 0 in 1981 to 35% of GDP in 1993 and is expected to reach 80% of GDP in 2002. Private management companies invest, in a defined-contribution system, 10% of salary individually for each worker. This means that there is one investment account, which the worker can transfer from one manager to another. The fund management companies (AFPs) are allowed to offer only one type of pension account. On retirement, workers are obliged to buy indexed-annuity with the bulk of their accumulated funds plus term-life and disability insurance. The government guarantees 22% of earnings in those retiring after 20 years, plus provision for destitute. Existing old-age security obligations are being honoured and tax treatment is similar to other countries (EET). Due to people not understanding the schemes, the regulation focuses on consumer protection (solvency and minimum capital requirements and investment rules). There are minimum funding rules and if a firm goes bankrupt, the government will pay minimum return.

The performance of funds is good and they provide protection against inflation due to indexed assets. However the ability to switch managers increase management expenses and fees for low-income workers, as there is a flat fee and ad valorem fees. The benefits of pension funds to capital markets are important: the price of equities and bonds have risen as well as prices of corporate bonds -giving alternative to bank credit-, there is better insulation from behaviour of international investors, government bonds are rated higher and there are better disclosure standards. However, little attention is paid to corporate governance issues. A reform of 1994 allowed AFPs to invest in a much wider range of companies and increase the percentage of international investment of their portfolio.

In **Singapore** there is a compulsory defined-contribution scheme that in 1987 had a capital equal to 87% of country's GDP. It is wholly administrated by a government investment agency, the contribution rate is 40% and contributions are taxed but withdrawals are tax-free. In the end of their working life, the workers are obliged to buy annuities to provide 25% of earnings while the rest can be used for housing, education or withdrawn as a lump sum. There is not such a good performance record and the effects on capital markets are minor due to the way of investment; however, the operating costs are low.

Pension funds have developed in few developing countries, mostly in those of middle income or now industrializing. Their role in capital markets' development should not be exaggerated although as investment rules in these countries are relaxed, they can play a more important role. Except of the mandatory retirement schemes, there are other schemes in Ldcs but it is certain that the former play the dominant role.

Mandatory retirement funds are recommended to reformers in less developed countries in combination with a defined-benefit social security system that will guarantee that basic needs are met. They are an intermediate form between social security and pension funds. Since contributions benefit the individual, there is less

incentive of the workers part to avoid them and they aid the development of capital markets. However, they expose the worker to inflation and investment risk (that is why there is the need for supplementary social security) and usually offer low returns as their capital is mainly invested in government bonds. That has the disadvantage that funds can be used to finance government consumption or wasteful investment. In some countries, the lack of annuities makes lump-sum withdrawals the only alternative which are often dissipated. Also funded schemes, being non-redistributive, are unable to deal with extreme poverty.

Less developed countries face demographic problems and social security is badly conceived due to its past failures. However, the need for old age security and a better financial infrastructure is obvious. Usually mandatory versus voluntary occupational schemes are advanced as the solution but it must become clear that the success of funds depends on prior development of securities and the efficiency of their administration.

Chapter 14 / Pension funds in developing countries **Empirical Studies for Developing Countries (Chile, Peru, Argentina)**

As the main purpose of my thesis will be to verify the hypothesis that pension fund reform affects the volatility of equity market (for the UK and a panel of OECD countries) controlling for other reforms, a study of Eduardo Walker and Fernando Lefort ‘‘Pension Reform and Capital Markets: Are there any Hard Links’’ will be used as a model for my analysis. In this study evidence empirically assessing the importance of such effects, from Chile, Peru and Argentina are quoted.

The above mentioned three countries have the longest histories after the pension fund reform in Latin America took place, although in the latter two cases this time period is relatively short and the statistical evidence is scarce.

This section is organised as follows: qualitative evidence from the above-mentioned Latin American countries are looked over and being assessed whether it favours or contradicts the hypotheses presented in the previous section. Both the effect of pension fund reform on capital market development and the consequences of this development in terms of lower cost of capital and financial integration are examined. It is also considered whether there are other explanations (from the list of concurrent conditions) to justify the same evidence.

Institutional capital and increased specialisation in the investment-decision making process

The evidence seems to be consistent with the concept of a dynamic legal framework with formal or informal participation of pension funds to the legislative process. Their participation also indicates the managers’ relatively high degree of influence and professionalism. The internationalisation of local pension funds led to technology being transferred from foreign fund managers, usage of modern information services, a learning process to understand and invest in new instruments and a permanent transfer of technology from the most advanced countries. The role of pension funds, regarding corporate governance, seems to have gained importance through the participation of independent board members representing pension funds and the

changes in corporate legislation. The evidence regarding transparency and integrity also seem to be consistent with the claim that both attributes increase with reform. In any case, for the three countries analysed (Chile, Argentina and Peru), other reforms took place at the same time that probably affected the “modernisation” of the market.

Reduction in firms’ cost of capital

Qualitative data

An indirect way to look at the effect that pension funds may have on firms’ cost of capital is to consider their importance within the existing stock of securities so as to check whether they are the main buyers of certain securities and whether there is such a lack of investment alternatives that lead to disequilibrium (this will be the case if rates of return are too low for periods of time with insufficient investment alternatives available).

The study examines the share of pension funds in financial markets (government debt, time deposits and bank bonds, mortgage bonds, corporate bonds and equity) and the size of each market for the last 17 years as well as the number of issuers present in pension fund portfolios.

Data show that Chilean pension funds held in 1997, 53% of the total outstanding amount of corporate bonds and 10% of total equity market while there is a clear increase of issuers. Especially in Chile, it is interesting to see the sharp increase in the number of bond issuers in 1998 (93 from 38 the previous year), the same year the Asian crisis “hit” Chile. That obviously suggests that in times of depressed stock prices, firms find it convenient to change their source of financing as long as there are important local providers of funds denominated in local currency like pension funds (the financing flexibility may imply lower financial costs).

For Argentina, percentages are smaller (8% of government bonds, 3% of stocks) but very significant if we consider the short history of pension funds in the country. It is important to mention that the percentage of total assets held by institutional investors in the country, has increased from 2.5% to 20% as well as that during the 1995 crisis, institutional funds almost completely replaced the outflows of foreigners offering a stabilising role. In Peru, there is a significant rise of stock issuers present in the pension funds portfolios, which also hold 41%-45% of outstanding bond issues.

The study also examines the fund investments in the corporate sector (stocks and bonds) relative to total market capitalisation as this weight indicates the importance that pension funds might have on the cost of capital for traded firms. For Chile, this weight started near 5% in 1986 while in 1998 it became 18%. For Peru and Argentina 5% was attained in 1996 but it seems the weight is growing with a faster pace in the above countries than in Chile in its beginnings.

Any effect on the cost of capital should be reflected on the historical evolution of price-to-book ratios, dividend yields and price earnings ratios. However, we must remember that the largest fraction of the changes in price-to-book ratios presumably indicates variations in required rates of return (given that variation in expected growth rates is seldom permanent and that their volatility is small compared with that of security prices). The above stock market indicators and the annual return of the three countries are compared with the Latin American Average but there is no clear

evidence in favour of our hypothesis. We therefore perform regression analyses on these variables, based on time-series evidence to get some statistical power for this question.

Time-series evidence

The historical price-to-book ratios and dividend yields are considered the indicators that follow the cost of equity capital for firms. We estimate the monthly evolution of (log) price-to-book ratio and dividend yields for Argentina, Chile, Peru and a Latin American average and we see a clear positive correlation among countries for these variables through time and a consistency of the general patterns of the two indicators (except from Argentina). Our hypothesis (lowering of capital cost) should be reflected in higher price-to-book ratios (or lower dividend yields) *ceteris paribus*.

A related hypothesis is that the sensitivity to changes in the Latin American required risk premium should also decrease with pension funds. To test these (due to apparent relative stability), only results for price-to-book ratios are studied. We estimate a “market model” formulated in terms of differences between the rate of growth of the country’s stock price index and its book value against the same variable calculated for the Latin American index. The estimated equations using monthly data are the following:

$$d\log(PB_{it}) = \alpha_0 + \alpha_1 d\log(PB_{t-1}^{LA}) + \alpha_2 d(LPFI_{vit}) + \alpha_3 [d\log(PB_{t-1}^{LA}) * d(LPFI_{vit})] + \varepsilon_{it}$$

where PB_{it} is the price-to-book ratio of country i ’s IFC index and the superscript LA stands for Latin America; $LPFI_{vit}$ represents the log of the pension fund investment in stocks in country i and period t if such investment is greater than US\$1million and zero otherwise.

Only for Chile does the data indicate a strong positive relationship between variations in price-to-book ratios and pension fund investment while for the other countries the coefficient is insignificant (Argentina and Peru’s pension funds ofcourse have a much shorter history). However, in all countries a lower sensitivity to changes in the Latin American index is indicated.

There is evidence that pension fund investment in stocks is associated with reduced responsiveness to external shocks in all countries and also that price-to-book ratios tend to be positively associated with it.

Reduction of transaction costs, increased liquidity and lower security-price volatility

Qualitative data

In this area, most of the available evidence is for Chile where traded volumes have increased tremendously since the implementation of pension funds while also in Argentina, despite the short history, there are noticeable effects.

Regarding technological innovation that may reduce transaction costs, there is evidence that pension funds have moved the markets towards such a direction; the Santiago Stock Exchange implemented electronic security trading systems, the Electronic Stock Exchange and electronic custody of securities begun operating in Argentina. Also, the fact that transaction costs are paid directly by the managers and are not subtracted from the pension funds as well as the increased competition among

intermediaries help to the reduction of costs. Altogether, the evidence may suggest that the impact of pension funds on traded volumes is largest at the beginning. However, their effect on institutions that help reduce transaction costs may be more permanent.

Time-series evidence

The hypotheses to be tested here are that the accumulation of pension fund assets causes security price volatility and direct transaction costs to decrease and traded volumes to increase. There is no time-series evidence of direct transaction costs but volatility and traded volumes can be studied. The empirical approach is to find a satisfactory model, conditioning on a set of information variables, and test whether asset accumulation by pension funds has a predictive effect at the margin. The dependent variables are the volatilities and traded volumes for selected Latin American countries.

Regarding volatility, we already showed previously that pension fund investment is associated with a reduced sensitivity of the local returns to a Latin American index, which means reduced systematic volatility and now we will examine its effect in total volatility by two methodologies. The one uses estimated volatility levels as dependent and explanatory variables while the second uses ARCH equations and determines whether pension fund investment appears with a negative coefficient in the variance equation.

The first methodology uses least squares for the estimated log-volatilities; the estimated equation for the first methodology is:

$$\log(\sigma_{it}) = d_0 + d_1 \log(\sigma_t) + d_2 \text{LPFInv}_{it} + v_{it}$$

where σ_{it} represents the estimated 24 month annualised rolling volatility; σ_t represents the average volatility of all included countries in the IFC database and LPFInv_{it} represents the investment in stocks by pension funds. We use logs because volatilities must be non-negative and we expect d_1 to be positive (volatility is contagious) and d_2 to be negative (pension fund investment reduces volatility). The error of the above equation will follow an ARMA process as the dependent variable is constructed as the annualized rolling volatility. Although it reaches the conclusion that pension fund investment reduces volatility, the coefficient is significant only for Chile. Having only a few observations with actual investment in stocks by pension funds (lack of power) may explain this.

The above tests have the problem that, due to their use of a 24-month moving average calculation, they assume that the expected returns vary slowly.

A procedure like ARCH that captures more promptly changes in means is more desirable. In this case we use two equations; the first in order to capture short-term and long-term variations in expected returns, by including the lagged own return and the dividend yield in the context of the Market Model while the second is a standard ARCH equation that includes the pension fund investment variable. The estimated equations are the following:

$$r_{it} = b_0 + b_1 r_{it-1} + b_2 r_t + b_3 y_{it-12} + \varepsilon_{it} \quad \varepsilon_{it}^2 = c_0 + c_1 \varepsilon_{it-1}^2 + c_2 \text{LPFInv}_{it} + u_{it}$$

where r_{it} represents the log return for country i 's index in period t ; r_t represents the return of the Latin American IFC index; y_{it-12} represents the dividend yield that existed twelve months before; and $LPFINV_{it}$ corresponds to the pension fund investment variable previously verified. The result of this approach is that the volatility is negatively related to pension fund investment in a significant level.

Regarding traded volumes, the testing methodology is similar to the one above, adopting an empirical model and looking for additional explanatory power by pension fund investment. The empirical model used, assumes the following facts: traded volumes should have positive trends in growing economies and in economies that become integrated to international capital markets; they are correlated around the world, especially among emerging markets; traded volumes tend to be high when returns are high.

Thus the simple empirical model is the following:

$$\log(V_{it}) = e_0 + e_1 t + e_2 \log(V_t) + e_3 r_t + e_4 LPFINV_{it} + \eta_{it}$$

where V_{it} represents the monthly traded volume for country i in period t ; t is the time trend; V_t is the total volume traded in Latin American countries measured in US dollars and r_t is the twelve month log return until t . There is no stationarity and we can reject the unit root hypothesis in the simple empirical model we formed, so it seems that trends are positive and there is a positive relation with aggregate traded volumes but pension fund investment tends to be significantly and positively related with traded volumes only in Chile.

