Review of the Irish Annuities Market

Report for the Partnership Pensions Review Group

Prepared by

Indecon

lifestrategies

ACTUARIAL & STRATEGIC CONSULTING

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Introduction

This Report was prepared by Indecon Economic Consultants and Life Strategies Ltd for the Partnership Pensions Review Group chaired by the Department of the Taoiseach. The purpose of the Report is to evaluate the efficiency and effectiveness of the Irish annuity market. The report, in line with the terms of reference, provides quantitative and qualitative information on the market in terms of: the size and scope of the market; the availability of products to meet consumer needs; an assessment of the efficiency of the market; pricing; the likely future demand and potential capacity to meet that demand; and relevant comparisons with the UK and other international annuity markets.

The background to the report is the ongoing debate on annuities policy and the view, which has been expressed in some quarters, that annuities represent poor value for money for consumers. This is in the context of trends which have significantly increased the cost of annuities. Given growth in the number of defined contribution pension scheme members, this is an increasingly important issue for policy-makers.

What is an Annuity?

An annuity is a contract between a customer and an insurance company whereby, in exchange for a single payment, the insurance company promises to pay the annuitant a guaranteed regular income (typically for the remainder or his or her life). In setting the purchase price to be paid, the insurance company must take a view on how long it expects the annuitant to live and on how much investment income it expects to earn on the funds it has invested over the lifetime of the annuity.

Consumers of Annuities (Chapter 2)

The large majority of consumers of annuities in Ireland are private sector defined contribution (DC) occupational scheme members, who are obliged to annuitise at retirement, and other DC pensioners (PRSAs, personal pension holders) who may choose to buy annuities. Some 172,000 people (9% of the labour force) are members of private sector defined contribution schemes and are currently obliged to buy an annuity at retirement. In addition to this number, the holders of other defined contribution pension plans (PRSAs, personal pensions) may choose to annuitise and account for a further 18% of the labour force (over 350,000 people).

Defined benefit (DB) occupational schemes (in the private and public sector) provide their pensioners with annuity-like incomes in retirement, but are not obliged to buy annuities in order to provide these incomes. Relatively few DB schemes purchase annuities to secure retired members benefits. This may partly be attributed to the fact that some schemes provide pensions that are linked to CPI and there is a restricted availability of annuities of this type, but may be related to views on the attractiveness of the current annuity products. The one situation where DB pension schemes do invariably buy annuities is in the event of a scheme wind-up. There were 239,000 people with a DB private sector occupational pension at the end of 2005. We estimate that these "bulk buy-outs" accounted for approximately 17% of total annuity purchases.

Consumer Needs (Chapter 2)

In any discussion of the Irish annuity market, it needs to be borne in mind that annuities are only one of several options available to pensioners at retirement. The range of available retirement options, of which annuities are a relatively small component, has had and will have a very important impact on the size and development of the annuity market in Ireland. The annuity market is, therefore, a sub-market of the wider market for retirement income products. The options available at retirement include cash lump sums, annuities and a form of post-retirement fund known as an Approved Retirement Fund (ARF).

ARFs are the most widely used alternative to annuities and it is noteworthy that those consumers with a choice invariably choose ARFs. ARFs bring flexibility, the potential for higher returns, at the expense of higher risk, and allow remaining assets to be transferred to one's estate on death. Annuities on the other hand, provide security and guarantees but are inflexible and do not allow the transfer of remaining capital on death (although they can be structured to continue paying a pension to surviving dependants). These products are qualitatively and quantitatively different and in some cases can also be seen as complimentary rather than substitute products. However, members of private sector DC schemes are not given the opportunity to purchase an ARF.

The relatively small market for annuities in Ireland could be due to several factors:

- Poor perceptions (principally regarding pricing);
- Marketing and distribution;
- Requirement to sacrifice capital; and
- Products – portfolio allocation and flexibility.

Consumer needs are explored in more detail in Chapter 2.

Future Demand for Annuities (Chapter 2)

The future development of the market for annuities depends crucially on two factors: demographics and public policy. Projections of the total amount of private-sector supplementary pensions payable over the period 2006-2056 (including both DC and DB pensioners and those taking ARFs and those taking annuities) indicate that the total number of new retirees each year is set to increase gradually from the current level of almost 10,000 people per year, peaking at approximately 25,000 per year in the 2040s before falling back somewhat in the 2050s. In terms of the funds available to these retirees, the projections show an increase from roughly €1 billion at the moment, to a peak of approximately €11 billion (in today's money) in the mid-2040s.

IIF statistics indicate that approximately 3,000 annuity contracts have been taken out each year in recent years. This implies that, currently, only some 30% of retirees take out an annuity. Assuming that this proportion remains constant in the future (and it may well be expected to increase given the trend towards DC provision in recent years), this would imply a peak demand for annuities of approximately €3.5 billion per annum in the 2040s. This would translate into a real growth rate of roughly 7% per annum in annuity sales over the next 40 years.

Annuity Providers (Chapter 3)

Potential annuity providers in the Irish market are:

- Irish life insurance companies;
- Foreign life companies with branch establishments in Ireland;
- Overseas provider without an Irish branch, under the "freedom to provide services" provisions of the EU single market for insurance.

Under current legislation, annuities may only be provided by life assurance companies. According to the Financial Regulator, there are currently 14 life assurance companies with their head offices in Ireland who write life assurance business in Ireland. Of these, 12 are authorised to write the class of business ("Class I") which covers annuities. There are also 8 foreign life companies with branch establishments in Ireland, all of which possess the necessary Class I authorisation. All of these companies could write annuity business in the Irish market if they desired, without the need for any additional regulatory approval. In addition, other Irish-headquartered companies who are currently focused on other markets, could potentially enter the Irish market also. There is also the possibility of overseas providers writing business in Ireland, although there are some question marks over the tax treatment for Irish consumers of annuities purchased from overseas players.

However, industry statistics for annuity business together with the results of the Indecon/Life Strategies survey of annuity providers indicate that only seven of these companies are actively writing annuity business.

Types of Annuities(Chapter 3)

In the Irish market, virtually all annuities are "ordinary" annuities, as defined in the Table below. Analysis of the survey responses we received from Irish life assurance companies indicates that over 90% of annuities sold are ordinary annuities with either level payments or payments that escalate at a fixed rate. Of note is the lack of product diversity or flexibility, with basic annuities accounting for the vast majority of sales.

Innovation is a form of non-price competition and a natural measure of market dynamic efficiency. Attempts at innovation by providers have been few and where they have occurred, have been poorly received. Strong legislative and/or Revenue requirements may indirectly contribute to this.

Summary of International Annuity and Retirement Income Product Types

Category	Description
Ordinary annuities	Income is defined as a base level (guaranteed for life) with an escalation rate (typically zero) fixed in advance. The provider bears the mortality and investment risks.
Impaired life and enhanced annuities	Same as an ordinary annuity except that rates are enhanced because of impairment or because of special characteristics of the individual
With-profit annuities	Income is defined as a base level (guaranteed for life), with increases in the form of bonus additions at the discretion of the insurer.
Unit-linked (or investment-linked) annuities	A guaranteed income stream is defined as a number of units per annum, rather than in monetary terms, so that the provider retains the mortality risk, but passes on the investment risk.
Flexible annuities	A range of newer product types, seeking to give some control to the annuitant concerning how they draw income or how they invest the money over time.
Income withdrawal	Income is drawn from an invested fund at a controlled rate, aiming to deliver lifelong income, but the fund is not annuitised (in the sense that funds are not forfeit on death).

Source: 'Paying Out Pensions: A Review of International Annuity Markets', Cardinale et al (2002)

Distribution (Chapter 3)

The vast majority of annuity sales are made through insurance intermediaries. Here, in exchange for a commission, an intermediary – broker - will use market knowledge to secure an annuity rate for their client. Brokers will have access to real time information (over the internet or phone) that enables them to undertake a market search. The intermediary will also help the consumer to choose annuity features, such as an increasing income or a spouse's pension, that meet their personal needs. Additionally the intermediary will assist with any technical details. Brokers have a role in the market in informing customer decisions about choice of provider.

Capacity (Chapter 3)

There is a concern in some quarters that there is insufficient capacity in the annuity market to cope with once-off large scale annuity purchases by pension schemes.

In economic terms, the supply side of the annuity market can be characterised as the insurance industry taking an input (fixed-interest securities), adding value by dealing with longevity risk, and creating annuities as an output. This means that the supply of annuities depends upon:

- The availability of suitable assets (fixed-interest securities and other similar assets);
- The availability of capital to back the business; and,
- The appetite of the insurance industry for longevity risk.

Since the adoption of the Euro there has been access to the very substantial market in Euro denominated bonds. There is a large market in bonds issued by each of the Eurozone governments. There is also a substantial market in bonds denominated in Euro but issued by countries outside the Eurozone. Therefore there is no shortage of suitable risk free assets to match fixed annuity payments. Moreover, we see no circumstances where the demand for annuities would increase to an extent where capacity problems would be experienced for this reason. In addition we do not believe that available capital is likely to place any significant limit on the ability of the market to provide additional capacity.

However, there are only very small amounts of inflation-linked bonds and demand for these is extremely high (these are also attractive investments for pension schemes). There are bonds which are linked to Eurozone inflation. However we have seen that Irish inflation can depart from Eurozone inflation and as such the Eurozone inflation linked bonds do not provide an ideal asset for the life insurer. This lack of a suitable matching asset may limit the ability of life insurers to offer inflation linked bonds.

In summary, asset availability is not likely in general to constrain the market from providing increased capacity for fixed annuities but could prevent increased capacity for inflation linked annuities.

In addition we believe that the availability of capital and reinsurance is likely to allow the market to provide additional capacity as required.

Pricing of Annuities (Chapter 4)

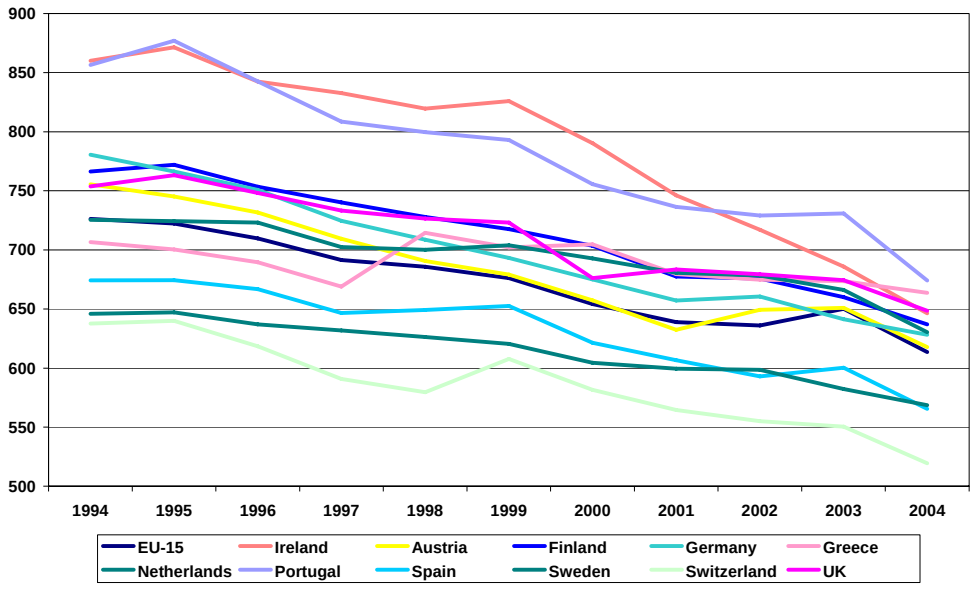
An annuity is a long-term contract to make payments for an uncertain future period. There are five key factors annuity providers take into account when setting prices:

- The likely life expectancy of the annuitant;
- The rate of return on investments;
- Commission and expenses;

- Capital requirements; and
- The desired additional risk/profit margin.

Life Expectancy is the most crucial factor in setting prices. Both current mortality experience and future improvements in mortality were judged to be very important factors by annuity providers. However, there is a considerable range of views on how to interpret past trends and what assumptions should be made about future trends in mortality. Adverse selection is also an issue and leads to higher annuity prices. Improvements in mortality have been one of the main drivers in explaining the increase in the price of annuities.

Age-Standardised Mortality Rates for Selected European Countries, 1994-2004



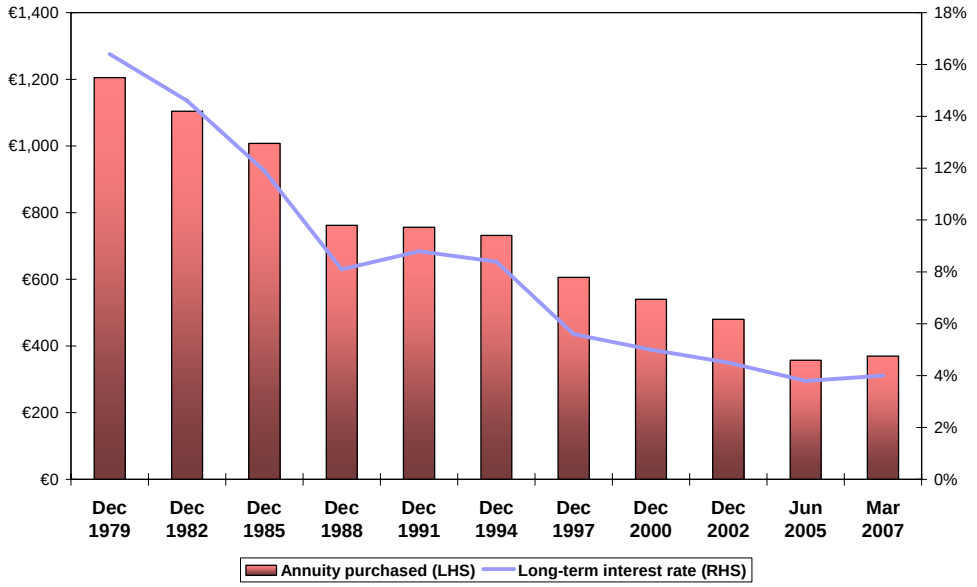
Source: Eurostat.

Investment returns are also a crucial factor influencing prices. 75% of the assets being used to back annuity liabilities are invested in Government bonds and falls in these yields have led to corresponding increases in the cost of annuities. Investment in other classes of assets, whilst possible, is not actively pursued as it introduces a mismatch between the insurer's assets and liabilities. This additional mismatching risk could be accommodated with greater capital requirements or it could be hedged, but in both cases this would lead to increased costs thus potentially counterbalancing any increased returns which alternative assets might provide.

Mortality assumptions and investment returns are the most important factors in determining the price of an annuity. It is worth noting that, unlike the allowances for commissions, expenses, cost of capital and desired profit margin, they are driven by external factors outside the control of the annuity provider.

Chapter 4 covers the factors that affect annuity pricing.

Annuity Costs and Long-term Interest Rates, 1979-2007



Source: Annuity rates 1979-2005 from IAPF; 2007 from www.pensionchoice.ie. "Annuity purchased" denotes the initial annual pension which a lump sum of €10,000 would have purchased (assuming a 65 year old male, pension increases of 3% p.a., guaranteed for 5 years, 50% spouse's pension on death).

Results of Pricing Model (Chapter 5)

In order to allow us to investigate the pricing of annuities in the Irish market, we constructed a model which allows us to calculate expected annuity prices. The model, which is very flexible, allows us to vary all of the inputs to the calculation as well as the assumptions for the factors described above.

We compared the calculated annuity prices with the actual prices being quoted by Irish annuity providers (as supplied to us by survey respondents) in order to investigate to what extent the actual market prices differed from our model prices (which were calculated based on our assessment of what we considered to be a reasonable set of pricing assumptions). The best available market prices were between 0.3% and 4.5% higher than our calculated prices. The market median prices were between 3.9% and 7.5% higher than our calculated prices.

In summary, therefore, a comparison of market prices with the prices calculated by our model indicates that, on our central set of pricing assumptions, the market prices are somewhat higher than our model prices. However, if we change our pricing assumptions to take a more conservative view of future mortality improvements, we find that the market prices and the model prices agree quite closely.

In terms of the price of annuities relative to a defined benefit scheme's assessment of its pensioner liabilities, we find that annuity prices could be expected to be approximately 18% higher than a pension scheme's assessment of its corresponding liability. The cost of capital accounts for the biggest difference, accounting for 6%, mortality differentials accounting for some 5%, a planned profit margin of over 3% and commission and expenses accounting for approximately 3%.[1] Our findings in this area correspond quite closely with the views of the IAPF (who suggest a 15% differential for these factors) as well as the Society of Actuaries in Ireland.

An analysis based on a concept called the money's worth (also sometimes referred to as the EPDV, or expected present discounted value) represents the value of the expected annuity payments that would be received if the annuity were purchased with €1. We find using this tool that some 12% to 17% of the cost of an annuity is being absorbed in costs/ loadings/expected profits. This finding is in line with a recent similar investigation into pricing in the UK annuity market: Martin and FitzGerald (2006) found that typical costs/loadings in the UK account for some 15% of the total cost.

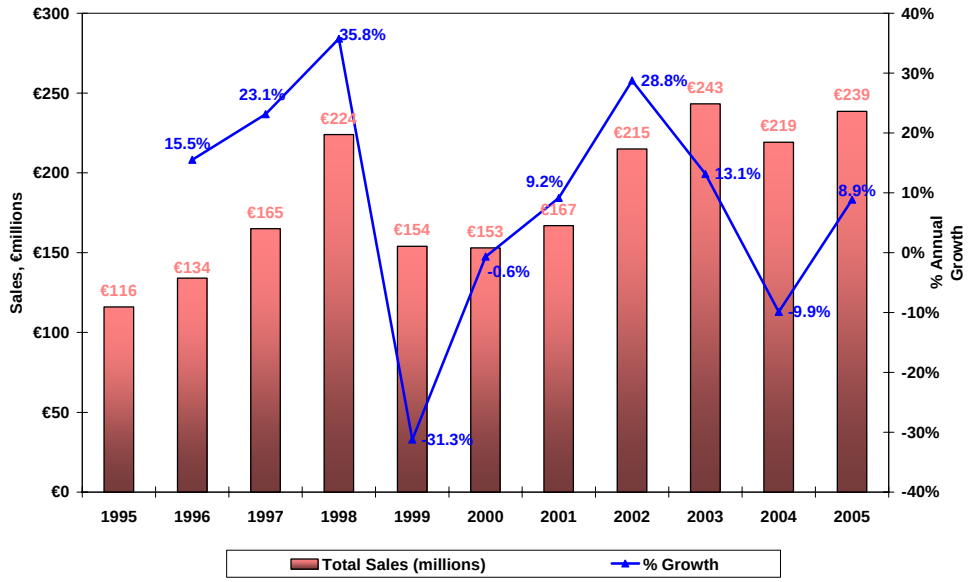
Finally, we also investigated the Internal Rate of Return (IRR) and, by extension, the Reduction In Yield (RIY) on annuities in the Irish market. We found that the IRR varied from 2.76% p.a. to 3.23% p.a. depending on the annuity in question. Given that short-term interest rates at the date in question were just under 4% and long-term rates were approximately 4.2%, these IRRs translate into RIYs of approximately 0.9% to 1.25% p.a. depending on the particular annuity in question. We note that these RIYs – which are a measure of the costs associated with the purchase of an annuity – compare favourably with typical RIYs on ARFs (which are typically in excess of 1.5% p.a.).

The Irish Annuity Market

The market for annuities is small, with sales of €239 million in 2005 accounting for less than 3% of life assurance companies' total premium income in that year. Although the annuities market has been growing, growth has been low compared to the growth in the ARFs market and the wider market for savings and investment products more generally.

[1] We are aware that there are different views in respect of estimates of cost of capital. This estimate of 6% is based on a particular set of assumptions which can be challenged.

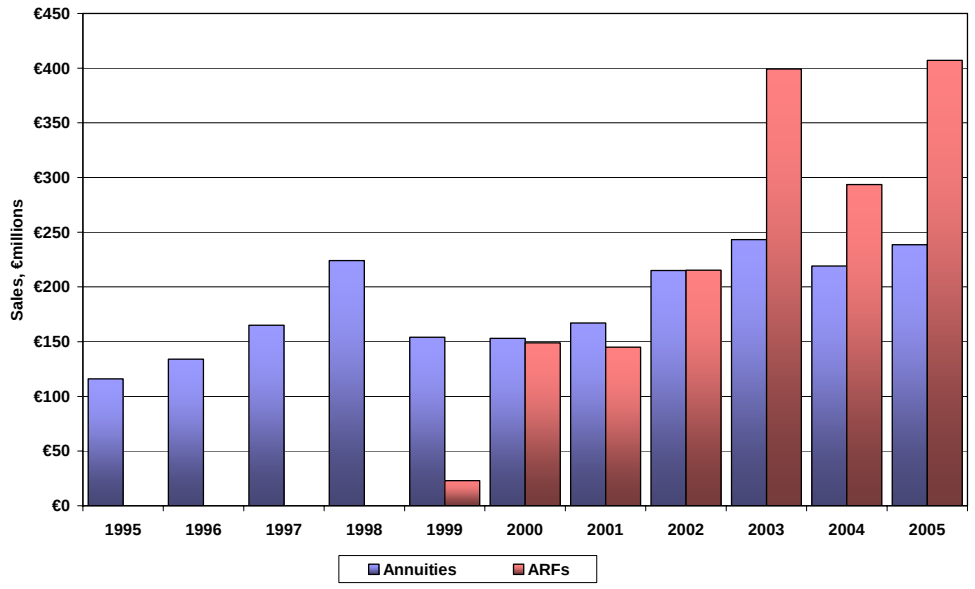
Market Size and Growth of the Annuity Market in Ireland 1995 -2005, €millions



Source: Indecon Analysis of data provided by Life Strategies

The market for annuities was severely impacted by the introduction of ARFs in 1999 as can be seen from the following graph. The upward trend in annuity sales was clearly arrested by the introduction of ARFs and only now, some 6 years later, have annuity sales recovered to pre-ARF levels.

Sales of Retirement Income Products by Insurance Companies 1995-2005, €millions



Source: Indecon Analysis of data provided by Life Strategies

There are currently eight life assurers present in the annuities market (although some of these only offer annuities to existing customers and do not compete for external business). The largest firm has a market share of over a third while the smallest provider conducts less than 1% of business.

Although market shares are volatile, market concentration is persistently high, the incidence of new entrants is low and larger firms experience stronger growth than smaller ones. However, there are no substantial barriers to entry or expansion with the possible exception of the uncertainty in some quarters regarding the tax treatment of annuities purchased from overseas suppliers.

Price Dispersion

The price level is not the only relevant feature of pricing in the market. Annuities are a standardised, homogeneous product and we would therefore expect low price dispersion since competition ensures price convergence. However, price dispersion is relatively high compared to that found in markets for similarly homogenous financial products. This is a sign that the market is less competitive than it could be and that there may also be a lack of consumer information.

Market Power

Economic analysis of competition in the annuities market requires an analysis of existing competition, potential competition and the ability of the buyer side of the market to exert competitive influence.

Our analysis of the annuities market in Ireland shows that market shares are high but are volatile. The market concentration is persistently high, the incidence of new entrants is low and larger firms experience stronger growth than smaller ones. However, there are no substantial barriers to entry or expansion with the possible exception of the uncertainty in some quarters regarding the tax treatment of annuities purchased from overseas suppliers.

Our review of the market, including the analysis of pricing, suggests that the market could benefit from more competition and that there is a need to improve consumer information. However, the market is not as malfunctioning as suggested in some quarters and most of the recent price trends can be explained.

Policy Options

Our policy options reflect the key findings we have highlighted. These consist of:

- The obligation on some retirees but not others to take out annuities;

- The poor perception of annuities as "bad value for money";
- The small size of the market;
- The small number of competitors and high concentration of the market;
- The limited range of products and innovation offered to consumers;
- The limited capacity of the market to cater for CPI-linked annuities due to the low supply of suitable matching assets (i.e. index linked bonds);
- Relatively high price dispersion.

These key findings underpin consideration of policy options which we discuss in detail in chapter 8. The suggested policy initiatives are designed to enhance competition in the market and improve choice for consumers and increase economic welfare. A summary is set out in the table below.

Consideration of Policy Options

1. Consideration should be given to some easing of the rules regarding the obligation for an employee member of a DC occupational pension scheme to use his/her accumulated fund to provide for post-retirement income only by purchasing an annuity, with a view to ensuring consistency of treatment with other categories of DC pensioners.
2. We believe there is a need for enhanced information to be supplied to consumers as part of an overall set of measures to improve market transparency. We believe that this could include the preparation of an information booklet on the retirement options available.
3. We believe that Life Assurers should be required to set out more formal pre-sale information on their annuity products similar to what they are obliged to provide for most other products, including information on charges and the assumptions (e.g. mortality assumptions) underpinning the prices offered.
4. Greater transparency is required on the comparative prices of annuities and consideration could be given to publishing a price survey on a regular basis (similar to what is currently done for other products such as motor insurance).
5. Clarification is required in the application of the taxation legislation to ensure that the tax treatment of the purchase of an annuity from an overseas provider is subject to the same tax treatment as one purchased from a domestic provider.
6. Consideration could be given to examining some of the current legislative provisions and/or Revenue rules governing the types of annuities that may be provided. For example, there may be merit in allowing "capital protection" annuities (which provide a capital payment on death) and the emerging new "hybrid" products which combine features of annuities and ARFs.
7. Consideration should be given to the conditions under which government bonds linked to CPI to improve the matching between assets and liabilities for CPI-linked annuities could be issued. We accept that other factors need to be taken into account and that there is a balance between a number of issues.
8. There is also the potential question of the issuance of Longevity Bonds. This would facilitate Life Assurers to address some of the uncertainties regarding longevity risk. We are less convinced of the need for this but we believe that it could be considered by the NTMA.

Source: Indecon and Life Strategies

1 Introduction

This Report was prepared by Indecon Economic Consultants and Life Strategies Ltd for the Partnership Pensions Review Group chaired by the Department of the Taoiseach. The purpose of the Report is to evaluate the efficiency and effectiveness of the current state of the Irish annuity market.

1.1 Background and Terms of Reference

The report, in line with the terms of reference, provides information on:

- How annuity prices are set;
- The factors determining annuity prices in Ireland (e.g. investments, risk preference, profit, regulation, mortality assumptions, market competition and other drivers);
- The size and scope of the annuity market in Ireland, including market competitors, products and pricing;
- An assessment of how efficient is the annuity market and what are the key influences in this regard:
    - is there a market failure?;
    - are there barriers to entry by firms from outside or within Ireland?;
    - are there monopolies or quasi-monopolies in the market or particular segments?;
    - are the distribution channels for annuity products operating efficiently?
- A review of the capacity of the annuity market, e.g. to absorb the buyout of a large portfolio of pensions, the likely competitive impact of buyouts, and the potential impact on prices (higher or lower?)
- A comparison of the annuity market in Ireland and in the U.K and in other relevant markets
- Examination of the likely future of the annuity market in Ireland; and
- An assessment of the availability of annuity products to match consumer needs.

1.2 Background on Annuities in the Context of the Irish Pension System

Views have been expressed in certain quarters that annuities are "bad value for money" and that the requirement to purchase them for certain groups is unfair. Strong views to the contrary have also been expressed.

There is no doubt that the increase in the cost of annuities in recent years has greatly contributed to putting annuities in the spotlight. The report of the Pensions Board on the National Pension Review summarised the position as follows:

> *"The increase in the cost of annuities has had an immediate effect on individuals who are not members of defined benefit schemes on reaching retirement. In many cases, the amount of their pension has been less than expected, sometimes considerably so. The annuity cost also has an indirect effect on defined benefit schemes. The funding standard for those schemes is based on the market cost of buying annuities for retired members: as this cost has increased, so have the funding standard liabilities, resulting in many cases in increased contributions, and in some cases to problems in meeting the higher contribution rates. "*

These views provide the key context for this review of the annuity market.

1.3 Methodology of Study

Our methodology for this study has included the following;

- Collecting available data;
- Reviewing relevant reports and presentations;
- Conducting an Industry Survey;
- Reviewing submissions from interested bodies;
- Consulting with various interested parties;
- Constructing a money's worth analysis (MWA); and
- Analysing the market structure.

We surveyed 13 Irish life assurance companies and received responses from 12 providers. A copy of the information request is attached.

Questions covered:

- Factual items (sales, products, prices, reserves, assets etc.);
- Opinions of market (barriers, efficiency, competition etc.); and
- Other specific issues (bulk buy-outs, capacity etc.).

Submissions were sought from various interested bodies:

- Social partners;
- Industry bodies (e.g. IAPF, IIF, IBA); and
- Others (e.g. Society of Actuaries).

A number of submissions were received and these are reflected in this analysis and judgements reached in this report.

We have consulted with a number of stakeholders, including:

- Social Partners (IBEC and ICTU);
- Mr Brendan Kennedy, CEO of Pensions Board;
- Mr Donal Casey, CEO of Irish Life Corporate, the largest annuity provider;
- The Irish Association of Pension Funds ("IAPF");
- The Steering Committee for the study led by the Department of An Taoiseach.

1.4 Structure of the Report

To evaluate the efficiency and effectiveness of the Irish annuity market, the report is structured as follows:

- Section 2 reviews the demand side of the market, including types of buyers, the drivers of demand and future demand growth;
- Section 3 reviews the supply side of the market, including providers of annuities, how annuities are produced, regulation, and capacity in the market;
- Section 4 reviews the *pricing* of annuities, including how prices are set, the factors determining prices and the weighting of different factors using a money's worth model;
- Section 5 sets out our pricing model and comparison with Irish annuity prices;

- Section 6 considers the *market structure*, including the market size and growth, the level of concentration, barriers to entry, barriers to expansion, vertical integration and countervailing buyer power;
- Section 7 examines market *conduct and performance*, regarding how firms relate to each other in terms of price, innovation and advertising;
- In Section 8 we present our key conclusions and considerations on policy issues

An international comparison with the UK and other relevant countries is including in the annex and findings and conclusions from this are incorporated throughout the report.

1.5 Acknowledgements

Indecon and Life Strategies would like to thank the main government departments who assisted with this review, including officers in the Department of An Taoiseach, the Department of Finance and the Department of Social and Family Affairs. We would also like to thank the Social Partners, including ICTU and IBEC, as well as the Pensions Board, for valuable inputs to our analysis. Finally, we would like to acknowledge inputs from representative organisations and individual life companies. The usual disclaimer applies and the views and analysis in this report are the sole responsibility of Indecon and Life Strategies.

2 Demand for Annuities

2.1 Introduction

This Section of the Report examines the demand side of the Irish market for annuities. This sets out what annuities are and how they work. The analysis, inter alia, then proceeds to:

- Place annuity market in the context of the wider market for retirement income products;
- Identify the two main potential consumers of annuities – defined contribution (DC) occupational scheme members and private sector defined benefit occupational scheme members;
- Identify the drivers of demand for retirement income products, from the viewpoint of the Government and the needs of consumers; and
- Present our outlook for the future trends in the demand for annuities.

2.2 What Are Annuities?

The Irish Association of Pension Funds defines an annuity as:

> *"A series of payments made at stated intervals until a particular event - usually the death of the person receiving the annuity - occurs. It is normally secured by the payment of a single premium to an insurance company. It may remain level during payment, or increase to compensate in whole or in part for increases in the cost of living. It can be designed to be paid only to the individual annuitant for life, or may be paid on to a surviving dependant on the death of the annuitant."*

Irish Life defines it as follows:

> *"Annuity: What you buy with your pension fund when you retire to give you an income for the rest of your life."*

The simplest type of annuity is the "immediate annuity for life" where, as the name suggests, the income payments from the annuity commence immediately and are payable for as long as the individual lives. The benefit of an annuity of this type is that it provides the individual with a mechanism for insuring himself against the risk of running out of money in old age by living longer than expected.

2.3 How Do Annuities Work?

An annuity is a contract between a customer and an insurance company whereby, in exchange for a single payment, the insurance company promises to pay the annuitant a guaranteed regular income (typically for the remainder or his or her life).

The level of income payable is fixed at the outset. The annuity contract between the insurance company and the annuitant will also stipulate whether this level of income will remain at the initial level for the duration of the annuity or whether it will increase, either at a fixed rate or in line with some external index such as the Consumer Price Index (CPI).

The important point, however, is that the specified income stream will be paid for the annuitant's remaining lifetime without limitation, irrespective of how long that might turn out to be.

In setting the purchase price to be paid, therefore, the insurance company must take a view on how long it expects the annuitant to live and on how much investment income it expects to earn on the funds it has invested over the lifetime of the annuity. It should be borne in mind that the insurance company only has one chance to set this price – the terms of the annuity contract are fixed and cannot be renegotiated at some later date – and will ultimately only find out if the price charged was profitable or not when the annuitant has eventually died and a comparison can then be made between the capital sum received and the interest earned by the company and the annuity payments made.

Each income payment received by the annuitant may be thought of as the sum of two components – the interest earned on the money invested and a partial repayment of the capital sum which was used to purchase the annuity. The pension generated by the purchase of the annuity will therefore be greater than the income that would be available to the purchaser were they instead to invest their capital in a bank account and live off just the income.

In a sense an annuity is like a mortgage in reverse: with a mortgage you receive a lump sum and repay it over time with repayments which are calculated to repay the capital and interest over a specified time frame[2]; with an annuity you pay over a lump sum and receive repayments which are calculated to pay back this lump sum to you with interest over a specified time frame. If you live for exactly the same length of time as the expected lifespan which the insurance company has used to determine the income payments, the annuity payments you receive will have repaid all of the capital you invested to buy the annuity (ignoring expenses and profits for the moment).

The following simplified numerical examples show how an annuity works. In summary, the insurance company charges the 65 year-old male €140,292, invests the money at 4% and pays out an annuity of €10,000 per annum. By charging exactly €140,292 the company, in this example, would break even if the male annuitant dies 21 years later. In the case of the 65 year-old female, the insurance company charges €156,221 in for the annuity of €10,000. The simplified examples in Table 2.1 and Table 2.2 operate on the basis of a single annuitant where the annuity was priced on the assumption that the annuitant would live for 21 years (male) or 25 years (female). In reality, insurance companies operate on the basis that, as they are selling annuities to a large number of people, they can pool the longevity risk and set their annuity prices accordingly based on average expectations for how long individuals will live.

[2] In fact, this type of mortgage is often referred to as an "annuity mortgage" to distinguish it from the alternatives such as "interest-only" or "endowment" mortgages.

Table 2.1: Simplified Annuity Example - Male

Age	Amount invested at start of year	Interest earned	Annuity outgo	Amount invested at end of year
65	140,292	5,612	-10,000	135,903
66	135,903	5,436	-10,000	131,339
67	131,339	5,254	-10,000	126,593
68	126,593	5,064	-10,000	121,657
69	121,657	4,866	-10,000	116,523
70	116,523	4,661	-10,000	111,184
71	111,184	4,447	-10,000	105,631
72	105,631	4,225	-10,000	99,856
73	99,856	3,994	-10,000	93,851
74	93,851	3,754	-10,000	87,605
75	87,605	3,504	-10,000	81,109
76	81,109	3,244	-10,000	74,353
77	74,353	2,974	-10,000	67,327
78	67,327	2,693	-10,000	60,021
79	60,021	2,401	-10,000	52,421
80	52,421	2,097	-10,000	44,518
81	44,518	1,781	-10,000	36,299
82	36,299	1,452	-10,000	27,751
83	27,751	1,110	-10,000	18,861
84	18,861	754	-10,000	9,615
85	9,615	385	-10,000	0
			-210,000	

Source: Life Strategies 2006.

Table 2.2: Simplified Annuity Example – Female

Age	Amount invested at start of year	Interest earned	Annuity outgo	Amount invested at end of year
65	156,221	6,249	-10,000	152,470
66	152,470	6,099	-10,000	148,568
67	148,568	5,943	-10,000	144,511
68	144,511	5,780	-10,000	140,292
69	140,292	5,612	-10,000	135,903
70	135,903	5,436	-10,000	131,339
71	131,339	5,254	-10,000	126,593
72	126,593	5,064	-10,000	121,657
73	121,657	4,866	-10,000	116,523
74	116,523	4,661	-10,000	111,184
75	111,184	4,447	-10,000	105,631
76	105,631	4,225	-10,000	99,856
77	99,856	3,994	-10,000	93,851
78	93,851	3,754	-10,000	87,605
79	87,605	3,504	-10,000	81,109
80	81,109	3,244	-10,000	74,353
81	74,353	2,974	-10,000	67,327
82	67,327	2,693	-10,000	60,021
83	60,021	2,401	-10,000	52,421
84	52,421	2,097	-10,000	44,518
85	44,518	1,781	-10,000	36,299
86	36,299	1,452	-10,000	27,751
87	27,751	1,110	-10,000	18,861
88	18,861	754	-10,000	9,615
89	9,615	385	-10,000	0
			-250,000	

Source: Life Strategies 2006.

