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Pensions, Purchasing-Power Risk, Inflation and Indexation

Edward Whitehouse

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FOREWORD

Pensions are inherently risky because they are long-term contracts, which complicates financial planning for individuals and governments. If things turn out better than expected, who will reap the gains? If things turn out worse, who will bear the cost? No one wants to bear risk, but, in most cases, someone has to. Risks in pension systems have, in the past, been poorly measured or even just ignored.

This paper is part of a series that examines how different kinds of uncertainty affect retirement incomes. The first of these papers (Whitehouse, 2007) looked at life-expectancy risk: how much of the cost to retirement-income systems of longer lives will be borne by individual retirees, in the form of reduced benefits or later retirement? How should this life-expectancy risk be allocated between generations?

The second and third papers in the series analyse investment risk. Using historical data, the first of these papers measures the degree of uncertainty in investment returns (D'Addio, Seisdedos and Whitehouse, 2009). The second – Whitehouse, D'Addio and Reilly (2009) – looks in detail at the impact of financial-market performance on retirement incomes and government budgets.

This paper, the fourth in the risk and pensions series, looks at inflation and indexation. Most OECD countries have automatic adjustment of pensions in payment, usually to changes in prices, average earnings or a mix of the two. However, these indexation rules have often been overridden, meaning that individuals bear a greater risk in practice than the legal position sets out,

This paper examines indexation policies and actual practices using data for 18 countries for up to 45 years. It examines policy questions, such as: Should pensions be indexed? If so, should they be linked to prices or earnings? How should the index be calculated? What role is there for progressive indexation policies, which give higher increases to lower pensions?

Forthcoming OECD work will look at further kinds of uncertainty that affect pension systems:

- *Myopia risk*: many individuals are short-sighted and so they consume too much when of working age and save too little for later, especially for retirement. This would lead to low pensions and costs for taxpayers and contributors if these retirees were entitled to safety-net benefits.

- *Social and labour-market risks*: life events — such as persistent low earnings, long-term unemployment, caring for children or older relatives, divorce and widowhood — mean that workers may build up little in the way of retirement income. Again, the cost of these risks could be borne by individuals, by governments or by the contributors to pension systems.

- *Policy risk*: the political process may result in unanticipated changes in pension entitlements before or during retirement, perhaps leaving individuals with little or no time to respond by changing their labour-market or savings decisions.

AVANT-PROPOS

Du fait qu'elles sont des contrats à long terme, les retraites comportent par nature un risque, ce qui complique la planification financière des particuliers et des États. Si la situation évolue plus favorablement que prévu, qui en récoltera les bénéfices ? Si elle empire, qui en supportera les coûts ? Personne ne veut supporter de risque mais, dans la plupart des cas, il faut bien que quelqu'un le fasse. Par le passé, les risques des régimes de retraite ont été mesurés de façon peu satisfaisante, voire purement et simplement négligés.

Le présent rapport s'inscrit dans un ensemble de documents qui examinent en quoi différentes formes d'incertitudes conditionnent le revenu des retraités. Le premier de ces documents (Whitehouse, 2007) s'est penché sur le risque lié à la longévité : quelle part du coût lié à l'allongement de l'espérance de vie pour les régimes de retraite sera-t-elle supportée par les retraités, sous forme de baisse des prestations ou de report de l'âge de la retraite ? Comment ce risque doit-il être réparti entre les générations ?

Le deuxième et le troisième rapports analysent le risque d'investissement. Se fondant sur des données historiques, le premier de ces documents évalue le degré d'incertitude des rendements sur investissement (D'Addio, Seisdedos et Whitehouse, 2009). Le second – Whitehouse, D'Addio et Reilly (2009) – étudie en détail ses retombées sur les revenus de retraite et les budgets publics.

Le présent rapport, le quatrième de la série sur les risques et les pensions, porte sur l'inflation et l'indexation. La plupart des pays de l'OCDE disposent d'un mécanisme d'ajustement automatique des pensions en cours, généralement lié à l'évolution des prix, à celle du salaire moyen, ou à une combinaison des deux. Or, ces règles d'indexation ont souvent été ignorées, ce qui signifie que les particuliers supportent un risque plus lourd, dans la pratique, que celui prévu par la loi.