Financial market integration

Pension reforms' role in financial market integration can be analysed from several perspectives; the entrance of capital flows to a country, the access to foreign capital in its diverse forms by local firms and the investment abroad by local investors. From the evidence, a particular direct link between pension reform and the first perspective can not be established although it can facilitate the process. Local firms have not shown a particular development in using foreign capital and the data on investment abroad by local investors are ambiguous. Only the prediction that the expected rates of return on the different securities will be closer to their international equilibrium, due to cross-investments, reflects financial integration.

Creation of new financial instruments

Chile

There is evidence that pension fund reform had some effects on the creation or implementation of new financial instruments but we can also interpret the creation of these products as the process that allowed pension funds to expand. Corporate bonds for example, existed from early 80s but become relatively important in early 90s by pension funds while allowing investment by pension funds in equities, gave them a new alternative that helped the development of their market. Closed-ended mutual funds whose only clients have been the pension funds have been formed without much success. Zero-coupon indexed bonds, which started as the recognition of the State's liability with contributors to the old pension system that chose to move to the new system, started trading in exchanges. Also, a kind of illiquid mortgage bond

whose only guarantee is the specific real estate property behind the debt was created successfully while other efforts were unsuccessful (real estate corporations).

Argentina

The “Common Investment Funds” that were created especially for pension funds in 1992 are important (6,9% of pension funds in 1998) together with negotiable obligations (size of the market has grown 5-folds since 1992), mortgage securitization and leasing contracts. Regarding bank deposits, in December 1998, 95% of them had variable rates of return (principal secured/interest tied to certain security-price indices).

Peru

Despite the short history of pension funds in the country, their impact has been more important due to the low starting point. There was a large increase of investment in corporations and investment in “Brady Bonds”, representative of Peruvian sovereign debt. It is also interesting to mention two relatively new instruments: subordinated bonds and leasing bonds. Leasing bonds have maturities ranging from 3 to 5 years, they are used to finance leasing operation by banks and are issued in soles, dollars and VAC (the CPI indexed unit). The tremendous increase of their market can be attributed to the usage of VAC as currency as it allows a better matching of assets and liabilities for firms oriented in massive consumption and it is argued that if not for pension funds, they wouldn't have appeared. Subordinated bonds are indexed and longer-term and can be converted in stocks if the issuing bank faces financial difficulties.

The above analysis can lead us to three simple ideas : the importance of a consistent institutional/legal environment; the fact that not all innovations proposed by pension funds, analysts and other observers to the authorities end up being successful; and the requirement that pension fund managers find expected returns “attractive” in order to push for the development of the new instruments.

Secondary effects on the financial system's structure and other markets

Chile

One of the industries that have had an enormous growth due to the reforms, is the life and disability insurance industry. Bank disintermediation has existed but has been limited although it is clear that, in the presence of a well-developed pension system, new long-term financing alternatives appear, particularly for larger firms. It is also likely that the reform has contributed by making financial markets grow. It is expected that banks will concentrate on shorter-term financing and smaller firms for which pension fund financing may be too expensive given the information requirements. There is also induced development of the mortgage industry in Chile triggered by special financial instruments where both pension funds and life insurance companies have invested heavily. As of December 1998, 16.6% of pension funds were invested in mortgage bonds, a number that shows that they have helped the development of the housing and office markets. We must keep in mind one of the previously identified concurrent conditions; inflation protection mechanisms as without them, the long-term mortgage market would have been difficult to evolve. Other indirect effects that may come as a consequence of the foreign investment by

the pension funds are the creation of local retail mutual funds that invest out of the national borders and the deepening of the foreign currency market.

Argentina

An important fraction of the total portfolios is held in government bonds and this has helped financing the deficit produced as a consequence of such reform. Regarding bank-disintermediation, there is no clear evidence on whether it has occurred or not.

Peru

The absence of deep, liquid government bond markets has led pension funds in Peru to use bank deposits as the “safe asset” of their portfolio. Even if pension funds had the effect of crowding out banks from large firm financing, banks have got back most of the funding in order to develop related business.

It seems that the claim that pension fund reform has positive secondary effects in other related markets, allowing a more efficient fund allocation, is supported by evidence and these positive effects may have important welfare implications.

Chapter 15 / Pension funds in developing countries **Empirical data for panel of countries**

A sample of 33 emerging economies and a sub-sample of 7 Latin American countries are also used for panel data evidence in the above mentioned study. It uses country panel data in order to test some of the hypothesis presented earlier and particular the two hypothesis regarding the effect of pension reform on capital markets development: if investment in stocks by pension funds decreases the cost of capital of firms and whether volatility diminishes as pension fund managers increase their investments in stocks.

Annual data of 33 emerging economies have been used (list of countries selected from IFC Emerging Markets database, including 7 Latin American countries and 8 economies where there is allocation of pension funds toward private securities) and dividend yields and price-to book ratios are used as a proxy of the firm’s cost of capital.

As for the explanatory variables, three different sets of variables were used. The first set examines the extent of pension fund investment in local firms: a dummy variable that takes the value 1 on those years in which pension fund managers engaged actively in equity investment and zero otherwise, a measure of the investment in stocks by pension funds (the log of), the relative importance of the investment in stocks and private bonds on the total market cap for the IFC country indices and a measure of the total funds to GDP for each country-year in the sample. The second set tries to control the “concurrent conditions”: per capita income is used as a general measure of the development of the country, the annual inflation rate as an indicator of macroeconomic stability and the assets of deposit money banks to GDP as a measure of the development of capital markets. The third set of variables indicates the extent of reform in the different areas of the economies (tax reform, privatisation,

international financial liberalisation, domestic financial reform and commercial reform).

The estimation of panel data regressions was performed using the OLS fixed effects estimator and the GLS pooled estimator and the results were as follows.

Impact of pension funds on the cost of capital

The results show that regardless of the indicator used, pension funds' importance significantly decrease the average dividend yield which would indicate a reduction in the effective cost of capital. Furthermore, the more important pension funds are, the higher is the price to book ratio of firms in a particular country.

Impact of pension funds on volatility

A negative and statistically significant relationship between market volatility and pension fund importance is established. It is also indicated that market volatility is positively related with inflation rates and negatively related to per capita income, as expected.

The validity of the above hinges upon the validity of the variables controlling the "concurrent conditions". The results are mixed: they show that pension funds, controlling for other reforms, would tend to increase cost of capital when measured as dividend yield while decrease it when measured by price-to-book ratios. The only reform index that significantly affects dividend yields is the capital account liberalisation index that reduces firms cost of capital while the degree of capital account openness and the tax reform indices seem to be the most important in explaining price-to-book ratios. Finally, no significant effect of pension fund reform on stock market volatility is found.

The evidence seems to be consistent with the claims by advocates of reform. The accumulation of institutional capital seems to be an important side effect of reform in all the countries analysed in more detail (there is evidence of dynamic legal framework, increased professionalism, transparency and integrity and a new governance balance). Regarding the effect on the cost of capital, the econometric analyses give indications that dividend yields are lower with reform, there is increased liquidity and there is evidence that favours the hypothesis of lower security-price volatility after reform.

The linkage between financial market integration and pension reform may be somewhat weaker but pension funds have an important and distinct role during the different phases of the process of integration. There is creation of new financial instruments in all countries analysed in which the institutional environment always plays a central role. Secondary effects on the financial system's structure and other markets as well as effects on industries directly related with the reform are always present while it is interesting to stress that there does not seem to be bank disintermediation although after the reform their role changed. It seems that the most important effects could be an improvement of allocation of funds for investment purposes leading to a better resource allocation that could have permanent positive effects on growth and welfare even if total savings were not affected.

Regarding panel data evidence, the results show that regardless of the indicator used, pension fund importance decreases the average dividend yield and increases price to book ratios of firms while there is a statistically significant negative relationship between market volatility and pension fund importance. However, when the sample is restricted to only 7 Latin American economies and directly control for other reforms the results are mixed.

SECTION 3
UK: THEORY AND DATA

Chapter 16 / The United Kingdom Theory

Introduction

The United Kingdom was one of the first countries in the world to develop formal private pension arrangements (beginning of the 18th Century) and was also one of the first to begin the process of reducing systematically unfunded state provision in favour of funded private provision (beginning of 1980). This explains why the UK is one of the few countries in Europe that is not facing a serious pension crisis.

The reasons for this are straightforward: state pensions (both in terms of the replacement ratio and as a proportion of average earnings) are amongst the lowest in Europe, the UK has a long-standing funded private pension sector, its population is ageing less rapidly than elsewhere in Europe and its governments have taken measures to prevent a pension crisis developing. These measures have involved making systematic cuts in unfunded state pension provision and increasingly transferring the burden of providing pensions to the funded private sector.

The UK is not entitled to be complacent, however, since there remain some serious and unresolved problems with the different types of private sector provision. In order to see them we will review the current system of pension provision and describe and analyse the reforms since 1980.

The Current System of Pension Provision

A flat-rate first-tier pension is provided by the state and is known as the Basic State Pension (BSP). The state, employers and private sector financial institutions, the so-called three pillars of support in old age, provide supplementary pensions or second-tier. The main choices are between:

- a state system that offers a pension that is low relative to average earnings but which is fully indexed to prices after retirement;
- an occupational system that offers a relatively high level of pension (partially indexed to prices after retirement up to a maximum of 5% p.a.), but, as a result of poor transfer values between schemes on changing jobs, only to workers who spend most of their working lives with the same company; and
- a personal pension system that offers fully portable (and partially indexed) pensions, but these are based on uncertain investment returns and are subject to very high set-up and administration charges, often inappropriate sales tactics, and very low paid-up values if contributions into the plans lapse prematurely.

Employees in the UK in receipt of earnings subject to National Insurance Contributions (NICs), will build up entitlement both to the BSP and, on 'band earnings' between the Lower Earnings Limit (LEL) and the Upper Earnings Limit (UEL), to the pension provided by the State-Earnings-Related Pension Scheme (SERPS). These pensions are paid by the Department of Social Security (DSS) from State Pension Age which is 65 for men and 60 for women. The self-employed are also entitled to a BSP, but not to a SERPS pension. Employees with earnings in excess of the LEL will automatically be members of SERPS, unless they belong to an employer's occupational pension scheme or to a personal pension scheme that has been contracted-out of SERPS. In such cases both the individual and the employer

contracting-out receive a rebate on their NICs (1.6% of earnings for the employee and 3.0% for the employer, unless it operates a COMPS in which case the employee rebate is 0.6%) and the individual foregoes the right to receive a SERPS pension.

However, there is no obligation on employers to operate their own pension scheme, nor, since 1988, is there any contractual requirement for an employee to join the employer's scheme if it has one. There is a wide range of private sector pension schemes open to individuals. They can join their employer's occupational pension scheme (if it has one), which can be any one of the following:

- contracted-in salary-related scheme (CISRS)
- contracted-in money purchase scheme (CIMPS)
- contracted-out salary-related scheme (COSRS)
- contracted-out money-purchase scheme (COMPS)
- contracted-out mixed benefit scheme (COMBS)
- contracted-out hybrid scheme (COHS).

A CISRS is a defined benefit scheme that has not been contracted-out of SERPS and so provides a salary-related pension in addition to the SERPS pension, while CIMPS provide a defined contribution supplement to the SERPS pension. COSRS must provide 'requisite benefits' in order to contract out of SERPS, namely a salary-related pension that is at least as good as the SERPS pension replaced, while COMPS must have contributions no lower than the contracted-out rebate. COMBS can use a mixture of the requisite benefits and minimum contributions tests to contract out of SERPS, while COHS can provide pensions using a combination of salary-related and money purchase elements. Individuals can also top up their schemes with Additional Voluntary Contributions (AVCs) or Free-Standing Additional Voluntary Contributions (FSAVCs) up to limits permitted by the Inland Revenue.

As an alternative, individuals have the following personal pension choices that are independent of the employer's scheme:

- personal pension scheme (PPS) (also the only type of scheme available to the self-employed)
- group personal pension scheme (GPPS)

A PPS is divided into two components. The first is an Appropriate Personal Pension Scheme (APPS) which is contracted out of SERPS and provides 'protected rights' benefits that stand in place of SERPS benefits: they are also known as minimum contribution or rebate-only schemes since the only contributions permitted are the combined rebate on NICs with the employee's share of the rebate grossed up for basic rate tax relief (at 22%). The second is an additional scheme, also contracted out, that receives any additional contributions up to Inland Revenue limits. A GPPS is a scheme that has been arranged by a small employer with only a few employees: it is essentially a collection of individual schemes, but with lower unit costs because of the savings on up-front marketing and administration costs.