As we have seen above, those who live for the average lifespan receive full repayment of their capital (with interest) whilst those who die earlier than average lose the balance of their capital that is still held by the insurance company. This capital is then used by the insurance company to continue making annuity payments to those who live longer than average, and whose entire capital has already been repaid to them with interest. Thus it can be seen that insurance companies would not "pocket" the remaining capital on the death of an annuitant; if it goes instead to pay the annuities of the other longer-living annuitants.

An annuity can be thought of as insurance against living longer than anticipated (i.e. as insurance against outliving one's savings). It should not, therefore, be viewed in financial terms solely as a financial investment as it also contains a significant element of insurance.

In summary, annuities operate by paying out an income for life (irrespective of how long that might be) in return for an immediate capital sum. Each income may be thought of as being made up of an interest payment together with a partial repayment of capital (analogous to a mortgage in reverse). Those who live for the same length of time as expected by the insurance company will receive a full repayment of their capital with interest; those who die earlier than expected will see the balance of their capital used to continue annuity payments to those who live longer than expected. This point is sometimes overlooked when comparing annuities with alternative retirement income options.

2.4 Retirement Options

In any discussion of the Irish annuity market, it needs to be borne in mind that annuities are only one of several options available to pensioners at retirement. The annuity market is, therefore, a sub-market of the wider market for retirement income products.

The following table attempts to summarise the main retirement options available under the plethora of supplementary pension arrangements which are found in the Irish market. The options available at retirement include cash lump sums, annuities and a form of post-retirement fund known as an Approved Retirement Fund (ARF).

Table 2.3: Summary of main* options available on retirement for various forms of pension/similar type arrangement

Pension arrangement	Summary of main retirement options
Private-sector occupational pension scheme – Defined Contribution (DC)	Option to take tax-free cash lump sum Obligation to purchase annuity with balance of fund
Private-sector occupational pension scheme – Defined Benefit (DB)	Optional tax-free cash lump sum Pension for life (no option), normally provided from scheme
Public-sector occupational pension scheme	Tax-free cash lump sum (no option) Pension for life (no option), normally provided on pay-as-you-go basis
Personal Retirement Savings Account (PRSA)	Option to take tax-free cash lump sum Choice of ARF or annuity for balance of fund
Personal Pension (Retirement Annuity Contract)	Option to take tax-free cash lump sum Choice of ARF or annuity for balance of fund
Additional Voluntary Contributions (AVCs) – Defined Contribution (DC)	Possible option to take tax-free cash lump sum Generally have choice of ARF or annuity
Additional Voluntary Contributions (AVCs) – Defined Benefit (DB)	May be structured as providing "added years" – used to increase pension provided by underlying scheme (no option). Alternatively may be structured as DC AVC (see above).

*In relation to PRSAs. RACs and AVCs, in addition to the option of an ARF or the purchase of an annuity, the pensioner may also opt to take the remainder of the fund (after tax-free lump sum) as taxable cash or indeed any combination of these options.

Source: Life Strategies/Indecon

In the interests of brevity, the table above is a somewhat simplified high-level representation of the options available at retirement under the various pension arrangements and other options found in practice. As ever, with the Irish pensions system there are numerous caveats, exceptions, terms and conditions which would need to be included in order to give a comprehensive representation of the situation.

The foregoing summary is, nevertheless, adequate for our purposes and brings out a number of important points:

- Only members of defined contribution occupational pension schemes are obliged to purchase annuities at retirement.
- Defined benefit schemes (in the private and public sector) provide their pensioners with annuity-like incomes in retirement, but are not obliged to buy annuities in order to provide these incomes.
- Some, but not all, retirees have the option to invest some or all of their accumulated funds in ARFs.

2.5 Consumers of Annuities

This leads on to a review of the numbers of these different consumers of annuities. Summaries of the numbers and proportion of different types of pension coverage and contribution and benefits pertaining to each is summarized in the annex.

2.5.1 Defined Contribution (DC) Occupational Scheme Members

The people who are obliged to buy annuities are the trustees of DC schemes when scheme members retire (unless the member is a "proprietary director", in which case there is flexibility as to whether or not to buy an annuity). Compulsory Purchase Annuities are bought by DC scheme members with the proceeds of a pension fund and each purchaser pays income tax on each payment of income from the annuity. This reflects the fact that their fund was built up with pension contributions that received income tax relief.[3]

Private Sector 2nd Tier Pension provision is rapidly changing to DC Schemes. At the end of 2005, there were 234,800 people with a DC occupational pension. 172,000 of these were members of 20,000 group schemes, while 62,800 were members of "one member schemes" (this does not include members with deferred pensions). However, looking more closely at the membership of defined contribution schemes, we find that some 63,000 members are actually members of their own "one-man schemes", and will not therefore be subject to the compulsory annuitisation requirements.[4] This leaves some 172,000 people (9% of the labour force) who are members of defined contribution schemes and who will be, as things currently stand, obliged to buy an annuity at retirement[5].

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[3] Defined Contribution scheme members can take a tax-free lump sum of a maximum of 1.5 times final remuneration subject to the maximum tax free lump sum of 25% of the Standard Fund threshold applying at the time. Individuals with RACs, PRSAs and proprietary director members of Occupational Pension schemes have the option to take a 25% tax-free lump sum

[4] On the (reasonable) assumption that the vast majority of these people are proprietary directors.

[5] The true figure is likely to be somewhat less than this as some of the 172,000 will be proprietary directors (who are exempt from the requirement).

2.5.2 Personal Pension or Personal Retirement Savings Account (PRSA) Members

Other DC pension types are personal pensions or PRSAs. A personal pension (whether sponsored by an employer or not) has the legal form of a contract between an individual and a pension provider (usually an insurance company). PRSAs are low cost Defined Contribution pension plans. Individual personal pensions are most common among the self-employed and others who are not entitled to join occupational schemes.

Holders of these defined contribution funds (PRSAs and personal pensions) may choose to buy an annuity at retirement, but are not obliged to do so. They may choose to take their retirement funds in cash or to invest in ARFs instead. So addition to the 172,000 individuals subject to compulsory annuity requirements, we also have the holders of other defined contribution pension plans (PRSAs, personal pensions), who may choose to annuitise, and who account for a further 18% of the labour force (over 350,000 people).

2.5.3 Private Sector Defined Benefit (DB) Occupational Scheme Members

The traditional DB Pension Scheme is a scheme in which benefits are related to salary and service. The Pensions Board annual report finds that there were 239,000 people with a DB private sector occupational pension at the end of 2005.

We understand, however, that relatively few schemes purchase annuities to secure retired members benefits. This can partly be attributed to the fact that some schemes provide pensions that are linked to CPI and there is a restricted availability of annuities of this type. However, according to the IAPF (2002), only 24% of schemes provide full CPI inflation on pensions (on a discretionary basis).

The one situation where pension schemes do invariably buy annuities is in the event of a scheme wind-up. Based on information provided to us by annuity providers in the Irish market, we estimate that these "bulk buy-outs" accounted for approximately 17% of total annuity purchases in the most recent year for which data was available to us.

The Pensions Act 1990 (as amended) sets out a Minimum Funding Standard for defined benefit pension schemes. The Standard is a "wind-up" standard: it looks at the benefits that a scheme is obliged to provide should the scheme be wound up and defines the minimum assets that the scheme must hold in order to cover those liabilities. There are some 1,300 schemes which are subject to the requirements of the Minimum Funding Standard, with the vast majority of these schemes (94%) having less than 500 active members, and three-quarters of schemes having less than 100 active members.

For members who have not yet retired, the wind-up liability is measured with reference to the members' accrued benefits (the liability is based on the current transfer value i.e. the accrued benefits based on current salary and service, revalued to retirement and discounted at a bond rate): annuities do not come into the equation. For retired members, however, where pensions are already being paid, the wind-up liability is based on the cost of buying out the liability by purchasing suitably matching annuities from an insurance company.

Consideration of the Minimum Funding Standard is taking us beyond our terms of reference and any review of the Standard is beyond the scope of this report, although we accept that developments in the annuities market affect the Minimum Funding Standard.

2.5.4 Public Sector Defined Benefit (DB) Scheme Members

It should be noted that the State does not buy annuities in respect of retiring members of public service pension schemes. The obvious reason for this is, of course, because these schemes are almost all run on an unfunded pay-as-you-go basis: the State does not accumulate a retirement fund for its employees – instead it pays pensions from general resources as and when they fall due. Buying annuities for retiring members would, therefore, require the State to accelerate the payment of pension benefits – the State's payment would in such circumstances be a single payment to an annuity provider at the time of the employee's retirement (for which no fund has been accumulated in advance), rather than a stream of annual pension payments for the lifetime of the retired employee.

2.6 Approved Retirement Funds (ARFs)

The introduction of ARFs represented a significant change in the structure of pension arrangements. Prior to their introduction pensioners were effectively forced to take out an annuity at retirement; as a result of the 1999 (and subsequent) changes, certain pensioners can now choose between:

- Investing in an ARF and/or an Approved Minimum Retirement Fund (AMRF);
- Purchasing an annuity; or
- Taking the value of their pension fund at retirement, subject to tax.

2.6.1 What are ARFs?

Approved Retirement Funds (ARFs) were introduced in the Finance Act 1999. These products allow certain individuals to maintain ownership of their capital in retirement and thereby provide considerable flexibility in terms of when and to what extent that capital may be drawn down to provide income in retirement (if at all).

An ARF is a fund managed for an individual by a Qualifying Fund Manager (QFM). In contrast with the situation for annuities (see below), where life assurance companies have a legal monopoly on product provision, a wider range of financial institutions including banks, building societies, credit unions, investment managers (as well as life assurance companies) can act as QFMs.

ARFs can invest in a wide range of assets. Prior to Finance Act 2003 there were essentially no restrictions on the investment activities of an ARF. However, the 2003 Act introduced provisions which sought to discourage certain types of investment by making them inefficient from a tax perspective. These provisions extended to transactions such as loans from the ARF to the ARF-holder or connected persons; property deals between the ARF and the ARF-holder or connected persons etc.

2.6.2 How Do ARFs Work?

In summary, ARFs work as follows:

- At retirement up to 25% of the accumulated fund may be taken as a lump sum (tax-free);
- If the retiree does not have a total guaranteed pension or income for life of at least €12,700 p.a. from one or more of the State Pension, an annuity or an occupational pension (the "minimum income requirement"), then at least €63,487 of the accumulated fund must be placed in an Approved Minimum Retirement Fund (AMRF). This fund may not be drawn down to less than €63,500 until the AMRF-holder reaches age 75;
- After investing in the AMRF (if required), the retiree can then simply take the balance of the accumulated funds or may invest them in an Approved Retirement Fund (ARF) or a number of such funds. The ARF-holder can then choose when to draw down an income from the ARF and take the balance of the accumulated funds subject to tax;
- ARFs and AMRFs enjoy tax-free status on all investment income and capital gains within the fund. Income tax is payable on withdrawals of capital and interest from the fund during the lifetime of the ARF-holder. From 2007 there will be tax payable on a deemed or imputed distribution from the ARF. The rate of the deemed distribution will be 1% of the value of the ARF assets at December 2007, rising to 2% in 2008 and 3% thereafter. Actual distributions made by the individual will be creditable against the deemed distributions;
- On death, funds held in an ARF/AMRF form part of the individual's estate and are passed on to the individual's dependants. Funds pass tax free to the spouse and/or there are reliefs where the funds are transferred to children.

In summary, therefore, ARFs allow much greater freedom in terms of how funds may be invested post-retirement and how and when income may be drawn from those funds.

2.6.3 Consumers of ARFs

As noted in Table 2.3, the following funds may, subject to certain terms and conditions, be transferred into an ARF at retirement:

- Funds accumulated within a PRSA contract;
- Funds accumulated within a "personal pension" (e.g. a Retirement Annuity Contract or other self-employed pension arrangements);
- Funds accumulated within defined contribution arrangements for additional voluntary contributions ("AVCs") paid by members of occupational schemes.

In addition, despite the general requirement for members of defined contribution occupational pension schemes to apply the balance of their funds at retirement to purchase an annuity, any member of such a scheme who is a "proprietary director" (i.e. has a shareholding in the business of 5% or more) may opt to transfer the funds to an ARF instead.

In summary, the only retirees *not* eligible for ARFs are members of defined contribution schemes who are not "proprietary directors" and holders of "buy-out bonds". [6]

2.7 Drivers of Demand

2.7.1 Government Objectives

A chief concern of governments in regulating the decumulation phase of pension arrangements is the avoidance of pensioner poverty. A second guiding principle should be to ensure that pension funds are indeed used for income in retirement, rather than for a tax exempt bequest. Governments are also concerned that pensioners should not be asked to make complex decisions with little information or only potential information. Governments also have a role in ensuring that competition forces are permitted to allow the market to work effectively and that all steps are taken to enhance competition.

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[6] A buy-out bond is a type of pension contract which may be used by those leaving employment (or moving from one employment to another) as a vehicle in which to invest the transfer value which they have received from the pension scheme that they are leaving.

Annuitisation of retirement funds has historically been the policy of successive governments (both in Ireland and the UK) for three main reasons:

- Annuities pool people's risk, ensuring that they are the most financially efficient way of turning capital into an income stream;
- Annuities make sure that people continue to receive an income from their savings, no matter how long they live; and
- Tax relief on pension contributions is provided so people can save for an income in retirement, not for other purposes.

It is important to note that the market need for annuities arises from pension regulations which set out the retirement options available to pension scheme members and individual pension policyholders. The range of available retirement options, of which annuities are a relatively small component, has had and will have a very important impact on the size and development of the annuity market in Ireland.

For the Exchequer, ARFs can raise some questions about Ireland's "EET" system[7] of pension taxation. Successive governments have provided tax incentives to encourage supplementary pension provision and can reasonably, therefore, be expected to be entitled to tax revenues on the resulting pension benefits (especially considering that over half of an individual's accumulated fund may consist of the accumulated value of the tax reliefs provided). The very flexibility of ARFs in relation to when, if ever, benefits may be drawn down from the fund, poses potential difficulties for the Exchequer in this regard.

The tax break on ARFs may be used to significantly increase 'earnings' in the run up to retirement when there is no cap on contributions. The concerns of the Department of Finance in relation to the potential for the abuse of the ARF regime were set out in the Review of Tax Schemes published by the Department in 2005:

> *"The analysis does suggest, however, that for those who have the capacity to survive in retirement without the need to rely on funds invested in an ARF, our "EET" system of pension taxation is much closer to an "EEE" system where effectively no tax is paid, or if it is, it is at a low rate and far into the future".*

[7] A pension system is described as EET if it is based on exempt (from tax) contributions, exempt investment returns and the ultimate pension benefits are taxed when received as income.

Measures have since been introduced with a view to curbing what are perceived as abuses of the ARF regime.

2.7.2 Consumer Needs

Yaari[8] demonstrates that a risk-averse individual who is concerned about longevity risk will purchase actuarially fair annuity contracts, enabling them to smooth consumption in their period of retirement. It is suggested that it is optimal for agents to hold all of their wealth in assets which make payments conditional on survival. This is called 'full annuitisation', and means that the entire portfolio should be held in life-contingent assets.

However, this depends on a number of assumptions and is inconsistent with the relatively small size of annuity markets, both in Ireland and elsewhere. Survey responses received from life assurance companies indicate that, where a retiree has a choice in the matter, he or she almost invariably choose an ARF over an annuity (and that everyone takes the tax-free lump sum). The position with regard to defined benefit schemes would appear to be quite similar – the submission received from the IAPF states that "[defined benefit] *schemes usually do not buy annuities but instead pay pensions from funds.*" There is little argument that ARFs have proved to be a popular and attractive feature and, whilst it is impossible to prove cause and effect, it would appear that the introduction of ARFs has had a beneficial impact on pension coverage, at least amongst certain sections of the population. In its report on the National Pensions Review (2005), the Pensions Board stated that:.

> *"In the Finance Act, 1999 holders of RACs and some members of OPSs were permitted to access part or all of their retirement savings at retirement through the introduction of Approved Retirement Funds ("ARFs"). In the years that followed, there was a significant increase in the volume of pension contracts sold. It is the view of the pensions and insurance industry that the increase was a direct result of the introduction of ARFs…."*

[8] Yaari. M. E., "Uncertain lifetime, life assurance, and the theory of the consumer", *Review of Economic Studies*, 32(2), pp. 137-50, 1965.

Annuities versus ARFs – A Qualitative Comparison

The main retirement income options currently seen in the Irish market are the annuity and the ARF. The following table sets out our high-level view of the two options under a number of headings.

Table 2.4: Summary of Main Features of Annuities and ARFs

	Annuity	ARF
Perceived value	Perceived, rightly or wrongly, as bad value	Perceived as better value (?)
Flexibility	Inflexible	Highly flexible
Control of assets	No control of assets	Full control of assets
Bequest	Not allowed (under current legislative/Revenue rules)	Allowed
Costs	Modest reduction in yield	Typically higher reduction in yield
Risks	Longevity and investment risk passed to insurance company	Longevity and investment risk borne by ARF holder
Guarantees	Guaranteed income for life	Depends on nature of ARF investments

Source: Life Strategies.

The following table, with text taken from the Irish Life website, provide a useful summary of the pros and cons, from the consumer's perspective, of buying an annuity versus investing in an ARF.

Table 2.5: Investing in an Annuity – Pros and Cons for Consumers

Advantages	Disadvantages
You are buying certainty.	Your pension fund no longer exists because you have changed it into an income for life
You are guaranteed to be paid a known pension for the rest of your life.	Lack of flexibility. You cannot change the level of your pension once you take it out.
With most annuities, it does not matter if returns from stock markets are poor, or if you live a long time.	Your pension will stop when you die, unless you have built in capital protection[9], a dependant's pension or a minimum payment period.
You can build in a minimum payment period, or a dependant's pension.	If you choose an equity linked pension, your income could go down as well as up
If you choose an equity linked pension[10], you have the potential to achieve a higher level of income	

Source: Life Strategies.

Table 2.6 provides the pros and cons of investing in an ARF.

[9] We understand that, in practice, capital protection is not available on an annuity due to Revenue rules.

[10] We are not aware of anyone in the Irish market offering an equity-linked pension.

Table 2.6: Investing in an ARF – Pros and Cons for Consumers

Advantages	Disadvantages
You have flexibility and control over your pension fund.	You are taking on risk.
You can invest in a wide range of assets, with the potential for your pension fund to continue growing.	If you withdraw more than your fund is earning, your initial investment will reduce.
You can choose the level of income you want to take each year.	Your pension fund could run out if returns from investment markets are poor, or if you live a long time.
When you die, the rest of your fund passes to your estate.	

Source: Life Strategies.

Thus, in summary, ARFs bring greater flexibility, the potential for higher returns (at the expense of higher risk) and allow remaining assets to be transferred to one's estate on death. Annuities on the other hand, provide security and guarantees but are inflexible and do not allow the transfer of remaining capital on death (although they can be structured to continue paying a pension to surviving dependants).

Annuities versus ARFs – a Quantitative Comparison

The previous section provided a high-level qualitative comparison of annuities and ARFs from the consumer's perspective (as well as from the provider's, intermediary's and Exchequer's point of view).

It is also useful, however, to compare the two alternative products in quantitative terms. The following table sets out a comparison between an annuity and an ARF for a 65 year-old male, using the standard format and assumptions that are prescribed under the statutory regime that governs the provision of information on life assurance products to prospective customers. All figures are quoted before deduction of tax.

Table 2.7: Quantitative Comparison Between an Annuity and an ARF for a 65 Year-Old Male

Age	Annuity with payments increasing at 3% p.a.		ARF growing at 3% p.a. (before fund charges)		ARF growing at 6% p.a. (before fund charges)	
	Cash-in value	Annual income	Cash-in value	Annual income	Cash-in value	Annual income
65	0	10,000	187,132	10,000	192,731	10,000
66	0	10,300	179,480	10,300	190,705	10,300
67	0	10,609	171,406	10,609	188,275	10,609
68	0	10,927	162,893	10,927	185,412	10,927
69	0	11,255	153,927	11,255	182,088	11,255
70	0	11,593	144,490	11,593	178,273	11,593
71	0	11,941	134,565	11,941	173,934	11,941
72	0	12,299	124,135	12,299	169,037	12,299
73	0	12,668	113,182	12,668	163,548	12,668
74	0	13,048	101,686	13,048	157,428	13,048
75	0	13,439	89,629	13,439	150,638	13,439
76	0	13,842	76,991	13,842	143,137	13,842
77	0	14,258	63,750	14,258	134,881	14,258
78	0	14,685	49,886	14,685	125,823	14,685
79	0	15,126	35,376	15,126	115,916	15,126
80	0	15,580	20,198	15,580	105,109	15,580
81	0	16,047	4,328	16,047	93,347	16,047
82	0	16,528	0	4,360	80,575	16,528
83	0	17,024	0	0	66,732	17,024
84	0	17,535	0	0	51,758	17,535
85	0	18,061	0	0	35,585	18,061
86	0	18,603	0	0	18,146	18,603
87	0	19,161	0	0	0	18,541
88	0	19,736	0	0	0	0
89	0	20,328	0	0	0	0

Source: Life Strategies calculations.

The first two columns – the annuity columns – show the annual income payments which are guaranteed to be paid under the annuity (provided the annuitant is alive) and also highlight the fact that the annuity cannot be cashed in.

The next two columns show the projected build up of an ARF fund where the initial investment in the ARF is the same as the purchase price of the annuity (€204,607) and the ARF holder draws down the same income from the fund each year as would be payable under the annuity. The investments in the ARF are assumed to grow at 3% per annum before deduction of charges (we assume that annual fund charges are 1.5%, which is typical of ARF products found in the market). The final two columns show the results on the same basis, but this time assuming that the investments in the ARF return 6% before charges.

The table is useful in bringing out some of the key differences between an annuity and an ARF and in highlighting when one is more suitable than another.

The flexibility of an ARF is a very valuable feature if you want to keep control of your investments and want flexibility about when you take income from the fund, but it also brings risk. As the table shows, if investment returns are poor your fund could run out before you die. The risk of this happening was quantified by a Working Party of the Society of Actuaries in Ireland; the Society summarised the risk as follows:

> *"Projections carried out by a Society Working Party show that, if a retiree opts for an ARF and makes regular income withdrawals from the fund equal to the amount of income which could have been obtained with an annuity, there is a 50% to 60% chance that the fund will be exhausted before the retiree dies."*

The annuity provides a guaranteed income for life but is inflexible and leaves you no capital sum on death (although it could be structured to keep paying for a minimum number of years and/or continue payments to a surviving dependant).

Life assurance companies do not recommend ARFs for those whose primary need is a substantial regular income in retirement. For example, Irish Life's marketing literature states very clearly:

> *"You should not take regular withdrawals of over 5% of the value of your fund a year. This will reduce the risk of using up all your initial investment in the ARF. If you need a higher level of withdrawal than this to live on when you retire, you should consider buying an annuity to give you a guaranteed lifetime income."*

Apart from the competition from ARFs, there are several aspects of the annuities market itself that potentially limit the desirability of annuities. It has been agreed that there are four widely identified problems hindering the development of annuities markets in many countries. These are:[11]

- Perceptions – principally regarding the value for money of annuities;
- Processes – marketing and distribution;
- Capital sacrifice; and
- Products – portfolio allocation, flexibility.

Pricing

One reason individuals in the voluntary market decide to avoid purchasing annuities is that these products are mispriced, or are perceived to be mispriced. This is "the belief that annuities are poor value for money or that insurers act as a cartel which exploited mandatory annuitisation requirements to make excess profits."[12] It would appear that this is the more prevalent reason for not buying annuities. Annuity rates have fallen sharply in recent years as a result of the combined effect of much lower long-term interest rates than was historically the case and improvements in life expectancy.

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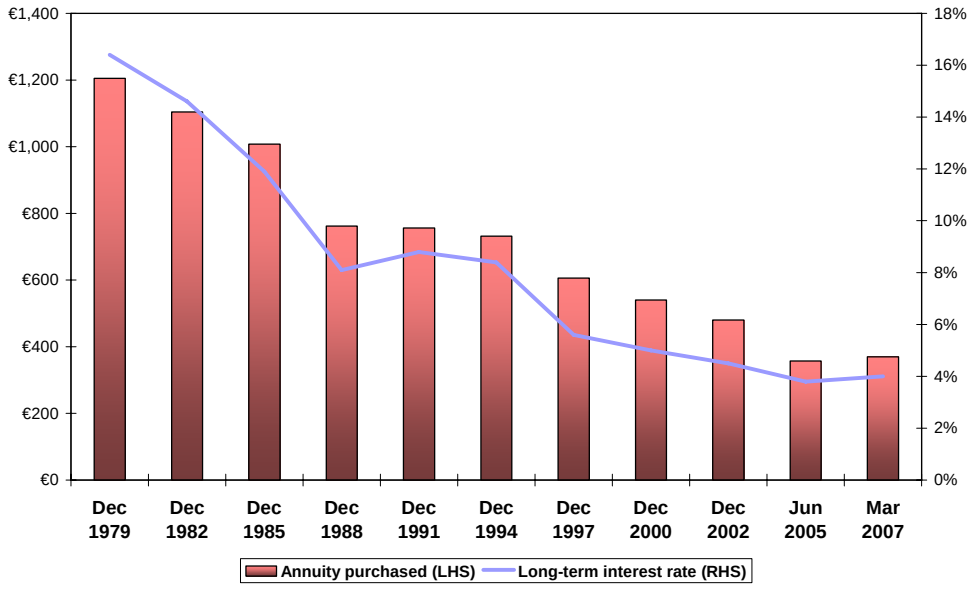
[11] *Annuities,* Mike Orzsag, Watson Wyatt 2000.

[12] *Annuities: The Problems,* NAPF Annual Conference, Orszag, May 2000.

Figure 2.1: Annuity Costs and Long-term Interest Rates, 1979-2007



Source: Annuity rates 1979-2005 from IAPF; 2007 from www.pensionchoice.ie. "Annuity purchased" denotes the initial annual pension which a lump sum of €10,000 would have purchased (assuming a 65 year old male, pension increases of 3% p.a., guaranteed for 5 years, 50% spouse's pension on death).

As can be seen from the graph, the reductions in annuity rates have been closely correlated with the reduction in long-term interest rates. This reflects the nature of annuities, as insurers can only price annuities based on the interest rates that are available in the financial markets; as interest rates have fallen, so too have annuity rates.

The possibility that annuities are overpriced is examined in detail in Section 5.

Marketing and Distribution

The role of marketing and distribution and its effectiveness is examined in Section 7.

Capital Sacrifice

Annuitisation may be the best way for the majority of annuitants to secure their retirement income. However, for a minority, the loss of capital into the annuity pool is difficult to accept.

Products

There are also reasons why it may be rational to avoid full annuitisation. Annuities earn a higher level of initial lifetime income for any desired consumption profile (mortality cross subsidy). But if people are willing to run out of money at some age, they can start out with a higher initial level of income.

There is also the 'bequest motive' – the reality that for most individuals, savings are not only for income in retirement. Changing family circumstances also add complexity with spouses' annuities whilst increased life expectancy reduces the benefit of children's annuities.

Also, appropriate products may not be available to match people's preferences. The concept of annuities on retirement developed at a time when the average time span in retirement was relatively short. With increased life expectancy and a trend in recent years towards early retirement (public sector early retirement options, private-sector redundancy programmes) the period to be covered now extends to 30 years plus.

The nature of a 30 year time horizon means that people's needs have changed. In early years an annuity is needed to supplement other income from working or investments. In later years heavier draw-downs may be needed to cover medical expenses. The current products do not provide a great deal of flexibility.

In a perfect market, these trade-offs should be accommodated. The lack of a broad range of products – an incomplete market - has been discussed in this Section and will be further investigated in later sections.

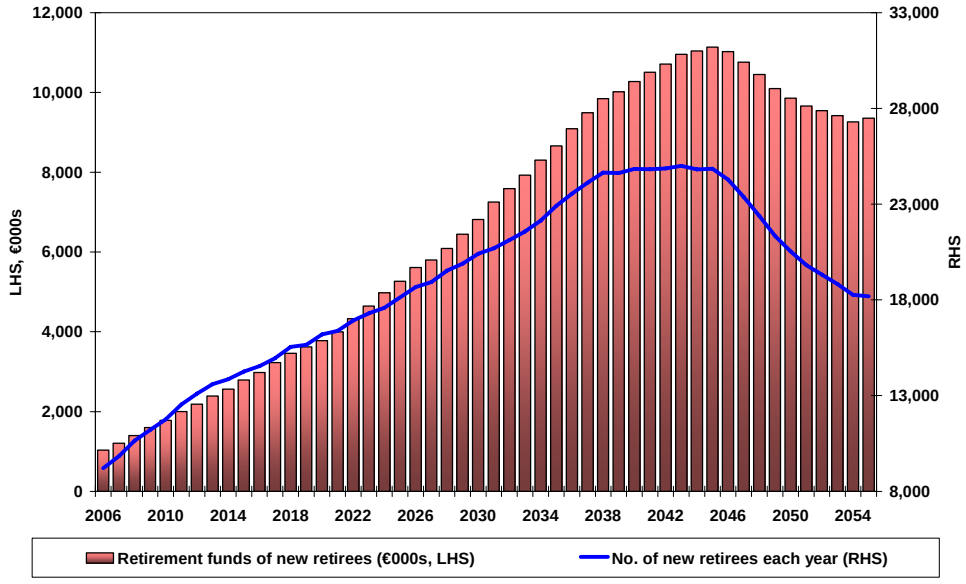
2.8 Future Trends

The future development of the market for annuities market depends crucially on two factors – demographics (i.e. how many people will retire from pension schemes in the future) and public policy (i.e. how many of them will be obliged to buy an annuity and other factors).

Life Strategies et al. (2005) projected the total amount of private-sector supplementary pensions payable over the period 2006-2056. It should be noted that the projections included both defined contribution and defined benefit pensioners and included those taking ARFs as well as those taking out annuities.

Re-using the same model as used in that report and the same assumptions[13] gives the following projection of the number of new pensioners each year and the amount of their retirement funds.

Figure 2.2: Projected number of new retirees from private sector schemes 2006-2056



Source: Life Strategies projections

[13] One particularly important assumption is that the proportion of the private-sector labour force which has a supplementary pension remains at its current level of just under 50%.

The projections indicate that the total number of new retirees each year is set to increase gradually from the current (estimated) level of almost 10,000 people per year, peaking at approximately 25,000 per year in the 2040s before falling back somewhat in the 2050s. In terms of the funds available to these retirees, the projections show an increase from roughly €1 billion at the moment, to a peak of approximately €11 billion (in today's money) in the mid-2040s.

It must be remembered however that these projections encompass all private-sector pensioners (i.e. those in defined benefit occupational schemes, defined contribution occupational schemes, personal pensions, PRSAs etc.). In practice, only those retiring from defined contribution occupational schemes are currently obliged to buy an annuity (and almost all those who are not obliged to buy an annuity do not choose to do so). Only a proportion of these retirement funds will be used to buy annuities therefore.

IIF statistics indicate that approximately 3,000 annuity contracts have been taken out each year in recent years. This implies that, currently, only some 30% of retirees take out an annuity.[14] Assuming that this proportion remains constant in the future,[15] this would imply a peak demand for annuities of approximately €3.5 billion per annum in the 2040s. This would translate into a real growth rate of roughly 7% per annum in annuity sales over the next 40 years.

A majority of annuity providers, including the biggest provider, believe their annuity business is set to grow. Results from our survey on this point are set out in Table 2.8.

Table 2.8: Annuity Providers' Forecasted Change in Value of Business

Significant Increase	Increase	No Change	Decrease	Significant Decrease
0%	50%	17%	33%	0%

Source: Indecon and Life Strategies Survey of Annuity Providers 2007.

[14] The remaining 70% either take out an ARF or have their pension paid to them by the defined benefit pension scheme of which they are a member (i.e. the scheme chooses to "self insure" the pension rather than buy an annuity) or can have all their benefits as tax-free cash or trivial benefits.

[15] In fact, it could reasonably be expected to increase somewhat over time, as defined contribution schemes are typically currently less mature than defined benefit ones. This is a key issue for policy-makers.

In the absence of any change in regulations governing compulsory annuitisation and in the absence of any change in behaviour by those for whom annuitisation is not compulsory, the market for annuities looks set to grow steadily from its current level (especially given the relative immaturity of DC schemes at present).

Of course, any changes in policy could have a very significant impact on these projections. For example, the removal of the requirement for DC pensioners to buy an annuity could be expected (based on the current experience that the overwhelming majority of those who have a choice choose not to buy annuities) to kill off demand for annuities from this source. On the other hand, the introduction of a mandatory (or soft-mandatory) defined contribution scheme, coupled with compulsory annuitisation, would dramatically increase the future demand for annuities.

Similarly, any change in policy or practice for defined benefit schemes could have a substantial impact. For example, if trustees of defined benefit schemes decided, or were obliged, to buy annuities for retiring members, this would significantly increase the potential market.

2.9 Conclusions

An annuity is a contract between a customer and an insurance company whereby, in exchange for a single payment, the insurance company promises to pay the annuitant a guaranteed regular income (typically for the remainder or his or her life). In setting the purchase price to be paid, the insurance company must take a view on how long it expects the annuitant to live and on how much investment income it expects to earn on the funds it has invested over the lifetime of the annuity.

In any discussion of the Irish annuity market, it needs to be borne in mind that annuities are only one of several options available to pensioners at retirement. The annuity market is, therefore, a sub-market of the wider market for retirement income products.

The options available at retirement include cash lump sums, annuities and a form of post-retirement fund known as an Approved Retirement Fund (ARF).

Annuities and ARFs are very different products and a qualitative comparison shows that each has its own strengths and weaknesses:

- ARFs bring greater flexibility, the potential for higher returns (at the expense of higher risk) and allow remaining assets to be transferred to one's estate on death.
- Annuities on the other hand, provide security and guarantees but are inflexible and do not allow the transfer of remaining capital on death (although they can be structured to continue paying a pension to surviving dependants).

The flexibility of an ARF can be a very valuable feature for those who want to keep control of their investments and want flexibility about when they take income from their fund, but it also brings risk: specifically the risk one's fund could be exhausted out before one dies. Research by the Society of Actuaries in Ireland found that "*if a retiree opts for an ARF and makes regular income withdrawals from the fund equal to the amount of income which could have been obtained with an annuity, there is a 50% to 60% chance that the fund will be exhausted before the retiree dies.*"

In contrast an annuity provides a guaranteed income for life but is inflexible and leaves no capital sum on death (although it can be structured to keep paying for a minimum number of years and/or continue payments to a surviving dependant).

Life assurance companies do not recommend ARFs for those whose primary need is a substantial regular income in retirement.

Turning to our analysis of the demand for annuities, the key highlights are:

- Only members of defined contribution occupational pension schemes are obliged to purchase annuities at retirement. All other DC pensioners can choose between an annuity and an ARF;
- Defined benefit schemes (in the private and public sector) provide their pensioners with annuity-like incomes in retirement, but are not obliged to buy annuities in order to provide these incomes;
- There is a significant decline in the demand for DB schemes.

Hence there are two key, and very different, consumers of life annuities:

- Defined Contribution (DC) occupational scheme members, who are obliged to annuitise at retirement, and other DC pensioners (PRSAs, personal pensions) who may choose to annuities. (An occupational scheme is one with scheme trustees and governed by trust law). ;

- Private Sector Defined Benefit (DB) occupational schemes, who, whilst not normally significant purchasers of annuities, are obliged to use annuities to measure their liabilities in certain circumstances.

Some 172,000 people (9% of the labour force) are members of defined contribution schemes and who will be, as things currently stand, obliged to buy an annuity at retirement[16]. In addition to this number, we also have the holders of other defined contribution pension plans (PRSAs, personal pensions), who may choose to annuitise, and who account for a further 18% of the labour force (over 350,000 people).

The traditional DB Pension Scheme is a scheme in which benefits are related to salary and service. The Pensions Board annual report finds that there were 239,000 people with a DB private sector occupational pension at the end of 2005. We understand, however, that relatively few schemes purchase annuities to secure retired members benefits. This can partly be attributed to the fact that some schemes provide pensions that are linked to CPI and there is a restricted availability of annuities of this type. However, according to the IAPF (2002), only 24% of schemes provide full CPI inflation on pensions (on a discretionary basis).