Pour examiner les politiques et les pratiques concrètes d'indexation, le rapport s'appuie sur les données recueillies dans 18 pays pendant 45 ans au plus. Il se penche sur certaines questions stratégiques : les pensions doivent-elles être indexées ? Dans l'affirmative, l'indexation doit-elle être liée aux prix ou aux salaires ? Comment l'indice doit-il être calculé ? Quel pourrait être le rôle d'une politique d'indexation progressive, qui accorderait des augmentations supérieures aux pensions de faible montant ?

De prochaines études de l'OCDE se pencheront sur d'autres formes d'incertitude qui pèsent sur les régimes de retraite :

- *Risque d'imprévoyance :* de nombreux individus sont imprévoyants : ils consomment trop pendant l'âge actif et n'épargnent pas assez pour l'avenir, en particulier pour leur retraite, ce qui se traduirait par de faibles pensions et des coûts pour les contribuables et les cotisants si ces retraités avaient droit aux prestations de protection sociale.

- *Risques sociaux et liés au marché du travail :* les événements de la vie — un faible niveau de rémunération persistant, une période de chômage de longue durée, la charge d'enfants ou de parents âgés, un divorce, le veuvage — font que les salariés risquent de ne pouvoir se constituer qu'une maigre épargne-retraite. Là encore, le coût de ces risques pourrait retomber sur les particuliers, les États ou les cotisants aux régimes de retraite.

- *Risque politique :* le processus politique peut entraîner des changements imprévus aux droits à pension avant ou pendant la retraite, les individus concernés n'ayant peut-être que peu ou pas de temps pour réagir en modifiant leur comportement sur le marché du travail ou en matière d'épargne.

- *Le risque lié au pouvoir d'achat*: l'évolution des coûts et du niveau de vie peut ne pas être suffisamment pris en compte dans les ajustements des prestations de pension, laissant les retraités plus âgés particulièrement vulnérables. Si la prestation de pension tombe en-dessous du seuil de pauvreté, des filets de sécurité pour les personnes âgées devraient être activés.

SUMMARY

The rapid rise in *inflation* in 2006-07 has attracted attention – once again – both to how pensions systems *should* react to changes in prices, and to how they do so in practice. Although inflation is now falling as a result of lower commodity prices and weakening demand, this brings with it the risk of *deflation* – falling prices – which also raises questions as to how pension systems should react.

Most OECD countries have a legislated commitment to indexation of pensions in payment. However, the empirical evidence in this paper shows that these rules have frequently been over-ridden. Furthermore, because indexation to price inflation rather than wage inflation is much more common – and wages can be expected to rise more rapidly than prices – the effect of following legislated indexation rules will be to reduce pensioner incomes compared with those of the working-age population. However, indexation to prices is less costly, allowing a larger initial pension than under earnings indexation for a given budget constraint.

This paper sets out current, national indexation policies and historical data on how pensions have been adjusted in practice. It examines different indexation policies: to prices, earnings or a mix of the two; the choice of the price index and progressive indexation (where smaller pensions are increased more rapidly than larger).

RESUME

La forte reprise de l'inflation en 2006-07 a, de nouveau, attiré l'attention à la fois sur la manière dont les régimes de pensions *devraient* réagir aux évolutions des prix, et sur la manière dont ils réagissent dans les faits. Même si l'inflation est actuellement en chute, par suite de la baisse des prix des matières premières et de l'affaiblissement de la demande, il en résulte un risque de *déflation* – c'est-à-dire de chute des prix – qui conduit aussi à s'interroger sur la manière dont les régimes de pensions devraient réagir.