In 1996, the UK workforce totalled 28.5 million people, of whom 3.3 million were self-employed. The pension arrangements of these people were as follows:

- 7.5 million employees in SERPS
- 1.2 million employees in 110,000 contracted-in occupational schemes

- 9.3 million employees in 40,000 contracted-out occupational schemes (85% of such schemes are salary-related, although 85% of new schemes started in 1998 were money purchase or hybrid)
- 5.5 million employees in personal pension schemes
- 1.7 million employees without a pension scheme apart from the BSP
- 1.5 million self-employed in personal pension schemes
- 1.8 million self-employed without a pension scheme apart from the BSP.

These figures indicate that 72% of supplementary pension scheme members in 1996 were in SERPS or an occupational scheme and 28% were in personal pension schemes

The Thatcher-Major reforms to the pension system

The Thatcher Conservative government that came into power in 1979 became the first government in the Western world to confront head on the potential crisis in state pension provision and the reforms were continued by the succeeding Major government.

These governments introduced the following measures:

- Linked the growth rate in state pensions to prices rather than national average earnings, thereby saving about 2% p.a. (Social Security Act 1980).
- Raised the state pension age from 60 to 65 for women over a 10-year period beginning in 2010, thereby reducing the cost of state pensions by £3bn p.a. (Pensions Act 1995).
- Reduced the benefits accruing under SERPS (which had only been set up in 1978) in a number of ways:
 - a) the pension was to be reduced (over a 10-year transitional period beginning in April 1999) from 25% of average revalued band earnings over the best 20 years to 20% of average revalued band earnings over the full career (Social Security Act 1986);
 - b) the spouse's pension was cut from 100% of the member's pension to 50% from April 2000 (Social Security Act 1986);
 - c) the revaluation factor for band earnings was reduced by about 2% p.a. (Pensions Act 1995);
 the combined effect of these changes was to reduce the value of SERPS benefits by around two-thirds.
- Provided a 'special bonus' in the form of an extra 2% National Insurance rebate for all PPSs contracting out of SERPS between April 1988 and April 1993 (Social Security Act 1986); provided an incentive from April 1993 in the form of a 1% age-related National Insurance rebate to members of contracted-out PPSs aged 30 or more to discourage them from recontracting back into SERPS (Social Security Act 1993).
- Relaxed the restriction in PPSs that an annuity had to be purchased on the retirement date, by introducing an income drawdown facility which enabled an income (of between 35 and 100% of a single life annuity) to be drawn from the pension fund (which otherwise remains invested in earning assets) and delaying the obligation to purchase an annuity until age 75 (Finance Act 1995).
- Enabled members of occupational pension plans to join personal pension plans (Social Security Act 1986).

- Simplified the arrangements for occupational schemes to contract out of SERPS by abolishing the requirement for occupational schemes to provide Guaranteed Minimum Pensions (GMPs): since April 1997, COSRSs had to demonstrate only that they offer requisite benefits that are broadly equivalent to those obtainable from SERPS (Pensions Act 1995).
- Ended its commitment to pay for part of the inflation indexation of occupational schemes (Pensions Act 1995). Until April 1997, COSRSs had to index the GMP up to an inflation level of 3% p.a. and any additional pension above the GMP up to an inflation level of 5% p.a. Since the GMP replaced the SERPS pension, which was itself fully, indexed to inflation, the government increased an individual's BSP to compensate for any inflation on the GMP above 3%. But the 1995 Act abolished the GMP altogether and required COSRSs to index the whole of the pension that they pay to a maximum of 5%
- Improved the security of the assets in private sector schemes through the creation of a compensation fund, a Minimum Funding Requirement (MFR) and a Statement of Investment Principles (SIP) (Pensions Act 1995).

Defects in the Thatcher-Major reforms

The main defects of the Thatcher-Major reforms were as follows:

- Removing the requirement that membership of an occupational pension scheme could be made a condition of employment. Membership was made voluntary and new employees had to take the active decision of joining their employer's scheme: fewer than 50% of them did so.
- There was no requirement to ensure that transferring from an occupational to a personal pension scheme was in the best interests of the employee, leading directly to the personal pensions misselling scandal that erupted in December 1993.

Between 1988 and 1993, 500,000 members of occupational pension schemes had transferred their assets to personal pension schemes following high-pressure sales tactics by agents of PPS providers. As many as 90% of those who transferred had been given inappropriate advice. Miners, teachers, nurses and police officers were amongst the main targets of the sales agents. Many of these people remained working for the same employer, but they switched from a good occupational pension scheme offering an index-linked pension into a PPS towards which the employer did not contribute and which took 25% of the transfer value in commissions and administration charges. An example reported in the press concerned a miner who transferred to a PPS in 1989 and retired in 1994 aged 60. He received a lump sum of £2,576 and a pension of £734 p.a. by his new scheme. Had he remained in his occupational scheme, he would have received a lump sum of £5,125 and a pension of £1,791 p.a. As a result of a public outcry, PPS providers have had to compensate those who had been given inappropriate advice to the tune of £11bn.

- There was no restriction on the charges that could be imposed in personal pension plans, hoping that market forces alone would ensure that PPSs were competitively provided.
- Giving personal pension scheme members the right to recontract back into SERPS. This option has turned out to be extremely expensive for the government because of the back-loading of benefits in DB pension schemes such as SERPS: benefits accrue more heavily in the later years than the earlier years.

Despite the financial incentives given to contract out of SERPS into PPSs, it turned out to be advantageous for men over 42 and women over 34 to contract back into SERPS once the period of the special bonus had ended in 1993. To discourage this from happening the government has been forced to offer additional age-related rebates to PPS members over 30 since 1993. Far from saving the government money, the net cost of PPSs during the first 10 years was estimated by the National Audit Office to be about £10bn.

The Blair Reforms to the Pension System

The New Labour Blair government came into power in 1997 with a radical agenda for reforming the welfare state. In the event, Frank Field, appointed the first Minister for Welfare Reform at the Department of Social Security (DSS) and charged with the objective of ‘thinking the unthinkable’, proved to be too radical for the traditional Old Labour wing of the Labour Party and was soon replaced.

The eventual DSS Green Paper proposals ‘A new contract for welfare: Partnership in pensions’ (December 1998) turned out to be much less radical than initially anticipated, but nevertheless continued with the Thatcher government’s agenda of attempting to reduce the cost to the state of public pension provision and of transferring the burden of provision to the private sector through the introduction of a new type of occupational pension called the “stakeholder pension” and the State Second Pension.

The “stakeholder pension” is in many ways more like the APPs than like traditional occupational pensions. These pensions are similar to the APPs in that they will provide individual accounts, but the annual administrative fee will be much lower (1%) and workers will be allowed to transfer between schemes without penalty. They are designed for moderately low wage workers, a group that often has not had access to occupational pension coverage, but unlike traditional occupational pensions very few employers are expected to add a contribution over and above the worker’s contribution. These pensions have become available to the public as of April 2001.

The State Second Pension will start in 2002 (when contributions to SERPS will end). During the first few years it will not be a flat-rate scheme, but it will become one in 2007. This second-tier flat-rate pension will eventually replace SERPS. The State Second Pension is designed to meet the needs of workers with low wages and irregular work histories. For this category of workers the new scheme will probably do a better job of replacing pre-retirement income than would SERPS, particularly given the cuts in SERPS benefits that are being phased in. After 2007, low-wage workers will typically be covered by the original flat-rate first tier Old Age Pension and the flat-rate State Second Pension.

The Green Paper

The key objectives of the DSS Green Paper were to:

- Reduce the complexity of the UK pension system, by abolishing SERPS.
- Introduce a minimum income guarantee in retirement linked to increases in national average earnings on the grounds that people who work all their lives should not have to rely on means-tested benefits in retirement; the first pillar BSP will remain indexed to prices, however, and over time will become a relatively unimportant component of most people’s pensions.

Monk (1994) conducted a study of institutional shareholdings in large quoted UK companies. He found that the average holding period for shares in a typical large UK company by institutional investors was a fairly lengthy 8 years and four months (based on an annual net divestment rate of 6% p.a.). However, there was a substantial turnover (i.e. trading in and out) of shares during the course of a year. The average across institutional shareholders was 24% p.a., with pension funds and life companies having the lowest turnover (at 20% each) and investment trusts and unit trusts having the highest (at 40% and 60% respectively). This short-termism may have serious effects on the willingness of companies to make long-term investments that are important for the long-term health of the British economy.

The Wilson Committee to Review the Functioning of Financial Institutions made these comments about pension funds:

“In law, their first concern must be to safeguard the long-term interests of their members and beneficiaries. It is, however, possible for fiduciary obligations to be interpreted too narrowly. Though the institutions may individually have no obligation to invest any particular quantity of new savings in the creation of future real resources, the prospect of new savings in the creation of future real resources, the prospect that growth in the UK economy over the next two decades might be inadequate to satisfy present expectations should be a cause of considerable concern to them. The exercise of responsibility which is the obverse of the considerable financial power which they now collectively possess may require them to take a more active role than in the past ... in more actively seeking profitable outlets for funds and in otherwise contributing to the solutions of the problems that we have been discussing.” [Wilson, 1980 (pp.259-60)]

The investment strategy of pension funds, especially in respect of their substantial investment overseas since 1979 and their apparent unwillingness to undertake long-term investments in British industry, has been widely criticised. The Wilson Committee and others (e.g. Minns 1980) argued that pension funds did not invest sufficiently in small and medium-sized enterprises (SMEs) and that, as a result, SMEs found it difficult to raise adequate equity finance for expansion.

The pension funds' defence against this criticism rested on the argument that the costs of investing in small companies were much higher than those of investing in large companies. The reasons that have been already analysed are the following: small companies are difficult and therefore expensive to research because they are generally relatively new and so do not have a long track record of performance; their shares may not be very liquid; pension fund trustees place limits on the proportion of a company's equity in which a fund can invest (for example, a pension fund might not be permitted by its trustees to hold more than 5% of any company's equity. For a company with equity valued at \$1 m, the investment limit is \$50,000. A large pension fund might have \$500 m of contributions and investment income to invest per year. This could be invested in 10,000 million-pound companies or it could be invested in 50 large companies. It is not hard to see why the pension fund is going to prefer the latter to the former strategy, even if it could find 10,000 companies to invest in).

Minns found that because pension funds prefer to invest in large firms, they also prefer to invest in sectors dominated by large firms. Since the financial sector has a higher proportion of large firms than other sectors, such as the capital goods sector,

pension funds have tended to invest in the financial sector in preference to, say, the capital goods sector, which is the sector that provides the engine to growth in the economy.

Related to the criticism that pension funds are unwilling to invest in SMEs is the criticism that pension funds have been unwilling to supply risk-taking venture capital to small unquoted companies engaged in new high-risk ventures. Venture capital usually involves the direct participation of the investor in the company. Not only does the investor supply seed-corn finance; he also supplies the business skills necessary to support the inventive talent of the company founder. This can help to reduce the risks involved in the venture. The reward for the provision of finance and business skills is long-term growth. The problem with pension funds is that, while they have substantial resources to invest, they do not generally have the necessary business expertise to provide the required support. As a result, pension funds remain largely portfolio investors rather than direct investors. In other words, they prefer to invest in equity from which they can make a quick exit if necessary, rather than make a long-term commitment to a particular firm.

Not only do pension funds tend to avoid the risks of direct investment; they tend also to be fairly conservative when it comes to portfolio investment. As it has been noted, pension funds do not have any expertise in the business of, or a commitment to, the companies in which they invest. Shares will be bought and sold on the basis of the potential financial return. It therefore follows that the potential social and economic implications of an investment decision have little influence on that decision' (Benjamin, Haberman, Helowicz, Kaye, and Wilkie 1987).

Another related area in which the pension funds investment strategy has been criticised is that of take-overs. The large shareholdings of pension funds have provided the source of equity to win corporate control in the event of hostile take-overs. Pension funds have been blamed for selling out to the highest bidder (i.e. of abandoning their obligations of corporate governance) and hence responsible for control being handed over to a predator, often from a country that would not permit similar behaviour (e.g. the Nestle takeover of Rowntree in 1988 would not have been permitted in Switzerland). The incentive to support the predator lies in the huge rise in the share price (known as the bid premium) at the time of the bid and the almost certain subsequent fall again if the bid fails. Thus by supporting the bid, pension funds have been accused of short-termism of the worst kind. Institutional investors have been accused of relying on take-overs to resolve the problem of poor management of a company rather than by directly intervening in the boardroom themselves.

A vicious circle is created. Companies are forced to divert their energies to counter potential take-over threats. Investment projects cannot be undertaken if they damage the share price in the short-term. Share prices can also be quite volatile. It is this unattractive scenario that has persuaded many medium-sized unquoted companies not to seek a quotation on the London Stock Exchange.