The one situation where DB pension schemes do invariably buy annuities is in the event of a scheme wind-up. Based on information provided to us by annuity providers in the Irish market, we estimate that these "bulk buy-outs" accounted for approximately 17% of total annuity purchases in the most recent year for which data was made available to us.

The future development of the market for annuities market depends on a number of factors, principally demographics (i.e. how many people will retire from pension schemes in the future) and public policy (i.e. how many of them will be obliged to buy an annuity and other factors). Life Strategies et al. (2005) projected the total amount of private-sector supplementary pensions payable over the period 2006-2056. It should be noted that the projections included both defined contribution and defined benefit pensioners and included those taking ARFs as well as those taking out annuities.

[16] The true figure is likely to be somewhat less than this as some of the 172,000 will be proprietary directors (who are exempt from the requirement).

The projections indicate that the total number of new retirees each year is set to increase gradually from the current (estimated) level of almost 10,000 people per year, peaking at approximately 25,000 per year in the 2040s before falling back somewhat in the 2050s. In terms of the funds available to these retirees, the projections show an increase from roughly €1 billion at the moment, to a peak of approximately €11 billion (in today's money) in the mid-2040s.

IIF statistics indicate that approximately 3,000 annuity contracts have been taken out each year in recent years. This implies that, currently, only some 30% of retirees take out an annuity.[17] Assuming that this proportion remains constant in the future,[18] this would imply a peak demand for annuities of approximately €3.5 billion per annum in the 2040s. This would translate into a real growth rate of roughly 7% per annum in annuity sales over the next 40 years.

[17] The remaining 70% either take out an ARF or have their pension paid to them by the defined benefit pension scheme of which they are a member (i.e. the scheme chooses to "self insure" the pension rather than buy an annuity).

[18] In fact, it could reasonably be expected to increase somewhat over time, as defined contribution schemes are typically currently less mature than defined benefit ones. This is a key issue for policy-makers.

3 Supply of Annuities

3.1 Introduction

This Section examines the supply of annuities in Ireland, broken down into the following topics:

- Types of annuity providers;
- How annuities are produced and the exchange of risk;
- Types of annuities provided;
- The use of distribution channels;
- The regulation of annuity providers in terms of information, product design and solvency; and
- The capacity of the market.

3.2 Providers of Annuities

Under current legislation,[19] annuities may only be provided by life assurance companies. According to the Financial Regulator (2005), there are currently 14 life assurance companies with their head offices in Ireland who write life assurance business in Ireland. Of these, 12 are authorised to write the class of business ("Class I") which covers annuities. There are also 8 foreign life companies with branch establishments in Ireland, all of which possess the necessary Class I authorisation. All of these companies could write annuity business in the Irish market if they desired, without the need for any prior regulatory approval.

However, industry statistics for annuity business together with the results of the Indecon/Life Strategies survey of annuity providers indicate that only seven of these companies are actively writing annuity business.

[19] Finance Act 2005

In addition to the 22 companies identified above as having either their head office or a branch in Ireland and possessing the requisite authorisation for Class I business, there are a further 39 life assurance with Irish head offices and a further 5 companies with Irish branches, who are not currently writing annuity business in Ireland. Most of these companies are not currently focused on the Irish market, choosing instead to write business into other countries on a cross-border basis from Ireland. However, there is no regulatory barrier to their offering annuity products in the Irish market.

Furthermore, following the creation of a single European market for life assurance in the mid-1990s, any life assurance company within the European Union may enter the Irish market, either by establishing an Irish branch or by writing business in Ireland on a cross-border, "freedom to provide services" basis . The process whereby foreign EU insurers may enter the Irish market is simple and well-defined and does not require the foreign company to seek approval from the Irish Financial Services Regulatory Authority, even if establishing a branch here. In principle, therefore, any number of EU insurers could decide to enter the Irish annuity market and, having taken such a decision, could commence operations within a very short timeframe.

However, whilst annuities can also be bought from an overseas provider without an Irish branch, under the "freedom to provide services" provisions referred to above, we understand that there is some uncertainty in some quarters at the moment with regard to the tax treatment of such annuities. There is a perception that an annuity bought from an overseas provider on this basis could be subject to a different tax treatment to one bought from an Irish company (whether head office or branch) and this needs to be clarified before any such provider would be considered by Irish consumers[20]. We have discussed this issue with the Revenue Commissioners. We comment on this issue in more detail in our discussion on policy considerations.

[20] See Hewitt Associates "Report on Possible State Involvement in Second Pillar Provision" (published by the Pensions Board as Appendix 7 to the National Pensions Review), pp. 293-294

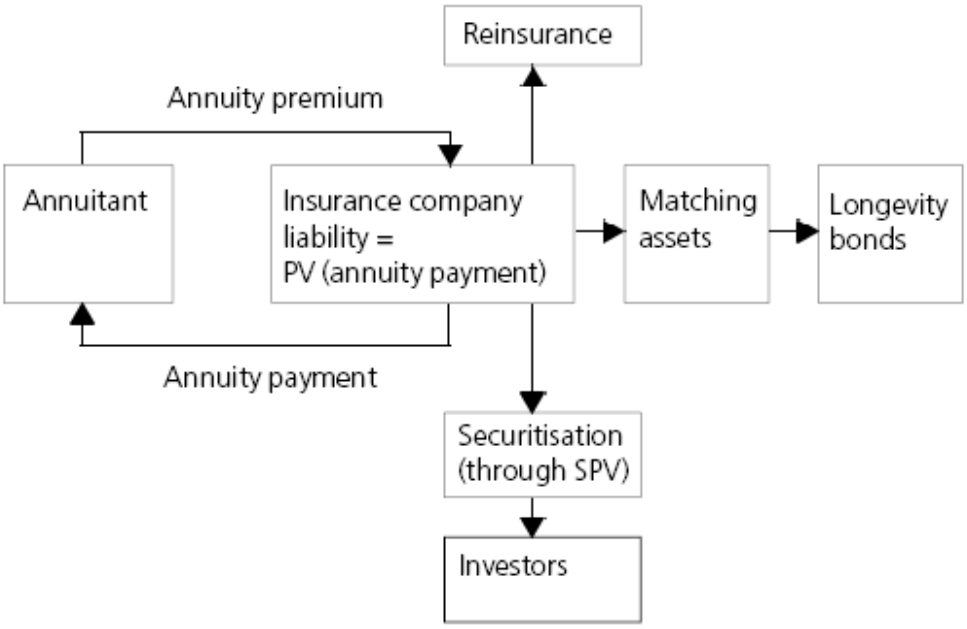
3.3 How Annuities are Produced

In return for a single up-front premium, a life assurance company agrees to pay an annuitant a regular annuity payment until death. Having entered into such a contract, the life company will have a contractual liability in respect of its future obligations to make specified payments to the annuitant, and, in doing so, will have exposed itself to various risks.

The main problems facing annuity providers relate to adverse selection and mortality risk, the risk associated with mortality improvements, and to interest rate, reinvestment and inflation risk. The company will aim to hedge its investment risk by investing the premium it has received in assets whose proceeds closely match the schedule of expected future annuity outgo. For example, riskless fixed-income bonds used to provide the payments on level annuities and index-linked bonds are needed if index-linked annuities are to be serviced effectively. This approach minimises the risk to the company that it will have insufficient funds to make payments under the annuity contract.

Following this approach, companies price annuities on the basis of the guaranteed investment returns that they can obtain in the financial markets. The most obvious assets for this purpose are government bonds (from within the Euro single currency zone). A portfolio of bonds can be constructed to deliver a schedule of investment income which is very similar, if not identical, to the schedule of expected annuity outgo. This is a fundamental risk management technique known as asset-liability matching. Life assurers use government bonds (and sometimes corporate bonds and mortgages) as an 'input' and produce annuities as an 'output'. The value added by life assurers is the conversion of these financial instruments into mortality-contingent income streams for individuals.

Figure 3.1: Relationship Between Annuitant, Life Assurer and Underlying Assets



Source: "Survey of Annuity Pricing", Cannon and Tonks, Research Report No. 318, Department of Work and Pensions, 2006.

The longevity risk which the company has taken on will be either retained by the company (with capital required to be set aside to cover the risk) or may be passed in part or in whole to another entity through, for example, the purchase of reinsurance.

3.4 Types of Annuities

A full list of the various types of annuity which exist is set out in Table 3.1.

Table 3.1: Summary of Annuity and Retirement Income Product Types

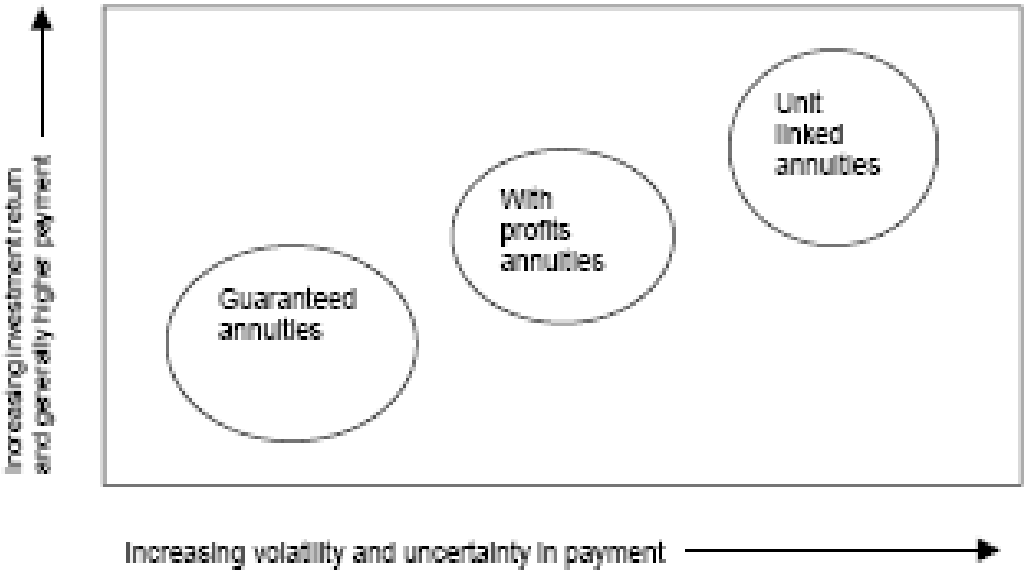
Category	Description
Ordinary annuities	Income is defined as a base level (guaranteed for life) with an escalation rate (typically zero) fixed in advance. The provider bears the mortality and investment risks.
Impaired life and enhanced annuities	Same as an ordinary annuity except that rates are enhanced because of impairment or because of special characteristics of the individual
With-profit annuities	Income is defined as a base level (guaranteed for life), with increases in the form of bonus additions at the discretion of the insurer.
Unit-linked (or investment-linked) annuities	A guaranteed income stream is defined as a number of units per annum, rather than in monetary terms, so that the provider retains the mortality risk, but passes on the investment risk.
Flexible annuities	A range of newer product types, seeking to give some control to the annuitant concerning how they draw income or how they invest the money over time.
Income withdrawal	Income is drawn from an invested fund at a controlled rate, aiming to deliver lifelong income, but the fund is not annuitised (in the sense that funds are not forfeit on death).

Source: 'Paying Out Pensions: A Review of International Annuity Markets', Cardinale et al (2002)

Many of these types of annuities can be seen as a trade off between certainty of payment and investment return. Historically, investment in equity shares has performed better over the medium to long term than investment in bonds. However, income payments under unit-linked or with-profits annuities are not guaranteed and so their future level, although likely to be higher than a guaranteed (ordinary) annuity, is unknown. This trade off is shown in

Figure 3.2.

Figure 3.2: Investment Return versus uncertainty of retirement income products



Source: "Modernising Annuities: Response to the Consultation Paper from Inland Revenue and the Department for Work and Pensions", The Faculty of Actuaries and Institute of Actuaries, April 2002.

In the Irish market, virtually all annuities are, in the terminology Table 3.1, "ordinary" annuities. Analysis of the survey responses we received from Irish life assurance companies indicates that over 90% of annuities sold are immediate annuities with either level payments or payments that escalate at a fixed rate.

Table 3.2: Analysis of types of annuities bought in Ireland

Level	Increasing at a fixed rate	Increasing with LPI	Increasing with CPI	With-profits	Others
86%	5%	8%	1%	0%	0%

Source: Indecon/Life Strategies survey of annuity providers (2007).

The other sales (the remaining 10%) are also immediate annuities, but typically with a variable escalation rate which is partially linked to the rate of price inflation.[21] One company offers an inflation-linked annuity, but we understand that sales to date have been low. We understand that this is because most individual purchasers opt for level annuities (for the reasons given below) and to-date relatively few pension schemes have bought out CPI-linked pensions on scheme wind-up.

The reason for the preference for level over increasing annuities is well summarised in the following quote taken from Hewitt Associates (2005):

> *"Indexation reduces the initial income stream in favour of a higher income later. As such, it is hardly surprising that members of defined contribution arrangements who are faced with a choice between an index linked pension and a level pension which has a substantially higher starting point will usually opt for the latter on the "bird in the hand" principle."*

Demand also differs between DC and DB scheme members. The demand from DB trustees is for products that match the promise made to the scheme members. This is typically a flat pension (single level annuity) or fixed escalation pension. Schemes may also promise minimum guaranteed payment periods or attaching spouses' and children's pensions. These are also supplied by life offices. Typically DC members will look to maximise income and mostly select flat pensions.

One life assurance company launched an impaired life annuity product some years ago, but it did not attract much business (as at 31 December 2005 it had just 75 impaired life annuitants on its books, with annual annuity payments of just over €1 million, which represents less than 0.5% of the total market).

One life assurance company launched a with-profits annuity some years ago but, again, demand for this product has been low as can be seen from the following comment:

> *"… if listed in dozens, the number of 'participating'* [i.e. with-profits] *annuities effected in the past five years could be counted on less than one hand."*[22]

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[21] These are known as "LPI-linked" annuities. LPI stands for "limited price inflation" – the annuity payment will escalate each year in line with price inflation, but subject to a cap (typically 3%).

[22] Quotation taken from "With-Profits Annuities – A Neglected Species", Irish Pensions magazine, Spring 2006 edition.

"Investment-linked" or "flexible" annuities are not found in the Irish market, but this is largely because of the availability of a more flexible product – the ARF – which essentially renders them redundant.

We also understand that a company attempted to introduce an investment-linked type of annuity in 2000. This product ("Performance Pension") allowed smoothed equity-market exposure with certain guarantees and was intended as an alternative to the "ordinary" annuity. Once again, however, sales were very low and the product has since been withdrawn. The following comments, received from the company in question in response to our survey are interesting in this regard:

> *"However, sales were very disappointing and there was evidently little appetite amongst pension members and intermediaries for a pension that had the possibility of falling income and complicated smoothing and bonus rules. The product was not a success and has since been withdrawn. There may have been a fear by some intermediaries that selling Performance Pension may have led to mis-selling allegations if returns were poor relative to the traditional annuity."*

It should be noted that annuities, in whatever form, can be purchased with a wide variety of features. The most commonly available features are:

- Guaranteed period: An annuity may be purchased with a guaranteed period (often 5 years) which means that annuity payments continue until the end of this period irrespective of whether the annuitant is alive or not;
- Escalation: The annuity payments may be level or may escalate at a chosen rate;
- Spouse's benefits: The annuity may continue to be paid to the surviving spouse (typically at a lower rate) following the death of the annuitant. It has been reported that approximately two-thirds of annuities bought include provision for a spouse's pension.[23]

[23] Source: "Report on Benefit Options at Retirement", Hewitt Associates (2005).

All of the annuities discussed to date involve the payment of a premium followed by the receipt of an income that starts immediately ("immediate annuities"). Other types of annuity may also found in practice, most notably the "deferred annuity" where income payments do not commence immediately but are scheduled to commence at some point in the future. However, deferred annuities are virtually never purchased in the Irish market.

3.5 Distribution Channels

The vast majority of annuity sales are made through insurance intermediaries. Here, in exchange for a commission, an intermediary – broker - will use market knowledge to secure an annuity rate for their client. Brokers will have access to real time information (either over the internet or over the phone) that enables them to undertake a market search. The intermediary will also help the consumer to choose annuity features, such as an increasing income or a spouse's pension, that meet their personal needs. Additionally the intermediary will assist with any technical details.

When intermediaries look to purchase an annuity on behalf of a client the major issue for the client is the amount of pension that can be provided for the purchase money. Companies that have the best annuity rates will attract the greater portion of those funds purchasing annuities in the open market.

3.6 Regulation of Annuity Providers

In Ireland the annuities industry is regulated in three areas:

- In terms of the information provided to consumers
- Through the design of products;
- By solvency regulation of annuity providers in terms of reserves and capital adequacy.

These three areas are discussed below.

3.6.1 Information

Annuities are complex financial products and are not easily understood by the average consumer. In addition, under current legislation[24] annuities are not always[25] subject to the same level of disclosure of pre-sale product information as is the case with most other products offered by life assurance companies (including ARFs).

3.6.2 Product Design

There are many legislative and/or Revenue restrictions which restrict the pension options available at retirement and the existing market has largely arisen to meet the needs that are allowed. These restrictions include: [26]

- The annuity must be payable for the annuitant's lifetime;
- The annuity payable to a surviving dependant cannot be higher than that payable to the annuitant;
- The guarantee period may not exceed 10 years; and
- Other than payments arising from the operation of the guarantee period, no lump sum benefit may be paid on the death of the annuitant.

These restrictions may unintentionally have an impact on innovation in the market. For example, an annuity with death benefit of original premium less payments made could be provided by life companies but is not allowed for tax relief by Revenue.

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[24] Life Assurance (Provision of Information) Regulations, 2001

[25] Whether or not the provisions of the Life Assurance (Provision of Information) Regulations apply depends on the source of the money being used to purchase the annuity (e.g. annuities sold to trustees of occupational pension schemes are exempt from the Regulations).

[26] Different restrictions apply to annuities purchased for members of occupational defined contribution schemes, but the thrust is broadly similar.

3.6.3 Reserving and Capital Adequacy Requirements

Reserving and capital adequacy requirements are aimed at protecting annuity holders from insurance company insolvency. Life offices are required to set aside significant capital to secure their continued solvency and to make sure that they can honour the benefit promises to policyholders.

Under Irish insurance regulations (which implement an EU Directive which is common to all EU countries),[27] life assurance companies are required to calculate reserves to meet their liabilities on prudent investment and mortality assumptions. These reserves must be calculated on a prudent basis – the regulations explicitly state that a;

> *"Prudent valuation is not a 'best estimate' valuation but shall include an appropriate margin for adverse deviation of the relevant factors" and that the "statistical elements of the valuation and the allowance for expenses used shall be chosen prudently…".*

Applying these regulations gives rise to a situation whereby the reserve that the company must establish is greater than the premium it receives from the annuitant (as the reserve includes a higher safety margin than the premium). The additional margin is typically of the order of 10% of the premium.

Under the same regulations, life assurance companies are obliged to set aside an additional amount, known as the required minimum solvency margin, in addition to the prudential reserves which they must hold. IFSRA requests life companies to hold 150% for prudential purposes. Annuities companies are required to use a 6% solvency margin factor.[28] Thus, taking the prudential margin in the reserves together with the additional solvency margin of 6%, the total additional capital which Irish insurance companies are required to set aside to back their annuity business is in the region of 16%.

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[27] European Communities (Life Assurance) Framework Regulations 1994.

[28] The Irish Financial Regulator obliges companies to hold 150% of the required minimum solvency margin. Newly established Irish companies are required to hold 200% for the first three years of operation.

3.7 Market Capacity

3.7.1 Introduction

There is a concern in some quarters, notably the IAPF, that there is insufficient capacity in the annuity market to cope with once-off large scale annuity purchases by pension schemes.

The IAPF has commented that:

> *"At present there is limited capacity in the annuity market with only a small number of insurers willing to provide annuities and their capacity to meet any significant demand very limited. As such, if the necessity arose to secure a significant amount of pension liabilities by annuity purchase (say because of the wind-up of a large pension scheme) it is questionable as to whether supply would be sufficient to meet demand."*

In this section we examine the factors that drive capacity in the market. In economic terms, the supply side of the annuity market can be characterised as the insurance industry taking an input (fixed-interest securities), adding value by dealing with longevity risk, and creating annuities as an output.

This means that the supply of annuities depends upon

- the availability of suitable assets (fixed-interest securities and other similar assets);
- the availability of capital to back the business; and,
- the appetite of the insurance industry for longevity risk.

3.7.2 Availability of Suitable Assets

Constructing a portfolio of matching bonds is not a trivial exercise because of the very long duration of annuities and the fact that the income stream from an annuity is very different to the income stream from government or corporate bonds. Since the adoption of the Euro there has been access to the very substantial market in Euro denominated bonds. There is a large market in bonds issued by each of the Eurozone governments. There is also a substantial market in bonds denominated in Euro but issued by countries outside the Eurozone. Therefore there is no shortage of suitable risk free assets to match fixed annuity payments. Moreover, we believe that it is unlikely that the demand for annuities would increase to an extent where capacity problems would be experienced for this reason.

If the bonds available are not a perfect match for the liabilities of the insurer, there are numerous other fixed interest options available including Corporate Bonds, Mortgage Backed Securities, Swaps, Strips etc. These allow the insurer to compile an asset portfolio that can match the liabilities quite closely for fixed annuities or annuities with guaranteed increases.

As we have discussed in this Section, very few index-linked annuities are currently being bought in Ireland. However, a substantial change in demand could be caused if Defined Benefit Schemes decided to buy out their existing pensions. Many Defined Benefit schemes give increases which are linked to price inflation and would probably want to continue to do so even if the annuities were insured.[29] Such annuities would also be attractive to members of DC schemes. For an insurer to match these liabilities, the insurer would need to invest in an asset which gave a return linked to Irish price inflation. Therefore the consideration of available inflation-linked assets is important in improving market capacity in this area.

[29] Schemes which are wound up can substitute annuities with fixed increases for those with inflation linked annuities. However increased demand is more likely to come from schemes which are still active but which want to insure pension benefits.

Unfortunately there are only very small amounts of inflation-linked bonds and demand for these is extremely high (these are also attractive investments for pension schemes). There are bonds which are linked to Eurozone inflation. However we have seen that Irish inflation can depart from Eurozone inflation and as such the Eurozone inflation linked bonds do not provide an ideal asset for the life insurer. This lack of suitable matching assets may limit the ability of life insurers to offer inflation linked bonds. Our survey found that only one company is offering inflation linked annuities. Inevitably this impacts on price. The Irish Insurance Federation commented as follows on the lack of available inflation linked bonds:

> *"Life offices could more easily offer inflation-linked annuities if matching assets were issued by the Irish government. IIF would support the introduction of a wider choice of matching assets e.g. the issue by the Government of index linked gilts."*

The Society of Actuaries commented as follows:

> *"Market capacity appears to be more than sufficient in terms of current volumes of fixed annuity business. These volumes are very small relative to the size of the Euro fixed interest market and there appears to be sufficient capacity for the amount of longevity risk involved.*
>
> *There are difficulties in relation to index-linked annuities, as not only is the Euro index-linked bond market much smaller, there is a mismatch between Irish inflation and general Euro inflation, which means that bonds linked to Euro inflation rates are not an exact match for annuities indexed to the Irish Consumer Price Index. As noted above, we have asked the Irish Government to consider issuing Irish inflation-linked bonds with a view to addressing this issue."*

In summary, asset availability will not constrain the market from providing increased capacity for fixed annuities but could prevent increased capacity for inflation linked annuities.

3.7.3 Access to Capital

In Section 3.6.3 we looked at the amount of capital that a life assurance company needs to hold to support its annuity business. Ignoring the effects of reinsurance, a life assurance company must hold capital (in the form of prudent reserves and required solvency margin) of approximately 15% of the premium paid. This is quite a substantial requirement. Therefore sales of €239m in 2005 would require capital to be set aside of approximately €35m. To accommodate an increase in capacity, the life insurers must be able/willing to access additional capital or allocate existing capital to this product line.

There are three potential sources of capital

- Capital of the existing competitors in the market;
- Additional capital that these companies could raise;
- New entrants to the market.

We examined the returns to the Financial Regulator (at end 2005) for Irish headquartered life assurance companies. These show the following summary position for these companies:

Table 3.3: Capital Available, Required and In Excess to Irish Headquartered Life Assurance Companies

Category	€ million
Available Capital	3,091
Required Capital[30]	1,698
Surplus Capital	1,393

Source:Life Strategies calculations

[30] Required capital defined here as 150% of the required minimum solvency margin since this is the guideline level required by the Financial Regulator.

The six companies in question therefore have substantial available capital. Assuming that these companies were willing to allocate all of this capital to new annuity business this could support additional annuity sales of over €9bn, representing a forty fold increase on the sales in the market in 2005. Including the UK-headquartered companies who operate in the Irish market would increase this figure further. While companies would not want to use all of their capital to support annuity business the amount of any buy-outs would need to be substantial before capital became a constraint.

The analysis above does not consider additional capital that these companies could raise. Irish Life has recently raised an additional €200m of capital through a subordinated loan offering. Life companies therefore have the potential to raise additional capital through these means. All existing companies operating in this market are part of large financial services groups with access to substantial capital resources. If attractive returns were available from annuity business in Ireland these companies would be willing to invest additional capital. In some cases these companies have been rapidly growing their annuity business in other countries (e.g. Canada Life is one of the largest players in the UK annuity market).

Finally, additional market demand could lead to new entrants to the market. These new entrants could be from companies already based in Ireland who have not competed in this sector, companies who write annuity business in other countries who would be attracted to a larger Irish market and completely new entrants to the market.

Over the last two years a number of new entrants have entered the UK annuity market as a result of the substantial increase in demand in that market. Many of these new entrants may have been attracted by the possible returns and volumes which may be available. Indeed the Society of Actuaries commented on the fact that a similar trend could be observed here:

> *"We note that a specialist buy-out market is emerging in the UK in response to demand from defined benefit pension schemes to transfer risk to the insurance market. While the Irish market is much smaller than the UK, it is likely that it would respond similarly to a rise in demand for annuities and/or longevity risk transfer. It is also worth noting that analysis by the recent UK Pension Commission suggested that supply was not an inherent block to expansion of the annuity market, and the UK market has in fact absorbed a tripling of demand over the past fifteen years."*

Overall, therefore, we do not believe that available capital is likely to place any significant limit on the ability of the market to provide additional capacity.

3.7.4 Providers Appetite for Longevity Risk

The final determinant of market capacity concerns provider's appetite for longevity risk. Many of the products offered by life assurance companies do not involve significant amount of mortality related risk. For example, the following products would typically involve minimal levels of mortality risk for life assurance companies:

- Regular premium savings plans such as those used for SSIA products;
- Pension accumulation products such as PRSAs, Defined Contribution pensions and Personal Pensions;
- Investment Bonds.

Products which include a substantial element of mortality or morbidity risk (including annuity sales) accounted for just 18% of all sales[31] by life assurance companies in Ireland in 2005. Products without these risks are attractive to life assurance companies because:

- Capital requirements are lower;
- Returns are more predictable since returns to the life company are not influenced by future mortality or morbidity trends;
- Margins can be attractive on certain types of these products;
- Profits are generally not as volatile from year to year;
- They are often less complex to manage and value.

Longevity risk (and mortality risk) is therefore only attractive to life insurance companies if the returns can be expected to be greater than those available from other, lower risk, products. Some companies will not want to take the uncertainty of longevity risk. The proposed Solvency II framework for calculating capital requirements of life assurance companies seems likely to reward companies with diversified portfolios of risks. This will mean that it will not be as attractive for a company to have high levels of concentration of longevity risk compared with other risks.

[31] As measured by Annual Premium Equivalent, a standard measure in the life assurance industry

While domestic life insurance companies have shown relatively limited appetite for longevity risk, there is a substantial reinsurance market which is willing to provide this capacity. Indeed much of the business being written in Ireland at present is reinsured to international reinsurance companies. This access to international reinsurance companies substantially increases the capacity in the market and means that the appetite for longevity risk is unlikely to be a constraint on growing capacity.

We note that some commentators seem to regard the use of reinsurance by Irish annuity providers as somehow undesirable. Reinsurance provides capacity in the Irish annuity market which would not otherwise be there and this is desirable. It would appear that these concerns about the use of reinsurance are based on a perception that it leads to higher prices (as the reinsurer, and any reinsurance intermediary must, presumably, seek to make a profit on the transaction). However, we do not share this view. Reinsurers can provide annuity providers with a "wholesale" price which will normally be lower than the price which the provider would otherwise have to charge. This is because reinsurers are subject to different prudential regulations (thus lowering their cost of capital) and can also benefit from greater pooling and diversification of risks. The use of reinsurance can:

(a) reduce the insurer's capital requirements, and hence cost of capital; and,

(b) provide the insurer with greater certainty about future experience, hence reducing any loadings which might be required for risk/uncertainty.

Of course, reinsurers charge insurers a higher price than their own "cost price", and reinsurance intermediaries will charge a fee for their services, but it is not axiomatic that this leads to higher prices for Irish consumers than would apply in the absence of reinsurance – in fact, the opposite is possible for the reasons set out above.

One other factor that may assist in improving market capacity is the development of a market for longevity bonds. Longevity bonds are bonds, issued by governments or corporate bodies, where the income and/or capital repayments are not fixed but are instead linked in some way to the survivorship rate of a specified reference population.[32]

[32] See "Living With Mortality: Longevity Bonds And Other Mortality-Linked Securities" by D. Blake, A. J. G. Cairns and K. Dowd (presented to the Faculty of Actuaries, 16 January 2006) for a full description of longevity bonds and other similar securities.

The longevity bond market is still in its infancy but, if it develops, it will allow insurers to purchase bonds whose returns are linked to improvements in longevity. There are no bonds of this type available with returns linked to Irish longevity (and there are very few in other countries also). If the development of these bonds grows in international markets it will increase the potential global market to pass on the longevity risk.

3.8 Conclusion

Potential annuity providers in the Irish market are:

- Irish life insurance companies;
- Foreign life companies with branch establishments in Ireland;
- Overseas provider without an Irish branch, under the "freedom to provide services" provisions of the single market for insurance.

Under current legislation,[33] annuities may only be provided by life assurance companies. According to the Financial Regulator (2005), there are currently 14 life assurance companies with their head offices in Ireland who write life assurance business in Ireland. Of these, 12 are authorised to write the class of business ("Class I") which covers annuities. There are also 8 foreign life companies with branch establishments in Ireland, all of which possess the necessary Class I authorisation. All of these companies could write annuity business in the Irish market if they desired, without the need for any additional regulatory approval. In addition, other Irish-headquartered companies who are currently focused on other markets, could potentially enter the Irish market. There is also the possibility of overseas providers writing business in Ireland, although there are some question marks over the perception of the tax treatment for Irish consumers of annuities purchased from overseas players.

However, industry statistics for annuity business together with the results of the Indecon/Life Strategies survey of annuity providers indicate that only seven of these companies are actively writing annuity business.

A full list of the various types of annuities is set out in Table 3.4.

[33] Finance Act 2005

Table 3.4: Summary of Annuity and Retirement Income Product Types

Category	Description
Ordinary annuities	Income is defined as a base level (guaranteed for life) with an escalation rate (typically zero) fixed in advance. The provider bears the mortality and investment risks.
Impaired life and enhanced annuities	Same as an ordinary annuity except that rates are enhanced because of impairment or because of special characteristics of the individual
With-profit annuities	Income is defined as a base level (guaranteed for life), with increases in the form of bonus additions at the discretion of the insurer.
Unit-linked (or investment-linked) annuities	A guaranteed income stream is defined as a number of units per annum, rather than in monetary terms, so that the provider retains the mortality risk, but passes on the investment risk.
Flexible annuities	A range of newer product types, seeking to give some control to the annuitant concerning how they draw income or how they invest the money over time.
Income withdrawal	Income is drawn from an invested fund at a controlled rate, aiming to deliver lifelong income, but the fund is not annuitised (in the sense that funds are not forfeit on death).

Source: 'Paying Out Pensions: A Review of International Annuity Markets', Cardinale et al (2002)

In the Irish market, virtually all annuities are, in the terminology of Table 3.4, "ordinary" annuities. Analysis of the survey responses we received from Irish life assurance companies indicates that over 90% of annuities sold are immediate annuities with either level payments or payments that escalate at a fixed rate. Of note is the lack of product diversity or flexibility, with basic annuities accounting for the vast majority of sales.

The vast majority of annuity sales are made through insurance intermediaries. Here, in exchange for a commission, an intermediary – broker - will use market knowledge to secure an annuity rate for their client. Brokers will have access to real time information (over the internet or phone) that enables them to undertake a market search. The intermediary will also help the consumer to choose annuity features, such as an increasing income or a spouse's pension, that meet their personal needs. Additionally the intermediary will assist with any technical details.

There is a concern in some quarters that there is insufficient capacity in the annuity market to cope with once-off large scale annuity purchases by pension schemes. In this section we examined the factors that drive capacity in the market. In economic terms, the supply side of the annuity market can be characterised as the insurance industry taking an input (fixed-interest securities), adding value by dealing with longevity risk, and creating annuities as an output.

This means that the supply of annuities depends upon

- the availability of suitable assets (fixed-interest securities and other similar assets);
- the availability of capital to back the business; and,
- the appetite of the insurance industry for longevity risk.

Since the adoption of the Euro there has been access to the very substantial market in Euro denominated bonds. There is a large market in bonds issued by each of the Eurozone governments. There is also a substantial market in bonds denominated in Euro but issued by countries outside the Eurozone. Therefore there is no shortage of suitable risk free assets to match fixed annuity payments. Moreover, we believe it is unlikely that the demand for annuities would increase to an extent where capacity problems would be experienced for this reason.

Unfortunately there are only very small amounts of inflation-linked bonds and demand for these is extremely high (these are also attractive investments for pension schemes). There are bonds which are linked to Eurozone inflation. However we have seen that Irish inflation can depart from Eurozone inflation and as such the Eurozone inflation linked bonds do not provide an ideal asset for the life insurer. This lack of a suitable matching asset may limit the ability of life insurers to offer inflation linked bonds.

In summary, asset availability is unlikely to constrain the market from providing increased capacity for fixed annuities but could prevent increased capacity for inflation linked annuities. In addition we believe that the availability of capital and reinsurance is likely to allow the market to provide additional capacity as required.

4 Review of Pricing of Annuities

4.1 Introduction

In this Section we first of all discuss the nature of the contractual commitment involved in the pricing of annuities. We then list and discuss the key factors which life assurance companies must consider and evaluate when deciding how to price annuities, namely:

- The likely life expectancy of the annuitant (i.e. the current level and likely future development of mortality rates);
- The rate of return which can be earned on suitable matching investments;
- The expenses of selling and administering the annuity;
- The level of capital which the company is required to hold in order to meet prudential solvency requirements; and
- The desired additional risk/profit margin.

This is by way of introduction to Section 5 where we analyse the actual pricing of annuities in the Irish market.

4.2 Nature of Contractual Commitment

As discussed, an annuity is a (potentially) long-term contract between a life assurance company and an annuitant. In return for a single up-front premium, the life assurance company agrees to pay the annuitant a regular annuity payment, typically until the death of the annuitant.[34]

[34] As noted in the previous Chapter, annuities may contain a provision whereby payments continue (often at a reduced rate) to the spouse if he or she is still alive at the time of the annuitant's death (a "joint-life annuity"). For simplicity, however, we generally base examples in this Chapter on annuities which are payable to a single annuitant (a "single-life annuity"). In any event, the principles involved in setting prices are the same.

In determining the terms of the contract, the life assurance company is, therefore, required to form a view on the length of time for which it expects to have to make annuity payments and the rate of return it expects to earn on the funds it holds in the meantime.

Accordingly, life companies will set the price of annuities such that if the annuitants live, on average, for what the insurer considers to be their expected lifespan, then the sum of the initial purchase price received by the insurer plus the interest earned, less the insurer's expenses and less the pension payments made will be a positive sum, thus leaving a residual profit for the insurer at the end of the day.

It is important to note that the company cannot know for sure when it sells an annuity what the correct price should be and therefore cannot know for sure what level of profit it will earn from the annuity. It will know what level of profit it will earn if its assumptions about future life expectancy (and other assumptions) are borne out in practice, but it cannot know this with certainty in advance. The actual profitability of an annuity can only be determined retrospectively, when payments have ceased and the comparison between actual income and outgo can be made.