Dans la plupart des pays de l'OCDE, la loi prévoit l'indexation obligatoire des prestations de retraite. Cependant, les données d'observation réunies dans le présent document montrent que, bien souvent, ces règles sont négligées. Par ailleurs, dans la mesure où le plus souvent, cette l'indexation s'opère beaucoup sur les prix plutôt que sur les salaires,– et que l'on peut s'attendre à ce que les salaires augmentent plus rapidement que les prix – l'application des règles d'indexation prescrites par la loi aura pour effet de réduire les revenus des retraités par rapport à ceux de la population en âge de travailler. Toutefois, l'indexation sur les prix étant moins onéreuse, cela permet de servir un montant initial de pension plus élevé que dans le cas d'une indexation sur la base des gains, pour un niveau donné de contrainte budgétaire.

Le document présente différentes politiques nationales d'indexation en vigueur ainsi que des données historiques retraçant l'évolution des modalités concrètes d'ajustement des pensions. Il passe en revue différentes options : indexation sur les prix, sur les gains ou formule mixte ; choix de l'indice des prix et indexation progressive (lorsque les pensions moins élevées augmentent plus vite que les pensions plus élevées).

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PENSIONS, PURCHASING-POWER RISK, INFLATION AND INDEXATION

EDWARD WHITEHOUSE

1. The surge in food and fuel prices in 2006-07 led to demonstrations and riots, both in developing and OECD countries. The position of vulnerable groups, such as pensioners, faced with rising prices has been a particular concern. The effect of the current financial and consequent economic crisis on price inflation is uncertain: forecasts range between deflationary depression and "stagflation" (declining national income combined with rising prices, a result of monetary and fiscal easing). This paper assesses how national retirement-income regimes reflect changes in costs and standards of living in determining the value of pensions. It examines conditions of both inflation and deflation.

2. Benefits from retirement-income programmes are typically provided as a flow of payments during retirement: a "pension" or an "annuity". Analysis of pension policy needs to consider the value of benefits not only *at the time of* retirement but also as it evolves *during* retirement.

3. Most OECD countries adjust pensions in payment to reflect changes in costs and standards of living. The procedures for such adjustment play an essential role in providing income security in retirement. Automatic adjustments are generally known as "indexation", because they are linked to indices, such as price inflation or growth in average earnings.

4. France adopted formal indexation procedures for pensions in payment in the late 1940s. Germany and the Netherlands followed in the late 1950s and the United Kingdom and the United States in the mid-1970s (Vording and Goudswaard, 1997, 1998). *Pensions at a Glance*, the OECD's (2005, 2007) report on member countries' pension systems, shows that most of them now have automatic indexation of pensions. Before the adoption of formal indexation, benefits tended to be increased. But in some cases, the adjustments were discretionary: periodic changes in pension benefits were required in law but are not linked to a particular index. In others, the changes were purely *ad hoc*, with adjustments both irregular and without specifying the rate of increase.

5. The adoption of automatic indexation appears to have led to a general feeling that adjustment of the value of retirees' benefits is no longer a pension-policy issue: it is a question that has been settled. However, there are two reasons why this is not the case.

6. The first is that the move towards automatic indexation of pension parameters has most often been towards a link with prices. Assuming that price inflation is generally less than wage inflation, this means that automatic indexation is often a route towards automatic reduction of pensioner incomes relative to those of people of working age. This has often been the explicit objective of policy, of course, but in the longer term, political pressures to make *ad hoc* adjustments might be overwhelming.

7. The second reason is that inflation is now higher than it has been for some time. The 2005 average inflation rate in OECD countries was just 2.6% per year. The annualised rate as of July 2008 was 4.7%. If inflation is back, then how retirement-income systems deal with it matters once again.

8. The next section of the paper examines the arguments for and against a formal indexation policy. Section 2 sets out the policies that OECD countries currently have for adjustment of pensions in payment and for key parameters of the pension system.

9. Section 3 is the core of the paper. It analyses empirically what countries have actually done in terms of indexing pensions as opposed to the ostensible, legal requirement. It shows how pension values were adjusted over long time periods relative to both price and wage inflation.