One recent example of the exercise of pension fund market power was the hostile take-over of Globe Investment Trust by the British Coal Pension Fund in July 1990 which had held 28.5% of the equity in Globe since the mid 1970s. Globe was the largest investment trust in the UK with a market capitalisation of \$1.1 bn and the only

investment trust in the FTSE 100 index of leading shares. The battle for Globe was won largely because other institutional investors agreed to sell their shareholdings to the British Coal Pension Fund. For example, POSTEL, the Post Office pension fund, sold its 2% shareholding, Prudential sold its 5% holding, Standard Life its 5% holding and Legal and General its 1.5% holding. Globe spent \$7.5m on its bid defence. This aspect of short-termism is a direct consequence of the companies themselves demanding that their own pension funds beat the average. They cannot then really complain when fund managers capitalise on the large price rises resulting from take-over bids by selling their stakes in an attempt to beat the average, knowing that if the bid fails, the share price will sink back again.

The mutual influence that companies and their pension funds have over each other is now so great that the consequences can be a destabilising effect on UK equity markets and a damage to confidence in British boardrooms. This compares strikingly with the position in Japan where Japanese companies also built up cross-holdings in each other during the 1960s and 1970s. The extent of the cross-holdings is about 38%, slightly higher than in Britain. Yet the Japanese cross-investment is never used in a destabilising manner and was certainly never involved in a hostile take-over.

The implication of all this is that, on the one hand, market pressures can be very effective in ensuring that companies operate in the interests of shareholders. On the other hand, the large shareholdings of pension funds that set overambitious performance targets can be used to destabilise the very companies that set those targets.

Pension funds have in recent years responded to some of the criticisms that have been mentioned above. For example, a number of the larger funds have established venture capital divisions. An example of a venture capital management group is CIN Venture Managers (or CINVEN) which operates the venture capital operations of what was the British Coal Pension Fund. CINVEN was set up by the British Coal Pension Fund in 1976 and the pension fund has 3% of its assets (i.e. \$550 m in 1990) in venture capital investments. CINVEN is the second largest venture capital management group in the UK after 3i.

The issue of pre-emption rights

Pension funds, through their shareholdings, can exercise a powerful influence on the behaviour of the companies in which they hold shares. A recent example of this has been the issue of pre-emption rights which have been enshrined in numerous Companies Acts.

Pre-emption rights are the rights attached to existing shareholdings when a company seeks to raise additional finance by issuing new shares. Historically, pre-emption rights have meant that existing shareholders have had to be offered the right to buy any new shares in direct proportion to their shareholdings before the shares are offered to new shareholders (pre-emption means 'buy before'). In this way, shareholders are protected from any dilution of their rights or controls over the company. Any deviation from this practice, or disapplication as it is called, must have specific shareholders' approval.

However, many leading company directors and corporate treasurers have been arguing for greater flexibility in company financing, with greater freedom to raise equity finance through new funding techniques such as bought deals and overseas placings. Company directors have been supported in this argument by the main securities houses in the City, which would earn fees from these new financing techniques.

The main argument put forward by the companies and securities houses in favour of relaxing pre-emption rights is that the rights restrict the growth of companies, since expansion is limited to the extent that existing shareholders are willing to buy the new shares. Also rights issues are lengthy and cumbersome procedures. Another argument is that most shareholders are British investors, and so pre-emption rights effectively limit companies to raising funds in the UK equity market which has a market capitalisation of less than 10% of that of the world equity market.

UK companies were therefore being forced to ignore a vast overseas pool of investment funds. By having a presence in overseas equity markets, this has helped to enhance the reputation of UK companies overseas and lowered the cost of other financing operations, such as commercial paper. In addition, because of this restricted access to the markets, larger price discounts had to be offered on rights issues to existing shareholders to induce them to take up the issue than would be necessary in the case of a wider distribution. Institutional investors were therefore really acting in their own self-interest by demanding the preservation of pre-emption rights. This was doubly so when it was realized that institutional investors also largely underwrite the rights issues and hence receive underwriting fees which would not be necessary if the company could access a wider market.

Stock Exchange rules permit shareholders to forgo some of their pre-emption rights and in the past companies have been able to issue up to 2.5% of their existing share capital without a reference to existing shareholders. In other words, 2.5% of share capital could be disappplied. But in October 1986, the Stock Exchange relaxed its rules. The Association of British Insurers (ABI) accepted a ceiling of 5%. The National Association of Pension Funds (NAPF) accepted the 5% ceiling but with the provision that no more than 12.5% of equity could be disappplied over 5 years. Together, pension funds and insurance companies own 55% of UK equity. But within months, the ABI had reduces its ceiling to 2.5% again in the face of substantial new equity issues by companies in the form of placings, equity warrants and euroconvertible bonds. In April 1987, Fisons was forced to withdraw an international issue targeted at European and Japanese investors in the face of pressure from institutional investors. Also in April 1987, CH Beazer was forced to reduce its issue of American depository receipts.

The Stock Exchange was forced to intermediate between the protagonists. In October 1987, it issued new guidelines which were approved by the Association of Corporate Treasurers, the NAPF and the ABI. The guidelines permit a listed company to issue up to 5% of its equity capital in any one year and up to 7.5% over three years, without having to offer pre-emption rights. However, the discount at which the new shares are sold must not exceed 5% of the share price (including underwriting fees, typically 2%) at the time of the announcement. The guidelines cover such financing techniques as warrants and euroconvertible bonds which had in the past been used to overcome

pre-emption ceilings. In addition, the guideline limits can be exceeded in exceptional circumstances and after consultation with shareholders.

The guidelines seemed to work quite well. An example of this was the financing arrangement for Next by Salomon Brothers with the placing of euroconvertible bonds by way of a rights issue in September 1987. The bonds were placed with institutional investors at home and abroad, but the bonds placed with domestic institutions were subject to claw-back. This meant that existing shareholders could buy back the bonds from the institutions at a claw-back offer price. Any shareholders that did not wish to participate in the offer, could sell their nil paid rights in the market.

The consequences of reducing pension fund surpluses and the increasing maturity of pension funds

Another potentially destabilising influence on the markets has resulted from the reduction in pension fund surpluses. The reduction in pension fund surpluses has taken place largely through the mechanism of employer contributions holidays. This has had the effect of reducing the flow of new money coming into the stock markets. This, in turn, has had two consequences.

First, the pressure on prices in domestic securities has been moderated. A substantial proportion of the price rises in the UK markets during the 1980s up till 1987 was due to the weight of new money (in the form of pension contributions and insurance premiums) from institutional investors. When that flow (at least from UK pension funds) began to be curtailed from the start of 1987, the pressure for further price rises was also curtailed. As a result, and notwithstanding the crash of October 1987, the UK markets were relatively subdued for the remainder of the decade.

Second, the reduced flow of contributions has reduced the ability of fund managers to rebalance their asset portfolios using only new money. Traditionally, fund managers have been able to rebalance their portfolios away from, say, domestic bonds to overseas equities simply by using the new money to buy overseas equities. With lower cash inflows, fund managers have had to sell domestic bonds in order to increase their portfolios' weightings in overseas equities. This strategy raises costs however, since commissions on turnover are increased.

The increasing maturity of pension funds could also have a moderating effect on capital markets. As pension funds mature, asset-liability management becomes more important and, as a consequence, the optimal structure of pension fund portfolios changes. Maturing pension funds will need to reduce their weighting in equities and increase their weighting in fixed-income bonds in order to reduce the risk of not being able to meet their liabilities when they fall due. In other words, immunisation strategies become more important for maturing pension funds.

If pension funds reduce their demand for equities and increase their demand for bonds, this will cause equity prices to fall relative to bond prices. So the immediate effect of pension fund maturity is increased volatility in asset prices. The longer-term effect might be for companies to reduce the supply of new equity coming to the market and to increase the supply of debt. In other words, companies might respond to these changes in demand by changing their capital structures in favour of greater leverage or gearing. However, greater corporate leverage has the effect of increasing

the risking of corporate bonds by reducing the equity shield. So the increasing maturity of pension funds may have the perverse result of reducing the effectiveness of the very immunisation strategies that are required by the increasing maturity of pension funds.

Poor relationships between trustees and investment managers

Under the 1961 Trustee Investments Act, trustees have a legal responsibility to ensure the pension fund is soundly invested. In practice, trustees delegate this responsibility to a professional investment management company. The trustees provide general investment guidelines (known as a *statement of investment principles* under the 1995 Pensions Act) and the investment manager undertakes the day-to-day management of the fund.

The relationship between trustees and investment managers is frequently an unhappy one. This is likely to be the case when one of the parties has no real understanding of the other's role. Typically the trustees have little understanding of investment management, yet they have to provide both general investment guidelines and to assess the subsequent performance of the fund manager. If the trustees are unskilled in executing their functions, the fund manager can be (or at least feel to be) unfairly treated. The main investment guidelines set by trustees (typically based on advice from a pension consultant or actuary) are asset allocation guidelines (principally the proportions of the fund devoted to bonds and equity) and country allocation guidelines (the proportions of the fund devoted to the various domestic and overseas markets). These are extremely important decisions, since subsequent investment performance depends critically on the initial asset and country allocations made. Typically, the strategic asset allocation dominates investment performance and has a much more important effect than the stock selection decision (the decision about which particular bonds and shares are purchased and sold) (Blake, Lehmann, and Timmermann 1997).

Now the optimal asset and country allocation decisions depend on the investor's attitude to risk. The greater the investor's aversion to risk, the greater the fund's investment in low-risk securities such as government bonds and the less the fund's investment in high-risk securities such as equities; similarly the greater the fund's investment in stable economies and the less in high-risk economies. However, the lower the fund's risk profile, the lower its expected return, in other words, the lower its expected performance.

An important task of the fund manager is to assess the trustees' attitude to risk. This in itself is an extremely complicated exercise, but the fund manager will invariably be left with the conclusion that the trustees are 'fairly risk averse'. This suggests that an investment portfolio should be constructed which has fairly low risk and consequently modest returns on average. Nevertheless, the fund manager can also be confident that when the portfolio's subsequent performance is assessed, the trustees will be critical of the fund manager if their fund's return is below the average generated by other pension fund managers.

From the fund manager's viewpoint, the poor return was the result of the trustees' expressed aversion to risk, but the trustees will have conveniently forgotten this point.

Hence the fund manager may feel that he has been unfairly treated by a set of people largely ignorant of the effect that their constraints place on his performance.

From the trustees' viewpoint, the fund manager will have promised, during the negotiations leading to the award of the mandate, to bring substantial expertise and experience to the task of managing the pension fund. The fund manager will also have negotiated an attractive management fee, typically based on the end-year value of the fund. In return, the trustees will have reminded the fund manager of their legal responsibilities in respect of the fund, but will then expect the fund manager to deliver on his promises. If the subsequent performance of the fund is poor, the problem of identifying the source of the poor performance is not easy. It could be the result of the constraints imposed by the trustee, poor investment management decisions or just bad luck.

Since the mid-1980s, the relationship between trustees and fund managers has begun to change quite dramatically. Gone are the days when the chairman of a company whose pension fund needed managing and the chairman of a merchant bank arranged a deal over a cosy drink at the club. As a result of the widespread use of performance measurement services and the importation of aggressive Wall Street marketing practices, the fund management process has become very competitive. Now a fund manager must deliver performance or risk being fired.

The NAPF was sufficiently concerned about the deterioration in the relationship between pension fund managers and company chairmen (a relationship that has been described as the 'barbarians at the gate' versus the 'sybarites in the boardroom') that it published the opinions of leading 'protagonists' on both sides in 1990 in a report entitled *Creative Tension?* (National Association of Pension Funds 1990). Some company directors wished to outlaw short-termist behaviour by fund managers. For example, Sir Hector Laing of United Biscuits suggested that shareholders should be denied voting rights until they have held shares for 12 months. Jonathan Charkham of the Bank of England argued that many pension fund managers tend to act as punters rather than stewards of their clients' investments. If shareholders expect company directors to be accountable to them, they must behave responsibly in return. Lord Tombs of Rolls-Royce complained of institutional investors who never bothered to turn up to companies' annual general meetings; in practice, only about 30% of institutional investors attend AGMs.

One counter-argument was that company directors frequently forget that it is the shareholders and not the company directors themselves who actually own the company. Sir James Ball of Legal and General argued that until recent years, shareholders had been 'considerably neglected by companies'. Sir Martin Jacomb of Barclays de Zoete Wedd criticised boards which admitted to bad news only when the market forced it out of them. In extreme cases, they then get their own back on shareholders by asking for share dealings to be suspended.

Another counter-argument was that shareholders have every right to keep their company directors in check and it is only the threat of take-overs that forces company directors to act in the best interests of their shareholders. At other times, shareholders appear unable or unwilling to exercise their rights. A recent example of this was the failed take-over bid for BAT Industries by Hoylake led by Sir James Goldsmith

during 1989-90. Hoylake argued that BAT was being inefficiently run by its management and that it could release the 'hidden value' in BAT by replacing the management. This hidden value would be shared between existing BATers and Hoylake. In the event, BAT's management succeeded in defeating the bid and keeping their jobs by implementing the very strategies that Hoylake intended to adopt. The obvious question is: why was the Hoylake bid necessary before they did this?