In summary, the life assurance company has one opportunity to set the price for a long-term contractual commitment and thus has only one opportunity to get it right. However, it will not find out whether it got it right or not until the contract has expired. There is, therefore, a risk to any life assurance company writing annuity business that it may be mispricing its annuity business. This is an important factor which needs to be borne in mind when considering how annuity prices are set and is particularly important in a small market such as Ireland.

The annuity is a simple and broadly transparent product. The consumer makes one single payment to the insurer and in return is promised a fixed income. This means that it is feasible to compare the annuities offered by rival insurers to select the one that offers the consumer the highest pension for the amount of retirement funds they have available for annuity purchase. In exchange for a commission, an intermediary will assist in the choice of an annuity product and assist with any technical difficulties.

4.3 Life Expectancy

Insurance companies pool the mortality experience of all buyers. Life assurance companies will endeavour to price their annuities on the basis of the mortality rates currently experienced by annuitants, together with an appropriate allowance for potential future improvements in annuitant mortality. The mortality assumptions will typically be reviewed on an annual basis. Age and gender are taken into account when setting the price, but otherwise they rely on pooling to average out individual health variations.

Both current mortality experience and future improvements in mortality were judged to be very important factors by annuity providers, according to the Indecon and Life Strategies Survey (see Annex 5).

4.3.1 Current Mortality Experience

In determining an appropriate assumption for current mortality, life assurance companies conduct regular investigations into their own recent experience. These experience investigations typically involve a comparison of the actual numbers of deaths which occurred at each age over the particular period under investigation with the number of deaths which would have been expected to occur if the actual mortality rates had been in line with those from a standard mortality table. The resulting age-specific ratios of actual deaths to expected deaths (known as "A/E ratios") are useful in benchmarking a particular life assurance company's actual experience against a standard mortality table.

Because the Irish annuity market is quite small, it can be helpful to look at the (much larger) UK annuity market to ascertain if the UK experience backs up the Irish experience. Life offices have a considerable amount of UK data available to set their baseline mortality assumptions. The Society of Actuaries in the past have provided information on both Irish life office mortality experience and the experience of pension schemes in Ireland that self-insure the longevity risk. The Continuous Mortality Investigation Bureau in the UK publishes regular updates on UK annuitant mortality experience. Life offices also now have access to reinsurers who have data on current annuitant mortality experience.

In addition, as Irish data is relatively limited, there is little scope for detailed analysis of particular segments of the population. The focus for Irish companies in looking at UK mortality data is not so much the absolute level of UK mortality (which is of no concern to Irish annuity providers), rather it is whether the UK data provides any useful insights into the mortality differentials which can exist across the population as a whole, whether by income, occupation, geography or other factors.

The CMI Bureau plays a key role in carrying out research into the mortality experience of holders of life assurance policies and annuitants in the UK. It draws its data from the life assurance companies in the UK and has been publishing its findings in regular CMI Reports. More recently it has also analysed data from pension schemes and compared the results with the life office annuitant experience. The CMI Reports are used by life assurance companies in the Irish market to help them to understand the impact of mortality differentials.

Irish annuity providers use their own recent experience coupled with information from wider Irish and UK studies in assessing the level of mortality currently being experienced by annuitants.

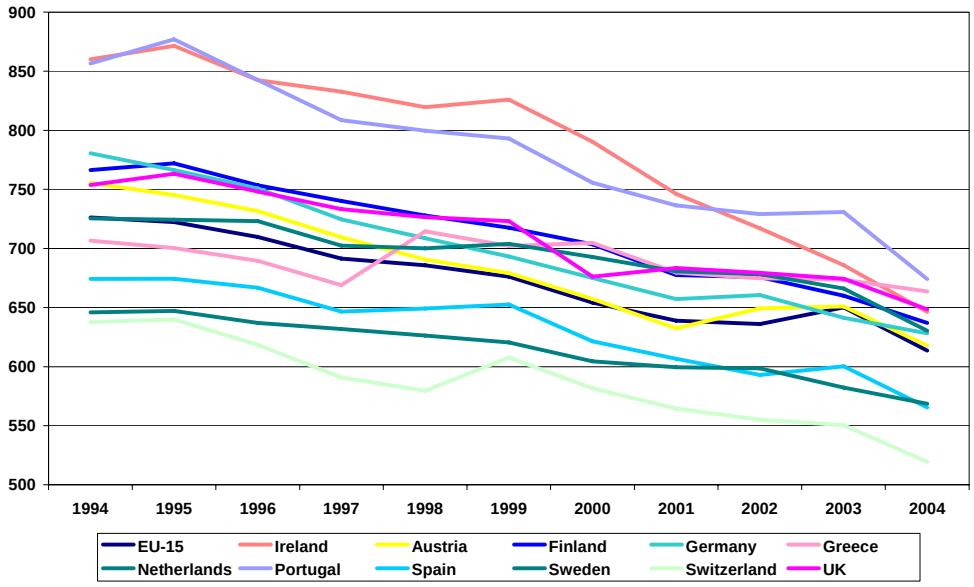
4.3.2 Future Improvements in Mortality

In pricing annuities, life assurance companies must allow not only for the current mortality experience but must also make an allowance for how that experience may develop in the future.

Of course, no one can predict with certainty how annuitant mortality rates will change over time, but all of the recent evidence has been that mortality rates are reducing steadily with a consequent increase in life expectancy. Indeed, the rate of improvement in life expectancy has been the focus of much attention in recent years and there is evidence to suggest that the rate of improvement may be accelerating.

The following graph illustrates just how dramatically mortality rates have been reducing over the past decade – not just in Ireland but throughout Europe.

Figure 4.1: Age-Standardised Mortality Rates for Selected European Countries, 1994-2004



Source: Eurostat.

It is clear from the graph that, throughout Europe, mortality has been on a downward trend over the last decade. Of all of the countries for which data is available for the full 1994-2004 period, Ireland has shown the most significant rate of reduction. From a situation where the average Irish population mortality rate was 18% above the EU-15 average in 1994, this differential had narrowed very considerably to just 5% by 2004. Comparing against the UK, we find that the differential with Irish rates had narrowed from 14% to nil over the same period. Another remarkable statistic from this data is that the Irish population mortality rate fell by 25% in just 10 years.

Whilst analysis of recent mortality trends is of interest, what really matters is what will happen to those trends in the future – will they improve, deteriorate, accelerate, slow down? There is no "right answer" to that question and different people will have different views. What this underlines is the inherent uncertainty in any projection of future mortality rates.

In undertaking projections of the future size of the Irish population, the CSO (2004) took the following approach to allowing for potential future improvements in mortality:

"There is a general consensus internationally among demographers that the improvements in life expectancy will continue for the foreseeable future. The Expert Group agreed with this and proposed that the average rate of improvement in life expectancy over the sixteen-year period 1986 to 2002 should be maintained over the life-time of the projections, with the exception of the 20 to 29 age group …"

Table 4.1 shows the projected remaining life expectancy for males and females reaching age 65 at various years in the future based on the CSO's mortality projections. In summary, those reaching 65 in 2056 are projected to live 6 years longer than those reaching 65 next year.

Table 4.1: Projected Life Expectancy at 65, 2006 to 2056

	2006	2016	2026	2036	2046	2056
Male	16.0	17.6	19.2	20.6	21.3	22.0
Female	19.4	20.9	22.4	23.9	24.6	25.3

Source: CSO projections.

Note that the projected future life expectancies quoted in Table 4.1 have been calculated allowing for projected improvements in mortality until the date in question, but with no allowance for expected future mortality improvements beyond that date (the so-called "period table" approach). This is the approach which has been adopted by the CSO (and others) when quoting projected life expectancies and we have adopted the same presentational approach for ease of comparison.

This means that the quoted life expectancies do not tell the full story – on the basis of the assumption of continued improvements in mortality beyond the date in question, they understate the true projected position. For example, the projected life expectancy for a 65 year-old male in 2006, assuming future improvements in line with the CSO's projections, is 17.7 years. For a 65 year-old female it is 21.6 years.

Improvements in mortality have been the subject of much research in recent years in other countries, particularly in the UK. Willets (1999) investigated mortality trends in the UK and found a number of interesting phenomena, notably:

- A "cohort effect" – those born between 1925 and 1945 have experienced faster improvements in mortality than generations born before or after them;

- An "ageing of mortality improvements": the rate of increase in rates of mortality improvement for elderly people has been accelerating over time (a trend which is not confined to the UK).

The concept of a "cohort effect" has since become well accepted and well established in the analysis of mortality trends. This methodology tracks the mortality experience to date of people currently retiring and compares this to the experience of previous cohorts of pensioners. The analysis helps one to predict to what extent these differentials in mortality experience will continue to exist into the future. We already know that today's retirees have significantly lower mortality rates than previous generations of pensioners: cohort analysis suggests that this differential will continue to exist as they grow older.

The Working Party on Population Studies of the Society of Actuaries in Ireland issued a report in 2003 which investigated recent trends in Irish mortality improvements (based on CSO population data). The purpose of the Working Party's investigation was to determine if, as in the UK, there was evidence of a "cohort effect" in Ireland and to consider possible assumptions to use for projecting future mortality improvements.

The Working Party concluded that there was some evidence of cohort effects for both males and females and felt that projections of future mortality rates should allow for this. The Working Party produced three scenarios for mortality improvements (low, medium and high) which produced somewhat different results to the CSO's projections. (In broad terms, the CSO projections are somewhere between the Working Party's central and high improvement scenarios.)

The problem for life assurance companies in setting their annuity prices is deciding how to decipher the past trends and, more importantly, deciding what assumptions they should make about future trends in mortality. It seems clear from the historical evidence that some allowance for future mortality improvements is appropriate, but the question is how much?

There is a considerable range of views on this question. Some experts are of the view that the rate of improvement which has been seen to date is unlikely to be repeated in the future as it has resulted from once-off changes which will not continue at the same rate indefinitely (e.g. improvements in living standards, reductions in the prevalence of cigarette smoking). On the other hand, others argue that mortality improvements may accelerate due to advances in medical science leading to major breakthroughs e.g. in the area of genetics.

It is important to note that most projections of future improvements in annuitant mortality only allow for a continuation of the differential that already exists between the current cohort of pensioners and previous cohorts of pensioners. Any significant medical breakthrough would result in even greater improvements in mortality rates than has generally been factored in.

Information from the Society of Actuaries shows that allowing for future improvements in mortality rates of 2.5% per annum adds approximately 10% to the cost of a flat annuity and 15% to the cost of an annuity with 3% escalation. So, in summary, we can see that whilst the assumption regarding the rate of improvement in future mortality is a critically important one in pricing annuities, it is also a particularly difficult one to make.

4.3.3 Adverse Selection Effects

Adverse selection occurs when the information about an annuitant's life expectancy is known by the annuitant but not available to the life insurer. Individuals who know that they have a low life expectancy would have less reason to purchase an annuity and they might avoid doing so if possible, resulting in actual annuitants having different characteristics from the population as a whole.

Studies, both in Ireland and internationally, have shown that the mortality rates experienced by annuitants are lower than those experienced by the population as a whole (and are also lower than those experienced by pensioner members of occupational pension schemes). International evidence, described in more detail in Section 8 indicates that the mortality of annuitants is significantly lighter than the mortality of pensioners, which is, in turn, significantly lighter than the mortality of the general population. Annuity providers recognise these effects and price annuities accordingly.

The reasons why annuitants experience lower mortality than the population as a whole can be categorised under two broad headings, which are sometimes referred to as "active selection" and "passive selection" (Cannon and Tonks, 2006).

- "Passive" selection reflects the fact that the people who purchase annuities (or for whom annuities are purchased) are drawn from a distinct subset of the general population which can be expected to exhibit different mortality experience to the population as a whole. Studies of the mortality experience of pension scheme members relative to the experience of the general population indicate that pension scheme members exhibit lighter mortality than the population average (see below). Possible reasons for this may be that pension schemes, by definition, only include those who were healthy enough to be at work in the first place and that pension scheme membership is more prevalent amongst white-collar and higher income workers (socio-economic factors such as occupation and income are known to have a strong correlation with mortality).
- "Active" selection reflects the fact that annuitants may purchase annuities because they have "inside" information not available to the insurance company (i.e. that they consider it likely that their life expectancy is longer than average)[35]. In most cases annuitisation is not compulsory, which means that those retiring have the option whether or not to buy an annuity. This means that they can select the option which they consider to be of most value. If an individual believes (e.g. because of their lifestyle, family history etc.) that they are likely to live longer than average, then the annuity purchase option becomes more attractive (or, perhaps more importantly, those who consider themselves to be in relatively poor health will avoid purchasing an annuity if they can). The empirical evidence suggests that this factor is at play in the annuity market – studies show that the mortality experience of annuitants is lighter than that of retired pension scheme members as a whole.

In general terms, "bulk buy-out" purchases of annuities can be expected to exhibit passive selection – with the extent of the mortality differential varying according to the extent to which the profile of the scheme's members differs from the population as a whole – whereas individual purchases of annuities can be expected to exhibit both passive and active selection.

[35] Note that, in contrast with the way in which life assurance is underwritten, insurance companies do not generally look for medical evidence from prospective annuitants. The rating factors which are used in pricing the annuity are normally simply the annuitants age and sex.

Studies have been conducted which have investigated the relative mortality experience of the Irish population, Irish pensioners and Irish annuitants. A presentation, made to a meeting of the Society of Actuaries in Ireland in June 2004, showed the results of an investigation into the mortality experience of Irish occupational pension scheme members which found that pensioner mortality rates in the period 1998-2003 were approximately 90% of the corresponding Irish population rates.

Another presentation, made to the same meeting, compared the mortality experience of the same occupational pension scheme members with the experience of the annuitants on the books of Irish Life Assurance plc (which, as we have seen, is by far the largest provider of annuities in the State).

The following table, taken from that presentation, shows the mortality experience of both groups. The methodology used in the comparison is the "A/E approach" (see section 4.3 for an explanation), which compares the actual deaths against those which would have been expected on the basis of a standard mortality table.[36] In summary, the pension scheme members exhibited mortality of roughly 120% of the benchmark, whereas annuitants exhibited mortality of some 105% of the benchmark. Thus, in broad terms, annuitant mortality was seen to be roughly 88% of pensioner mortality.

Table 4.2: Investigation into mortality experience of Irish pensioners and Irish annuitants

Age	Occupational pensioners A/E	Life office annuitants A/E	Annuitants as % of pensioners
62	123%	131%	107%
67	120%	93%	78%
72	115%	98%	85%
77	107%	91%	85%
82	122%	113%	93%
87	133%	N/A	N/A
92	120%	N/A	N/A
All	**120%**	**105%**	**88%**

Source: Society of Actuaries in Ireland (2004).

[36] In this case, the standard table used was the PMA92 (C=2001) mortality table from the UK. However, given that we are interested in the relative mortality of the two groups rather than the absolute level, the choice of table is not particularly crucial.

Some caveats should be applied to this investigation – notably that the data source is relatively small, the pension schemes chosen for inclusion in the study may or may not be representative,[37] and the period under investigation was relatively short. Nevertheless, it remains, to our knowledge, the only study of its kind in the Irish market.

Recent studies in the UK show a similar picture to Ireland regarding the impact of adverse selection. Comparing the most recent life office annuitant mortality tables (the "00 series" tables) with corresponding UK population mortality tables (1999-2001) we find that, over the 60-80 age range, male annuitant mortality averaged approximately 63% of population mortality. Over the 60-100 age range, the average was approximately 73%. The corresponding female ratios were 69% and 76% respectively.

Another UK report,[38] this time examining the relationship between pensioner and annuitant mortality found that retired male pension scheme members exhibited mortality rates which were some 122% of annuitant rates;[39] the corresponding female ratio was 126%. Taking an average of 124% and inverting this ratio – to express annuitant mortality as a percentage of pensioner mortality – gives a figure of 81%.

Finally, it is worth mentioning in passing that a study by McCarthy and Mitchell (2000) showed a broadly similar pattern in the USA and Australia also.

Thus, in summary, the evidence indicates that the mortality of annuitants is significantly lighter than the mortality of pensioners, which is, in turn, significantly lighter than the mortality of the general population. Annuity providers recognise these effects and price annuities accordingly. All other things being equal, an assumption of lower mortality rates will lead to higher annuity prices.

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[37] Occupational pension schemes have been established by employers in many industries, but are more prevalent amongst "white collar" employers. Mortality varies considerably with socio-economic factors.

[38] Working Paper 17, issued by the Continuous Mortality Investigation Bureau in 2005.

[39] Comparison is for 2000 against the PMA00 (C=2000) table.

4.4 Investment Returns

As discussed in Section 3.3, in return for a single up-front premium, a life assurance company agrees to pay an annuitant a regular annuity payment until death. Having entered into such a contract, the life company will have a contractual liability in respect of its future obligations to make specified payments to the annuitant. The company will aim to hedge this liability by investing the premium it has received in assets whose proceeds closely match the schedule of expected future annuity outgo. This approach minimises the risk to the company that it will have insufficient funds to make payments under the annuity contract.

With this in mind, companies price annuities on the basis of the guaranteed investment returns that they can obtain in the financial markets. The most obvious assets for this purpose are government bonds (from within the Euro single currency zone). A portfolio of bonds can be constructed to deliver a schedule of investment income which is very similar, if not identical, to the schedule of expected annuity outgo. This is a fundamental risk management technique known as asset-liability matching.

In practice, companies will typically use a combination of long, medium and short-dated government bonds, strips, and derivative instruments such as swaps to try to match expected investment income as closely as possible with expected annuity outgo and thereby hedge against interest rate risk. According to our survey of Irish annuity providers, it appears that more than 75% of the assets being used to back annuity liabilities are invested in government bonds, with the balance invested in other (typically corporate) bonds. There are a number of alternative asset classes which could also be used to back annuity liabilities – most notably mortgages and mortgage backed securities – but these do not appear to be used in practice.

4.4.1 Restrictions on Investment Choices

It is important to note that life assurance companies are not obliged to invest their annuity assets in government bonds. The relevant regulations[40] permit Irish life assurance companies to invest up to 55% of their annuity assets in listed equities, a further 25% in property and a further 20% in collective investment vehicles (UCITS) which may in turn invest wholly in equities or property. Thus, it is permissible for Irish life assurance companies to invest 100% of their annuity assets in a mixture of equity and property investments.

Investment in other asset classes apart from bonds is possible, but brings mismatching risk. This risk could either be hedged or, if an unhedged mismatched position is being adopted, more regulatory capital would be required to be set aside to cover the higher risk. Either way, the additional costs of mismatching – whether the real cost of hedging the additional risks or the opportunity cost of capital on the additional capital requirements which would be required in the absence of hedging – will sometimes negate the "advantage" of investing in non-matching assets. The reason why companies choose not to pursue a strategy of investment in assets other than bonds is because of the additional capital which they would be required to set aside to cover the potential risk to the company's solvency position should investment markets move against them.

One regulatory test which companies must apply is to consider what additional capital would be required to cover the situation where equity and property markets fall by 15% and interest rates fall by 0.75%. In this situation, for a company invested 100% in equities and property, the company's assets will have fallen by 15% whilst the cost of switching into matching assets (government bonds) will have risen[41] by approximately 12%. Thus, the company would have to set aside an amount equal to 27% of the annuity premium to satisfy this test (in addition to holding the "normal" level of prudential capital, which might typically be of the order of 15%).

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[40] European Communities (Life Assurance) Framework Regulations 1994.

[41] The price of bonds moves inversely with movements in interest rates. For a given change in interest rates, the change in the price of a particular bond will depend on the duration and other characteristics of the bond. The price of a typical 20-year bond will increase by approximately 11% for a 0.75% reduction in interest rates; for a 30-year bond, the price increase would be approximately 14%.

Clearly, therefore, only a company with very substantial levels of free capital could even begin to contemplate this approach (unless it planned to write very limited volumes of business) and, even if a company did have sufficient capital to take this approach, it would not be able to remunerate that capital, as the additional premium which it would need to charge in order to do so would price the company out of the market.

It is perhaps worth mentioning that if an insurer takes investment risks on its annuity liabilities and things go badly, it cannot go back to the purchasing scheme/employer for more money, as it is providing an unconditional guarantee. In contrast, a defined benefit scheme which mismatches its pensioner liabilities may be able to obtain increased contributions from the employer to make up a deficit.

4.5 Commission and Expenses

4.5.1 Commission

Virtually all annuity business is placed with life assurance companies by intermediaries (pension consultants or independent financial advisers). Initial expenses will be largely the broker commission as life office expenses in setting up new annuity cases are low. We understand that typically brokers will take up to 2% commission on annuities.

It is interesting to note that this rate is below the typical rate of commission payable on other single premium products. Single premium investment products (including ARFs) typically pay commission of 3.5% of the premium plus 0.5% of the fund value each year, which clearly has the potential to amount to considerably more than 2% over the life of the ARF[42].

[42] It is arguable that the ongoing commission on an ARF is intended to pay for ongoing advice and that it should, therefore, be excluded from the comparison of initial commission rates. Nevertheless, even if one accepts this argument, there is still a clear difference between the rates of commission payable on the two competing retirement income products.

4.5.2 Expenses

As well as incurring the cost of paying initial commission to intermediaries, life assurance companies also incur the once-off cost of setting up the annuity policy and the recurring cost of administering the policy on an ongoing basis. The company will also incur investment management costs in managing the annuity assets.

Life companies do not disclose the actual level of expenses that they incur in administering annuity policies, but some of them disclose (in the annual returns that they make to the Financial Regulator) the level of expenses that they factor into their calculations of the reserves they need to hold for annuity business. Some sample expense allowances at 31 December 2005 included:

- Company A: €53.71 per policy, inflating at 3.75% per annum, plus 0.05% of the capital value.
- Company B: €48.90 per policy, inflating at 4% p.a.

These expense allowances – which, given the use to which they are put, are more prudent than the actual expenses incurred – suggest that the costs of administering annuities may not be particularly high.

Figures on the size of the market show that average single premium for new annuity cases is in excess of €70,000 which is a significant amount. The fixed renewal expenses of life offices should therefore not be a significant factor in determining price.

4.6 Cost of Capital

The assets backing the additional capital requirement specified in regulations (see Section 3.6.3) will typically be invested in low-risk investments (typically government bonds) and will, therefore, earn a rate of return which is less than the rate of return which the company's shareholders would normally require[43].

[43] Shareholders will normally expect companies to maximise their return on capital employed. To the extent that a company may have excess capital, such excess capital will normally be returned to shareholders if suitably remunerative uses for the capital cannot be found.

Shareholders will obviously look for return in providing this capital and these requirements have a significant impact on the prices charged by life offices. The annual charge for the cost of maintaining additional capital is represented by the difference between the return earned on the assets and the amount required in accordance with the shareholders' desired rate of return. The cost of capital is the present value of these annual charges over the life of the annuity.[44]

For providers, ARFs are typically expected to be more profitable than annuities and, more importantly, carry much less risk for the company's shareholders. In contrast with annuities, the life assurance company bears virtually no risk (neither investment nor longevity nor expense). This is reflected in additional reserving and solvency margin requirements for annuity business whereas virtually no additional reserves or solvency margin capital are required to be held for ARFs.

4.7 Loading for Potential Adverse Deviation and/or Profit

Finally, companies will build in a profit margin into the price they charge.

As noted previously, this margin will depend on whether actual experience turns out to be as factored into the price. Therefore it may be considered by some companies as a margin to cover the risk of adverse deviation in experience, as well as profit, which will translate into profit if experience proves in line with expectations.

The risk for the company is that, if pensioners live longer than expected, the company will suffer a loss. This could also happen if investment earnings turned out to be lower than expected, or expenses turned out to be higher than expected, but as we have seen, these variables are capable of being hedged or controlled by the insurance company.

In a proprietary company, the owners are shareholders, and the profits can be distributed as dividends, and losses made good either from other sources of profit or from raising fresh capital from shareholders.

[44] We are aware that there are different views on the estimation of these costs.

4.8 Summary

An annuity is a long-term contract to make payments for an uncertain future period. There are five key factors annuity providers take into account when setting prices:

- The likely life expectancy of the annuitant;
- The rate of return on suitable investments;
- Commission and expenses;
- Capital requirements; and
- The desired additional risk/profit margin.

The first two of these are the most important factors in determining the price of an annuity. It is worth noting that, unlike the allowances for commissions, expenses, cost of capital and desired profit margin, they are driven by external factors outside the control of the annuity provider.

Life Expectancy

- This is the most crucial factor in setting prices. Both current mortality experience and future improvements in mortality were judged to be very important factors by annuity providers.
- However, there is a considerable range of views on how to interpret past trends and what assumptions should be made about future trends in mortality.
- Adverse selection is also an issue and leads to higher annuity prices.

Investment Returns

- 75% of the assets being used to back annuity liabilities are invested in Government bonds.
- Falling bond yields have led to corresponding increases in the cost of annuities.
- However, investment in other classes of assets brings mismatching risk. This additional risk could be accommodated with greater capital requirements, or it could be hedged. This implies an opportunity cost or a real cost.

- Regulatory tests to consider what additional capital would be required to cover mismatching risk means that only companies with very substantial levels of free capital could even begin to contemplate moving into equities to a large extent. Even if this were the case, companies may not be able to remunerate that capital.

Commissions and Expenses

- Annuity providers incur the cost of paying initial commission to intermediaries the once-off cost of setting up the annuity policy, and the recurring cost of administering the policy on an ongoing basis.

Capital Requirements

- These costs are due to regulations ensuring prudential reserves and a minimum solvency margin.
- The assets backing this additional capital requirements will typically be invested in low-risk investments and therefore earn a rate of return than that required by shareholders.
- The annual cost of this requirement is the difference between the return earned on the assets and the return expected by shareholders. The cost of capital is the present value of these annual charges over the life of the annuity.

Desired Additional Risk/Profit Margin

- This is the margin which also covers the risk of adverse deviation in experience, which will translate into profit if expectations are met.

Mortality assumptions is one of the crucial factors in setting prices as discussed in this chapter. The issue of disclosures by insurance companies is important and we address this in our discussion of policy options.

5 Analysis of Annuity Pricing in the Irish Market

5.1 Introduction

In this Chapter we translate the analysis of the previous Section into practice by examining the pricing of annuities in the Irish market.

- Using an annuity pricing model, we calculate annuity prices based on what we consider to be a reasonable assumption for each of the pricing factors.
- We then compare prices with those being charged in the market (obtained from our survey of the market).
- We then look at the build up of annuity prices on a step-by-step basis, isolating and quantifying the contribution that each factor makes to the overall price of the annuity.
- We then investigate the "Money's Worth Ratio" (MWR) for Irish annuities.
- Finally, we look at the yield which the purchaser of an annuity can expect to earn on his or her "investment"[45]. This approach allows us to compare the cost to the consumer of buying an annuity with the cost of investing in other financial products.

5.2 Our Annuity Pricing Assumptions

In order to calculate annuity prices, we first had to choose a set of assumptions which we considered to be reasonable for this purpose. The following paragraphs set out our choice of assumptions, together with the reasoning for our choices.

[45] Remember that an annuity is not purely a financial investment – it is a hybrid product which contains a significant element of insurance.

5.2.1 Current Mortality

Based on the analysis of the mortality experience of annuitants in both Ireland and the UK (see Section 4.3 above), we considered that an assumption of 75% of population mortality would be appropriate (where population mortality rates were taken to be the CSO's 2006 rates).

As can be seen from Table 5.1, an assumption of 75% is slightly lower than the most recently reported Irish experience (79%), but is above the UK experience (73%). Given the very limited data on which the Irish investigation was based, we felt that it was appropriate to give slightly more weight to the UK experience. However, in order to investigate the sensitivity of annuity prices to this assumption, we also calculated prices using a mortality assumption of 80% of population mortality for comparison purposes.

The Irish and UK experience, as described in the preceding paragraphs, may be summarised in the following table:

Table 5.1: Summary of findings for relative mortality of pensioners and Annuitants

	Ireland	UK
Pensioner mortality as % of population mortality	90%	90%
Annuitant mortality as % of pensioner mortality	88%	81%
Annuitant mortality as % of population mortality	79%	73%

Source: Life Strategies Research.

5.2.2 Mortality Improvements

As can be seen from the discussion in Section 4.3.2 above, the choice of assumption for future mortality improvements is particularly problematic. Although it has been suggested[46] that it does not build in sufficient allowance for future improvements, we decided to use the CSO's projected mortality improvements as the most objective and independent source for this purpose.

[46] See Society of Actuaries (2004), page 6.

Over the key 65-95 age range, the average rate of future improvement underlying the CSO's projections is approximately 2% p.a., with higher improvements at the younger end of the age range (c. 3% p.a.) and lower improvements at the older ages (c. 1% p.a.). In order to investigate the sensitivity of annuity prices to the assumptions for future mortality improvements, we also calculated prices on the basis of a constant improvement in mortality rates of 2.5% p.a. across all ages.

5.2.3 Investment Returns

In relation to investment returns, we used the term structure of interest rates as at the date for which we had requested life assurance companies to provide us with their annuity prices (15 January 2007). We noted from our survey of annuity providers that the bulk of annuity assets are invested in Euro government bonds, which makes this an appropriate assumption to make for investment returns.

The Euro yield curve at the date in question was very flat, with short-term interest rates just below 4% and long-term rates just above 4%.

5.2.4 Commission

Based on information received from annuity providers, as well as on the submission from the Irish Insurance Federation, we assumed an initial commission rate of 2%.

5.2.5 Expenses

Based on our analysis of information disclosed in life assurance companies' annual filings with the Financial Regulator, together with information received from providers in response to our survey, we assumed expenses of 1% of each annuity payment.

5.2.6 Cost of Capital

As discussed in Section 4.6, Irish life assurance companies are obliged to set aside reserves and solvency margins to cover their liabilities to policyholders.

In our calculations, we assumed that the reserves are established on a typically prudent set of assumptions and that a solvency margin of 6% is required.[47] Our particular choice[48] of prudent assumptions for reserving purposes was based on an analysis of the annual filings made by life assurance companies with their relevant financial regulator.

We further assumed that shareholders in life assurance companies' require an additional return of 2.75% p.a. over the risk-free rate in order to compensate them for the risks inherent in their investment. Our resulting assumption for the "risk discount rate" (approximately 6.75%) is broadly in line with the risk discount rates used by European life assurance companies in calculating the embedded values of their businesses (as disclosed in their reported results for 2006)[49].

5.2.7 Risk/Profit Margin

We assumed that life assurance companies would add a margin for risk and/or profit of 3%. As discussed in Section 4.7, this is a "planned" rather than a guaranteed profit margin – it is a margin to cover the risk of adverse deviation in experience relative to the pricing assumptions, which will fall into profit if experience proves to be in line with the assumptions made. It would however increase if experience is better than predicted.

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[47] I.e. 150% of 4% (see Section 3.6 for details)

[48] Specifically, we assumed mortality rates of 90% of the PMA/PFA 92 table with "medium cohort" improvements, a discount rate of 3.75% and an allowance for expenses of 1.1% of each annuity payments.

[49] It is worth noting that our choice of assumption in this regard (2.75%) is considerably below the rate proposed by the Committee of European Insurance and Occupational Pension Supervisors (CEIOPS) in their latest Quantitative Impact Study (QIS3) on the design of the future Solvency II supervisory regime. CEIOPS has asked companies participating in QIS3 to assume a rate of 6% above the risk-free rate.

5.3 The Pricing Model

In order to allow us to investigate the pricing of annuities in the Irish market, we constructed a model which allows us to produce our own annuity prices. The model, which is very flexible, allows us to vary all of the inputs to the calculation (both the age and sex of the annuitant, as well as the assumptions for mortality, investment returns, commission, expenses and cost of capital).

Based on the assumptions set out above, we calculated annuity prices for a number of specimen cases. In each case the annuity in question was a single-life annuity of €10,000 per annum, payable monthly in advance, with a 5-year guaranteed period. The calculated prices for different scenarios are presented in Table 5.2.

Table 5.2: Specimen Annuity Prices as Calculated by Model with Central Assumptions

Age	Sex	Level annuity	Annuity escalating at 3% p.a. fixed
60	Male	€165,829	€238,076
60	Female	€179,084	€267,002
65	Male	€145,449	€197,784
65	Female	€160,612	€227,088
70	Male	€123,831	€159,589
70	Female	€139,910	€187,541

Source: Life Strategies annuity pricing model.

The results show the usual familiar pattern of annuity prices. In particular:

- The cost of an annuity falls the older one gets. For example, buying the level annuity is 12% cheaper for a 65 year-old than it is for a 60 year-old and it is 25% cheaper for a 70 year-old (compared to a 60 year-old).

- At any given age, an annuity on a female life costs more than a corresponding annuity on a male life (a female level pension is some 8% more expensive at age 60; 10% more expensive at age 65, and 13% more expensive at age 70 than for an equivalent male pension; the differentials for an escalating pension are even greater, reflecting the higher payments at older ages for an escalating pension).
- Escalating annuities cost more than level ones – the differentials are higher at younger ages (given that the longer payment term means that there is more time for the annuity payments to inflate), and are higher for females (for similar reasons).

Alternative prices, recalculated on the basis of an alternative mortality assumption (80% of population mortality rather than 75%), are set out in Table 5.3.

Table 5.3: Specimen Annuity Prices as Calculated by Model with Higher base mortality Assumption

Age	Sex	Level annuity	Annuity escalating at 3% p.a. fixed
60	Male	€164,680	€235,875
60	Female	€178,126	€264,926
65	Male	€144,065	€195,376
65	Female	€159,414	€224,769
70	Male	€122,266	€157,095
70	Female	€138,472	€185,037

Source: Life Strategies annuity pricing model.

Comparing the prices in Table 5.3 with those in Table 5.4 we see that increasing the mortality assumption from 75% to 80% of population rates (i.e. reducing the annual life expectancy) has the effect of reducing annuity prices by just under 1% on average for males and by just over 1% on average for females.

The annuity prices are also quite sensitive to the assumption for the rate of future mortality improvements. A second set of alternative annuity prices, this time recalculated on the basis of current mortality rates of 75% of population rates (i.e. our central assumption), but with constant future mortality improvements of 2.5% p.a. rather than the CSO's projected improvements (which broadly vary between 3% and 1% depending on age), are set out in Table 5.4.

Table 5.4: Specimen Annuity Prices as Calculated by Model with Higher Mortality Improvement Assumption

Age	Sex	Level annuity	Annuity escalating at 3% p.a. fixed
60	Male	€167,782	€244,360
60	Female	€181,377	€274,994
65	Male	€147,671	€203,510
65	Female	€163,034	€233,938
70	Male	€126,257	€164,731
70	Female	€142,386	€193,294

Source: Life Strategies annuity pricing model.

Comparing these prices with those in Table 5.2, we see that this change of assumption adds approximately 1%-2% to male annuity prices (compared to the prices on our central assumptions) and adds roughly 2.5%-3% to prices for females. Clearly, therefore, the impact of this change to the assumption for future mortality improvements has a significantly greater impact on annuity prices than the impact of a 5% change in the base mortality assumption.

5.4 Comparison of Calculated Prices with Actual Market Prices

We compared our annuity prices with the actual prices being quoted by Irish annuity providers (as supplied to us by survey respondents) in order to investigate to what extent the actual market prices differed from our model prices (which were calculated based on our assessment of what we considered to be a reasonable set of pricing assumptions). In summary, as can be seen from the table above, the best available market prices were between 0.3% and 4.5% higher than our prices.

Table 5.5: Best Available Annuity Prices as a Percentage of Calculated Prices (Central Assumptions)

Age	Sex	Level annuity		Annuity escalating at 3% p.a. fixed	
60	Male	€169,412	102.2%	€248,850	104.5%
60	Female	€183,016	102.2%	€279,000	104.5%
65	Male	€147,994	101.7%	€204,607	103.4%
65	Female	€166,778	103.8%	€239,000	105.2%
70	Male	€124,864	100.8%	€160,056	100.3%
70	Female	€143,247	102.4%	€192,900	102.9%

Source: Indecon/Life Strategies survey of annuity providers 2007.

The market median prices were between 3.9% and 7.5% higher than our prices.

Table 5.6: Median Annuity Expressed as a Percentage of Calculated Prices (Central Assumptions)

Age	Sex	Level annuity		Annuity escalating at 3% p.a. fixed	
60	Male	€173,700	104.7%	€256,000	107.5%
60	Female	€186,000	103.9%	€283,495	106.2%
65	Male	€152,137	104.6%	€209,000	105.7%
65	Female	€167,029	104.0%	€242,947	107.0%
70	Male	€129,754	104.8%	€170,000	106.5%
70	Female	€147,000	105.1%	€197,003	105.0%

Source: Indecon/Life Strategies survey of annuity providers 2007.