10. Section 4 looks at the policy arguments for indexing pensions either to prices or to average earnings. Section 5 examines the design of price indices used to adjust pensions and why they might not measure the true changes in cost of living faced by retirees. Section 6 looks at policies of progressive indexation, where the increases granted to smaller pensions are larger. Section 7 concludes.

1. Indexing pensions

1.1. Why index?

11. The case for periodic adjustment of benefits is obvious. During periods of high inflation, the real value of the pension can rapidly be eroded. For example, the average real pension fell by 40% in Hungary during the 1980s.[1] Even relatively low levels of inflation can have a major effect during retirement: the period after normal pension-eligibility age averages 18.3 years for men and 22.5 years for women in OECD countries. As an illustration, 2.5% annual price increases over this expected retirement period would reduce the real value of pensions by 37% for men and 43% for women if benefits were not adjusted. Pensioners are clearly in a poor position to compensate for differences between the purchasing power of their pensions that they expected and what occurs in practice. For example, it is too late to change the work and savings decisions that they made earlier, choices that were made with a particular expectation of real retirement income in mind.

12. Indexation transfers the determination of benefit levels during retirement from the political arena to the realm of the law. Weaver (1988) argues that this has an effect on the political agenda, both in ensuring benefits are protected and that the increases are not overly generous. Weaver (1982) describes this as "anonymising" the responsibility for the changes. It means that adjustment of pensions in payment is not a political or even ideological question, but a neutral element of the retirement-income regime. Other elements of the structure of pension systems are also designed to minimise political interference and to preserve a long-term intergenerational contract.[2] Indexation has the attraction of avoiding recurrent political debate, which naturally has uncertain outcomes. Moreover, as retirees become more significant electorally during periods of population ageing, this can prevent "budgetary capture", whereby older voters boost their own incomes at the expense of others.

13. However, should such adjustments be carried out automatically through formal indexation? Political majorities will either support uprating, in which case it would be enacted anyway, or will oppose

1. Palacios and Rocha (1997).

2. For example, around half of OECD countries have automatic links with the life expectancy of different generations and either the level of benefits or the conditions to qualify for a pension. Whitehouse (2007) analyses the diverse ways in which pensions are linked to life expectancy.

it, in which case they can just change the law that requires indexation. Moreover, politicians might be able to adjust other budgets that affect pensioners or to change the tax treatment of pensioners to undo the effects of automatic indexation. Therefore, why bother to make a law if this does not constrain future politicians?

14. Indexation makes the real value of benefits more certain, and so is part of the insurance contract of the pension system. Indexation is a fair balance that minimises political competition and intergenerational social conflict over pensions.

1.2 Why not index?

15. There are, however, counter-arguments: automatic indexation of pensions in payment might not be desirable. The first of these concerns the role of macroeconomic and, particularly, monetary policy in controlling inflation. Such concerns are longstanding: Wilson and Wilson (1982) report that Beveridge – author of a groundbreaking report on social insurance (Beveridge, 1942) – was opposed to automatic indexation. His argument was that indexation would create a class of people who had nothing to gain from anti-inflation policies and so would be unwilling to bear the cost. More recently, similar arguments lie behind the outlawing of any indexation in Argentina. They are also are invoked in the debate over whether governments should issue indexed bonds or not.

16. Indexation might also limit flexibility in budgetary policy when faced with a need for fiscal restraint and lead to higher inflation. If benefit levels are higher under automatic indexation than they would otherwise be, then the policy may put pressure on tax and contribution burdens. In theory at least, automatic indexation might prevent the government from achieving a fair burden of the costs of fiscal retrenchment on different generations.

2. National indexation policies

2.1 Indexing pensions in payment

17. For earnings-related pensions, only Austria and Greece have discretionary adjustment of pensions in payment in public schemes. The same applies to the quasi-mandatory occupational plans in the Netherlands (on which, see Bikker and Vlaar, 2006). In each case, there are annual adjustments, but these are negotiated rather than linked formally and automatically to particular indices.