The real problem is the separation between ownership and control. Shareholders own the company but they are not involved in the day-to-day running of the company. Also shareholders, and this includes institutional shareholders, do not tend to have any expertise in company management per se. This is inevitable in large companies. But what is not inevitable is that shareholders feel completely divorced from their company's management. David Hopkins of the M&G unit trust group argued for continuous contact between management and shareholders, especially institutional investors. Another solution proposed by Sir James Ball and Sir Adrian Cadbury of Cadbury-Schweppes is to have independent non-executive directors on company boards with their role written into company law. This would certainly cement some degree of long-termism, but company boards have always tended to resist this type of outside interference. Also, institutional investors have the power to insist on independent directors even without a change in the law, but have in the past chosen not to exercise this power. Instead they have relied on market forces in the form of take-over bids to see that inadequate managements were replaced.

However, very recently, institutional investors (through the auspices of the Institutional Shareholders Committee) have begun to take direct action in the managements of companies if they have become dissatisfied with company performance. In the past, dissatisfied institutional investors would simply have sold their shares; they have now begun to fire the chairman. For example, in May 1991, institutional investors removed John Fletcher as chairman and chief executive of the Budgens supermarket group, and in June 1991, they removed John Hardman as chairman and chief executive of the Asda supermarket group. In the case of Asda, the institutional investors, which included the Prudential, Schroders and Scottish Widows, demanded a separation of the roles of chairman and chief executive and the appointment of more non-executive directors to represent the interests of the main shareholders. Conflicts such as these between company boards and key investors led to the establishment of codes of practice for corporate governance and executive pay following the Cadbury, Greenbury and Hempel Reports.

Nevertheless, the problem of short-termism in the UK has not been resolved and, moreover, does not look like going away. Pension scheme members are entitled to expect that their pension funds do not act in a way that destabilises the very companies for whom they work. Nor should it be forgotten just how pension funds have achieved their strong position. It is as a result of the huge tax advantages that pension funds enjoy and which have been used since the 1960s to decimate private shareholders, the very group of investors who historically have provided such a loyal and stabilising influence on the companies in which they invested.

Abolition of Capital Controls: The UK Experience

In the United Kingdom pension funds already accounted for an important proportion of personal savings and of GDP (around 20 per cent) when capital controls were dismantled in October 1979. The UK experience may thus provide some insights relevant to countries considering dismantling capital controls in the presence of domestic institutional investors.

On theoretical grounds, it is usually expected that liberalising capital inflows, and even outflows, will produce a net capital inflow, a positive wealth effect and an appreciation of the real value of the domestic currency. It is proved that, in a two-period model, the liberalisation of outflow controls may lead to the repatriation of domestic assets — a net capital inflow — because controls on outflows "tax" the option of re-exporting capital later, and so reduce the incentive to repatriate capital now. Similarly, it has been proved that a liberalisation of outflows -specifically, a reduction in the minimum capital repatriation period for foreign investment- reduces the irreversibility of inward investment and therefore the option value of waiting before moving funds in, thus potentially increasing net inward investment. Realignment of portfolio structures and the once-and-for-all attempt by foreign and domestic investors to increase their claims on a newly liberalised economy has sometimes created a spending boom, caused by the wealth effect due to the (at times euphoric) revaluation of domestic assets. All these forces will lead to a real appreciation of the domestic currency, in particular when liberalisation is followed (rather than preceded) by a stabilization policy which drives real interest rates up.

In contrast to these hypotheses, the abolition of UK capital controls in the presence of important domestic institutional investors (notably pension funds) generated a wealth loss due to the disappearance of the "investment currency" premium and heavy net outward portfolio flows, with new foreign demand for sterling assets significantly lower than the demand by UK residents for overseas assets. The net effect of portfolio flows was to raise interest rates and to depreciate sterling, even though the currency appreciated heavily in real terms due to other factors. (Although a definite decomposition of sterling's appreciation during 1979-82 has never been achieved, with the development of North Sea oil, the second oil price shock, and sweeping policy changes under Margaret Thatcher coinciding with the abolition of capital controls, the fact that net portfolio flows became strongly negative implies that the abolition of capital controls limited rather than intensified the appreciation).

The Bank of England (1981) argued that a net outflow was to be expected in the British context, given the importance of the investment currency premium over the long period when capital controls had been in place. With respect to portfolio investment, the UK controls had limited residents' purchase of foreign exchange for the purpose of investment overseas to the proceeds from the sale of existing foreign securities or from foreign currency borrowing. This constituted the "investment currency" market, in which there was a premium over the official exchange rate, which was mostly in the range of 30 to 50 per cent, or on occasion even higher. The size of the premium demonstrates the effectiveness of capital controls in locking in domestic savings.

The Bank of England (1981) argued that their removal triggered portfolio adjustment through four channels. First, the loss of the "investment currency" premium

constituted a *reduction in the wealth* of investors who had previously been holding overseas securities, and a disruption to their previous portfolio balance. Attempts to restore the pre-abolition share of foreign assets in portfolios would give rise to capital outflows. Second, the abolition of the premium directly reduced the *sterling price* of foreign securities, which would induce investors to raise the desired portfolio share of foreign assets beyond pre-abolition levels, as long as foreign currency yields and risks remained unchanged. Third, some *refinancing in sterling* of investment originally financed with foreign currency borrowing was to be expected. Fourth, on top of the three stock- adjustment effects, a continuing *flow effect* was required to maintain portfolio balance as wealth increased.

Once controls were abolished, UK pension funds became the driving force for important net capital outflows. Net outward portfolio flows, which had been virtually nil when controls were still in place, cumulated to £36 billion during 1980-85. Pension funds invested almost exclusively in foreign equities, withdrawing funds from illiquid property and low-return government bonds. The foreign asset share of pension funds rose to 14 per cent in 1985, up from 5 per cent in 1979, and rose further to around 30 per cent by 1993. The switch in portfolio flows and the rise of foreign asset shares in portfolios can be put down as the "effect" of abolishing capital controls -implying that controls had been very effective in preventing global diversification of UK portfolios as long as they existed-. The OECD (1990) noted a further stimulus to outward portfolio investment from 1988 on, when the government started retiring debt, creating a lack of suitable domestic investment assets.

Measures of financial market integration usually focus on interest rate parity conditions. Such a focus is justified by the concern that high capital mobility erodes the effectiveness of monetary policy as an instrument to manage the domestic economy under a regime of fixed (or managed) exchange rates. UK capital controls had indeed inhibited full interest arbitrage (a further indication of their effectiveness); their removal subsequently had a dramatic effect in eliminating deviations from covered interest parity. But it is unlikely that pension funds contributed in any great measure to short-term interest arbitrage, since their post-abolition portfolio shifts mainly involved replacing property and government bonds by foreign equity purchases.

Pension funds, as the driving force of post-abolition portfolio outflows, could nevertheless be held responsible for changes in the sterling exchange rate and interest rate *levels*. The Bank of England (1981) concluded that capital controls had contained the demand for foreign currency, and that removing them depreciated the pound and increased interest rates. Evidence in favour of this position can be found in the behaviour of onshore/offshore interest differentials: pre-abolition differentials in favour of offshore rates fell after abolition.

The global integration of the UK stock market has undoubtedly been fostered primarily through pension funds after capital controls were dismantled. While no significant increase in the correlation of *short-run* stock market returns could be detected, the UK stock exchange became cointegrated with Continental Europe and Japan, although not with the US. The cointegration of different sets of stock markets has the implication that the benefits from international diversification will be reduced.

Chapter 17 / The United Kingdom Empirical Evidence

In order to see the effects of pension funds in the stock market of the UK we gathered data on pension fund assets from 1963-2000, together with information on how these were invested. The most important aspect for our study was the percentage of their assets that was invested in the UK stock market. Considering that size together with the size of the stock market and calculating the volatility of the UK stock market together with the volatility of a European Index we managed to reach some interesting conclusions.

First of all we must examine the asset allocation of UK pension funds during this period of time.

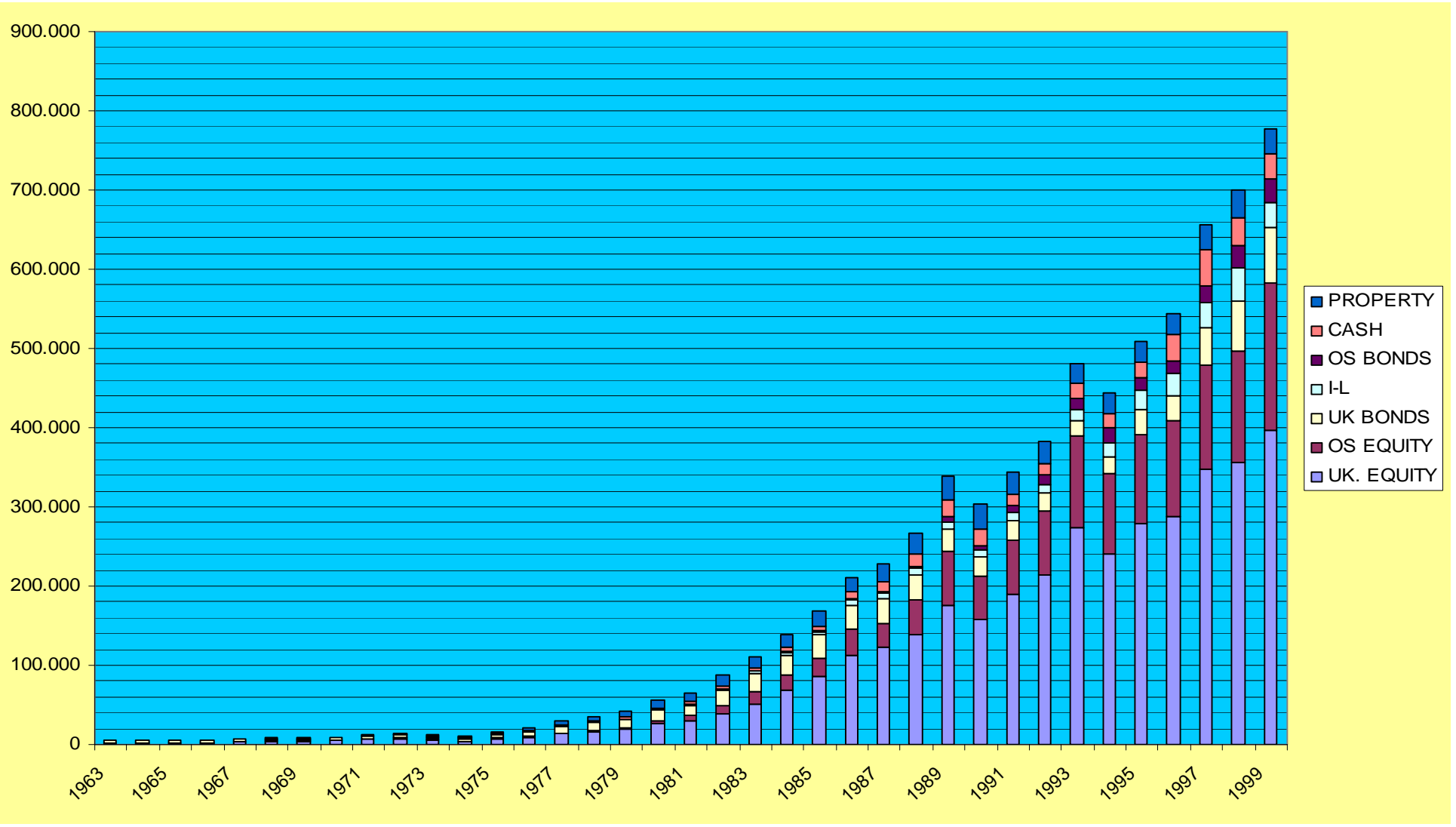
In mill £	UK. EQUITY	OVERSEAS EQUITY	UK. BONDS	INDEX-LINKED GILTS	OVERSEAS BONDS	CASH	PROPERTY	TOTAL
1963	2.115	0	2.295	0	0	90	0	4.500
1964	2.208	0	2.400	0	0	96	96	4.800
1965	2.244	0	2.496	0	0	156	104	5.200
1966	2.365	55	2.695	0	0	110	275	5.500
1967	3.149	67	3.015	0	0	134	335	6.700
1968	4.374	81	2.916	0	0	243	486	8.100
1969	4.374	81	2.916	0	0	243	486	8.100
1970	4.650	186	3.162	0	0	372	930	9.300
1971	6.720	240	3.720	0	0	360	960	12.000
1972	7.752	544	3.400	0	0	680	1.224	13.600
1973	5.856	488	3.172	0	0	976	1.708	12.200
1974	3.638	428	2.889	0	0	1.712	2.033	10.700
1975	7.470	830	4.316	0	0	1.494	2.490	16.600
1976	9.372	1.065	5.964	0	0	1.491	3.408	21.300
1977	13.590	1.208	8.456	0	0	1.812	5.134	30.200
1978	15.930	1.770	9.912	0	0	2.124	5.664	35.400
1979	18.990	2.110	10.972	0	0	2.954	7.174	42.200
1980	25.668	4.464	13.950	0	0	2.232	9.486	55.800
1981	29.565	6.570	13.797	1.314	0	2.628	11.826	65.700
1982	38.236	10.428	19.118	2.607	0	3.476	13.035	86.900
1983	50.130	16.710	22.280	3.342	0	4.456	14.482	111.400
1984	68.257	19.502	23.681	4.179	1.393	5.572	16.716	139.300
1985	85.731	23.534	28.577	5.043	1.681	5.043	18.491	168.100
1986	111.936	33.792	29.568	6.336	2.112	8.448	19.008	211.200
1987	122.904	29.588	31.864	6.828	2.276	11.380	22.760	227.600
1988	139.048	42.784	32.088	8.022	2.674	16.044	26.740	267.400
1989	176.280	67.800	27.120	10.170	6.780	20.340	30.510	339.000
1990	157.404	54.486	24.216	9.081	6.054	21.189	30.270	302.700
1991	189.035	68.740	24.059	10.311	10.311	13.748	27.496	343.700
1992	213.920	80.220	22.920	11.460	11.460	15.280	26.740	382.000
1993	273.828	115.296	19.216	14.412	14.412	19.216	24.020	480.400
1994	239.490	102.005	22.175	17.740	17.740	17.740	26.610	443.500
1995	279.730	111.892	30.516	25.430	15.258	20.344	25.430	508.600
1996	288.267	119.658	32.634	27.195	16.317	32.634	27.195	543.900
1997	348.157	131.380	45.983	32.845	19.707	45.983	32.845	656.900
1998	356.592	139.840	62.928	41.952	27.968	34.960	34.960	699.200
1999	396.066	186.384	69.894	31.064	31.064	31.064	31.064	776.600
2000	370.097	166.166	93.192	38.830	31.064	38.830	23.298	755.300