Whilst this comparison is very helpful in that it allows us to determine the extent of the differences between our calculated prices and the market prices, it does not shed any light on the reason for these differences. The differences could be attributable to use of different assumptions (e.g. in relation to current mortality or future mortality improvements) or could be indicative of a different risk/profit margin than we have assumed.

For example: if, instead of comparing the market prices against the prices we calculated using our central set of assumptions, we compare instead against the prices we calculated using the alternative assumption for future mortality improvements, we find that the differential has narrowed considerably, with some prices now cheaper than ours.

Table 5.7: Best Available Annuity Prices Expressed as a Percentage of Calculated Prices (Higher Mortality Improvements Assumption)

Age	Sex	Level annuity		Annuity escalating at 3% p.a. fixed	
60	Male	€169,412	101.0%	€248,850	101.8%
60	Female	€183,016	100.9%	€279,000	101.5%
65	Male	€147,994	100.2%	€204,607	100.5%
65	Female	€166,778	102.3%	€239,000	102.2%
70	Male	€124,864	98.9%	€160,056	97.2%
70	Female	€143,247	100.6%	€192,900	99.8%

Source: Indecon/Life Strategies survey of annuity providers 2007.

In summary, therefore, a comparison of market prices with the prices calculated by our model indicates that, on our central set of pricing assumptions, the market prices are somewhat higher than our model prices. However, if we change our pricing assumptions to take a more conservative view of future mortality improvements, we find that the market prices and the model prices agree quite closely.

5.5 Contribution of Each Factor to Total Annuity Price

As the pricing model allows us to recalculate annuity prices using different sets of assumptions, we can use the model to investigate how annuity prices are built up step-by-step by changing one assumption at a time until we get to the final set of assumptions. This approach allows us to isolate the contribution of each factor to the overall cost of the annuity.

We investigated the build-up of the overall annuity price in five steps, as set out in the following table.

Table 5.8: Steps Used to Build Up Annuity Prices

Step No.	Description	Summary of assumptions
1	Population mortality	CSO population mortality table, including CSO allowance for future improvements. Risk-free interest rates.
2	Pensioner mortality	90% of mortality rates used in Step 1
3	Annuitant mortality	75% of mortality rates used in Step 1
4	Include allowance for commission and expenses	Step 3 plus allowance for 2% initial commission and expenses of 1% of the annuity p.a.
5	Include allowance for cost of holding regulatory capital	Step 4 plus allowance for cost of holding additional reserves and solvency margin capital
6	Add margin for risk/profit	Step 5 plus allowance for 3% planned profit margin

The results for two specimen cases are as follows.

Table 5.9: Analysis of Step-by-Step Build Up of Annuity Prices for Two Sample Cases, Expressed as a Percentage of Step One Costs

Step No.	Male, aged 65, level annuity		Female, aged 70, 3% esc. annuity	
	Annuity price	As % of Step 1 price	Annuity price	As % of Step 1 price
1	€119,564	100.0%	€148,899	100.0%
2	€123,179	103.0%	€155,266	104.3%
3	€129,389	108.2%	€166,714	112.0%
4	€133,350	111.5%	€171,818	115.4%
5	€141,212	118.1%	€182,079	122.3%
6	€145,449	121.6%	€187,541	126.0%

In summary, these examples indicate that the combined impact of the various factors that go into pricing an annuity can add over 20% to the cost, relative to an annuity priced on population mortality and with no allowance for any costs. The results shown here for these two specimen cases are quite typical (the overall results, for males and females across all ages, range from 117% to 129%).

Of more interest, perhaps, is the fact that this analysis allows us to compare the price that a life assurance company could be expected to charge for an annuity with the value which a pension scheme might place on an equivalent liability to a pensioner member. A pension scheme would probably consider that its liability to its member should be evaluated on the basis of Step 2 above rather than Step 6 (i.e. using typical pensioner, rather than annuitant, mortality assumptions and stripping out the allowances for commission, expenses, cost of capital and risk/profit margin).

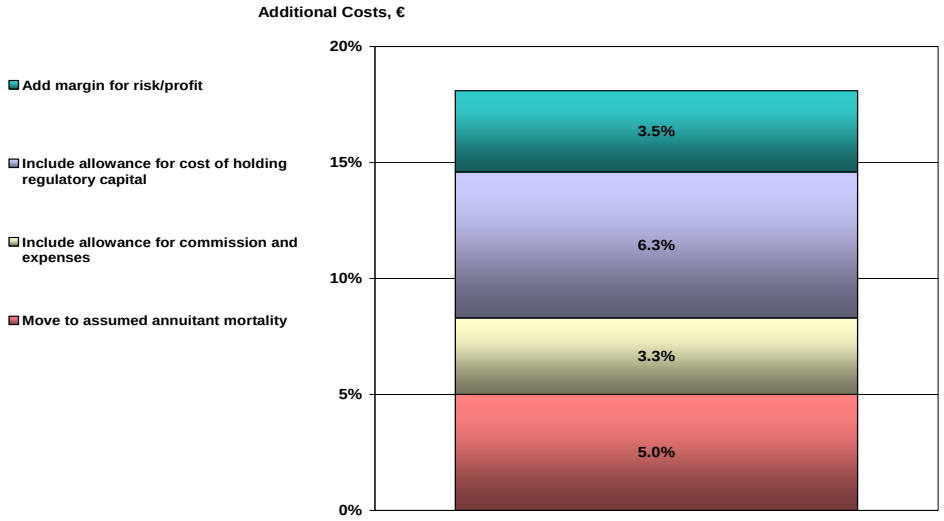
Re-expressing the figures as a percentage of the Step 2 cost rather than the Step 1 cost allows us to see the impact of these additional elements relative to the Step 2 cost. The revised presentation is set out in Table 5.10.

Table 5.10: Analysis of Step-by-Step Build Up of Annuity Prices for Two Sample Cases, Expressed as a Percentage of Step Two Costs

Step No.	Male, aged 65, level annuity		Female, aged 70, 3% esc. annuity	
	Annuity price	As % of Step 2 price	Annuity price	As % of Step 2 price
1	€119,564	97.1%	€148,899	95.9%
2	€123,179	100.0%	€155,266	100.0%
3	€129,389	105.0%	€166,714	107.4%
4	€133,350	108.3%	€171,818	110.7%
5	€141,212	114.6%	€182,079	117.3%
6	€145,449	118.1%	€187,541	120.8%

On this basis, looking at the male 65 case, we find that annuity prices could be expected to be approximately 18% higher than a pension scheme's assessment of its corresponding liability. This is shown in the chart below. The cost of capital accounts for the biggest difference, accounting for 6%, mortality differentials accounting for some 5%, a planned profit margin of over 3% and commission and expenses accounting for approximately 3%.

Figure 5.1: Additional Costs of Male, Aged 65, Level Annuity Relative to Pension Schemes' Assessments of Corresponding Liabilities



Source: Life Strategies annuity pricing model.

It is interesting to note that our findings agree reasonably closely with the views of the Society of Actuaries in Ireland. A submission received from the Society stated that:

> *"We understand that in aggregate the cost of capital, commission and lower mortality levels (compared with those experienced by occupational pension schemes) amounts to between 10% and 15% of the annuity price (approximately 6% in respect of the cost of capital, 1.5% in respect of commission and 5% in respect of the mortality selection effect)."*

The figures for the impact of the mortality differential and the cost of capital agree with their figures. However, we have a higher figure for the impact of commission and expenses and we also allow for a further planned profit margin of 3%.

5.5.1 Annuity Prices and the Minimum Funding Standard

Arguments have been advanced in certain quarters that it is inappropriate for the Minimum Funding Standard to use the actual market cost of buying an annuity as the benchmark for the amount of the liability for pensions payable to retired members. This is not a specific issue on which we are asked to comment, but the analysis in this section can help in considering this.

One of the chief critics of the requirement to use annuity rates as the benchmark for this purpose has been the Irish Association of Pension Funds (IAPF). In a discussion document published in May 2005, the IAPF claimed that the cost of buying an annuity can exceed the *"long-term cost allowing for mixed investment"* by 32%, with *"the bulk of the difference between the expected cost of providing for pensions and the annuity cost is caused by the requirement of insurance companies to invest in bonds and their use of a higher level of mortality improvement than expected by independent actuaries (conservative vs. best estimate)"*. However, somewhat paradoxically, the document goes on to state that *"we have no evidence that annuity providers over charge for this type of product"*.

In summary, the IAPF believes that the *"annuity cost can exceed long-term expected cost by 32%"* with the *"excess cost if investment restricted to bonds"* accounting for a 17% difference, with the remaining 15% made up of differences in mortality assumptions, expenses, cost of capital and profit margin.

It is our view that the true cost of annuities (or any guaranteed pension) must be calculated on the basis of the yield available on a matching portfolio of risk-free assets. The reason as to why we believe this to be the case, is best summarised by the following example, taken from a paper by Record (2005):

> *"I should note here that in my opinion the question of the 'cost of a pension' has attracted an extraordinarily high level of debate for a question which has a definitive answer. Let me use this analogy.*
>
> *I am an employer, and I pay an employee £15,000 per year. The employee receives £1,250 monthly in arrears. I would expect no debate on the question "how much does that employee cost to employ?".*

Now suppose that the employer has identified a particularly astute professional punter... This man has a good record of making more money on the horses than he loses, and for a small fee (obviously too small!), lets the employer into his tips. The employer makes a practice of making bets at the start of each month with the £1,250 set aside for his employee's wages that month. Sometimes it is a disaster and all the month's wages are lost. Other months are terrific, and the employer makes several times the monthly salary as profit. The employer of course makes up (or pockets) the difference whatever the outcome, so that the employee never really knows what the employer is doing, and is perfectly content with his pay arrangements. Let us imagine that over the years the employer makes an average of 33% profit on each monthly bet (after the fee to the punter), so the average annual cost to the employer is £10,000. What is the cost of employment?

I would wish the reader to agree that the cost of employment be universally taken to be £15,000 p.a., and an offsetting credit (in this case £5,000 p.a.) for successful betting (and reported as such). …

… This debate has boiled down to the appropriate discount rate for liabilities. I am using [a risk free rate] because that is the current market price and is available to every investor … who wishes to acquire an investment at no risk. Those who wish to have the employee's cost at £10,000 will wish to use higher rates of return (which may reduce the 'apparent' cost of the pension), but none of which are available without risk.

It is entirely logical for the sponsor of a funded defined benefit pension fund to choose to accept some investment risk in return for the expectation of higher returns for the pension fund over the longer-term. It is a business decision, and employers make and re-make these kinds of decisions all the time. However what is not acceptable is to use this choice as a lever to argue that because of this the liabilities of the fund are somehow reduced. The liabilities are invariant with respect to the method of investment: they exist because of pension promises, and will have to be paid whatever the investment returns."

We agree with this analysis. In our view, any argument to the effect that the cost of providing a pension to a retired pension scheme member is unnecessarily overstated by using a risk-free discount rate (as is used by annuity providers in pricing annuities) is not a valid one.

This leaves the remaining 15% difference in costs (according to the IAPF's analysis) to be considered. The factors giving rise to these additional costs are the different mortality assumptions adopted by life assurance companies, the allowance for commissions and expenses, the allowance for the cost of capital and the margin for risk/profit. Our analysis of the additional cost from these factors is somewhat different to the IAPF's analysis (we calculated a typical cost difference of some 18%-20%), with a higher contribution from the cost of capital being the main contributor to the difference.

The question then becomes whether or not it is appropriate for the Minimum Funding Standard to include these additional costs for the purposes of measuring a scheme's liabilities.

Given that the Minimum Funding Standard is aimed at ensuring that pension promises can be secured on wind-up, and that for most schemes the only practical way of securing pension benefits is to purchase annuities, it is difficult to see how one can use anything other than the annuity rates available in the marketplace as the basis for the Standard.

The one possible exception is for the few very large schemes that are so large that they could in practice be run as closed funds, even if employer sponsorship were to cease (whether voluntarily or otherwise). In this case, it could be argued that some of the additional costs/margins which a life assurance company must include in its annuity prices could be stripped out in determining an appropriate benchmark. Even in this case, however, whilst some factors could be stripped out (commission, cost of capital and profit margin), an allowance for expenses should remain, the calculations should continue to be carried out on the basis of the risk-free rate of return, and some allowance should be made for the possibility for adverse deviations in mortality experience.

5.6 The Money's Worth Ratio (MWR)

5.6.1 Introduction to the MWR

A common approach to investigating the value of annuities is to use a measure called the money's worth. The money's worth (also sometimes referred to in the literature as the EPDV, or expected present discounted value) represents the value of the expected annuity payments that would be received if the annuity were purchased with €1. The MWR is a concept which has been used by other researchers in other markets and thus allows us to compare the money's worth of annuities in Ireland relative to those in other countries (particularly the UK).

If the money's worth is €1 then the annuity is perfectly fairly priced (and the life-assurance company receives no compensation for administrative costs, cost of capital or profit). Given that life assurance companies incurs costs, have to establish prudential reserves and solvency margins (which are invested conservatively), and price their products to make some profit, one would expect the money's worth to be somewhat less than €1.

In mathematical terms, the EPDV of a single life annuity can be written as follows:

$$EPDV = \sum_{t=1}^{T} \frac{A_t * S_t}{\prod_{j=1}^{t} (1 + i_j)}$$

where A_t is the annuity amount payable at time t, S_t is the probability that the annuitant survives until time t, i_j is the one-period interest rate at time j, and $\Pi(1 + i_j)$ is the discount factor at time t.

Hence there are three inputs which are required in order to calculate the EPDV:

- The amount of the annuity payable at time t;
- The interest rates that are used to discount future annuity payments; and,
- The mortality rates that are used to calculate the probability of receipt of each future payment.

The first of these does not require any subjective assumptions – we simply choose the amount of the annuity for which we want to calculate the EPDV. The second and third require assumptions to be made, however.

Finally, the ratio of the EPDV to the purchase price is known as the Money's Worth Ratio or MWR. A ratio of 1.0 would imply that the annuity price contained no loadings for expenses or profit – in other words that for every €1 of premium, the average individual could expect to receive €1's worth of future income.

In practice, given that insurance companies must pay the costs of commission and administration, must hold prudential reserves and solvency margins (which give rise to a cost of capital) and can be expected to build in a margin for contingencies/profit, one would reasonably expect to see MWRs of less than 1.0.

5.6.2 Methodology

We used our pricing model to investigate the MWR for annuities in Ireland, using the following data.

Annuity rates

We considered the case of an individual who is purchasing a single life annuity and we looked at two types of annuity – a level annuity and an annuity which will escalate in payment at 3% per annum. As previously noted, the annuity rates which would have been quoted to this individual on 15 January 2007 have been supplied to us by those providers in response to our survey request.

Mortality rates

When it comes to a suitable mortality assumption, the normal approach is to calculate MWRs by considering mortality from the perspective of the average individual (i.e. the individual with the average life expectancy). As we have already seen, an average annuitant tends to live longer than an average member of the population, so we examine the MWR from the perspective of the average annuitant rather than the average member of the population.

Accordingly, as set out in Section 5.2.1, we based our calculations on a mortality assumption of 75% of the base rates from the mortality tables prepared by the CSO (2006) which, as we have seen in Section 5.2.2 above, incorporate an allowance for future mortality improvements at an average rate of improvement of between 1% and 3% p.a. depending on age.

Interest rates

In terms of a suitable interest rate assumption, we used the term structure of interest rates on Euro government bonds as at 15 January 2007.

5.6.3 Results

The results of our MWR calculations are set out in Table 5.11 and Table 5.12. The first table looks at the MWR based on the median annuity price from our survey.

Table 5.11: Money's Worth Ratios for Specimen Annuities Based on Comparison With Median Market Price

Age	Sex	Level annuity	Annuity escalating at 3% p.a. fixed
60	Male	0.849	0.812
60	Female	0.867	0.837
65	Male	0.850	0.828
65	Female	0.866	0.831
70	Male	0.850	0.824
70	Female	0.856	0.846

Source: Life Strategies annuity pricing model and Indecon/Life Strategies pricing survey (2007).

The second table looks at the position relative to the best annuity price quoted. Looking at the MWRs in Table 5.12 we see that they range from 0.835 to 0.883. In other words, some 12% to 17% is being absorbed in costs/ loadings/expected profits.

Table 5.12: Money's Worth Ratios for Specimen Annuities Based on Comparison With Best Available Market Price

Age	Sex	Level annuity	Annuity escalating at 3% p.a. fixed
60	Male	0.871	0.835
60	Female	0.881	0.851
65	Male	0.874	0.846
65	Female	0.867	0.845
70	Male	0.883	0.876
70	Female	0.878	0.864

Source: Life Strategies annuity pricing model and Indecon/Life Strategies pricing survey 2007.

5.6.4 International Comparison of Money's Worth

Studies of the money's worth of annuities in other countries have found that the cost of annuities is lower than might be expected. A World Bank study[50] found that when using a risk-free discount, the money's worth ratio of nominal annuities in Australia, Canada, Chile, Israel, Singapore, Switzerland and the UK, based on annuitant mortality tables, exceeded 97%, and in some case were over 100%. Mitchell et al (1999) used a money's worth approach to analyse the annuities market in the USA and similar exercises have been conducted by Murthi et al (1999), Finkelstein and Poterba (2002, 2004), Cannon and Tonks (2004 and 2006) and Martin and FitzGerald (2006) to analyse the UK annuity market.

[50] *Annuity Markets in Comparative Perspective: Do Consumers Get Their Money's Worth?* James and Vittas, Working Paper, 2000, the Development Research Group at the World Bank.

Cannon and Tonks' estimates of the UK annuities money's worth are shown in Table 5.13. The results imply that the annuities were sold at a rate which was approximately fair in actuarial terms. Combining the 5-year guaranteed and non-guaranteed annuities series between 1957 and 2002 the overall mean of the money's worth during this period is 0.98, which is statistically different from unity, but it is arguable whether the difference is economically significant. These money's worth calculations are based on a simple average of the prices given by different companies and therefore the money's worth for the best value companies may have been very good.

Table 5.13: Ex Ante Money's Worth of UK Annuities, Male, Aged 65, 1957-2002

Years	Type of Annuity	Actuarial Table	Mean	95% confidence interval	Test
Panel A					
1957-1973	No guarantee	a(55)	1.034	1.001-1.066	0.042
1972-2002	5 year guarantee	Various	0.985	0.963-1.008	0.187
1972-1980	5 year guarantee	a(55)	1.004	0.942-1.066	0.887
1978-1991	5 year guarantee	a(90)	0.978	0.955-1.001	0.060
1990-1999	5 year guarantee	IM80	0.985	0.954-1.017	0.316
1990-2002	5 year guarantee	IM80	0.976	0.951-1.002	0.064
1957-2002	No guaranteed spliced with 5 year guarantee	Various	0.981	0.965-0.998	0.028
Panel B					
1972-2002	5 year guarantee	Population	0.956	0.975-0.937	

Source: "UK Annuity Rates, Money's Worth and Pension Replacement Ratios 1957-2002", 'The Geneva Papers on Risk and Insurance' Cannon and Tonks, 2004a

Panel A computes the money's worth over different sub-samples of the dataset. 'Test' reports the p-value of a two tailed t-test for whether the average money's worth is significantly different from unity. Panel B computes money's worth using population life tables to assess the degree of selection.

On the face of it, this is a somewhat curious finding as it implies that insurance companies were pricing annuities with minimal allowance for commission and expenses, never mind any allowance for cost of capital or for any additional margin for potential adverse deviation in experience and/or profit.

In attempting to explain why the money's worth ratio had been historically close to 1.0, Murthi et al (1999) provided a number of possible reasons as to why this might be the case:

" … it is clear that annuitization costs are significantly lower than accumulation costs in the UK. There are a variety of explanations for this:

- *Sales commissions are low relative to other financial products.*
- *Annuities are commoditised, so it is easy for consumers or advisers to compare rates across products.*
- *The annuity amounts are relatively large, so customers have an incentive to search extensively.*
- *The lack of availability of fine-grained mortality data limits the ability of providers to cherry-pick customers*
- *Economies of scale and other benefits to providers from attracting market share in a growing market reduce prices to consumers.*
- *For providers, annuities are a useful balance against life insurance liabilities – so that they are willing to sell them at quite competitive prices.*
- *Once sold, annuities are relatively easy to administer – and hence administrative costs are low.*
- *Pension annuities purchases in the UK are irreversible, so providers do not bear lapse risk."*

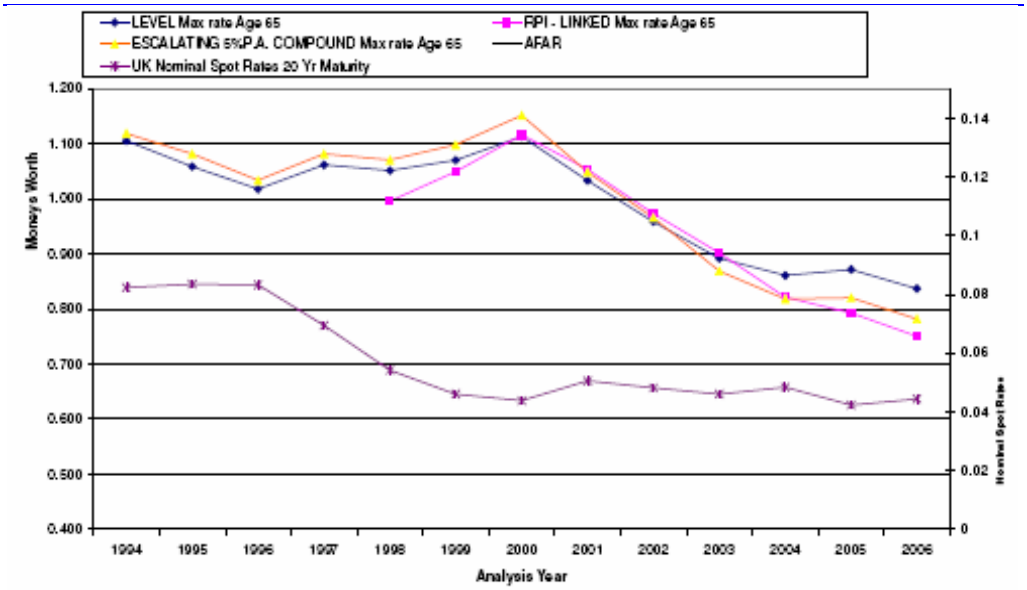
Murthi et al (2000) added a further possible explanation:

"Annuities may be written at rates that are higher than yields on gilts because insurance companies invest in riskier but more rewarding assets …".

We agree that relatively low levels of sales commissions and low administrative costs mean that the level of reduction from a MWR of 1.0 due to these factors should be relatively low (we estimate that they would justify a reduction to perhaps 0.98 in the UK environment given typical commission and administration costs in that market). We are less convinced by some of the other possible justifications given by Murthi et al and suggest some possible alternative explanations below.

Most recently, Martin and FitzGerald (2006) investigated the development of MWRs over the period 1994-2006.[51] This study built on past studies[52] by updating findings and expanding their scope using the established methodology for calculating EPDV and MW. They found that the MWR had been in excess of 1.0 until 2001 but had fallen very considerably over the past 5 or 6 years, so that the MWR for a level annuity had fallen to 0.85 in June 2006. (They note that this downward trend had not been identified in previous studies of the MWR in the UK as these had only investigated the period up to 2002.) Figure 5.2 shows the trend of Moneys Worth for Level, escalating at 5%, and RPI linked annuities for a 65 year old male. The UK nominal spot rates, used as the discount factors in the calculation, are also shown.

Figure 5.2: Moneys Worth Trend Using Historic Discount Factors



Source: "Can "Compulsory" Annuities Provide a Fair Pension?" Edward Fitzgerald, Discussion Paper, Economics and Finance Brunel Business School, October 2006.

[51] *Can "Compulsory" Annuities Provide a Fair Pension?* Edward Fitzgerald, Discussion Paper, Economics and Finance Brunel Business School, October 2006.

[52] Including Cannon and Tonks (2004),, Finkelstein (2002), Lunnon (2001), Murthi (2001), Murthi (1999)..

After peaking in 2000, payout rates however have been in a steady decline, even though the discount factor, the nominal spot rate, has remained constant.

It was found that real and escalating annuity rates also followed this pattern, but that since 2003, their MW values have fallen significantly below that offered by the Level annuity product. The MW of the real annuity product is lower than an escalating one, and this may possibly be due to insurance companies having to bear some insurance risk or demand from risk adverse individuals to purchase a real product.

Martin and FitzGerald suggest that the reason for the considerable reduction in MWRs since 2000 may be due to increased uncertainty about trends in future longevity and that that *"it is possible that annuity payout rates have been dropping to reflect concerns re the extent of this risk"*. Other commentators have believed that UK providers have in the past written business at overly optimistic rates, due to greater improvements in life expectancy than assumed in pricing.[53]

We agree that this is one possible explanation but we think that there may be some other factors which have contributed to the reduction in MWRs.

Firstly, there is now an increased focus on cost of capital in the UK industry. Prior to the severe equity market falls in the first couple of years of this decade, the life assurance industry had enjoyed a period of good returns and good profitability and was therefore very well capitalised. Capital was not a scarce resource. Since then, however, the poor investment performance, coupled with a change in the regulatory regime in the UK which forced companies to disclose their "realistic balance sheets" to the FSA and to engage in "Individual Capital Assessments", have led to a change in attitude. There is now much greater focus than before on capital usage. It is possible that in times past, insurers may not have been fully pricing in the cost of holding capital on annuities but that this has now changed. As we have seen from our investigations in 5.5 above, full allowance for the cost of capital can add approximately 7% to the cost of an annuity (in Ireland).

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[53] *Reinventing Annuities,* Wadsworth and Findlater, 2002.

Secondly, there is an increased focus on capital within the life assurance industry and a "de-risking" of investment strategies**.** Related to the previous point, it is possible that some insurers may, in the past, have been adopting a mismatched investment strategy on their annuity business (i.e. investing some annuity assets in equities in the expectation of higher returns and pricing their annuities accordingly). As we have seen in Section 4.4, investment mismatching is possible but only if companies are prepared to set aside increased amounts of capital to cover the mismatching risk. In an environment where capital was plentiful, some companies may have been prepared to take this approach. However, as capital has become scarcer, one way to reduce a company's capital requirements would be to "de-risk" the investment strategy and move back to matched position.

Thirdly, there has been a narrowing of spreads on corporate bonds. Many UK companies, whilst not necessarily investing their annuity funds in equities, would invest a greater or lesser proportion of those funds in corporate bonds (rather than government bonds). Corporate bonds offer higher yields than government bonds – the extra yield is referred to as the "spread" – to compensate investors for the risk of default and for the fact that such bonds may be less easily traded than government bonds. Again, some companies may have taken full or partial credit for the additional expected investment returns in pricing their annuities, offering higher annuity rates as a result (and hence showing high MWRs). Over the past few years, however, the average spreads for corporate bonds have narrowed considerably, reducing the scope for companies to follow this pricing strategy, thereby reducing MWRs.

In any event, whatever the reason for the reduction in MWRs in the UK since 2001, the current level of the MWR in the UK is very similar to the level we find in Ireland (i.e. in the region of 0.85).

5.7 Reduction in Yield

5.7.1 Introduction

An alternative approach to investigating annuities from a value-for-money perspective is to consider the "reduction in yield" associated with an investment in an annuity.

Murthi et al produced a paper on UK annuity margins in 2000 which applied the Internal Rate of Return (IRR) metric (and its derivative the "annuity margin" or the "reduction in yield") as a criterion for evaluating annuities. The following paragraphs summarise the concept, as set out in that paper.

5.7.2 Concept of IRR and RIY

As an annuity provides a stream of income until one's death in return for an initial premium, the implicit (expected) yield on an annuity is the return on the purchase price of the annuity, based on the individual's expected longevity. This yield can be compared with the yield on alternative investments, such as risk-free government bonds. The cost of the annuity can then be examined through the reduction in yield associated with investing in an annuity relative to those alternative investments.

In mathematical terms, if we revisit the equation in Section 5.6 above for the EPDV, but make the interest rate rather than the EPDV the variable of interest, we then need to find the interest rate sequence i_j which solves the following equation:

$$R = \sum_{t=1}^{T} \frac{A_t * S_t}{\prod_{j=1}^{t} (1 + i_j)}$$

where R is the annuity rate available in the market.

If the term structure of interest rates is flat ($i_j = i$ for all values of j), then the equation simplifies to:

$$R = \sum_{t=1}^{T} \frac{A_t * S_t}{(1 + i)^t}$$

and solving for i gives the internal rate of return on an annuity.

The internal rate of return ("IRR") is a widely used measure for assessing the merit of an investment. It is the interest rate that equates the present value of an investment's cash inflows with the present value of its cash outflows (i.e. it gives a net present value of zero). It is also sometimes referred to as the "yield" on an investment.

An investor can consider the IRR available on a potential investment and compare it with the IRR available on alternative investments; provided the relative riskiness has been properly factored into the projections of the cash flows, the investment which shows the highest IRR is the most financially attractive.

Returning to the calculation of the internal rate of return for an annuity, the difference between the internal rate of return which we obtain by solving the equation above and the interest rate available in the market is the interest rate margin implicit in the underlying annuity rate. This interest rate margin is the same concept as the "reduction in yield" which is disclosed to prospective purchasers of many financial products[54]. As Murthi et al (2000) point out, the reduction in yield *"provides an intuitive basis for comparison with other financial services (in terms of annual costs relative to assets under management)"*.

5.7.3 Results

The following Table summarises the results of our IRR calculations using the same mortality assumptions as in our MWR work above.

[54] Under the Life Assurance (Provision of Information) Regulations 2001,, life assurance companies are obliged to provide prospective customers with a Customer Information Notice which sets out, inter alia, the reduction in yield on their investment which is projected to arise given the impact of product charges. However, annuities are not always subject to the provisions of these Regulations.

Table 5.14: IRRs for Specimen Annuities Based on Best Available Market Price

Age	Sex	Level annuity	Annuity escalating at 3% p.a. fixed
60	Male	3.01%	2.95%
60	Female	3.23%	3.23%
65	Male	2.84%	2.79%
65	Female	2.94%	3.00%
70	Male	2.67%	2.81%
70	Female	2.84%	2.94%

Source: Life Strategies annuity pricing model and Indecon/Life Strategies pricing survey 2007.

In summary, we see that the IRR varies from 2.76% p.a. to 3.23% p.a. depending on the annuity in question.

Given that short-term interest rates at the date in question were just under 4% and long-term rates were approximately 4.2%, these IRRs translate into reductions in yields of approximately 0.9% to 1.25% p.a. depending on the particular annuity in question.

In other words, an "average investor" in an annuity (i.e. someone who lives for the average expected life expectancy based on our mortality assumptions) will incur costs which reduce his or her annual yield by this amount, relative to an expense-free investment in a government bond (which is, of course, not obtainable in practice). These costs are largely due to the expenses and margins which the insurance company has built into its annuity prices but also reflect the "insurance premium" which the annuitant is implicitly paying to insure him or herself against living too long.

It is interesting to note that the reduction in yield on an annuity compares favourably with the reduction in yield on a typical ARF. The Customer Information Notices which life assurance companies are obliged to provide to prospective customers typically show a reduction in yield on an ARF of close to 2.0% per annum – in other words, the charges on a typical life assurance ARF are close to double the charges on a typical annuity.[55]

5.8 Conclusions

In order to allow us to investigate the pricing of annuities in the Irish market, we constructed a model which allows us to produce our own annuity prices. The model, which is very flexible, allows us to vary all of the inputs to the calculation (both the age and sex of the annuitant, as well as the assumptions for mortality, investment returns, commission, expenses and cost of capital).

The results show the usual familiar pattern of annuity prices. In particular:

- The cost of an annuity falls the older one gets. For example, buying the level annuity is 12% cheaper for a 65 year-old than it is for a 60 year-old and it is 25% cheaper for a 70 year-old (compared to a 60 year-old).
- At any given age, an annuity on a female life costs more than a corresponding annuity on a male life (a female level pension is some 8% more expensive at age 60; 10% more expensive at age 65, and 13% more expensive at age 70 than for an equivalent male pension; the differentials for an escalating pension are even greater, reflecting the higher payments at older ages for an escalating pension).
- Escalating annuities cost more than level ones – the differentials are higher at younger ages (given that the longer payment term means that there is more time for the annuity payments to inflate), and are higher for females (for similar reasons).

[55] No figures are available for the effect of charges on ARFs from QFMs other than life assurance companies, as they are not subject to same requirements with regard to the disclosure of projected charges at point of sale.

We compared our calculated annuity prices with the actual prices being quoted by Irish annuity providers (as supplied to us by survey respondents) in order to investigate to what extent the actual market prices differed from our model prices (which were calculated based on our assessment of what we considered to be a reasonable set of pricing assumptions). In summary, as can be seen from the table above, the best available market prices were between 0.3% and 4.5% higher than our prices.

The market median prices were between 3.9% and 7.5% higher than our prices.

In summary, therefore, a comparison of market prices with the prices calculated by our model indicates that, on our central set of pricing assumptions, the market prices are somewhat higher than our model prices. However, if we change our pricing assumptions to take a more conservative view of future mortality improvements, we find that the market prices and the model prices agree quite closely.

In terms of the price of annuities relative to a defined benefit scheme's assessment of its pensioner liabilities, we find that annuity prices could be expected to be approximately 18% higher than a pension scheme's assessment of its corresponding liability. The cost of capital accounts for the biggest different, accounting for 6%, mortality differentials accounting for some 5%, a planned profit margin of over 3% and commission and expenses accounting for approximately 3%. Our findings in this area correspond quite closely with the views of the IAPF (who suggest a 15% differential for these factors) as well as the Society of Actuaries in Ireland.

A common approach to investigating the value of annuities is to use a measure called the money's worth. The money's worth (also sometimes referred to in the literature as the EPDV, or expected present discounted value) represents the value of the expected annuity payments that would be received if the annuity were purchased with €1. The MWR is a concept which has been used by other researchers in other markets and thus allows us to compare the money's worth of annuities in Ireland relative to those in other countries (particularly the UK). Our findings are that the MWRs for Irish annuities are very similar to those currently found in the UK, being in the region of 0.83 to 0.88 (compared to approximately 0.85 in the UK). In other words, some 12% to 17% is being absorbed in costs/loadings/expected profits. We believe that these returns are not excessive.

Finally, we also investigated the Internal Rate of Return (IRR) and, by extension, the Reduction In Yield (RIY) on annuities in the Irish market. We found that the IRR varied from 2.76% p.a. to 3.23% p.a. depending on the annuity in question. Given that short-term interest rates at the date in question were just under 4% and long-term rates were approximately 4.2%, these IRRs translate into RIYs of approximately 0.9% to 1.25% p.a. depending on the particular annuity in question. We note that these RIYs – which are a measure of the costs associated with the purchase of an annuity – compare favourably with typical RIYs on ARFs (which are typically in excess of 1.5% p.a.)

6 Review of Market Characteristics

6.1 Introduction

In this section we review the structure of the annuities market in Ireland in more detail. This involves us addressing the following issues:

- Market size and growth;
- Size distribution of providers and concentration;
- Vertical Integration;
- Barriers to expansion;
- Barriers to entry; and
- Countervailing buyer power.

6.2 Market Size and Growth

First, we examine the growth of the market over time. This is an important factor in the competitiveness of the market because, other things being equal, rapidly growing markets provide more opportunities for entrants and expansion by smaller providers.

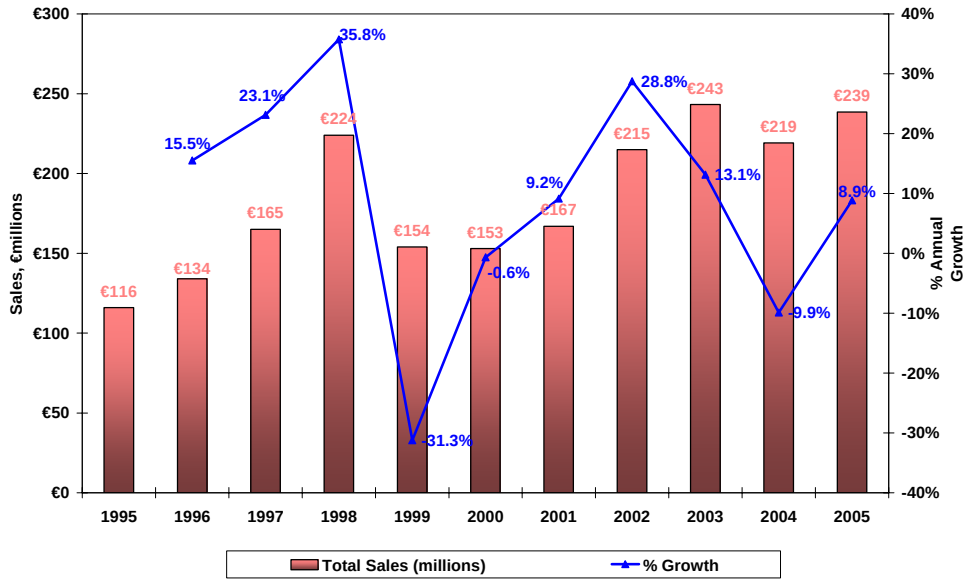
6.2.1 The Annuities Market

Historical data on annuity sales are available from statistics compiled by the Irish Insurance Federation (IIF) on its members' annual sales. The volume of annuity business written by non-IIF members is insignificant and the IIF figures may be taken to represent the entire market.

The Tax Strategy Group (1998) commented that *"the market for annuities in Ireland is small"*. This remains the case and we agree with this assessment: sales of €239 million in 2005 need to be seen in the context of total premium income of approximately €10 billion for life assurance companies in the Irish market in the same year (i.e. sales of annuities account for less than 3% of total premium income).

Annual annuity sales have grown from €116 million to €239 million over the period – an average compound annual growth rate of 7.5% per annum over the period as a whole. Adjusting for price inflation, the average real growth rate in excess of CPI was 4.0% per annum. IIF Interim figures for 2006 indicate that annuity sales in 2006 are substantially up on 2005. However the growth in the annuity market has been low compared to the growth in other life products and this can be attributed the introduction of ARFs for the director and self-employed market which had an impact on the market since 1999/2000.

Figure 6.1: Market Size and Growth of the Annuity Market in Ireland 1995 - 2005, €millions



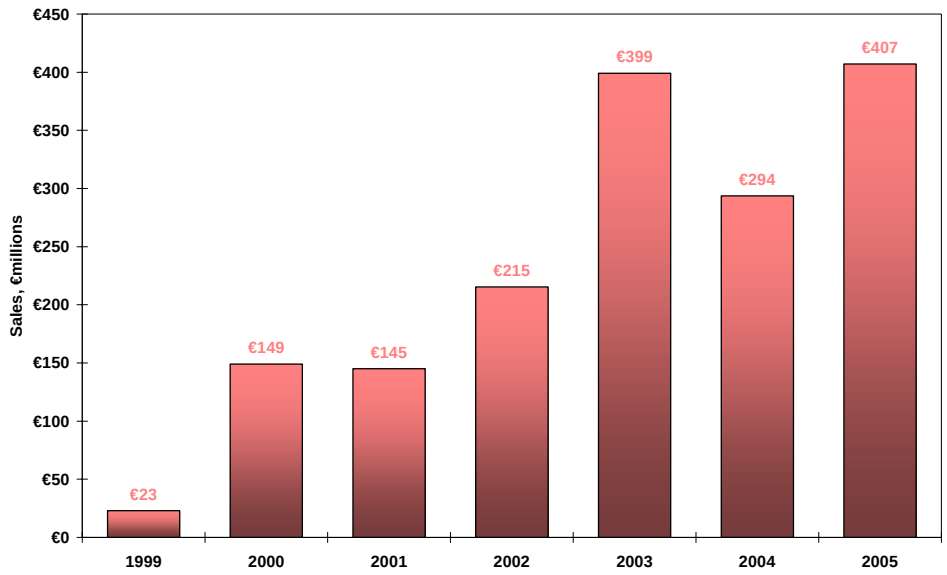
Source: Indecon Analysis of data provided by Life Strategies

6.2.2 The ARF Market

Comprehensive statistics of the size of the ARF market are not available. As noted, ARFs can be offered by a range of regulated financial institutions (QFMs), only some of which are obliged to publish regular statistical information on their ARF business.

Life assurance companies are one of the main providers of ARFs and are also the only QFMs who publish details of the size of their ARF business. Analysis of life assurance industry statistics (collated by the IIF) provides the following data on ARF sales for the period 1999-2005.

Figure 6.2: Market Size and Growth of the ARF Market in Ireland 1999-2005, €millions



Source: Life Strategies Analysis of ***New ARFs/AMRFs taken out with Irish life assurance companies, from IIF statistics. Note that these statistics only cover a portion of the overall ARF market – please refer to the comments in the remainder of section 6.2.2 for a fuller analysis.***

It can be seen that, following their introduction in 1999, sales of ARFs by life assurance companies have increased considerably (there have been some distortions to the underlying trend due to the sales of a small number of very large "super ARFs" in a couple of years (see Department of Finance (2006) for details). The overall total amount invested in life assurance ARFs over the period 1999-2005 was in excess of €1.6 billion.

It is worth noting that life assurance companies are only one of a number of financial institutions which are authorised to offer ARFs. Data on ARFs sold by other institutions (e.g. banks, stockbrokers) are more difficult to come by, but it would be reasonable to assume, based on anecdotal evidence, that the amounts invested in non-life assurance ARFs are substantial.

The Financial Services (Pensions) area of the Revenue Commissioner's Large Cases Division undertook an examination of all QFMs providing ARF/AMRF services in the first part of 2005. The results of the examination in terms of numbers of ARFs/AMRFs in existence and amounts invested were published by the Department of Finance (2006) and are summarised in the following table.

Table 6.1: Summary of ARFs in existence as of "the first part of 2005"

	Number of cases	Total amount invested (€m)	Average fund size (€)
ARFs pre- Finance Act 2000	118	19.155	162,333
ARFs post- Finance Act 2000	6,048	1,114.601	236,796
Total	**6,166**	**1,133.756**	**234,975**

Source: Life Strategies Analysis of "Review of Tax Schemes (Vol. III)", Department of Finance (2006).

Thus, according to this source, by early 2005 there were some 6,200 ARF funds with a total investment of over €1.1 billion and with an average ARF size of some €235,000 per fund. However, in relation to the average fund size, it should be borne in mind that there is a wide variation in fund sizes around this average, as the following quote from the Department of Finance report makes clear:

> *"The overall average ARF fund size, however, masks a difference in average fund size as between ARFs managed by Life Offices and those managed by other QFMs…In the case of Life Office QFMs the average ARF fund stands at €148,000 (excluding 2 "super" ARFs referred to in case studies 1 and 2 following)…In the case of Stockbroker/Bank QFMs, the average ARF fund stands at 661,000 (for 484 individual funds) but one fund at the higher end of the scale stands at €4.4m."*

There would appear to be some conflict between the Revenue's data summarised in above and the IIF sales data. The IIF sales data puts the total ARF sales for the period to 31 December 2004 at some €1.22 billion, whereas the Revenue's data has a total *"amount invested"* by *"the first part of 2005"* of €1.11 billion. Also of note is that the IIF data excludes banks, stockbrokers etc. One possible explanation is that the Revenue's data represents the market value of the ARFs in early 2005 rather than the sum of the amounts invested – given the trend in stock markets in the early years of the century it is possible that many ARFs were showing a lower market value in early 2005 than the amount originally invested and/or that substantial withdrawals had already been made. Another possible explanation is that the Revenue's survey data may be understated or the IIF sales overstated.

In any event, extrapolating from the IIF sales data to end-2005, it seems reasonable to estimate that the total amount invested in life assurance ARFs over the period 1999 to date is in the region of €2 billion. In addition, we believe that substantial (but unfortunately unquantifiable) amounts of ARF funds have also been invested with other QFMs (notably stockbrokers). We estimate[56] that this figure may well be in excess of €1 billion, bringing the total invested in ARFs over the period to in excess of €2 billion.

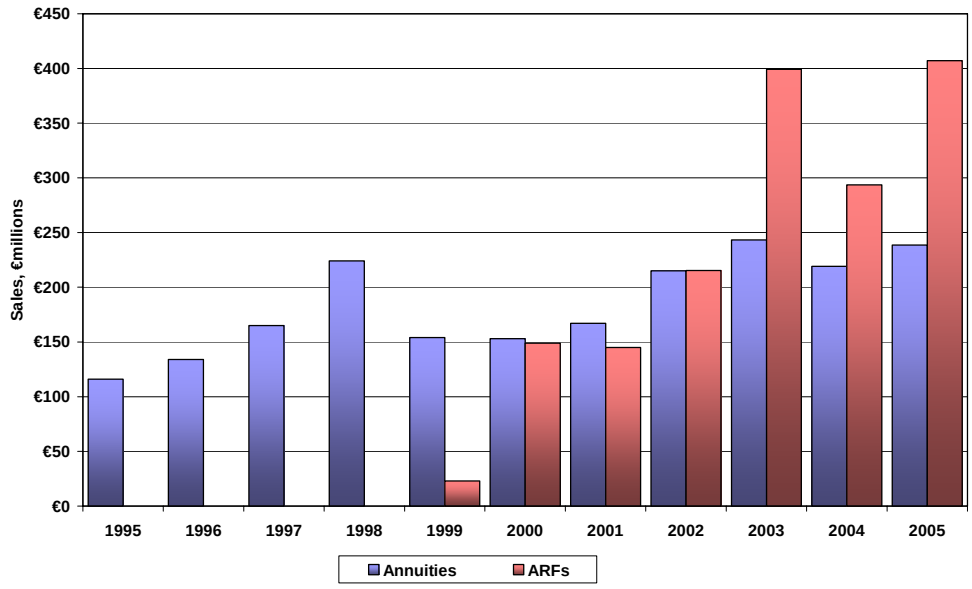
6.2.3 Total Market

Adding the annuity and (partial) ARF sales,[57] gives the following picture of the development of the overall market for retirement income products. One striking point from the graph is that the impact on annuity sales of the introduction of ARFs in 1999 can clearly be seen.

[56] Based on the split between life assurance and non-life assurance ARFs disclosed in the quotation from the Department of Finance report.

[57] Yearly data on ARF sales is only available for ARFs taken out with insurance companies.

Figure 6.3: Sales of Retirement Income Products by Insurance Companies 1995-2005, €millions



Source: Indecon Analysis of data provided by Life Strategies

6.3 Size Distribution of Providers and Concentration

Size distribution refers to the relative sizes of the providers in a market. Concentration generally refers to the number and size distribution of firms in a market. A concentrated market is one with a small number of firms with a large market share whereas an unconcentrated market is one with a large number of firms with a small market share. There are therefore two statistical components of concentration – the number of firms and the degree of inequality among them in terms of their sizes. Concentration *per se* does not provide conclusive evidence of the degree of competition or efficiency in a market but it is an important indicator in conjunction with others.

The two most widely used statistical measures of concentration are the four-firm concentration ratio (CR4) and the Herfindahl-Hirschman index (HHI). The CR4 shows the extent to which the market is accounted for by its four largest firms and is defined as the sum of the market shares of the top four firms. Mathematically, the CR4 is given by the following equation:

$$CR4 = s_1 + s_2 + s_3 + s_4$$
$$= \sum_{i=1}^{4} s_i$$

where $s_1 \geq s_2 \geq s_3 \geq s_4$ are the market shares of the four largest firms in the market. With market shares measured in percentage terms, the range of values taken by CR4 varies from close to 0% to 100%. Values close to zero are indicative of low concentration, while values close to 100% signal high concentration.

The HHI is defined as the sum of the squares of the market shares of all firms in the market. The formal or mathematical definition of the HHI is given by the following equation:

$$HHI = s_1^2 + s_2^2 + \ldots + s_n^2$$
$$= \sum_{i=1}^{n} s_i^2$$

Where s_i is the market share of the i^{th} firm in the market and n is the number of firms in the market. With market shares expressed in percentage terms, the HHI varies between close to 0 (extremely low concentration) and 10,000 (complete concentration).

The main statistical properties of the HHI as a measure of concentration are that: (i) it embodies the market shares of all firms in the market and therefore makes use of all available data; and (ii) by squaring each firm's market share, the HHI gives more weight to larger firms and thereby may be sensitive in markets where size inequalities among firms are high.

Table 6.2: HHI Values and the Level of Concentration

Level of Concentration	HHI Value	Equivalent No. of Equally Size Firms
'Low'	Less than 1,000	Equivalent to an industry with at least 10 equally-sized firms
'Moderate'	Between 1,000 and 1,800	Equivalent to an industry with between c. 6 and 10 equally-sized firms
'High'	Above 1,800	Equivalent to an industry with fewer than c. 6 equally-sized firms

Source: Indecon Analysis of Horizontal Merger Guidelines and international practice.
Note: The equivalent number of equally-sized firms is obtained by 10,000/HHI.

The HHI is commonly used to categorise the level of concentration in a relevant market as 'low', 'moderate' or 'high'. In particular, following the US Horizontal Merger Guidelines, the HHI is often used to reflect the level of concentration in the following ways.[58]

6.3.1 The Annuities Market

The annuities market is concentrated amongst a small number of players, with 8 life assurers present in the market. The largest firm has a market share of over a third while the smallest provider conducts less than 1% of business.

[58] The thresholds do not mean that the level of *competition* is low, moderate or high accordingly.

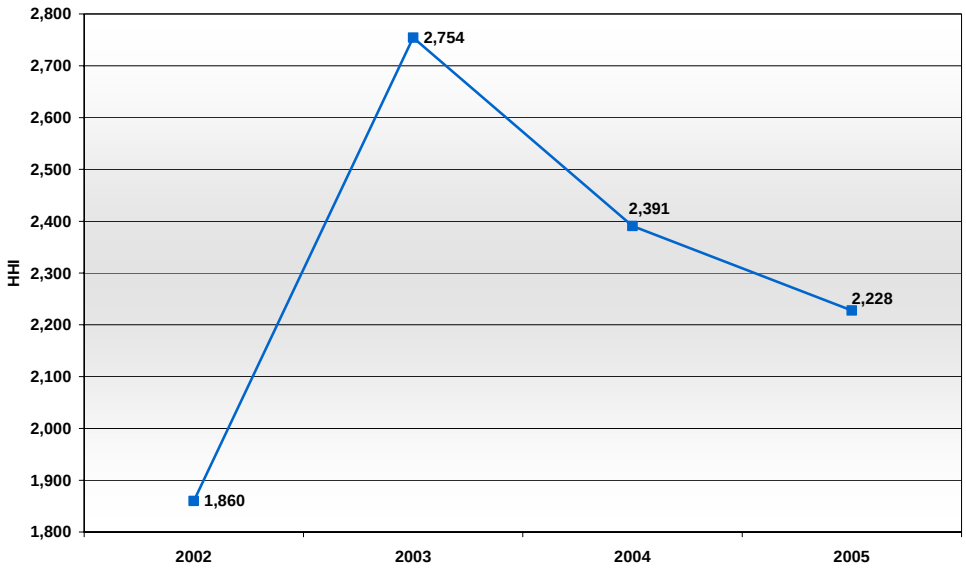
Table 6.3: Market Concentration in Annuities Market, 2005

Company	Market Share
A	36.3%
B	23.3%
G	11.0%
D	12.2%
C	5.7%
E	3.4%
F	7.3%
J	0.7%
Total	100.0%
CR4	82.8%
Herfindahl-Hirschman Index (HHI)	2,228
Concentration Climate (by HHI)	**High**

Source: Indecon Analysis of data provided by Life Strategies.

Consequently, the annuities market exhibits high concentration, measured both by its CR (82.8%) and its HHI (2,228). In addition it should be noted that some providers only write annuity business for those who are already customers (and do not compete for external business). Therefore the market is even more concentrated than these figures suggest.

Figure 6.4: Market Concentration of the Annuity Market in Ireland 2002-2005



Source: Indecon Analysis of data provided by Life Strategies

The level of concentration in the annuities market appears to fluctuate significantly – measured by a HHI of between 1,860 and 2,764. However, concentration has been falling recently, as measured by the HHI in Figure 6.4 above. We believe this may be due to the volatile share sizes, linked to pricing in the market.

6.3.2 The ARF Market

There were 9 life assurance firms operating in the ARFs market in 2005 – greater than the number of annuity providers. In addition, it must be remembered that other financial institutions are also present in this market but that data on their sales are unavailable. The largest player holds a 23.1% market share and the smallest firm holds a 0.5% market share. There is only moderate concentration in this market, as measured by both the CR4 (68.7%) and HHI (1,530) statistical measures

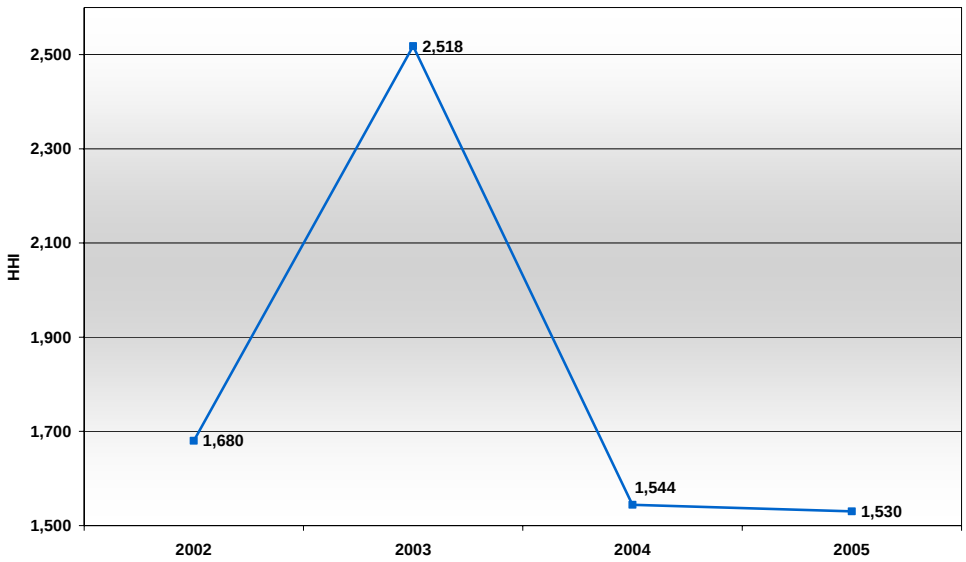
Table 6.4: Market Concentration in ARF Market, 2005

Company	Market Share
A	23.1%
C	20.5%
B	15.3%
F	9.9%
E	9.3%
D	8.4%
H	7.8%
G	5.2%
I	0.5%
Total	**100%**
CR4	**68.7%**
Herfindahl-Hirschman Index (HHI)	**1,530**
Concentration Climate (by HHI)	**Moderate**

Source: Indecon Analysis of data provided by Life Strategies

Again however, the HHI index shows considerable variation over a relatively short period of time. While remaining between moderate HHI index levels of 1,530 and 1,680 in 2002, 2004 and 2005, concentration levels peaked in 2003 to a HHI index of 2,618, implying a high level concentration in this market.

Figure 6.5: Market Concentration of the ARF Market in Ireland 2002-2005



Source: Indecon Analysis of data provided by Life Strategies

6.3.3 The Total Market

There are 10 firms active in the total market for retirement income products (i.e. annuities and ARFs). A CR4 of 72.7% implies a moderate level of concentration in the market, as does a HHI of under 1,800. This approximates to a market with between 6 and 10 moderately sized firms, implying that there was not a great deal of firm size disparity in 2005.

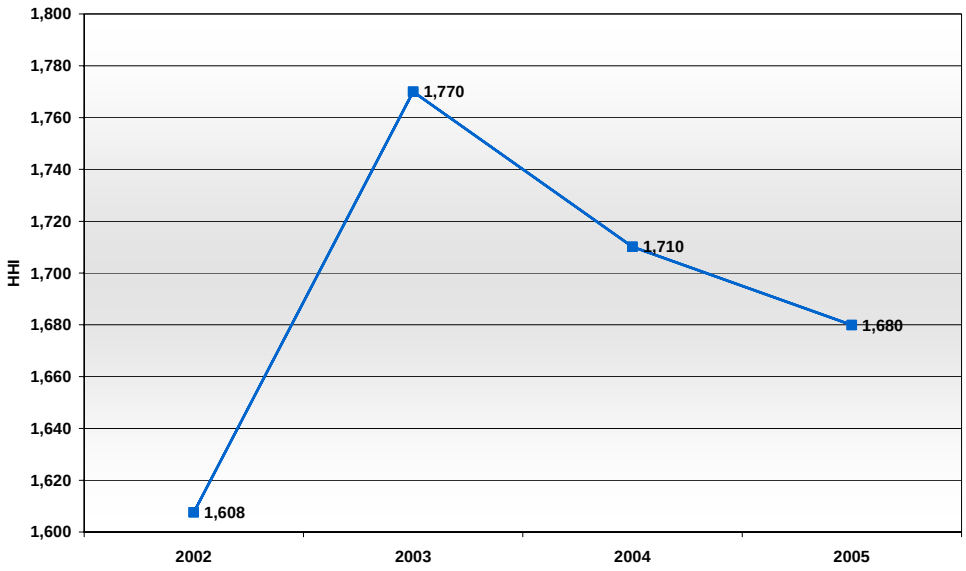
Table 6.5: Market Concentration in Retirement Income Products Market, 2005

Company	Market Share
A	28.0%
B	18.2%
C	17.0%
D	9.8%
E	8.0%
F	7.5%
G	6.0%
H	4.9%
I	0.3%
J	0.3%
Total	100.0%
CR4	73.0%
Herfindahl-Hirschman Index (HHI)	1,680
Concentration Climate (by HHI)	**Moderate**

Source: Indecon Analysis of data provided by Life Strategies.

However, the HHI over time in the total market fluctuates somewhat and has in the past years increased from 1,608 in 2002 to 1,680 in 2005. This was despite the entry of an additional firm into the market in 2004 (Firm I). We believe the increased concentration is linked to pricing in the market, causing volatile market shares.

Figure 6.6: Market Concentration of the Retirement Income Products Market in Ireland 2002-2005



Source: Indecon Analysis of data provided by Life Strategies.

6.4 Barriers to Entry

Next, we examine the issue of barriers to entry. In general, a barrier to entry is any factor limiting or preventing the arrival of new competition to a relevant market. Barriers to entry include costs that must be borne by an entrant that incumbents do not (or have not had to) bear. There are generally three types of entry barrier to a market:

- *Regulatory or public barriers to entry* – these are entry barriers due to regulatory requirements to enter the market (their effect as an entry barrier may be unintentional);
- *Structural or economic barriers to entry* – these arise as a result of demand and/or cost conditions in the market (e.g. economics of scale, sunk cost, reputation); and
- *Strategic or private barriers to entry* – an incumbent may exploit either or both of the other two types of entry barrier to limit or prevent the rate of entry to the market.

When weighing up the three types of entry barrier, if, in general, it is unlikely that a new entrant could enter the market at least at efficient scale within a two-year-period, then the overall height of entry barriers would be deemed to be high in competition assessments.

In table 6.6 we present the views of providers on the impact of regulatory or economic barriers to entry. Some respondents felt that there were economic barriers but none felt there were regulatory barriers. There are however two barriers to entry which could be classed as regulatory. The first is uncertainty amongst some potential consumers regarding the tax treatment of purchases of annuities from overseas suppliers and the second is the restriction on financial services companies other than life assurance companies from entering the annuities market. These are policy issues that may be worth considering in more detail.

Table 6.6: Annuity Providers' Assessment of Impact on Regulatory and Economic Barriers on Entry by Outside Firms

Regulatory Barriers		Economic Barriers	
Yes	**No**	**Yes**	**No**
0%	100%	17%	87%

Source: Indecon and Life Strategies Survey of Annuity Providers, 2007.

6.4.1 Cost of Entry / Regulatory Barriers

There are no regulatory barriers to entry by life assurers from within or outside Ireland: EU legislation facilitates the selling into Ireland of life assurance products by an insurer situated in another EU Member State. However, as indicated the tax treatment of annuities bought from overseas providers may require some clarification, and there is also the issue of the restrictions on providers other than life assurance companies entering the market.

6.4.2 Incidence of New Players

The incidence of entry into the market is important to assessing the competitiveness of a market because a high incidence of past entry to the market may reflect a dynamic and competitive market. Consideration of potential entrants, as well as the incidence of actual entry, to the market is important because any identified barriers to entry may be surmountable given the nature of the potential entrants.

There have not been many new entrants into the market recently. However, this may be due to the small size of the market and the risks involved. Despite the forecasted increase in the size of the annuities market, it is believed by annuity providers that there will not be a significant increase in the number of providers. A third believe that the number of competitors will increase, a third that the number will remain the same and a third that the number of competitors will decrease.

Table 6.7: Annuity Providers' Forecasted Change in Number of Competitors

Significant Increase	Increase	No Change	Decrease	Significant Decrease
0%	33%	33%	33%	0%

Source: Indecon and Life Strategies Survey of Annuity Providers 2007.

6.5 Barriers to Expansion

A barrier to expansion is any market characteristic or otherwise preventing existing firms from expanding their sizes in the long run. Factors inhibiting the growth of smaller firms may be an important source of market power or dominance and therefore market inefficiency.

6.5.1 Market Share Changes

There are a number of ways in which we can empirically assess whether or not there are barriers to expansion in the annuities market in Ireland. Barriers to expansion are measured by the market share mobility. As already noted, the market share of firms is volatile

6.5.2 Gort Measure of Market Share Mobility

The Gort measure (proposed by Michael Gort in 1962)[59] is defined as the geometric mean of the regression of current on base year market shares and the reciprocal of the regression of base year on current year market shares. That is, the Gort measure is given by the geometric mean of two numbers, ϕ_1 and ϕ_2, where $\phi_1 = \Sigma x_0x_1/\Sigma x_0^2$ and $\phi_2 = \Sigma x_1^2/\Sigma x_0x_1$, and where x_0 denotes deviations from the mean share in the base year and x_1 deviations from the mean share in the current year.

Mathematically the Gort Measure is given by the following formula, where ϕ_1 and ϕ_2 are as defined above:

Equation 6.1: $$G = \sqrt{\frac{\phi_1}{\phi_2}}$$

The significance of taking the geometric, as opposed to the arithmetic, mean of the regression slope coefficients is that it overcomes the bias that would arise if the regressions were taken separately – a bias that results from the general tendency that firms that are largest at the end of the period to have grown more than average and those that are largest at the beginning of the period to have grown less than average during the period.[60]

A geometric mean or Gort value greater than unity signifies market share changes in favour of initially larger firms, while the opposite for a mean of less than unity. The reference value of 1 indicates perfect stability over the period. Gort values less than unity suggest therefore the presence of low barriers to expansion.

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[59] Gort, M., 1963, 'Analysis of Stability and Change in Market Shares', *Journal of Political Economy*, 71, pp. 51-63.

[60] The statistical justification for this class of measure is provided by the earlier paper by Prais (1956): Prais, S. J., 1958, 'The Statistical Conditions for a Change in Concentration', *Review of Economics and Statistics*, 40, pp. 268-272.

Table 6.8: Measure of Barriers to Expansion in the Annuity Market and Sub-Markets, 2002-2005

Market	ϕ_1	ϕ_2	Gort	Interpretation
Annuities	1.074556	0.670588	1.265863	Likely to be barriers to expansion
ARFs	0.462282	0.627501	0.8583	Unlikely to be barriers to expansion
Overall Market	0.848565	0.758377	1.057791	Likely to be barriers to expansion

Source: Indecon Analysis of data provided by Life Strategies

6.5.3 Cable Measure of Market Share Mobility

The Cable measure (Cable, 1997) is defined as the sum of squared differences in market shares between two years. Formally, this measure is written as:

Equation 6.2:

$$C = \sum_{i=1}^{n} (s_{it} - s_{it-1})^2$$

$$= \sum_{i=1}^{n} \Delta s_{it}^{\ 2}$$

where s_{it} denotes the market share of firm i in year t and n is the number of firms in the market and $\Delta s_{it} = s_{it} - s_{it-1}$. To avoid the problem that share changes sum to unity by definition, the changes in shares are squared. This effectively weighs larger changes more heavily than smaller changes.

The Cable measure ranges between 0 and 2: C = 0 indicates that all market shares remain the same (perfect stability), while C = 2 describes complete market turnover. C can readily be normalised to the unit interval *via* the following transformation (giving the normalised Cable index):

Equation 6.3:

$$NC = \sqrt{\frac{1}{n} \sum_{i=1}^{n} \Delta s_{it}^{\ 2}}$$

The normalised Cable index (NC) is basically a positive index of mobility ranging between 0 and 1. This index can also be expressed in percentage terms by multiplying NC by 100.

Table 6.9: Measure of Stability in the Annuity Market and Sub-Markets, 2002-2005

Market	Cable Measure ($\sum \Delta s_{it}$)	Normalised Cable Measure (%)	Interpretation
Annuities	0.0277	5.88%	Relatively low market share mobility
ARFs	0.0462	7.17%	Relatively low market share mobility
Overall Market	0.0256	5.06%	Relatively low market share mobility

Source: Indecon Analysis of data provided by Life Strategies

The normalised Cable value for the overall market during 2002-2005 is 5%, suggesting only a slight degree of market share change. Mobility did not differ significantly between the sub-markets, although the ARF market (7.2%) displayed slightly more market mobility than the annuities market (5.9%).

To give some comparative perspective to the estimates reported here, it is worth recalling Cable's (1997) own application of his method in his 1997 study, which was carried out using data on the UK national daily newspaper market between 1975 and 1991. The normalised measure gave rise to an overall mobility rate of 4.2%, with specific mobility rates of 11.3%, 14.7% and 10.8% for the 'highbrow', 'middlebrow' and 'tabloid' sectors, respectively. There was no apparent lack of competition in this market yet the mobility rates found by Cable are smaller than those reported for the Northern Ireland PCA (Personal Current Account) market.

We can also compare the cable values above against values reported for the Northern Ireland Personal Current Account Market during 1999-2004, as publicly available on the UK Competition Commission's website http://www.competition-commission.org.uk, which found an overall normalised cable value of 30%.

6.6 Countervailing Buyer Power

In a Section 2 we discussed the types of buyers in the market and the drivers of demand. This is relevant when we assess the extent to which buyers may exert a competitive influence on the supplier side of the market, which may make the market work more effectively. Countervailing buyer power can be an effective constraint on the activities of suppliers, including the ability for firms to exercise market power. Due to the nature of the contractual commitment, once a price has been set, the annuity provider must stick with it. Therefore, effectiveness depends on the initial availability of alternative suppliers.

6.7 Summary

In this Section we have reviewed the structure of the annuities market in Ireland with reference to a number of issues in order to gauge whether market power is exercised and indicate to what degree the market is efficient and effective.

Economic analysis of dominance requires consideration of a number of elements making up the dominance principle, which comprise essentially existing competition, potential competition and the ability of the buyer side of the market to exert competitive influence.

Our overall conclusion is that the market for annuities is small, accounting for less than 3% of life assurance companies' total premium income. The annuities market has been growing, but growth has been low compared to the growth in the ARFs market and the wider market for savings and investment products more generally.

Market shares are volatile. The market concentration is persistently high, the incidence of new entrants is low and larger firms experience stronger growth than smaller ones. However, there are no substantial barriers to entry or expansion.

7 Review of Market Conduct and Performance

7.1 Introduction

In this section, we examine the nature of competition in the market and, in particular, how firms may relate to each other. Key elements include:

- Price dispersion;
- Innovation; and
- Distribution channels.

We then examine the outcomes emerging in the market, which will tend to be a function of the structure and conduct in the market. Outcomes of interest in the annuities market are:

- The profitability of firms and the market as a whole;
- Market failure caused by:
    - Asymmetric information;
    - Incomplete markets;
    - Market power

Amendment failure leads to a situation in which too much or too little output is produced relative to the optimal level that would occur under effective competition.

7.2 Price Dispersion

Price dispersion is the distribution of prices across sellers of the same item, standardized for the item's characteristics and may be used as an indicator of competition in a market, along with other market characteristics. It is often attributed to consumer search costs or unmeasured attributes of the item being sold or retailing outlets involved. It is a very useful indicator in markets characterised by information asymmetry, as the annuity market is. In general, in a market in which products are homogeneous or product differentiation is low, and consumers are well-informed, one might expect that price dispersion will be low – competition ensures price convergence. High price dispersion may indicate a lack of information by consumers, even though there is product standardisation.

Price dispersion measures include the range of prices, the percentage difference of highest and lowest price, the standard deviation of the price distribution, the variance of the price distribution, and the coefficient of variation of the price distribution.

Among the various measures of dispersion, the most representative ones are range and coefficient of variation. Although the "raw" measure of variability such as variance and standard deviation are of use, the scaled measure, coefficient of variation, is more robust. It is defined as the mean divided by the standard deviation and therefore is expressed as a ratio to the average price. While two markets may exhibit the same variance in prices, the dispersion is considered more significant in the one where the average price is lower. The rationale is there is more room for differences in prices when the average price in the market is high, thus the same variance would mean more severe dispersion in a market where prices are comparatively lower.

The range and the coefficient variance is shown in the Table 7.1, Table 7.2 and Table 7.3. These have been summarised from Table A5.6, Table A5.7, Table A5.8, Table A5.9, Table A5.10 and Table A5.11 in the Annex.

Table 7.1: Range and Coefficient Variance for Level Annuity Price as of January 15th, Assuming a Pension of €10,000 Per Annum, Payable Monthly, with a 5 Year Guarantee and No Revision

Sex	Age	% Range	Coefficient Variance
Male	60	5.2%	1.8%
Male	65	4.7%	1.7%
Male	70	8.6%	3.3%
Female	60	5.1%	2.0%
Female	65	3.1%	1.3%
Female	70	3.9%	1.5%

Source: Indecon and Life Strategies Survey

The range varies from 3.1% to 8.6% of the lowest price and the coefficient variance ranges from 1.3% and 3.3% for a level annuity.

Table 7.2: Range and Coefficient Variance for 3% Escalating Annuity Price as of January 15th, Assuming a Pension of €10,000 Per Annum, Payable Monthly, with a 5 Year Guarantee and No Revision

Sex	Age	% Range	Coefficient Variance
Male	60	3.3%	1.3%
Male	65	7.1%	2.6%
Male	70	14.0%	5.2%
Female	60	3.9%	1.6%
Female	65	2.3%	0.9%
Female	70	7.6%	2.9%

Source: Indecon and Life Strategies Survey

The dispersion of prices for 3% escalating annuities is greater. The range varies from 2.3% to 14% of the lowest price and the coefficient variance ranges from 0.9% and 5.2%.

Table 7.3: Range and Coefficient Variance for 5% LPI Escalating Annuity Price as of January 15th, Assuming a Pension of €10,000 Per Annum, Payable Monthly, with a 5 Year Guarantee and No Revision

Sex	Age	% Range	Coefficient Variance
Male	60	33.3%	14.3%
Male	65	29.4%	13.0%
Male	70	26.8%	11.8%
Female	60	38.2%	16.7%
Female	65	29.5%	13.3%
Female	70	20.8%	9.8%

Source: Indecon and Life Strategies Survey

The dispersion of prices for 5% LPI escalating annuities is substantially greater than both preceding products. The range varies from 20.8% to 38.2% of the lowest price and the coefficient variance ranges from 9.8% and 16.7%. There is a surprising degree of dispersion in the market of 5% LPI escalating annuities which may be due to the fact that a very small number of providers are prepared to quote for this type of business.

The degree of price dispersion for all three annuity products does not compare well with the price dispersion found in the 5 year fixed mortgages. The range of prices of this product is only 2.1% and the coefficient variance is only 0.7%, see below.

Table 7.4: Cost of €100,000 5 Year Fixed Rate Mortgage 20 Year Repayment as of March 19th 2007 in Ireland

Company	APR	Cost per Thousand	Repayment Cost
AIB Existing	4.94%	€6.64	€159,360
BOI	5.00%	€6.58	€157,920
ESB	5.10%	€6.63	€159,120
F/Act	4.90%	6.54	€156,960
ICS	5.00%	€6.58	€157,920
IIB Ex	5.13%	€6.65	€159,600
IIB New	4.97%	€6.59	€158,160
TSB	5.10%	€6.68	€160,320
Minimum	-	-	€156,960
Maximum	-	-	€160,320
% Difference	-	-	2.1%
Mean	-	-	€158,670
Standard Deviation	-	-	€1,107
Coefficient Variance	-	-	0.7%

Source: Indecon Analysis of Finfact figures.

This suggests that the annuity market is not working as efficiently as the mortgage market. We believe that this may be due to the fact that, in contrast with mortgage banks, not all annuity providers are actively pursuing business.