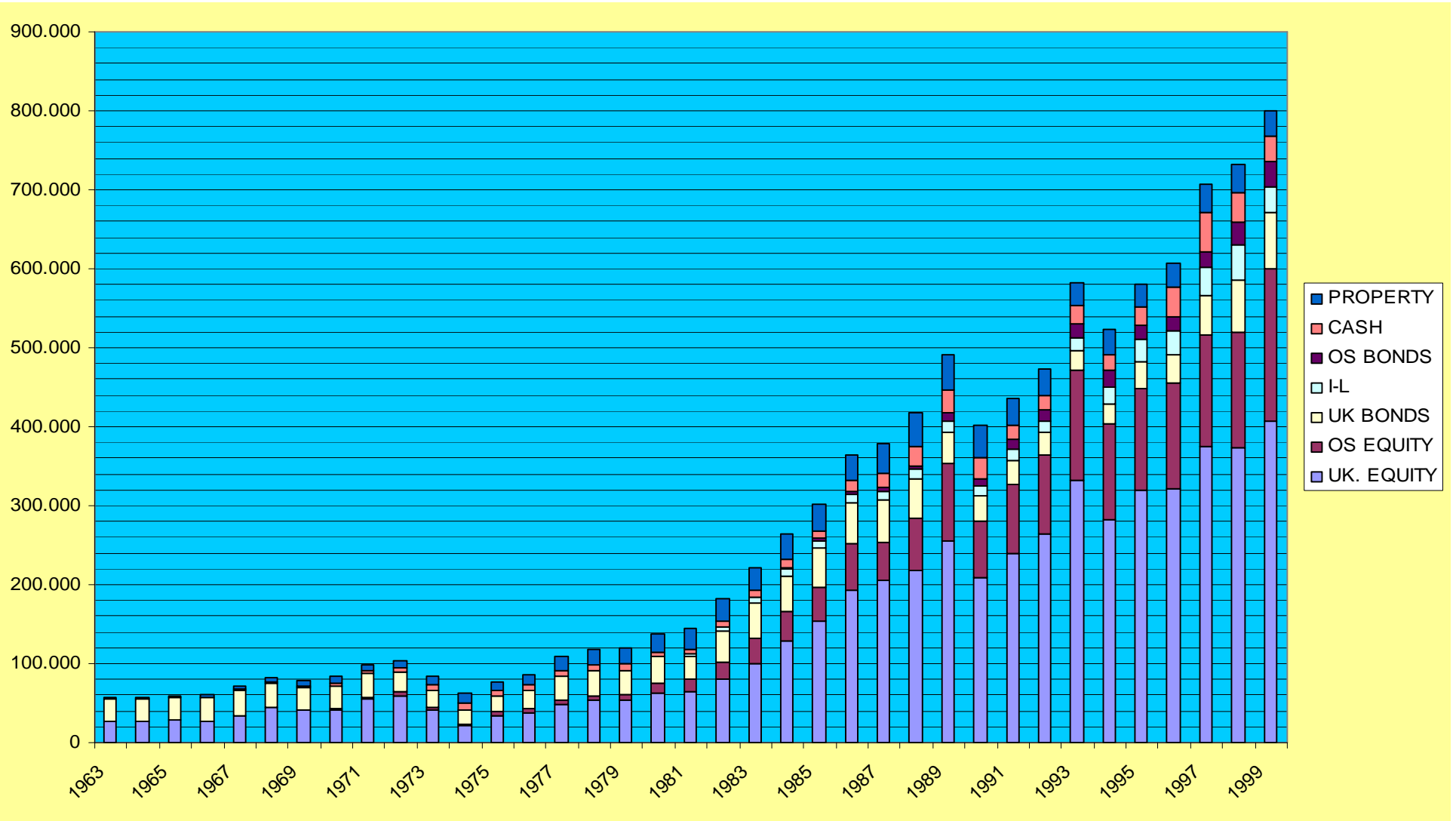
The above data are illustrated in the following chart while the second chart illustrates the same but with values at 2000 prices. Finally the third chart shows the percentage of each kind of investment.

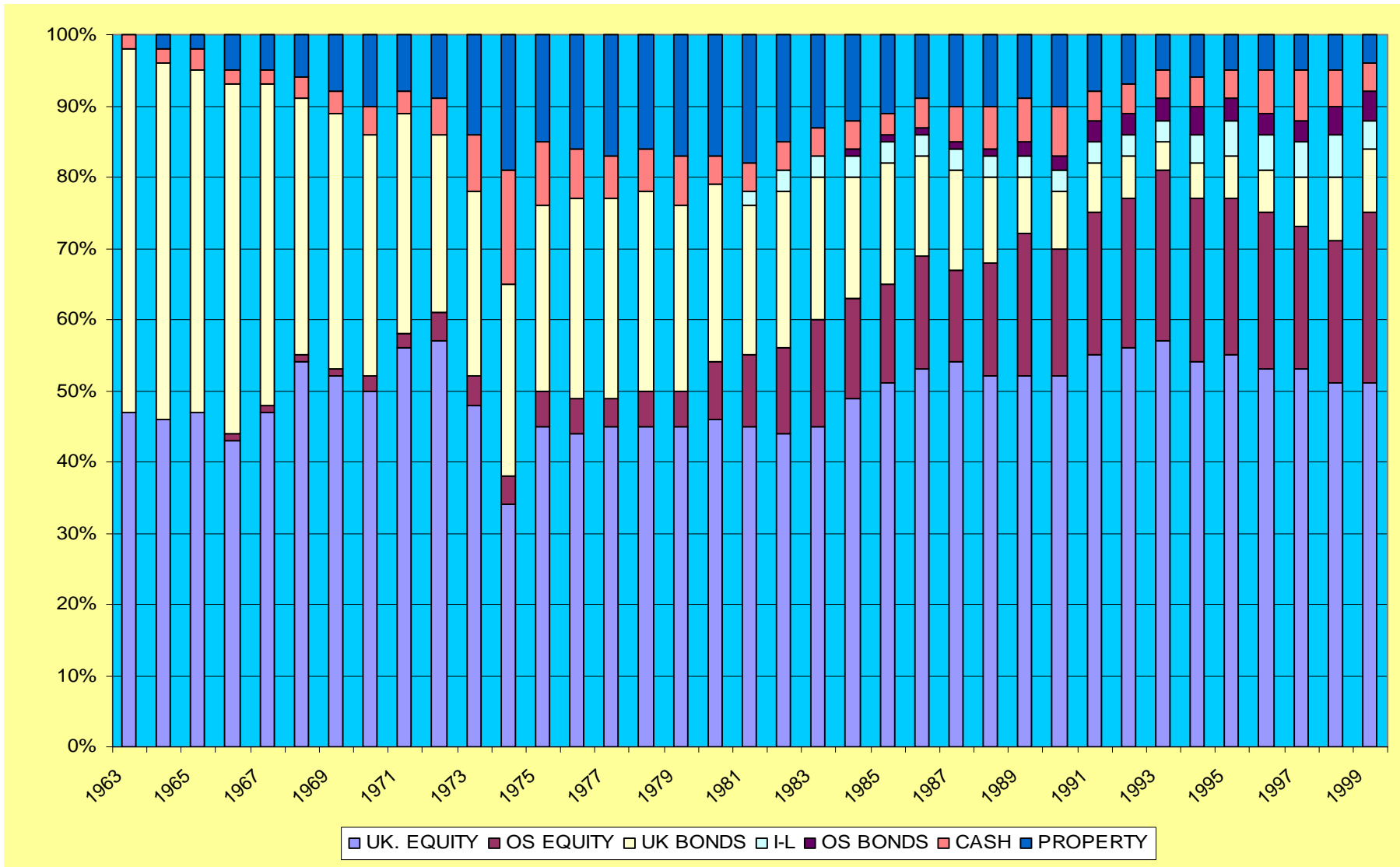
The weighting in UK bonds fell gradually from 51% in 1962 to 4% in 1993. This was partly the result of substitution by index-linked gilts first issued in 1981, and overseas bonds. However, the main reason for the decline in the weighting was the fall in the size of the gilt market relative to the equity market.

The trend against bonds has, however, reversed in recent years. Cash allocations to conventional and index-linked gilts have been positive, reflecting recognition of the growing maturity of schemes and a desire for closer matching of assets with liabilities, partly as a result of the Minimum Funding Requirement (MFR) legislation.

Property investment increased in popularity during the 1970s as pension funds moved into a sector that they saw as a hedge against inflation. The property proportion rose to a peak of 18% in 1981, compared with less than 5% in the mid 1960s. Since 1981, reduced net investment and relatively disappointing performance have reduced the property proportion to below 5% once again.







Time Series Analysis

We want to check the effect of pension funds in the volatility of the UK equity market.

We will use least squares for the estimated log-volatilities; the estimated equation is: $\log(\sigma_{it}) = d_0 + d_1 \log(\sigma_t) + d_2 \text{LPFInvit} + v_{it}$ where σ_{it} represents the estimated volatility of the UK market (ukvol); σ_t represents the estimated volatility of a Euro-Index provided by Datastream (euvol) and PFInvit represents the investment in stocks by pension funds(pension).

The reliability of our variables as presented below is satisfactory so we could say that the results of our analysis will be valid.

First stage regressions

1) Linear regression (robusterrors) pension

Constant : pension {1 to 2} Euvol {1 to 2} ukvol {1 to 2}

2) Linear regression (robusterrors) euvol

Constant : pension {1 to 2} Euvol {1 to 2} ukvol {1 to 2}

3) Linear instrumental variable estimation ukvol

Constant : pension Euvol ukvol {1}

1) Dependent Variable : Pension-Estimation by Least Squares

2)

Usable observations	: 26	Degrees of Freedom	: 19
Centered R**2	: 0.731017	R Bar **2	: 0.646074
Uncentered R**2	: 0.983118	Tx R**2	: 25.561
Mean of Dependent Variable	: 0.4603978296		
Std Error of Dependent Variable	: 0.1214996153		
Standard Error of Estimate	: 0.0722821123		
Sum of squared Residuals	: 0.0992693713		
Durbin-Watson Statistic	: 1.940083		
Q (6-0)	: 2.030310		
Significance Level Of Q	: 0.91689001		

Variable	Coefficient	Std Error	T-Stat	Significance
Constant	-0.054769929	0.061641199	-0.88853	0.37425682
Pension {1}	0.555891788	0.111138352	5.00180	0.00000057
Pension {2}	0.465768407	0.104226690	4.46880	0.00000787
Euvol {1}	-2.388350940	1.253395859	-1.90550	0.05671458
Euvol {2}	0.117070394	1.271081229	0.09210	0.92661620
Ukvol {1}	2.143865664	0.663095605	3.23312	0.00122447
Ukvol {2}	0.613915527	0.693940064	0.88468	0.37632875

2) *Dependent Variable : Euvol - Estimation by Least Squares*

Usable observations	: 26	Degrees of Freedom	: 19
Centered R**2	: 0.129954	R Bar **2	: -0.144797
Uncentered R**2	: 0.890012	Tx R**2	: 23.140
Mean of Dependent Variable	: 0.0445635855		
Std Error of Dependent Variable	: 0.0172880819		
Standard Error of Estimate	: 0.0184974162		
Sum of squared Residuals	: 0.0065009337		
Durbin-Watson Statistic	: 1.530095		
Q (6-0)	: 1.907189		
Significance Level Of Q	: 0.92803331		

Variable	Coefficient	Std Error	T-Stat	Significance
Constant	0.053394580	0.023111077	2.31035	0.02086902
Pension {1}	0.009781049	0.034430214	0.28408	0.77634653
Pension {2}	-0.044212708	0.042692939	-1.03560	0.30038988
Euvol {1}	0.368131234	0.363887683	1.01166	0.31169983
Euvol {2}	0.377969054	0.444962433	0.84944	0.39563630
Ukvol {1}	-0.220304748	0.184844184	-1.19184	0.23332387
Ukvol {2}	-0.279082065	0.255075978	-1.09411	0.27390521

3) *Dependent Variable : Ukvol-Estimation by Instrumental Variables*

Usable observations	: 26	Degrees of Freedom	: 22
Centered R**2	: 0.749771	R Bar **2	: 0.715649
Uncentered R**2	: 0.937711	Tx R**2	: 24.380
Mean of Dependent Variable	: 0.0519366285		
Std Error of Dependent Variable	: 0.0304920449		
Standard Error of Estimate	: 0.0162597598		
Sum of squared Residuals	: 0.0058163554		
Durbin-Watson Statistic	: 1.719269		
Q (6-0)	: 2.078837		
Significance Level Of Q	: 0.91230700		

Variable	Coefficient	Std Error	T-Stat	Significance
Constant	0.008036157	0.038323383	0.20969	0.83583676
Pension	-0.051607874	0.035737057	-1.44410	0.16280236
Euvol	1.295454554	0.594049277	2.18072	0.04018027
Ukvol {1}	0.187388037	0.106547753	1.75872	0.09252839

We can see that, as expected, the investment in stocks of pension funds has a negative effect on volatility. Although T-Stat is not as significant as we would wish, it gives us a quite valid answer to the question we tried to answer.