7.3 Innovation

Innovation is a form on non-price competition and a natural measure of market dynamic efficiency. That is, innovative markets are characterised by rapid product and/or process innovation. The former relates to new product development and higher quality while the latter relates to lowering costs of production using better technology and know-how. Of particular importance in both instances is the extent to which innovation occurs at the firm level and at the wider market level. Vigorous firm-specific innovation tends to indicate stronger competition and efficiency.

7.3.1 Recent Attempts at Innovation

Although half of all annuity providers believe that there is good availability of products to match consumer needs, the remaining 50% believe that availability is either only fair or poor. Therefore we may expect that providers would be interested in innovative products that would meet some of the consumer needs highlighted in Section 2.7.2.

Table 7.5: Annuity Providers' Assessment of Availability of Products to Match Consumers' Needs

Excellent	Good	Fair	Poor	Very Poor
0%	50%	33%	17%	0%

Source: Indecon and Life Strategies Survey 2007.

A paper on "The Taxation Aspects of Certain Pension Issues" from the Tax Strategy Group (1998) commented that:

> *"There are approximately 6 insurance companies currently providing annuity products in Ireland. The market is open to any insurer whether established in Ireland or in the EU generally. The market for annuities in Ireland is small and this may deter more companies providing products. In relation to products on offer, there appears to be nothing in the Irish legislation which would prevent the development of the types of annuity product on offer in the UK (other than the capital preservation product mentioned above)."*

There have indeed been some attempts at product innovation in the annuity market in recent years, aimed at broadening the range of products offered – impaired lives annuities and with-profits annuities were both launched albeit with very limited success in both cases. One company introduced an investment-linked annuity which offered smoothed equity-market exposure with certain guarantees, but this was withdrawn.

We understand that at least one life assurance company has explored the possibility of introducing an annuity with a "money back" guarantee on death, whereby the remaining outstanding capital would be returned to the estate on the death of the annuitant, but we have been informed that this was ruled against by the Revenue Commissioners.

A further fundamentally important point, however, is that the introduction of ARFs – which impose few restrictions on the choice of underlying assets – has taken away the potential demand for unit-linked or with profit annuities and has reduced the incentive to provide alternative innovative annuity products.

7.3.2 Barriers to Innovation

There are many legislative and/or Revenue requirements which may restrict the pension options available at retirement and the existing market has largely arisen to meet the needs that are allowed. These include: [61]

- The annuity must be payable for the annuitant's lifetime;
- The annuity payable to a surviving dependant cannot be higher than that payable to the annuitant;
- The guarantee period may not exceed 10 years; and
- Other than payments arising from the operation of the guarantee period, no lump sum benefit may be paid on the death of the annuitant.

More generally, pensions legislation and/or Revenue rules may be unintentionally acting as a obstacle to product innovation. It is important to note in this regard that there are no other insurance regulatory barriers to innovation. Indeed, many Irish-based life assurance companies (operating under the same prudential supervisory regime as "domestic" players) are successfully producing innovative retirement income products for overseas markets but are prevented from marketing these products in Ireland due to the Irish pensions legislation and/or Revenue rules.

We accept the imperative of Revenue conditions to ensure that any tax subsidies address only the intended objectives and also recognise the importance of Revenue rules in containing the Exchequer costs and in meeting equity and efficiency objectives. Some of the restrictions may, however, have had unintended impacts on innovation.

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[61] Different restrictions apply to annuities purchased for members of occupational defined contribution schemes, but the thrust is broadly similar.

Table 7.6: Annuity Providers' Assessment of Impact on Regulatory and Economic Barriers on Introduction of New Products

Regulatory Barriers		Economic Barriers	
Yes	**No**	**Yes**	**No**
50%	50%	33%	67%

Source: Indecon and Life Strategies Survey 2007.

Half of the annuity providers surveyed by Indecon and Life Strategies believed that regulation represented barriers to the introduction of new products.

Table 7.7: Annuity Providers' Assessment of Impact on Regulatory and Economic Barriers on Innovative Pricing

Regulatory Barriers		Economic Barriers	
Yes	**No**	**Yes**	**No**
33%	67%	17%	83%

Source: Indecon and Life Strategies Survey 2007.

Innovative pricing is also a way to meet customer needs. A third of providers thought that regulation was a barrier to this form of innovation.

While not presenting as great a difficulty as regulatory barriers, economic barriers were perceived by providers to restrict the introduction of new products (a third of providers) and innovative pricing (one-sixth of providers). This may still be significant and may be a key constraint on the size of the market in the future (see Section 3).

7.4 Distribution

Given the continued large market share of traditional annuities, the question arises as to whether the marketing and distribution process for annuities could be improved.

It appears that different annuity providers make their prices known through several different channels. Smaller providers only providing for their own policyholders will not have a presence in terms of distribution or marketing. A few providers only provide quotes to brokers and sometimes direct to consumers through enquiry, made by phone/letter. The internet is playing a greater role, with larger providers leading the way. One company has invested in its own website, to provide direct access to its annuity prices for consumers and distributors.

The vast majority of annuity sales are made through insurance intermediaries. When intermediaries look to purchase an annuity on behalf of a client the major issue for the client is the amount of pension that can be provided for the purchase money. If this distribution channel works effectively, companies that have the best annuity rates will attract the greater portion of those funds purchasing annuities in the open market, contributing to the efficiency of the market.

According to the survey conducted by Indecon and Life Strategies, two-thirds of Irish annuity providers believe that the distribution of products is good or excellent.

Table 7.8: Annuity Providers' Rating of Distribution Channels for Annuity Products in Ireland

Excellent	Good	Fair	Poor	Very Poor
17%	50%	33%	0%	0%

Source: Indecon and Life Strategies Survey 2007.

7.5 Profitability

Profitability is an important element of assessing the performance of a market although it can be difficult to measure in practice due to data constraints and to finding the appropriate measure of profitability for the market in question. While most annuity providers indicated their overall profitability in the market resulted in marginal profits, detailed data on this is not available and interestingly none felt the market was experiencing losses.

Table 7.9: Annuity Providers' Assessment of Overall Profitability of Irish Annuity Market

High Profits	Marginal Profits	Neither	Slight loss	High Loss
0%	33%	67%	0%	0%

Source: Indecon and Life Strategies Survey 2007.

A similar finding was evident concerning options on their own company's profitability.

Table 7.10: Annuity Providers' Assessment of Company's Profitability

High Profits	Marginal Profits	Neither	Slight loss	High Loss
0%	60%	40%	0%	0%

Source: Indecon and Life Strategies Survey 2007.

This is consistent with our pricing model's findings in which the profit/risk margin accounted for 3% of the price.

7.6 Market Failure

Market failure refers to the situation in which a market fails to work effectively by either delivering too much or too little output relative to the optimal level that would occur under effective competition. There are two potential sources of market failures in the context of the annuities market:

- Imperfect information; and
- Market power.

7.6.1 Imperfect Information

Types of imperfect information or asymmetry of information potentially relevant to the annuities market are:

- Asymmetric information;
- Incomplete markets.

Asymmetric Information

Information asymmetry occurs when one party to a transaction has more or better information than the other party. Typically it is the seller that knows more about the product than the buyer, but this is not always the case.

Adverse selection, discussed in Section 4.3, is a potential explanation of why annuity demand is not as high as theory suggests it should be.

As with many financial products, lack of consumer knowledge and information also means the market may function inefficiently.

Adverse Selection

Adverse selection occurs when the information about an annuitant's life expectancy is known by the annuitant but not available to the life insurer. Individuals who know that they have a low life expectancy would have less reason to purchase an annuity and they might avoid doing so if possible, resulting in actual annuitants having different characteristics from the population as a whole. In Section 5.5, the assumption of lower annuitant mortality compared to pensioner mortality (75% compared to 90% of population mortality respectively) led to an increase in price of between 5% and 8%.

Poterba and Finkelstein[62] distinguish between active selection and passive selection. The reasons why annuitants experience lower mortality than the population as a whole can be categorised under two broad headings, which are sometimes referred to as "active selection" and "passive selection" as set out in section 4.3.3.

[62] "Adverse Selection in Insurance Markets: Policyholder Evidence form the UK Annuity Market" *Journal of Political Economy 112(1)* 2002 pp.183-208

Selection effects are likely to be more important in the voluntary market compared to the compulsory market.[63] Only individuals who expect to live for a long time are likely to purchase a voluntary annuity, whereas compulsory annuities are purchased as part of the terms of the pension contract. "Bulk buy-out" purchases of annuities can be expected to exhibit passive selection – with the extent of the mortality differential varying according to the extent to which the profile of the scheme's members differs from the population as a whole – whereas individual purchases of annuities can be expected to exhibit both passive and active selection.

Adverse selection is sometimes used as an argument justifying government intervention in the annuities market, for example, by making the purchase of annuities compulsory.

Consumer Information Asymmetry

Annuities are complex financial products and are not easily understood by the average consumer. It is usually only until long after the event of the purchase that annuitants appreciate the benefit or otherwise of an annuity product.

Despite logical reasons as to why annuity rates are currently low and as to how the risk-pooling nature of annuities operates, the perception remains in many quarters that annuities are "bad value for money" and that "the insurance company pockets your fund if you die early".

There may be psychological explanations for the relatively low demand for annuities in the voluntary market. For example, it is generally believed that most people tend to underestimate their future longevity and overestimate their ability to earn high returns (in actively-managed investment vehicles such as ARFs). Furthermore, people tend to undervalue guarantees. These perceptions lead to a situation whereby people tend to undervalue the benefits of annuities and overestimate the potential returns available from ARFs. As we saw in section 2.7.2, annuities are the superior product in terms of delivering a guaranteed income for life.

However, without better financial education it is difficult to see how these views of the relative attractiveness of the two products will change.

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[63] "Selection Effects in the United Kingdom Individual Annuities Market" *Economic Journal, 112(476),* pp.28-50.

7.7 Summary

This Section examined the nature of price competition and non-price competition in the market and, in particular, how firms may relate to each other. Particular issues giving rise to inefficiency and a lack of competition are then identified.

Annuities are a standardised, homogeneous product and we would therefore expect low price dispersion – competition ensures price convergence. However, price dispersion is relatively high compared to that found in markets for similarly homogenous financial products. Price dispersion is higher for less standard products. This may arise due to lack of consumer information and/or because there are less providers of "non-standard" annuities.

Innovation is a form on non-price competition and a natural measure of market dynamic efficiency. Attempts at innovation by providers have been few and where they have occurred, have been poorly received. We do not believe that this indicates market power. Legislative and taxation conditions may have had the unintended impact of reducing innovation in this market.

8 Some Policy Options

8.1 Conclusions and Options to Explore

The Irish annuities market is small. Demand arises primarily from defined contribution occupational pension scheme members who have no other option but to buy an annuity. Those retirees who are offered a choice virtually all choose ARFs. The substantial majority of consumers of annuities choose the basic annuity and are not offered a great range of products or innovation.

We forecast the market to grow in the mid- to long-term depending on Government policy and practice. However, asset availability may constrain the market from providing increased capacity for inflation-linked annuities due to the limited supply of bonds linked to Irish price inflation. This could limit the capacity of the life assurance industry to provide CPI-linked annuities.

Despite the small number of Life Assurers participating in the market, prices are broadly in line with those predicted by our pricing model but average prices are somewhat higher. There are low barriers to entry and exit. However, the small size of the market, high risks caused by longevity and investment risk, and low margins offer few incentives for new entrants.

We are, however, concerned about a market where few consumers would appear to choose the particular product in the absence of legislative obligation to do so in order to secure a tax subsidy. There are also concerns about a potential barrier to overseas suppliers and the market is characterised by high levels of concentration, a surprising degree of price dispersion for a commodity product and a lack of product innovation. There are also concerns about availability of comparative price information for consumers.

In order to address these issues, we outline below a series of potential actions.

8.2 Consideration of Policy Options

These key findings underpin the following policy options which we discuss in subsequent sections. A summary is set out in the table below.

Table 8.1: Consideration of Policy Options

1.	Consideration should be given to some easing of the rules regarding the obligation for an employee member of a DC occupational pension scheme to use his/her accumulated fund to provide for post-retirement income only by purchasing an annuity, with a view to ensuring consistency of treatment with other categories of DC pensioners.
2.	We believe there is a need for enhanced information to be supplied to consumers as part of an overall set of measures to improve market transparency. We believe that this could include the preparation of an information booklet on the retirement options available.
3.	We believe that Life Assurers should be required to set out more formal pre-sale information on their annuity products similar to what they are obliged to provide for most other products, including information on charges and the assumptions (e.g. mortality assumptions) underpinning the prices offered.
4.	Greater transparency is required on the comparative prices of annuities and consideration could be given to publishing a price survey on a regular basis (similar to what is currently done for other products such as motor insurance).
5.	Clarification is required in the application of the taxation legislation to ensure that the tax treatment of the purchase of an annuity from an overseas provider is subject to the same tax treatment as one purchased from a domestic provider.
6.	Consideration could be given to examining some of the current legislative provisions and/or Revenue rules governing the types of annuities that may be provided. For example, there may be merit in allowing "capital protection" annuities (which provide a capital payment on death) and the emerging new "hybrid" products which combine features of annuities and ARFs.
7.	Consideration should be given to the conditions under which government bonds linked to CPI to improve the matching between assets and liabilities for CPI-linked annuities could be issued. We accept that other factors need to be taken into account and that there is a balance between a number of issues.
8.	There is also the potential question of the issuance of Longevity Bonds. This would facilitate Life Assurers to address some of the uncertainties regarding longevity risk. We are less convinced of the need for this but we believe that it could be considered by the NTMA.

Source: Indecon and Life Strategies

Obligation to Take Out Annuity

We believe that consideration should be given to some easing of the rules regarding the obligation for an employee member of a DC Pension Scheme to use his/her accumulated Fund to provide for post-retirement income only by purchasing an annuity. This recommendation arises in the context of the terms of reference where we were asked to assess *"the availability of annuity products to match consumer needs"*.

As noted in Chapter 2, the only DC pensioners who are obliged to buy an annuity with their pension fund at retirement (having first taken an optional tax-free lump sum, if desired) are employee members of defined contribution occupational pension schemes. All other categories of defined contribution pensioners may choose to, but are not obliged to, purchase an annuity with their retirement fund (and may avail of the ARF option instead).

Many commentators have pointed out that this is an inconsistent and inequitable situation with no basis in logic and we would tend to agree with this point of view. When ARFs were first introduced they were originally limited to the self-employed and proprietary directors and this restriction was justified on the basis that these were likely to be "financially sophisticated" individuals who could properly evaluate the pros and cons of ARFs versus annuities. However, now that the ARF option has been further extended (including to all PRSA holders), we see no logical reason why retiring members of defined contribution schemes should be subject to different rules in this regard.

In addition, the restrictive obligation to annuitise one's accumulated fund at retirement is quite inconsistent with the latitude typically afforded to DC scheme members with regard to investment decisions prior to retirement.

There are, in theory, various ways to address this inequity – at one extreme, one could force everyone to buy an annuity; at the other extreme, one could completely remove the requirement for compulsory annuitisation; or, one could settle on some middle approach, involving some combination of annuitisation and non-annuitisation, and apply this to everyone.

The first option – forcing everyone to buy an annuity – would go completely against the thrust of all recent policy changes in this area (i.e. the introduction and subsequent expansion of the ARF option) and would therefore not seem to be a practical suggestion.

The second option – removing the requirement for compulsory annuitisation would be straightforward to implement and would be welcomed in many quarters (although perhaps not universally) – but, in our view, this option is not without its drawbacks.

In our view, the third option, requiring some element of annuitisation for all (with some flexibility about the timing of the annuitisation), with retirees then free to invest the balance of their retirement in an ARF would appear to be the best approach.

We fully accept that removal of all restrictions in this area could significantly damage the viability of the annuities market and also impact on other policy objectives. However, we believe that consideration should be given to enabling pension savers to invest at least some of their accumulated retirement funds in ARFs rather than requiring them to purchase only annuities with the proceeds of their accumulated pension fund. Options include:

1. Allowing the option for annuities to be purchased at any or a later age; and/or
2. Setting minimum amounts of funds that must be used to purchase an annuity.

One possible approach for defined contribution retirees might be:

- At retirement, to require retirees to buy an annuity of (say) €10,000 with their retirement fund (having first taken the optional 25% tax-free lump sum, if desired). The balance of the retirement fund (if any) could be invested in an ARF, or used to buy an annuity as desired.[64]
- If the retiree did not want to purchase an annuity at retirement, they could instead place the equivalent capital sum (i.e. the annuity purchase price) into an AMRF.

[64] At current annuity rates, the capital sum required to secure a lifetime income of €10,000 is quite a considerable amount. Our survey of annuity providers indicates that the cost for a 60 year-old male would be currently approximately €170,000. Thus, it is quite possible that, for many members of defined contribution schemes, there will be no excess fund to transfer to an ARF. Note also that, as the cost of an annuity falls as one gets older, this could prove to be a powerful incentive towards encouraging later retirement.

- By age 75 at the latest, the AMRF would have to be used to buy an annuity of €10,000 (suitably adjusted for inflation in the meantime). Any balance remaining in the AMRF could then be transferred to the ARF (note that, as the pensioner gets older, the cost of securing an income of €10,000 falls, making it likely that there will be a surplus in the AMRF to be transferred to the ARF).

In the interests of equity, there is also a strong argument that the same rules should apply to all DC retirees irrespective of the nature of the pre-retirement pension arrangement.

Making ARFs available to members of defined benefit schemes is potentially more problematic, as retiring members do not have their own separately identifiable and quantifiable accumulated fund. Instead, they have a promise from the scheme to pay them a pension in line with the rules of the scheme. Converting this pension promise into a capital sum would require subjective assessments to be made regarding the value of the pension promise (essentially it would involve giving retiring members a transfer value in lieu of their pension). We believe that this is a complex and difficult issue and one which would require considerable further study before it could be properly judged.

The Society of Actuaries, in its submission to this study, also sounded a note of caution in this area:

> *"We believe, however, that the ARF alternative [for defined benefit retirees] should only be available to trustees in respect of pension benefits in excess of a specified threshold that is considered adequate, from a public policy perspective, to ensure an appropriate level of income security. It would also be important to ensure that all concerned understand clearly the trade-offs involved in any of the above benefit substitutes e.g. in the case of the ARF alternative, the trade-off for pensioners is between flexibility and control of capital on the one hand, and income security on the other."*

We would support this sentiment.

Financial Market Issues

We would recommend that the government should consider the issue of index linked bonds to support capacity for inflation linked annuities. Consideration should be given to the provision of government bonds linked to CPI to enable a match between assets and liabilities for CPI-linked annuities. This is an issue for the Irish Government/NTMA and we believe this should be pursued in conjunction with them.

Several calls[65] have been made for the issuance of Irish government debt with interest payments denominated with reference to Irish CPI. Several other EU Member States have issued inflation-linked bonds – France and the UK both have a long history of issuing inflation-linked bonds and, more recently, Italy has also issued a very long-dated index-linked bond.

We believe, however, that this is a complex issue and the cost to the Exchequer as well as the potential subscribers for any such bond would need to be evaluated.

We are aware that there are arguments on both sides and that the primary role of those managing Ireland's debt is to minimise costs. This needs to be balanced against the potential terms of pensions policy.

Issue Irish Government Longevity Bonds to facilitate Life Assurers

There is also the potential question of the issuance of Longevity Bonds (please refer to section 3.7.4 for a brief description of longevity bonds). This would facilitate Life Assurers to address longevity risk. In this case the Bond coupon payments would be linked to an index of population mortality such that payments would increase/decrease in line with the number of lives surviving beyond a given benchmark.

We are less convinced of the need for this but we believe that it could be considered by the Government/NTMA. It must be remembered that the State is already bearing considerable longevity risk in other areas and this is an important consideration in this regard.

[65] By the Society of Actuaries in Ireland, the Irish Association of Pension Funds and the Irish Insurance Federation amongst others.

Consumer Information Issues

Increase Information Supplied to Consumers and Improve Market Transparency

The extent of price dispersion in the Irish annuities market raises issues about how well the market is operating and the degree of consumer awareness. We believe there is a need for enhanced information to be supplied to consumers as part of an overall set of measures to improve market transparency. This would improve the information available to consumers and help with price comparison and the level of competition in the market. We believe that this could include the preparation of an information booklet on the retirement options available (i.e. annuities versus ARFs).

It may also involve requiring Life Assurers to set out more formal pre-sale information on their annuity products similar to what they are obliged to provide for most other products, including information on charges (reduction in yield).

Greater transparency is also required on the comparative prices of annuities and consideration could be given to publishing a price survey on a regular basis (similar to what is currently done for other products such as motor insurance).

Access to International Markets

Review Tax Legislation

Clarification is required in the application of the taxation legislation to ensure that the tax treatment of the purchase of an annuity from an overseas provider is subject to the same tax treatment as one purchased from a domestic provider.

The uncertainty in this area is a potential barrier to Irish consumers in accessing a wider range of annuity providers which should be addressed. We have discussed this issue with the Revenue Commissioners.

Regulatory Barriers

Product Design

Consideration could be given to examining some of the current legislative provisions and/or Revenue rules governing the types of annuities that may be provided. For example, there may be merit in allowing "capital protection" annuities (which provide a capital payment on death) and the emerging new "hybrid" products which combine features of annuities and ARFs.

8.3 Conclusions

The above actions are likely to increase competition, enhance innovation and improve efficiency and consumer interests in this important market.

ANNEXES

Annex 1	**Glossary of Terms**
Annex 2	**Indecon and Life Strategies' Survey of Annuities Providers**
Annex 3	**International Comparison**
Annex 4	**Pension Coverage and Contributions and Benefits by Type**
Annex 5	**Price Dispersion**
Annex 6	**Further Survey Results**

Annex 1 Glossary of Terms

Additional Voluntary Contributions (AVCs) - *Additional contributions* paid by a member of an *occupational pension scheme* in order to secure benefits over and above those set out in the rules of the scheme.

Approved Retirement Fund (ARF) - an investment contract for the proceeds of any *AVCs*, or in the case of a 5% Director or *RAC* holder other retirement benefits that are not taken in the form of a lump sum or pension on retirement.

Approved Minimum Retirement Fund (AMRF) - like an *ARF* except that individuals cannot withdraw original investments until they are aged 75. The holder is only able to withdraw the investment income in the meantime.

Buy Out Bond - a single premium Pension Plan effected by the *trustees* of an *occupational pension scheme* in the name of a member who is leaving that scheme, in lieu of providing deferred retirement benefits under the scheme for that member.

Defined Benefit Scheme (also known as "final salary" scheme) – these provide members with retirement and death benefits based on formulae set out in the rules of the scheme. Benefits are often based on a members' salary close to retirement and on his or her pensionable service. For this reason these schemes are sometimes known as "final salary" schemes. Many *defined benefit schemes* are "integrated" with the State pension. This means that they provide a level of benefit that makes an allowance for the State pension.

Defined Contribution Scheme (also known as "money purchase" scheme) – these provide benefits by using the value of the member's individual retirement account at the time a benefit is purchased. The value of a member's retirement account and the ultimate benefit depends on three main factors:

1) The contributions paid into the account;
2) The investment returns on those contributions; and
3) The cost of purchasing the member's pension using annuity rates.

Occupational Pension Scheme – this is a pension scheme set up by an employer to provide retirement benefits for employees. This term is used interchangeably with "Company Pension Scheme".

Personal Retirement Savings Accounts (PRSAs) - A *PRSA* is a contract between an individual and an authorised *PRSA* provider in the form of an investment account. The *PRSA* benefits will be determined by the contributions paid by and on behalf of the contributor and the investment return on those contributions. There are two types of *PRSA* contract:

- A *Standard PRSA* is a contract that has a maximum charge of 5% on the contributions paid and 1% per annum on the assets under management. Investments are only allowed in pooled funds which include unit trusts and life company unit funds.
- A *Non-Standard PRSA* is a contract that does not have maximum limits and charges and/or allows investments in funds other than pooled funds.

A register of *PRSA* providers and their products is available from the Pensions Board.

PRSI - a shortened name for Pay Related Social Insurance, under which individuals who earn an income pay related contributions to the Social Insurance Fund, and in return are covered for certain Social Insurance Benefits e.g., Social Welfare Old Age Contributory Pension.

Retirement Annuity Contract (RAC) - an individual pension policy which can only be effected by individuals who are in non pensionable employment or who have taxable earnings from a self-employed trade or profession. Colloquially known as Personal Pension Plans.

Trustees - individuals or a company which, alone or jointly looks after the assets held in a trust fund. In a company pension scheme the trust fund is the monies and assets for the time being held by the trustees subject to the trusts of the scheme.

Annex 2 Indecon and Life Strategies' Survey of Annuity Providers

Company Name: _____Contact details in case of Query: _____

1. Please provide details of total sales in Ireland for each of the following products in each of the last five years (€).

	2002	2003	2004	2005	2006
Annuities					
ARFs/AMRFs					
'Buy out Bonds'					

2. Please provide details of total sales of these products in each of the last five years as a percentage of total sales in Ireland (as measured by APE).

	2002	2003	2004	2005	2006
Annuities					

ARFs/AMRFs

'Buy out Bonds'

3. Please indicate the approximate percentage of your annuity sales split between the following different annuity products (for the most recent year for which this information is available).

Immediate Fixed	Immediate LPI-linked	Immediate Inflation linked	Immediate With-profits	Deferred	Others
%	%	%	%	%	%

4. Please indicate the average age of your clients taking out annuities?

_____

(For joint-life cases please use the age of first life)

5. Please indicate your views on the importance or otherwise of the following factors in determining your pricing strategy in the Irish annuity market (tick one box for each):

	Not at all important	Somewhat important	Important	Very important	Extremely important
Base mortality					
Future mortality improvements					
Reserving requirements					
Solvency margin requirements					
Reinsurance					
Expenses					
Investment return					
Competitor prices					
Risk preferences					

Profitability					
Investment policy					

6. Please indicate what purchase price you would have charged on January 15, 2007 in each of the cases set out in the following table. In each case please assume a pension €10,000 per annum, payable monthly, 5 year guarantee, no reversion.

	Level annuity	Escalating at 3% p.a. fixed	Escalating at 5% LPI
Male aged 60 exactly	**Price €**	**Price €**	**Price €**
Male aged 65 exactly	**Price €**	**Price €**	**Price €**
Male aged 70 exactly	**Price €**	**Price €**	**Price €**
Female aged 60 exactly	**Price €**	**Price €**	**Price €**
Female aged 65 exactly	**Price €**	**Price €**	**Price €**
Female aged 70 exactly	**Price €**	**Price €**	**Price €**

7a. How frequently do you review your annuity prices?

Every Day	Every week	Every Month	Other (please Specify)
☐	☐	☐	

7b. How do you make your annuity prices available to distributors/consumers?

_____

_____

_____

_____

_____

_____

_____

_____

8. Please provide the following details of your total book of immediate annuities in force at end 2005:

Number of annuitants

_____

Total annuity in payment per annum

€_____

Total reserve gross of reinsurance (IFSRA Form 25)

€_____

Total reserve net of reinsurance (IFSRA Form 25)

€_____

9. Please indicate what assumptions you used for calculation of solvency reserves in your valuation at 31/12/2005 (or nearest closest date if no valuation at this date)

Investment return -

_____

Mortality (base & improvements)

_____

Expenses

_____

10. Please indicate what level of prudent reserve these generate for a typical case (as a percentage of premium) compared with the pricing assumptions used in Q6 above: _____

11. Please indicate the % allocation of your current assets backing your annuity portfolio.

Government bonds	Other bonds	Equity	Property	Cash	Other Please specify
%	%	%	%	%	%

12a. Have there been any changes to the range of annuity products offered in the last five years?

Yes □ **No** □

12b. If yes, please provide details of any changes.

_____

_____

13. Please indicate your assessment of the overall level of profitability in the Irish annuity market and your company's profitability in this sector.

	Highly Profitable	Marginally Profitable	Neither profitable nor loss	Slightly Loss-	Highly Loss-

			making	Making	Making
Market	☐	☐	☐	☐	☐
Own Company	☐	☐	☐	☐	☐

14. Do you believe that either regulatory requirements or economic factors (such as economies of scale, capital investment or branding) represent barriers which affect the innovative pricing of annuity products, the introduction of new annuity products or incidence of market entry? If yes, please separately provide details on the nature of the barriers identified:

	Regulatory Barriers		Economic Barriers	
Impact on:	Yes	No	Yes	No
Innovative Pricing of products	☐	☐	☐	☐
Introduction of new products	☐	☐	☐	☐
Entry by firms outside or within Ireland	☐	☐	☐	☐

15. Please indicate your perception on the availability of products in the Irish annuity market in terms of matching existing and future consumer needs:

Excellent Availability to Meet Consumer Needs	Good Availability to Meet Consumer Needs	Fair Availability to Meet Consumer Needs	Poor Availability to Meet Consumer Needs	Very Poor Availability to Meet Consumer Needs
☐	☐	☐	☐	☐

16. Please rate the distribution channels for annuity products in Ireland:

Excellent	Good	Fair	Poor	Very Poor
☐	☐	☐	☐	☐

17. Please indicate your view on the capacity of the annuity market to absorb the buyout of a large portfolio of pensions:

Significant Capacity Likely	Limited Capacity Likely	No Capacity Likely
☐	☐	☐

18. Please indicate the likely impact on your annuity pricing of a bulk buyout of a large portfolio of pensions:

Significant increase in prices	Moderate increase in prices	No change in prices	Decrease in prices	Significant decrease in prices
☐	☐	☐	☐	☐

19. How would you compare the Irish annuity market to UK and to other European markets?

	Compared to UK	Compared to Other EU Markets
Irish market less efficient and effective	☐	☐
Irish market more efficient	☐	☐

and effective		
Irish market similar in efficiency and effectiveness	☐	☐

20. Please indicate your assessment of the likely future of the annuity market in Ireland over the next 5 years in terms of growth in value of business written and in terms of likely number of competitors.

	Change in Value of Business	Number of Competitors
Significant Increase	☐	☐
Increase	☐	☐
No Change	☐	☐
Decrease	☐	☐
Significant Decrease	☐	☐

21a. Do you write "bulk annuity" business? Yes ☐

No ☐

21b. If yes, please specify what percentage of your total annuity business is bulk business: _____%

(For the most recent year for which a breakdown is available)

22. Please specify whether there are any limits on your company's capacity to write annuity business in Ireland?

Yes □ **No** □ **If yes, what limits:** _____

23. Please indicate the maximum amount of annuity business that you would be happy to write in any one year. €_____

Other Comments

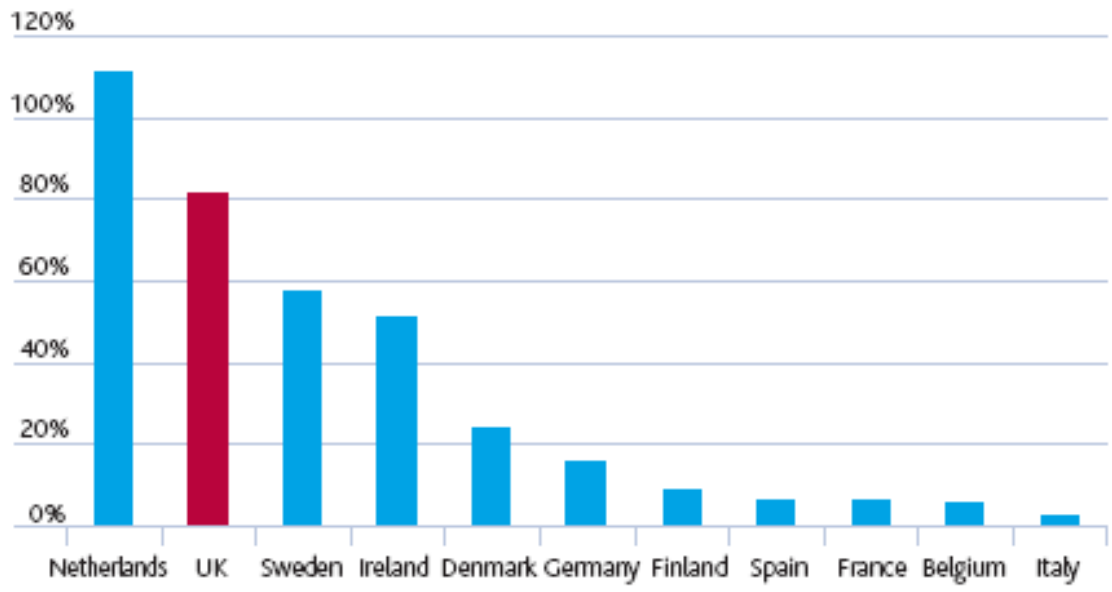
Please feel free to attach any additional comments you may have on the operation of the Irish annuities market.

Annex 3 International Comparison

Given the broad nature of supply and demand issues influencing the annuities market, it is constructive to review market circumstances, products, and prospects in different countries. Many of the problems observed in Ireland are also seen in other markets around the world, either now or in the past. Among the rich developed countries Ireland is in a specific group with the UK, New Zealand and Canada, where the state pension is primarily designed to prevent poverty rather than to provide income replacement.

The UK has had one of the most extensive voluntary funded pension systems in the world, with a higher percentage of people in occupational schemes, mostly DB in nature, and large pension fund assets as a percentage of GDP, shown in Figure A3.1. The UK figures in this international comparison understate the UK pension assets, since they include only self-administered pension funds and exclude insurance company pension policies. Including the latter makes the total about 120% of GDP. The UK is by far the largest annuities market in the world.

Figure A3.1: Pension Fund Assets as a Percentage of GDP



Source: Pensions: Challenges and Choices – The First Report of the Pensions Commission, Pensions Commission, October 2004 taken from CEPS 2003.

On the issue of the efficiency of the Irish annuity market the views of providers are presented in the table below. Interestingly, over half of providers felt the Irish annuity market was less efficient than the UK but most felt it was similar to EU markets.

Table A8.2: Efficiency of Irish Annuity Market Compared to UK and the EU According to Providers

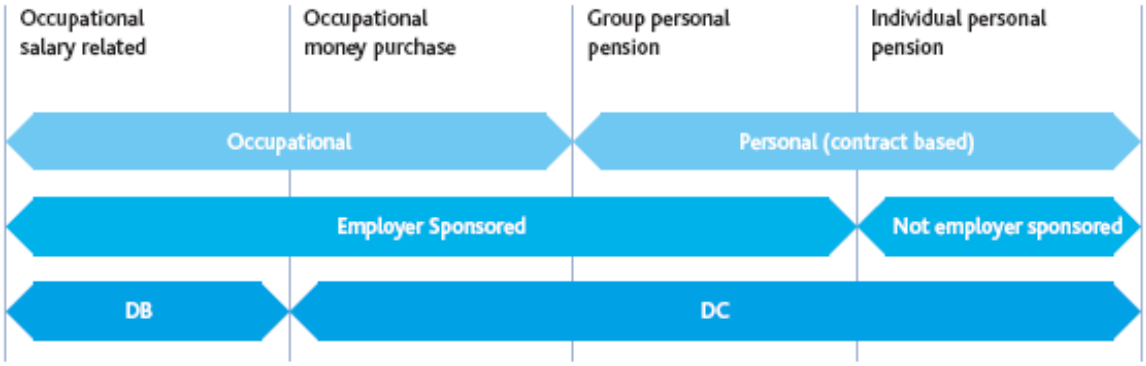
Compared to the UK			Compared to the EU		
Less	**Similar**	**More**	**Less**	**Similar**	**More**
50%	33%	17%	0%	67%	33%

Source: Indecon and Life Strategies Survey 2007.

Demand for Annuities

Types of Personal Pension Provision

Figure A3.2: Types of Personal Pension Provision in the UK



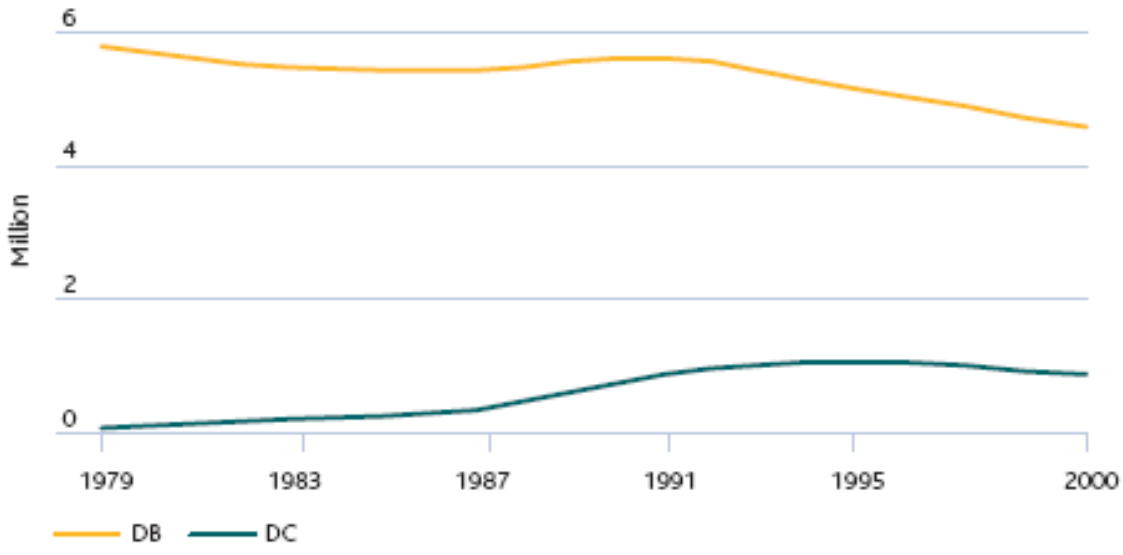
Source: "Pensions: Challenges and Choices – The First Report of the Pensions Commission", Pensions Commission, October 2004.

The figure above shows how occupational and personal pensions interact with employer sponsorship and the split between DC and DB schemes.

The UK pensions system appeared in the past to work well because one of the least generous state pension systems in the developed world was complemented by the most developed system of voluntary private funded pensions. On average the system was judged to work, with the percentage of GDP transferred to pensioners comparable to other countries. But the state plans to provide decreasing support for many people in order to control expenditure in the face of an ageing population and the private system is not developing to offset the state's retreating role. Instead it is in significant decline.

In general, the structure of private pension provision in the UK is approximate to that pertaining in Ireland. With over £700bn in pension fund assets, occupational plans play an extremely important role in pension provision in the UK. That is a mix of defined contribution and defined benefit schemes providing a mix of retirement lump sums and guaranteed pensions/annuities. However, the underlying trend in private sector employer pension contributions has been downwards since the early 1980s. Active membership of private sector occupational schemes declined slightly from 1979-2000, while DB membership in particular fell significantly, see the figure below.

Figure A3.3: Active Members of Private Sector Occupational Pension Schemes, Millions



Source: "Pensions: Challenges and Choices – The First Report of the Pensions Commission", Pensions Commission, October 2004, from Occupational pension schemes 2000, GAD.

With the passing of DB schemes, the rising costs and inadequate funding of the PAYG state system, in the future most people will be in a DC arrangement. But irrational equity markets and delayed appreciation of life expectancy increases enabled many Defined Benefit (DB) schemes to avoid necessary adjustments until the late 1990s. As this has been realised, DB occupational schemes have been closed. Some of these have been replaced with DC schemes, as has occurred in Ireland.

The shift from DB to DC will greatly increase demands for annuities, while rising life expectancy is increasing the number of years which annuities on average have to cover. This raises issues about the capacity of the insurance industry to meet that demand at attractive prices, given the current limited supply of appropriate underlying instruments (such as long-dated gilts and index-linked gilts), and given the industry's capital capacity to absorb risk. These are discussed below.

There is considerable flexibility in the annuitisation rules, particularly for individual DC pension arrangements. Although most pension funds are managed by the major insurance companies, the individual has the opportunity to take direct control of investment strategies by investing/transferring existing pension savings into an unsecured pension (USP) such as a SIPP (Self Invested Pension Plan).

However, in order to ensure that earlier tax privileges are used to generate retirement income, UK legislation restricts the drawdown of the pension fund. Individuals can draw individual pensions typically from age 50 (55 in 2010). The minimum drawdown is 35% of the single life annuity factor and the maximum is 100%. Retirees can take 25% of the accumulated fund as a tax free lump sum.

From April 2006, there has been an alternative to converting pension funds into an annuity at 75. Instead, an individual can opt for an alternatively secured pension (ASP) which is similar to a USP, but the level of drawdown is severely reduced (by 55%), and no further age related adjustments are made. This is thought to be an incentive to purchase an annuity. The balance of the fund on death can be left to beneficiaries, subject to a 35% tax fund.

In addition to Annuities Purchased from a Pension Fund, or Pension Funded Annuities, there is a smaller voluntary market in purchased life annuities. In 2001, the volume of new premia was £245m.

Accordingly, the UK has one of the largest annuity markets in the world.

Demand Drivers

The low demand for annuities in the voluntary market is not confined to Ireland. It has been observed in other countries, including the US,[66] the UK,[67] Canada[68] and Australia.[69] As in Ireland, there are four widely identified problems in annuities markets. These are:

- Perceptions – principally regarding the value for money of annuities;
- Processes – marketing and distribution;
- Politics – the capital sacrifice; and
- Products – portfolio allocation, flexibility.

Traditional guaranteed annuities have suffered from poor customer perceptions in many countries across the world. These include poor value, perception of the insurance companies taking advantage of consumers, and declining value where offered in a market subject to falling bond yields.

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66 *The Role of Annuity Markets in Financing Retirement* Brown, Mitchell, Poterba and Warshawsky, 2001 (Cambridge MIT Press).

67 'Annuity Markets: Problems and Solutions', Blake 1999, *Geneva Papers on Risk and Insurance, 24(3),* pp.358-75.

68 'Annuities in Canada', Kim and Sharp, 1999, Institute of Insurance and Pension Research, *University of Waterloo Working Paper,* pp.99-130.

69 'The Australian Annuity Market', Knox, 2000, World Bank Policy Research Working Paper No. 2495.

The same obstacles to individuals buying annuities in the voluntary markets that exist in Ireland and other countries exist in the UK. In the UK, persistent and powerful barriers to individuals taking long-term savings decisions highlighted by the Department of Work and Pensions are inertia, financial myopia, the cost of pension saving and the complexity of the decisions involved. However, both the behavioural barriers to savings and the costs of provision have been made worse by the bewildering complexity of the UK pension system, state and private combined. Means-testing within the state system both increases complexity and reduces, and in some cases reverses, the incentives to save via pensions which the tax system creates. These barriers are being tackled by a radical reform of private pension saving outlined above.

Supply of Annuities

Types of Annuities

Until recently, the individual pension annuity market was almost completely dominated by traditional guaranteed products. Products offering defined future income in nominal terms had overwhelming market share. Inflation-linked guaranteed annuities also existed, but have never been popular. The reason for their unpopularity is generally believed to be the comparatively low starting level of income that they offer.

There are a variety of types of annuity products on the market. Unlike with defined benefit pensions, individuals are not restricted to effectively index-linked fixed- income benefits. Most individuals in fact choose level annuities but investment-linked annuities are becoming more common. Individuals can also take guarantee periods on payments of up to 10 years, although typically people tend to elect for no guarantee or a guarantee period of 5 years (probably in order to obtain a higher headline income level).

Table A3.3 describes the different categories of annuities, pus income withdrawal. The main form of product launched is the with-profit annuities. In addition, a handful of unit-linked annuities are available, and two or three flexible annuity products. Flexible annuities include annuities that also plan to pay a guaranteed lump sum on a set maturity date or those that agree to pay death benefits if the annuitant dies while the plan is still running.[70]

[70] Such as products offered by Living Time.

Table A3.3: UK Annuity Products (Plus Income Withdrawal)

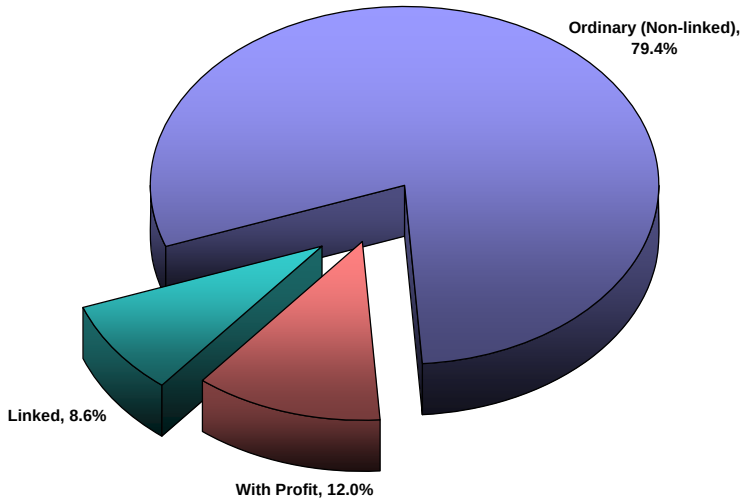
Category	Description
Ordinary annuities	Income is defined as a base level (guaranteed for life) with an escalation rate (typically zero) fixed in advance. The provider bears the mortality and investment risks.
Impaired life and enhanced annuities	Same as an ordinary annuity except that rates are enhanced because of impairment or because of special characteristics of the individual
With-profit annuities	Income is defined as a base level (guaranteed for life), with increases in the form of bonus additions at the discretion of the insurer. Bonus structures usually consist of two bonus types, reversionary increased (that cannot be removed once added) and terminal increases (that can be removed). Initial income may be increased by anticipating bonus in advance, in which case the guaranteed income stream is a reducing one, reducing at the rate of bonus anticipated.
Unit-linked (or investment-linked) annuities	A guaranteed income stream is defined as a number of units per annum, rather than in monetary terms, so that the provider retains the mortality risk, but passes on the investment risk. Initial income may be increased by anticipating a growth rate in advance, in which case the guaranteed unit stream I a reducing one, reducing at the growth rate anticipated.
Flexible annuities	A range of newer product types, seeking to give some control to the annuitant concerning how they draw income or how they invest the money over time.
Income withdrawal	Income is drawn from an invested fund at a controlled rate, aiming to deliver lifelong income, but the fund is not annuitised (in the sense that funds are not forfeit on death).

Source: 'Paying Out Pensions: A Review of International Annuity Markets', Cardinale, Findlater and Orszag, Watson Wyatt, 2002.

Until recently, the only characteristics of the annuitant used in rating were age and gender. However, there has been an emergence of annuities rated on a broader range of factors such as health, smoking and occupation. These are referred to as 'impaired' or 'enhanced' annuities and provider higher than standard rates to annuity purchasers with poorer life expectations. In 2005, it was found that 20% of annuities placed in the open market in some months were of this type.[71]

[71] *The Pension Annuity Market: Further Research Into Supply and Constraints,* ABI February 2005.

Figure A3.4: 2001 New UK Annuity Business by Volume



Source: Association of British Insurers.

Regulation

Reserves

The management of reserves is crucial, illustrated by the consequences of imprudent management of Equitable Life.[72] During the 1970s and 1980s, Equitable Life offered deferred guaranteed annuities – the option to buy an annuity at a guaranteed rate – to individuals who saved through an Equitable Life personal pension. These options were profitable at the time since nominal interest rates were high. As interest rates fell throughout the 1990s however, the guaranteed annuities became profitable but Equitable Life had made no charge for these guarantees nor made any attempt top set aside reserves to cover the cost of the guarantees.

[72] *Report of the Equitable Life Inquiry* Lord Penrose, 2004.

Money's Worth Analysis of Annuities

There have been many studies over the years into the "money's worth" of annuities in the UK market. A summarised history of these studies is set out in section 5.6.4 above.

Most recently, Martin and FitzGerald (2006) investigated the development of MWRs over the period 1994-2006.[73] This study built on past studies[74] by updating findings and expanding their scope using the established methodology for calculating EPDV and MW. They found that the MWR had been in excess of 1.0 until 2001 but had fallen very considerably over the past 5 or 6 years, so that the MWR for a level annuity had fallen to 0.85 in June 2006. (They note that this downward trend had not been identified in previous studies of the MWR in the UK as these had only investigated the period up to 2002.)

Martin and FitzGerald suggest that the reason for the considerable reduction in MWRs since 2000 may be due to increased uncertainty about trends in future longevity and that that *"it is possible that annuity payout rates have been dropping to reflect concerns re the extent of this risk"*. Other commentators have believed that UK providers have in the past written business at overly optimistic rates, due to greater improvements in life expectancy than assumed in pricing.[75]

We agree that this is one possible explanation but we think that there may be some other factors which have contributed to the reduction in MWRs, including:

- an increased focus on cost of capital in the UK industry;
- a "de-risking" of investment strategies; and
- a narrowing of spreads on corporate bonds,

These themes are expanded upon in section 5.6.4 above

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[73] *Can "Compulsory" Annuities Provide a Fair Pension?* Edward Fitzgerald, Discussion Paper, Economics and Finance Brunel Business School, October 2006.

[74] Including Cannon and Tonks (2004),, Finkelstein (2002), Lunnon (2001), Murthi (2001), Murthi (1999)..

[75] *Reinventing Annuities,* Wadsworth and Findlater, 2002.

In any event, whatever the reason for the reduction in MWRs in the UK since 2001, the current level of the MWR in the UK is very similar to the level we find in Ireland (i.e. in the region of 0.85).

Market Characteristics

Market Size and Growth

Roughly £2.5 billion individual pension immediate annuities were sold in the UK in 1991. This rose significantly to £6.2 billion in 2001. An additional £2.1 billion of sales in 2001 were recorded for income withdrawal plans.

Further growth is forecasted in the market for compulsory annuities. Pension annuity sales have increased form £2.45 billion in 1001 to £8.55 billion in 2002[76] and this increase is part of a longer-term tend due to four factors. These are:

- Maturity of past DC pension schemes;
- Increased numbers of elderly people;
- Pension schemes shifting from DB to DC; and
- Bulk buyouts as DB schemes are closed and the schemes are wound up by an insurance company taking on the scheme's pension liabilities.

Modelling undertaken by the Association of British Insurers (ABI) predicts a growth in premiums for individual annuities of 8.7%, 9.7% and 10.6% per annum over the next 10 years for each of three scenarios used.[77]

[76] *Pension Annuities; Market Dynamics and Implications for Supply,* Watson Wyatt 2003.

[77] *The Future of the Pension Annuity Market* ABI, September 2003. The 3 scenarios were constructed to test out potential annuity growth and took a view of growth in equity returns, inflation, changes in bond yields and the FTSE 100 index over a decade.

Table A3.4: Projected Demand for UK Individual Annuities and Bulk Buyout

	2002	2012		
		Low	Medium	High
Conventional Annuities – Individual	7.2%	16.6%	18.1%	19.7%
Bulk buyout	1.4%	1.5%	35.4%	128.1%

Source: The Future of the Pension Annuity Market ABI, September 2003.

Concentration

The number of annuity providers the UK has fallen significantly over the last 50 years. There are currently fewer than 20 annuity providers writing new business. The largest firm, the Prudential, accounts for around 40% of the market, see below.

Table A3.5:New Business of Selected UK Insurance Companies in 2004

New Ordinary UK Long-term Business	Annuity Rate (2005) for $20,000 male, %	Rank by Annuity Rate	Market Share, %	Average Premium, £	Total Premiums, £ms
AXA/Sun Life	-	-	2.2	23,448	185
Canada Life	6.96	11=	7.1	49,831	591
Clerical Medical	6.54	9	-	-	-
Friends Provident Pensions	6.96	1=	7.8	9,279	648
Legal and General	6.84	4=	12.3	44,754	1,015
MGM Life Assurance	-	-	0.3	22,750	22
Norwich Union	6.84	4=	7.7	53,041	636
Prudential	6.96	1=	40.6	27,287	3,360
Reliance Mutual	6.00	10	0.3	35,315	29
Resolution Group	-	-	2.4	20,007	200
Royal London	-	-	2.0	12,836	169
Scottish Equitable	6.60	8	5.9	24,766	492
Scottish Widows	6.84	4=	6.6	16,224	543
Standard Life	6.72	7	4.7	12,440	387
Total	-	-	-	**27,075**	**8,277**

Source: Survey of Annuity Pricing, Cannon and Tonks 2006, taken from FSA Insurance Returns.

It has been suggested that the small number of active annuity providers in the UK could be beneficial due to the potential advantages of economies of scale, especially through more effective risk-pooling. The near constancy of the money's worth over a period of increased concentration suggests that this consideration is not significant in this context. However, the small number of providers also means that the cohort longevity risk is highly concentrated in a small number of firms, and there is a concern over whether these providers have the capacity to absorb the extra risk associated with increased annuity demand.

In a study comparing annuity markets across a number of countries,[78] it was found that Australian and German annuity markets are less concentrated than those in France and the UK. In Australia by the end of 2001, the HHI index for the allocated annuities market (the drawdown market) was 1026 and for the immediate annuities market was around 1400.

However, in every country there has been a trend towards greater consolidation over time.

Barriers to Entry

Reputation is an important barrier to new entrants. Service reputation and financial strength (giving consumers and brokers confidence that the provider will pay their pension) are vital and need to be built up over time. However, it is unlikely that there are large numbers of organisations that want to enter the annuity market. Other major barriers to entry in the UK market remain the large amount of capital required for solvency purposes, the availability of suitable matching investments and the risk of faster than anticipated mortality improvements.

There is pressure on the existing providers remaining in the market. In particular, current developments and trends such as increased flexibility (implying potential regulation costs), pressure for unisex rates, annuity transfers, increased mortality and the shortage of assets, may drive existing providers out of the market.

Market Conduct

Price Competition

It is believed that the annuity market in the UK is highly competitive in respect of price, as indicated by the money's worth analyses.

[78] *Paying Out Pensions: A Review of International Annuity Markets,* Cardinale, Findlater and Orszag, Watson Wyatt, 2002.

Price Dispersion

There is a range of prices in the UK market, due to the fact that some companies wish to gain a significant market share from open market options and others merely want to provide the pension build up vehicle before retirement.

Innovation

At the same time as the size of the annuities market has been growing, dissatisfaction with the products sold in the UK has been grown significantly. This in part reflects the less favourable headline annuity rates that occurred throughout the 1990s, driven by reductions in long term interest rates and improvements in mortality. Driven by this dissatisfaction, a certain amount of product innovation has occurred in the market.

Given the likely increase in price of annuities (see below), it is expected that many consumers will find the price attached to lifetime security unacceptably high. It is necessary that reviewability (of interest rates and/or longevity) and alternatives to annuities may be important areas for product development. According to the ABI, the Government has a role in facilitating such innovation through ensuring that the rules governing annuities and other retirement income products are sufficiently flexible.

Marketing and Distribution

The UK distribution regulation regime is strenuous and imposes substantial overheads on the advice process. The typical commission rates for brokers are only around 1.5% of the purchase price or lower, as the following quote from Murthi et al (1999) indicates:

"First, most annuity business is either transacted in-house or through independent financial advisers. Commissions to independent advisers run at about 1 percent, which is well below those payable on other lines of business. For example, income drawdown policies of £100,000 attract roughly 3 percent in commission."

Online real-time price comparisons are more readily available in the UK market than they are in Ireland. Financial advisers will generally have access to an on-line price comparison site (e.g. "The Exchange") which will provide them with comparative annuity quotes from a number of providers.

However, as many personal pension funds are small and therefore the associated commission is small, many financial advisers are not very interested in chasing business for relatively small remuneration. Therefore people receive little or no advice on a substantial financial decision. The result is that holders of pension savings plans simply take the annuity product of the same provider, even though the open market option is available and the rates of many pension savings providers are not competitive.

Cost is, therefore a barrier to the provision of advice to some and, without advice, it is difficult to ensure the individual receives the best value for money. Most consumers in the UK continue to opt for default annuity options rather than select the most suitable options. Only about 25% of consumers shop around for the best annuity, even though rates can be up to 20% higher. A large majority of retirees continue to choose bond-backed level annuities which might not be appropriate investments given they could be spending 20 years or more in retirement.[79]

Market Outcomes

Asymmetric Information

Adverse Selection

Recent studies in the UK show a similar picture to Ireland regarding the impact of adverse selection. Comparing the most recent life office annuitant mortality tables (the "00 series" tables) with corresponding UK population mortality tables (1999-2001) we find that, over the 60-80 age range, male annuitant mortality averaged approximately 63% of population mortality. Over the 60-100 age range, the average was approximately 73%. The corresponding female ratios were 69% and 76% respectively.

[79] *Paying Out Pensions: A Review of International Annuity Markets,* Cardinale, Findlater and Orszag, Watson Wyatt, 2002.

Using the Cannon and Tonks 2006 figures and calculating the money's worth using population rather than annuitant mortality, they find a much lower money's worth – 95.6%. The difference in means of money's worth over the period 1972-2002 using annuitants and population life tables, representing a selection effect, is 2.9%. This means that the financial value of annuity for an actual annuitant would have been 3% more than it would have been for an 'average' member of the general population due to the higher life expectancy of the annuitant.

Another UK report,[80] this time examining the relationship between pensioner and annuitant mortality found that retired male pension scheme members exhibited mortality rates which were some 122% of annuitant rates;[81] the corresponding female ratio was 126%. Taking an average of 124% and inverting this ratio – to express annuitant mortality as a percentage of pensioner mortality – gives a figure of 81%.

The Irish and UK experience, as described in the preceding paragraphs, may be summarised in the following table:

Table A3.6: Summary of findings for relative mortality of pensioners and Annuitants

	Ireland	UK
Pensioner mortality as % of population mortality	90%	90%
Annuitant mortality as % of pensioner mortality	88%	81%
Annuitant mortality as % of population mortality	79%	73%

Source: Life Strategies Research.

Finally, it is worth mentioning in passing that a study by McCarthy and Mitchell (2000) showed a broadly similar pattern in the USA and Australia also. According to a variety of analyses conducted on different countries and for different time periods, the reduction in the money's worth due to adverse selection (i.e. short-lived individuals withdrawing from the market) appears to lie in the range of 0.03-0.12.

[80] Working Paper 17, issued by the Continuous Mortality Investigation Bureau in 2005.

[81] Comparison is for 2000 against the PMA00 (C=2000) table.

However, it is not known to what extent adverse selection affects the annuity price. In price analyses of the UK annuities market, the main source of reduction in annuity yields was given by adverse selection yet this did not translate into high load factors.[82]

Incomplete Markets

One of the problems suffered in many annuities markets around the world is that sufficient bonds issued by government and corporate bond issuers may not be issued by volume and duration and structure to meet demand. The availability of financial instruments used to hedge the risk taken on by life assurers is vital. For example, in Australia, the market for traditional annuity products is small. There is a lack of matching securities and appropriate mortality data that makes annuities costly and risky to underwrite so potential providers have little incentive to supply them.[83]

Among the issues constraining supply in the UK annuities market identified by the ABI September 2003 Report were:

- The very limited secondary market for pooling longevity risk and the scope for developing such a market ('wholesale longevity pooling'); and
- The potential supply of and supply constraints on long duration bonds and related financial instruments.

UK annuity providers make extensive use of long bonds to back annuity liabilities. But returns on long bonds are in the UK typically lower than returns on medium bonds. This is symptomatic of a shortage of long bonds. The table below summarises data on existing volumes of long bonds and mortgages and the corresponding size of annuity reserves and occupational pension scheme assets. This indicates the potential demand from pension funds and the constrained supply of long bonds.

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[82] *The Value for Money of Annuities in the UK Theory, Evidence and Policy*, Murthi, Mamta, Orszag and Orszag. 1999, Birkbeck College Working Paper 99-19. and "Selection Effects in the United Kingdom Individual Annuities Market", Finkelstein and Poterba, *Economic Journal 112(476): 28-50* 2002.

[83] *Paying Out Pensions: A Review of International Annuity Markets,* Cardinale, Findlater and Orszag, Watson Wyatt, 2002.

Table A3.7: Volume of Long Bonds and Mortgages Compared to Size of Annuity Reserves and Occupational Pension Scheme Assets

		Estimated at 30 September 2004, £ billion
Gilts (15 years+)	Conventional	82
	Price Indexed	38
Non-gilts (investment grade/15 years+)	Conventional	90
	Price Indexed	8
Mortgages (balances outstanding)		850
Occupational pension scheme assets		750
Annuity reserves (excluding investment linked		80

Source: The Pension Annuity Market: Further Research Into Supply and Constraints, ABI February 2005, using data from DMO/FT/CML/ONS/FSA Returns/Watson Wyatt.

Notes: Values are market values, except for Mortgages and Annuity Reserves.

Returns on long bonds could deteriorate further (relative to medium bonds) as a result of further increases in demand to back both pensions and annuities. There is limited potential for the Government to relieve this supply constraint since it already carries substantial longevity risk through pensions and social security and may not be in a position to take on additional risk.

Reinsurance was found to play only a small role in the UK annuity market, partly because the longevity risk associated with annuities is not seen as an attractive risk by reinsurers. A common concern is that longevity may increase faster than forecast.

The capacity constrains in the reinsurance and bond markets are substantial, may increase and are unlikely to be resolved rapidly. Examining both areas of supply, it is suggested by the ABI that capacity constraints would not be removed by the marketplace operating as normal.[84] Increasing capacity in the reinsurance or bond markets may also mean paying more for reinsurance and bonds, and consequently more expensive annuities. Even if the market displays a willingness to pay, it is in doubt whether capacity will adapt quickly enough to meet rising demand. Market based solutions may therefore be uncomfortable for consumers at times.

[84] *The Pension Annuity Market: Further Research Into Supply and Constraints,* ABI February 2005.

An expansion in supply may arise from the financial markets, such as an increase in mortgage (or asset) backed securities and increasing capacity to sap yields over long periods.

Conclusions

UK Government proposed reform of pension policy seeks to ensure five key principles:[85]

1. **Personal responsibility and the right balance of choice and support** - everyone will have the opportunity to save easily, as an essential step towards tackling undersaving for retirement. However, individuals must be responsible for their own plans for retirement. The most recent reforms in 2006 seek to ensure the provision of high-quality savings vehicles, and a solid state foundation to private savings. But the choice of how much to save, the level of risk to take with investments, and how long to work must be available to the individual;
2. **Fairness;**
3. **Simplicity** - The Pensions Commission observed that "the UK has the most complex pensions system in the world". The combination of the latest reforms to state and private pensions aims to dramatically simplify the system, and make the decision to save a very straightforward one for individuals;
4. **Affordability**; and
5. **Sustainability** - to give trust and confidence to all parties that the system is a sustainable deal for the long term, through, for example, the National Pensions Debate.

The UK experience provides some important lessons:

- Provision of a large quantity of annuities requires sufficient matching instruments from the government or the private sector. In the absence of appropriate matching instruments, there will be supply constraints.

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[85] ***Security in Retirement:*** *Towards a New Pensions System,* Department of Work and Pensions, May 2006.

- Careful attention needs to be paid to marketing and distribution systems to make sure that consumers get good advice at low cost.

Annex 4 Pension Coverage and Contributions and Benefits by Type

Table A4.1: Pension Coverage at the End of 2005

Type of Provision	Number	Percentage
No Provision	891,000	45%
Personal Pension or Personal Retirement Savings Account (PRSA)	357,400	18%
Defined Contribution Occupational Pension	234,800	12%
Private Sector Defined Benefit Pension	239,100	12%
Public Sector Defined Benefit Pension	257,700	13%
Total Labour Force	1,980,000	100%

Source: Life Strategies 2006.

Table A4.2: Pension Contributions by Pension Coverage

Category	Contribution level	Comment
No personal provision	None	They rely totally on the state benefits
Personal Pensions	Average 9% of earnings	While 9% is the average, there is quite a bit of variation within this figure
Defined Contribution	Average 16% of earnings, including 5% employee contributions	There is a wide level of variation with typical contribution of 10% of earnings but large contributions by high earners bringing the total to 16%
Private Defined Benefit	18.5% of salary, including 3% employee contributions	This is the contribution rate that would be needed for a new entrant
Public Sector Defined Benefit	25% of salary including 5% employee contributions	New entrant rate. Varies from 20% for nurses to 33% for Gardai

Source: Life Strategies

Table A4.3: Membership at 31 Dec 2005 of defined contribution schemes

Scheme size (active members)	No. of schemes	No. of active members
Non-Group	62,786	62,786
1 – 50	19,578	85,232
51 – 99	295	20,669
100 – 500	156	29,516
501 – 1000	14	9,834
1001 +	12	26,777
Total	**82,841**	**234,814**

Source: Pensions Board (2006)

Table A4.4: Membership at 31 Dec 2005 of defined benefit schemes subject to the Funding Standard

Scheme size (active members)	No. of schemes	No. of active members
Non-Group	17	17
1 – 50	797	13,209
51 – 99	171	12,360
100 – 500	241	56,317
501 – 1000	44	32,021
1001 +	35	125,203
Total	**1,305**	**239,127**

Source: Pensions Board (2006)

Table A4.5: Pension Benefits by Pension Coverage

Category	Benefit	Comment
No personal provision	State pension of €193.30 per week.	This represents 32% of Gross Average Industrial Earnings
Personal Pensions	41% of pre-retirement earnings	Includes 23% from the State Pension
Defined Contribution	55% of pre-retirement earnings	Includes 23% from State Pension. *If only 10% is contributed the total pension reduces to 45% of earnings*
Private Defined Benefit	57% of earnings after 30 years service	Includes 27% from State Pension. Increases to 67% with 40 years service
Public Sector Defined Benefit	50% of earnings with full service. Lump sum of 1.5 times salary	This includes State Pension for those who joined the public sector from 1995 onwards. Pensions increase in payment with earnings.

Source: Life Strategies

Annex 5 Price Dispersion

Table A5.6: Price charged as of January 15th 2007 to a 60-year old male, assuming a pension of €10,000 per annum, payable monthly, with a 5 year guarantee and no revision

Company	Level Annuity	Escl. 3% fixed	Escl. 5% LPI
A	175,000	256,000	295,000
B	169,344	248,750	255,071
C	172,682	257,069	-
D	178,066	256,583	-
E	173,701	254,004	340,077
Minimum	169,344	248,750	255,071
Maximum	178,066	257,069	340,077
% difference	5.2%	3.3%	33.3%
Mean	173,759	254,481	296,716
St. dev.	3,192	3,409	42,529
Coefficient Variance	1.8%	1.3%	14.3%

Source: Indecon and Life Strategies Survey

Table A5.7: Price charged as of January 15th 2007 to a 65-year old male, assuming a pension of €10,000 per annum, payable monthly, with a 5 year guarantee and no revision

Company	Level Annuity	Escl. 3% fixed	Escl. 5% LPI
A	151,000	209,000	235,000
B	147,935	204,525	209,634
C	154,823	219,106	-
D	153,500	207,735	-
E	152,137	211,393	271,175
Minimum	147,935	204,525	209,634
Maximum	154,823	219,106	271,175
% Difference	4.7%	7.1%	29.4%
Mean	151,879	210,352	238,603
St. dev.	2,631	5,485	30,929
Coefficient Variance	1.7%	2.6%	13.0%

Source: Indecon and Life Strategies Survey

Table A5.8: Price charged as of January 15th 2007 to a 70-year old male, assuming a pension of €10,000 per annum, payable monthly, with a 5 year guarantee and no revision

Company	Level Annuity	Escl. 3% fixed	Escl. 5% LPI
A	130,000	170,000	188,000
B	124,814	162,569	166,508
C	135,556	182,448	-
D	125,500	160,056	-
E	129,754	171,452	211,136
Minimum	124,814	160,056	166,508
Maximum	135,556	182,448	211,136
% Difference	8.6%	14.0%	26.8%
Mean	129,125	169,305	188,548
Standard Deviation	4,308	8,786	22,319
Coefficient Variance	3.3%	5.2%	11.8%

Source: Indecon and Life Strategies Survey

Table A5.9: Price charged as of January 15th 2007 to a 60 year old female, assuming a pension of €10,000 per annum, payable monthly, with a 5 year guarantee and no revision

Company	Level Annuity	Escl. 3% fixed	Escl. 5% LPI
A	186,000	279,000	326,000
B	184,412	283,382	290,703
C	183,106	282,008	-
D	192,500	290,009	-
E	188,752	288,454	401,682
Minimum	183,106	279,000	290,703
Maximum	192,500	290,009	401,682
% Difference	5.1%	3.9%	38.2%
Mean	186,954	284,571	339,462
Standard Deviation	3,747	4,574	56,701
Coefficient Variance	2.0%	1.6%	16.7%

Source: Indecon and Life Strategies Survey

Table A5.10: Price charged as of January 15th 2007 to a 65-year old female, assuming a pension of €10,000 per annum, payable monthly, with a 5 year guarantee and no revision

Company	Level Annuity	Escl. 3% fixed	Escl. 5% LPI
A	169,000	239,000	273,000
B	166,796	242,850	248,992
C	166,778	244,499	-
D	172,000	243,413	-
E	167,029	242,183	322,412
Minimum	166,778	239,000	248,992
Maximum	172,000	244,499	322,412
% Difference	3.1%	2.3%	29.5%
Mean	168,321	242,389	281,468
Standard Deviation	2,257	2,076	37,435
Coefficient Variance	1.3%	0.9%	13.3%

Source: Indecon and Life Strategies Survey

Table A5.11: Price charged as of January 15th 2007 to a 70-year old female, assuming a pension of €10,000 per annum, payable monthly, with a 5 year guarantee and no revision

Company	Level Annuity	Escl. 3% fixed	Escl. 5% LPI
A	147,000	197,000	220,000
B	147,064	202,864	207,889
C	148,876	207,641	-
D	144,500	192,900	-
E	143,247	197,004	251,050
Minimum	143,247	192,900	207,889
Maximum	148,876	207,641	251,050
% Difference	3.9%	7.6%	20.8%
Mean	146,137	199,482	226,313
Standard Deviation	2,244	5,780	22,263
Coefficient Variance	1.5%	2.9%	9.8%

Source: Indecon and Life Strategies Survey

Table A5.12: Cost of €100,000 5 Year Fixed Rate Mortgage 20 Year Repayment as of March 19th 2007 in Ireland

Company	APR	Cost per Thousand	Repayment Cost
AIB Existing	4.94%	€6.64	€159,360
BOI	5.00%	€6.58	€157,920
ESB	5.10%	€6.63	€159,120
F/Act	4.90%	6.54	€156,960
ICS	5.00%	€6.58	€157,920
IIB Ex	5.13%	€6.65	€159,600
IIB New	4.97%	€6.59	€158,160
TSB	5.10%	€6.68	€160,320
Minimum	-	-	€156,960
Maximum	-	-	€160,320
% Difference	-	-	2.1%
Mean	-	-	€158,670
Standard Deviation	-	-	€1,107
Coefficient Variance	-	-	0.7%

Source: Indecon Analysis of Finfact figures.

Annex 6 Further Survey Results

In the Indecon/Life Strategies' survey of the providers of annuities in the Irish market, we asked companies to rate a number of factors in terms of their importance to setting annuity prices. The following table summarises the responses received from the five companies currently writing business in the Irish Market.

Table A6.1: Annuity Providers' Ratings of Factors in Terms of Their Importance to Setting Annuity Prices

	Not at all important	Important or somewhat important	Very or extremely important
Base mortality	-	-	100%
Future mortality improvements	-	-	100%
Reserving requirements	-	80%	20%
Solvency margin requirements	-	80%	20%
Reinsurance	40%	40%	20%
Expenses	-	100%	-
Investment return	-	20%	80%
Competitor prices	-	40%	60%
Risk preferences	-	40%	40%
Profitability	-	80%	20%
Investment policy	20%	20%	60%

Source: Society of Actuaries in Ireland, December 2006.

As can be seen from the table, all companies considered mortality (both current and future improvements) to be either very or extremely important in setting annuity prices. In addition, four out of the five considered investment returns to be either very or extremely important. There was less consensus about the other factors, although almost all other factors were considered by all respondents to be at least somewhat important in setting annuity prices.

Annex 7 Membership of Partnership Pensions Review Group

Philip Kelly (Chair)	Department of the Taoiseach
Simon Hare	Department of the Taoiseach
Alan Plummer (Secretariat)	Department of the Taoiseach
David Begg	ICTU
Fergus Whelan	ICTU
Rosheen Callender	ICTU
Jerry Shanahan	ICTU
Brendan McGinty	IBEC
Donal Byrne	IBEC
Marie Daly	IBEC
Paul Cran	IBEC
Stephen O'Sullivan	Department of Finance
Ronan Fox	Department of Finance
John Reilly	Department of Finance
Alice O'Flynn	Department of Social and Family Affairs
Anne Vaughan	Department of Social and Family Affairs
Paul Cunningham	Department of Social and Family Affairs
Paul Morrin	Department of Social and Family Affairs
Ciaran Lawler	Department of Social and Family Affairs
John Walsh	Department of Enterprise, Trade and Employment

Michael Cunniffe	Department of Enterprise, Trade and Employment
Bob Keane	Department of Enterprise, Trade and Employment
Brendan Kennedy	The Pensions Board
Yvonne White	The Pensions Board
Jerry Moriarty	The Pensions Board
Anne Maher	The Pensions Board (up to November 2006)