It seems that for the UK as for the Latin American countries for which the results have been stated before there is a negative relation between pension fund investment and equity market volatility.

Chapter 18 / OECD countries: Panel Analysis

With the same as the above analysis, we examine the same question of whether pension fund investment influences market volatility for 7 OECD countries. The countries are U.K., The Netherlands, U.S.A., Japan, Switzerland, Sweden and Australia and the data refers to the 1991-2000 period.

The reliability of our variables as presented below is satisfactory so we could say that the results of our analysis will be valid.

Linear regression (robust errors) ukvol

Constant pension Euvol ukvol {1}

Dependent Variable : ukvol - Estimation by Least Squares

Usable observations	: 64	Degrees of Freedom	: 60
Total observations	: 69	Skipped / Missing	: 5
Centered R**2	: 0.415387	R Bar **2	: 0.386156
Uncentered R**2	: 0.917633	T x R**2	: 58.728
Mean of Dependent Variable	: 0.0461816588		
Std Error of Dependent Variable	: 0.0188498890		
Standard Error of Estimate	: 0.0147685479		
Sum of squared Residuals	: 0.0130866004		
Durbin-Watson Statistic	: 1.678204		
Q (6-0)	: 22.334245		
Significance Level Of Q	: 0.17220411		

Variable	Coefficient	Std Error	T-Stat	Significance
Constant	0.026058496	0.010785926	2.41597	0.01569327
Pension	-0.40510458	0.019819547	-2.04396	0.04095701
Euvol	0.628176659	0.119396797	5.26125	0.00000014
ukvol	0.148476236	0.123031336	1.20682	0.22750285

As we can see the results for the panel analysis point the same direction as the results for the UK (negative correlation of pension fund investment in equities with equity market volatility) and additionally are more significant.

It seems it would be safe to suggest, after our analysis and the E. Walker-F. Lefort study, that the evidence favours the hypothesis of lower security-price volatility after pension fund reform.

APPENDIX

Appendix / The Netherlands

As we have mentioned before the pension system of the Netherlands consists of three pillars: (i) a state-financed basic pension at minimum wage level; supplemented by (ii) a collective pension financed by employees and employers typically at a level of 70 percent of pre-pension gross earnings (compulsory pension funds); and on top of that (iii) an old-age provision financed by an individual person (free choice of saving, investment and life insurance products). The basic pension is financed on a pay-as-you-go basis through premium payments as well as through the general government budget, while the financing of both of the supplementary pension components is funded on a capital basis. The basic features of this three-pillar pension system were established immediately after World War II.² Soon after, large part of the labour force was participating in premium payment and the accumulation of pension savings began.

We will try to further explain the above three pillars system: basic collective, supplementary collective and supplementary individual. The third pillar by its nature can differ widely by individual; this pillar can be taken to include not only insurance-type products (life-time annual benefits after retirement) but also more broadly any other types of capital accumulation contributing to income after retirement (savings, investments including owner-occupied housing). Comparisons of its features and relative importance -both between pillars and internationally- are therefore difficult to make.

The sum of the first two pillars is the collective pension. In the Netherlands this typically totals 70 percent of final earnings before retirement, when retiring at the age of 65 after 40 years of employment. Precise international comparisons are difficult to come by, but nevertheless this seems to be a fairly usual profile. Within this collective pension total, the first pillar in the Netherlands provides a state pension at the level of the minimum wage. More specifically the three pillars are organised as follows.

The first pillar

The first pillar consists of the state social security pension scheme (so-called AOW). Participation is compulsory for all who reside or work in the Netherlands. Its purpose is to guarantee an income from the age of 65. The benefit is flat rate and is linked to the statutory net minimum wage. The accrual rate is 2 percent a year. A fully-fledged pension is built up between the age of 15 and 65. The contribution is currently 17.9 percent of income (with a general exemption for taxes and social security contributions for taxpayers under 65 in the first two tax brackets). Since 1998 the AOW premium has been maximised at 18.25 percent. As soon as AOW costs will be higher, the remainder will be financed through the central government budget. The benefit is independent of labour history, contributions paid, wealth and other old-age income. Since 1985, the first pillar benefits for couples have been individualised due to EC-legislation. The benefit for a person with a partner is 50 percent of net minimum wage if that person is over 65 years of age. If both persons are over 65 years, the benefit for a couple is 100 percent. The benefit for a single person over 65 years of age is 70 percent of net minimum wage. A benefit is seen as remuneration for labour in a former period and is taxed accordingly. The gross replacement rate of the

national old-age scheme amounts to 45 percent of average earnings. The state pension scheme disbursements currently amount to about 5 percent of GDP.

The first pillar scheme is financed on a pay-as-you-go basis. Additionally the government has set up a support fund with yearly contributions from the government budget. This AOW Fund, included accumulated interest, will be used to contribute to first pillar benefits from 2020 on (see section on ageing).

The second pillar

The second pillar concerns the labour-related pension schemes. They have an essential social function in the Netherlands because of the limited level of first pillar provisions. Pension schemes are administered outside the company, by industry-wide or company pension funds or by insurance companies (group life insurance). Membership by employees is compulsory whenever an employer offers a pension scheme. Employers within a branch of industry are obliged to take part in an industry-wide pension scheme, whenever participation in these schemes is made compulsory by the Minister of Social Affairs on request of social partners (representative organisations of employers and of employees) in that branch. More than 90 percent of the working population is currently covered by occupational pension schemes, of which 77 percent belong to mandatory industry-wide pension funds (civil servants included).

About 9 percent of the working population is not participating in a second pillar scheme. Of that, 2 percent is with an employer not offering such a scheme (e.g. very small companies or new companies in as yet unorganised sectors such as parts of IT) and 7 percent is not eligible (e.g. small and temporary part-time jobs). The government is currently preparing policy to further broaden participation in second pillar schemes.

These schemes offer many different provisions: old-age pension, widows' and widowers' pension, partners' pension (in case of enduring cohabitation), orphans' pension, invalidity pension, bachelors' pension (if the pensioner is single), temporary old-age pension (from the retiring age until the statutory age of 65), temporary survivors' pension (until the age of 65 of the survivor), lump sum. Of all employees covered by second pillar provisions, nearly all are insured against the consequences of old age and premature death. About 75 percent also have an insurance against loss of income due to invalidity. Many have the prospect of early retirement on a pay-as-you-go basis, the so-called VUT system.

Old age, survivors' and invalidity pensions are usually compulsory. However, recent measures to reduce first-pillar benefits for invalidity respectively survivors' pensions have created a need for more flexibility within the second pillar. The result is that pension funds gradually offer more optional provisions, not only for survivors' and invalidity pensions, but also for repairing old-age pension.

As for old-age pensions, 70 percent of employees have an accrual rate of 1.75 percent per year, which gives defined benefits at a level of 70 percent after 40 years of service, mostly related to some final pay system (average gross salary of some recent years, or no past service costs for career development after the age of 55). 12 percent have an accrual rate of less than 1.5 percent per year, mostly belonging to an average

salary system. Contribution-defined systems are rare in the Netherlands. Only about half a percent of employees have such a provision, often in addition to a defined benefit scheme. Pensioners usually receive an adjustment for the cost of living.

As for early retirement, the pay-as-you-go VUT systems were developed by social partners (employers and employees) in the beginning of the eighties to advance employment opportunities for the younger. A usual condition for early retirement was an uninterrupted employment of at least ten years before the moment of early retirement. Initially guaranteeing a replacement rate of at least 80 percent from the age of 60 on (incidentally even at an earlier age) and without any contribution of the employees, they proved to be very popular. Obviously they also became very expensive for the employer. In combination with an easily accessible state invalidity pension in the first pillar, the system of early retirement is an important reason for the low labour participation of elderly people in the Netherlands. Government therefore nowadays promotes a transformation into a capitalised flexible pension system. The friendly tax treatment of the pay-as-you-go early retirement systems (contributions exempt and benefits taxed, often at a lower rate) will be phased out in the longer term.

Tax legislation is offering more possibilities for building up pensions than generally used by pension funds. An accrual rate of 2 percent per working year on a final pay basis (2.25 percent if based on average salaries), with a maximum of 100 percent of the final salary, is legally accepted. The retirement age in the pension scheme should be between 60 and 70 for obtaining tax facilities. Retirement at a still earlier age is possible, but only with an adequate actuarial reduction of benefits.

In the board of pension funds, employers and employees are represented equally. The employer contracts group life insurances, administered by insurance companies. Pension funds themselves may reinsure (part of) their portfolio with insurers. This concerns about 45 percent of the schemes; with in total less than 10 percent of employees, so reinsurance appears to be especially interesting for smaller pension funds.

Medical checks for entrance are forbidden. The level of contributions is different for each scheme, depending on the ambition of the scheme, the composition of membership, the different risks that are covered, the adjustment of pensions, the returns on investments, the financial position of the fund. Usually both employer and employee pay part of the contribution for group provisions. In some schemes only the employer pays. Individual provisions usually will be fully paid by the employee.

The regulatory body for pension funds is the Ministry of Social Affairs and for life insurance companies the Ministry of Finance. The supervisory body for both pension funds and life insurance companies is the Insurance Supervisory Board. Schemes in the second pillar are fully funded under supervision of this Board. Investments must be made according to the so-called "prudent person" principle. There are no quantitative restrictions on the portfolio investments of pension funds, except the limitation to a maximum of 10 percent of assets invested in the sponsoring company. This restriction limits the influence of the employer in the board of company pension funds. There is no currency-matching requirement. Investments by insurance companies are governed by the rules of the Third Life Directive of the European Union.

The tax treatment of second pillar schemes is similar to the EET-system: contributions are Exempt, returns on investments are Exempt, and benefits are taxed. Pension funds are exempt from corporation tax. Insurance companies pay corporation tax on profits. Tax facilities as mentioned cover the provision of old age, survivors' and disability pensions.

Particularly relevant from a labour market perspective, finally, is how second pillar benefits are treated when workers are mobile between firms. Until the mid -1990s this was cumbersome, in many cases causing a significant disincentive to labour mobility. Since 1994, however, every employee has a legal right to take along the capital corresponding with his accrued rights to a new employer and pension fund. Transfer takes place according to calculating rules set by the government. The transferred value of pension rights, accrued under the old scheme until the moment of mobility, is converted into actuarially equivalent pension rights under the new scheme. In this sense all second pillar benefits are individually portable within the Netherlands, even the vast majority based on defined benefits. Portability of pensions between EU member states (other than in the case of temporary assignments abroad for the same employer) is generally difficult, not specifically so for workers from the Netherlands. The difficulty is due to very large differences in pension and taxation regimes between member states. These should be placed prominently on the European agenda.

The third pillar

As mentioned before, this pillar can be taken to include all parts of old-age income provisions. In the Netherlands, individual life insurance products up to a limit enjoy similarly favourable tax treatment as collective pension schemes in the second pillar. Beyond that, savings and investment and other vehicles are liable to normal income and wealth taxation.

Other interesting aspects

Transparency and accountability

Until a few years ago, pension funds were not even obliged to publish an annual report. Reporting requirements were introduced as of 1998, but the quality of pension fund reporting is still in the process of coming to a level customary for other financial institutions. Such transparency is important to enhance pressure on pension fund management and boards to deliver an adequate performance. Several aspects need to be improved. No information is available on administrative costs. Transparency requirements are less developed than those for life insurers are. There is still much to be improved in providing employees with comprehensive information about accrued rights and the costs at which benefits are being delivered.

As regards accountability, it is interesting to note that a lot of attention is being paid in public debate to corporate governance in the Netherlands, stimulated in part by a more active role of pension funds as shareholders. The corporate governance of pension funds themselves however remains underdeveloped. In addition to transparency, the accountability of pension boards to their members with respect to key topics such as investment returns, administrative costs and pensions modalities offered will certainly be on the policy agenda of years to come.

Opting out by employers

Also as of 1998, some limited room has been created for companies to opt out of their industry pension fund when the fund's investment performance is very significantly below usual standards. The criteria for opting out are severe and it remains to be seen to what extent opting out will be viable. Nevertheless, it is a positive effect that the investment performance of pension funds will now be measured and published on a comparable basis.

Financial supervision

Over the last few years several policy initiatives have been taken to fully align the quality of financial supervision of pension funds with that of financial institutions in the market sector (especially life insurance companies). In one respect the supervisory regime for pension funds in the Netherlands is quite amenable to efficient pension production: modern ALM techniques are permitted and encouraged within a "prudent person" approach eschewing artificial quantitative restrictions (currency, financial instrument) on asset allocation. Dutch pension funds are free to invest their assets where and how they best see fit within a framework of modern prudential supervision (geared toward output in terms of risk/return rather than input in terms of asset restrictions) – and indeed they do, as witnessed by their worldwide presence. The share of pension assets invested abroad has risen rapidly in recent years, from 25 percent in 1996 to 60 percent in 1999. This undoubtedly reflects in part the introduction of the euro.

Reform

The mix within this three-pillar system is such that the Netherlands currently boast what is perhaps the most funded collective pension system in the world. While the country may thus seem relatively well placed to cope with the prospective increasing of the pension burden, several aspects of the Netherlands pension system remain that could be reformed. We have to first study the financial challenges for the Netherlands pension system given the prospective population ageing, examine the room for individual choice and the efficiency of the schemes.

Ageing of population

We have to investigate the extent to which the ageing of the population is expected to lead to deficiencies in the financing of pension benefits. In order to do so we have to describe the level and composition of current benefits, and subsequently assess potential difficulties in continuing to finance this benefit system in the future.

Projections indicate that the Netherlands will be confronted with a substantial ageing of the population. In 2000, the number of persons aged above 65 relative to those aged 20 to 65 stands at about 22 percent. This is expected to roughly double to something in the order of 40 percent or over in 2050. Whether such a substantial ageing of the population will pose major financing difficulties depends on the level of benefits, their composition between funded and non-funded components and the degree to which each component's financing source is adequate in view of the prospective ageing.

Given myriad institutional differences it is difficult to make precise international comparisons of the level of benefits. Nevertheless, some indication can be gleaned from replacement ratios, defined as disposable income during retirement as a

percentage of disposable income pre-retirement. For most countries within the OECD area, this ratio typically is in the order of 70-80 percent. Recent computations tend to place the Netherlands at the high end of this range (e.g. OECD (1998, 1999)). The question we have to answer is whether these benefits can be financed when recourse to them rises with the increasing number of pensioners. The prospects in the case of the Netherlands are as follows:

First pillar

Until a few years ago, the first pillar (AOW) was financed exclusively on a pay-as-you-go basis. Premiums were paid by employees at a rate of about 17-18 percent of the first two brackets of income taxation (see next section for more detail). Without further policy action, this rate would be set to rise considerably with the upward trend of the number of benefit recipients relative to the active labour force. This would place upward pressure on the wedge between gross and net earnings, and thus erode incentives to work.

The government has taken two initiatives to help avoid this. First, as of 1998 it has embarked on a temporary, earmarked reduction of the public debt until 2020 that will subsequently be used up for financing the AOW peak of 2020-2050. This is the so-called AOW Fund, a “virtual” fund within the government budget and economically meaningful to the extent that it is reflected in declining public debt. In 2000 the fund’s size is a mere 1.8 percent of GDP, in years to come it will be fed with annual contributions in the order of 0.6 percent of GDP. This is projected to add up to a size sufficient to absorb the *temporary* hump of AOW costs during 2020-2050. Current estimates show that the accrual of the AOW Fund during 1998-2002 indeed goes hand in hand with (much more substantial) debt reduction; the public debt to GDP ratio is projected to fall from 70 percent in 1997 to 50 percent in 2002.

Second, as of 1998 the AOW premium rate is maximised (at a level of 18.25 percent of the first two income tax brackets). AOW costs rising above this level, corresponding with about 5 percent of GDP, will be financed by contributions from the central government budget. Current projections indicate that such contributions will have to begin from about 2010, climbing to a permanent level equal to 3 percent of GDP as of about 2030. This may be financed by permanently reducing the public debt to GDP ratio before then, making permanent room in the budget through lower interest payments. Recent estimates show that a permanent raising of the annual budget balance by about 0.6 percent of GDP as of today and accordingly a reduction of the debt to GDP ratio to zero within 25 years would suffice to absorb both the permanent increase of the AOW burden and the similar rise of public health care expenditure associated too with the ageing of the population. Alternatively, the structurally higher AOW contributions may have to be financed from higher taxation. The effect of the latter would be that AOW costs will be financed in part by AOW recipients themselves -thereby reducing net benefits in the first pillar. With this premium cap therefore, there will be less upward pressure on labour tax rates and less adverse incentive and employment effects emanating from rising costs in the first pillar – the more so to the degree that the public debt to GDP ratio can be reduced by more than what is accounted for by the AOW Fund.

As background at this point it is also relevant to note that, more generally, taxes and social premiums have declined significantly in recent years and are set to decline

further with the tax reform and reduction package of 2001. Relative to a high in the early 1990s, their total has come down by several percent of GDP and is projected to reach a level below 40 percent of GDP in 2001. Having started from a position with one of the highest tax burdens in the world, the Netherlands will begin facing the ageing challenge with tax and premium levels below those of most other European countries, though still substantially higher than those of many competitors in the rest of the world. This is relevant with an eye to maintaining employment and GDP growth as a basis for financing the costs of an ageing population.

Second pillar

The second pillar of old-age income provisions is already fully pre-funded through pension funds, taking into account to an important degree the prospective ageing of the population. Given furthermore the relative importance of this pillar, it is not surprising that Dutch pension funds are among the largest in the world.

Taken together, the first and second pillars in the Netherlands account for a collective old-age income provision typically totalling a level of about 70 percent of gross earnings before retirement (higher when measured net of taxes). This collective provision covers a very high share of the work force, currently even more than 90 percent.

Third pillar

Persons not fully covered by the first two pillars may take life insurance provisions for their old-age income. Beyond that, such provisions may also serve to supplement the first two pillars at an individual level. As indicated in the introductory section, it is difficult to compare internationally the adequacy of individual old-age income provisions. As far as life insurance provisions are concerned, available data suggest that here again the Netherlands stand out with a relatively high level of accumulated savings (see above). This may reflect in part the advantageous tax treatment of life insurance for old-age income, as further explained in the next section.

As an overall conclusion, the Netherlands old-age system is currently fully and therefore adequately funded as regards the (relatively large) second and third pillars. The (relatively small) first pillar is unfunded, and (taking into account the temporary AOW budget fund) its annual financing burden is projected to rise from 2010, to a level permanently higher by 3 percent of GDP as of 2030. Coping with this financing requirement already in the years to come, preferably by achieving public debt reduction thus making budgetary room through lower interest payments, is the remaining challenge in financing retirement income as the population ages. Current estimates show that a permanent raising of the annual budget balance by about 0.3 percent of GDP would suffice.

Finally, it must be noted that all of these quantitative indications can be quite sensitive with respect to underlying assumptions. For instance, Ewijk *et al.* (2000) computed that a one year longer life expectancy would double the required budgetary adjustment.

The room for individual choice

Within the three-pillar system, equilibrium is sought between solidarity and individual choice. The first pillar offers every citizen a basic old-age income provision at

minimum wage (thus income-independent). This is solidarity at a national level. The pay-as-you-go premium is compulsory and income-dependent (within the first two brackets of income taxation). The second pillar offers employees a supplement up to typically 70 percent of some definition of pre-pension gross income, collectively within the industry sector or the company. This is solidarity at the industry or company level. The premium to fund the second pillar is compulsory and paid by employers and employees (income-dependent). The third pillar is voluntary and individual. In itself this three-pillar system offers a suitable set-up for balancing solidarity and individuality. In part this is a question of economic efficiency. It has been shown that a collective pension for the commonly preferred pension component is economically efficient (more efficient risk reduction than individual saving). Finding the right equilibrium is also a political matter; it concerns the demarcation between the second and third pillar, and the scope for differentiation within the second pillar. The latter offers room for choice insofar as permitted by the collective (industry or company) wage agreement.

During the 1990s there has been a growing interest in making room for individual choice. Factors behind this trend have been growing differentiation in household and labour participation patterns (more singles and working spouses) and growing labour mobility (changing employer, exit and re-entry according to family circumstances, self-employment).

There are in principle three ways of offering more room for individual choice. The first way is quite drastic: allow people to opt out of collective arrangements and to invest their accrued capital individually. This road has been followed in the United Kingdom, leading to the pension-misselling difficulties. Many persons have been ill-advised and have taken risks with their basic pension that have turned sour. This road has not been considered in the Netherlands. Second, the room for individual choice can be enlarged by reducing the size of the second pillar in favour of the third pillar, maintaining the total of favourable tax treatment intact. Third, more room for choice can be offered to some extent within the second pillar itself. The latter two can be more gradual ways of accommodating shifting societal preferences.

There has, however, been no policy of systematically reducing the size of the second pillar. Employers' and employees' organisations have not in the context of their collective wage agreements adopted such an approach. This is remarkable, given that surveys time and again indicate that there is demand for more individual choice. Individual modules have been introduced *within* the second pillar, however. This can be explained by tax considerations and by incentives for parties involved (employers' and employees' organisations, pension funds).

In the current tax system, a reduction of the second pillar does not automatically lead to a larger size of tax-favoured room within the third pillar. This is an important factor. There has been discussion during recent years about introducing tax neutrality between the second and third pillars. This has led to a move in the direction of, but not quite reaching such tax neutrality in the new tax regime. As of 2001, all accrued non-tax-exempt savings are taxed at a low rate of 1.2 percent (applying a uniform tax rate of 30 percent to an assumed return of 4 percent, independent of actual investment returns). This will mitigate the relevance of the tax exemption for old-age provisions.

Incentives of employees' and employers' organisations may be relevant too. These are the "social partners" deciding on collective wage agreements of which second-pillar schemes are a part, and they also form the board of pension funds active within this pillar. I am not aware of any systematic empirical research into the degree to which premium payers' preferences are reflected in their decisions. The scope for opting out of collective industry schemes is very limited for participating employers and non-existent for employees. Can it be expected that these organisations actively reduce the scope of "their" second pillar, even if warranted by participants' preferences?

It is indicative in this respect that more room for choice *has* been created *within* second-pillar schemes. This concerns for instance pre-pension options. Collective pension funds have also started to offer individual third-pillar products; the demarcation between collective, tax-favoured second-pillar schemes and the free-market segment of the third pillar is blurring. This has raised important but as yet unresolved issues of fair competition (taxation, use of individual data) and of privacy in using individual data from collective schemes for making individual offers.

Finally, of specific labour market relevance is the question of whether the pension system is amenable to individual choice regarding pension age. As noted above, the system hitherto has in effect contributed to early retirement and to low labour participation of the aged. With an eye both to financing the costs of an ageing population and to utilising to the full the available labour capacity, it will be increasingly important that people remain economically active and productive as long as they wish and reasonably can. Here again, the system's incentives will need to be adjusted and more flexibility will be required. To this end it may be of interest to consider moving from a final-pay pension anchor toward a pension level defined in such a way that demotion and/or part-time work at career-end is not penalised. Some pension schemes, for instance, base the pension level on income say at the age of 55; other formulae are being discussed by various pension schemes.

The efficiency of old-age income provision

As regards efficiency it is again the second pillar that is of greatest interest. The first pillar is organised simply as a general pay-as-you-go scheme through the central government budget, and there is no debate about the costs of running it. The third pillar is open to full competitive pressures within the financial market sector.

For the greater part the second pillar is run by pension funds. These are the responsibility of social partners (employers and employees or their organisations); the government is not directly involved other than by defining the statutory context. Employers are obliged by law and general policy to participate in industry-wide funds whenever a branch of industry is defined. Employees are obliged to participate in the employer's scheme. Three elements are, given this situation, of specific relevance for the efficiency of pension funds: transparency and accountability, the scope for opting out by employers, and financial supervision. As an indication of the importance of second pillar efficiency, it is illustrative to mention some recent computations by Dutch scientists: They found that a one percent lower pension fund return (keeping the general interest rate unchanged) would necessitate drastically higher pension contribution rates and thus, through their tax deductibility, an additional raising of the annual government budget balance substantially larger than that already needed to cope with financing higher AOW and health care costs.

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