18. Price indexation of pensions in payment is found in 12 OECD countries. Indexation is linked to earnings growth in just Luxembourg and Norway, while five countries – the Czech Republic, Finland, Hungary, the Slovak Republic and Switzerland – use a mix of earnings and price indices.

2.2 Indexing pension-system parameters

19. Indexation affects not only pensions in payment but also the parameters of pension systems. In resource-tested and basic pension schemes, indexation policies have a much greater impact on individual retirement incomes than the treatment of earnings-related pensions in payment. This is because they affect not only the evolution of the value of the benefit *during* retirement but also the initial starting value *at the time of* retirement.

20. The United Kingdom's basic-pension scheme provides a good illustration. The basic pension's value has been linked to prices since 1981.[3] At that point, it was worth 24% of average earnings. Today, it

3. In practice, there have been discretionary increases above price inflation in the last eight years: see below.

is worth just 15% of average earnings. The scale of the reduction over time is a result of a process akin to the compound-interest effect.

21. The change in indexation procedure reduced the entitlements not only of existing pensioners but also the benefits of all current and future workers.[4] If the current procedure of price indexation were to continue, then the basic pension for new entrants would be worth just 6.4% of average earnings when they retire in 45 years' time, just 40% of its value relative to earnings now.[5] Indeed, this steady erosion in the value of the basic pension relative to economy-wide living standards is why the recent pension reform – which was greeted with cross-party consensus – will index the basic pension to average earnings in the future. This example illustrates the fact that the adjustment of benefit levels to the point when they are first claimed is more important than the adjustment of benefits in payment with basic and resource-tested schemes. With earnings-related schemes, the real value of new pensions increases as real earnings grow between the time that rights were earned and the pension is claimed. But this is not the case with resource-tested and basic schemes.

22. Basic pensions, resource-tested schemes and minimum pensions play an important role in many OECD countries' retirement-income systems (see Hoskins, Pearson and Whitehouse, 2008). For example, resource-tested of minimum pensions are received by around 40% of pensioners in France, 55% in Sweden and over 75% in Australia.

23. National policies for indexing these benefits again differ. Many adjust the value of to changes in average earnings, which maintains the replacement rate – pension relative to individual earnings – for these schemes over time. This group includes Australia, Denmark, Ireland and New Zealand. In France, Greece and Mexico, the value of targeted benefits are linked to minimum wages, as is the basic pension in the Netherlands.

24. Canada and Sweden link their resource-tested schemes to prices (as under the policy in the United Kingdom adopted for the two decades after 1981). The implication, over the long periods involved in pension policy, is that these programmes will all but disappear. For new entrants, the minimum retirement income in 45 years time would be just 12% of average earnings in Canada and 14% in Sweden. It is difficult to believe that it will be politically possible to pay such low incomes to poor, old people (see also the discussion in OECD, 2007, p. 27).

25. Indexation affects other parameters of retirement-income systems: ceilings on pensionable earnings are a significant example. Most countries do not require high-income workers to contribute to the pension system on their entire earnings. Usually, a limit is set on the earnings used both to calculate contribution liability and pension benefits: only three countries do not have such a ceiling for public pensions. The average ceiling on public pensions for the 19 OECD countries (where this is relevant) is worth 189% of average economy-wide earnings. Indexation of this parameter of earnings-related pension schemes can also have important effects on retirement incomes. In Canada, for example, the ceiling was, for a significant period, indexed to prices, again leading to a steady erosion of its value relative to average earnings. However, since the ceiling in 2006 was worth just 96% of average earnings (OECD, 2007), policy has changed so that it will in future be indexed to average earnings.

26. In many countries, however, there is no formal procedure for changing the value of the ceiling over time and adjustments are effectively discretionary. Ceilings have been increased relative to both

4. There are also complex effects of the indexation of the basic pension on the value of benefits under the earnings-related scheme: see Disney and Whitehouse (1991).

5. This calculation uses the OECD's baseline real-earnings-growth assumption of 2% per year.

prices and average earnings to generate additional contribution revenues in a number of countries. For example, Hungary increased the ceiling from 225% of average earnings in 2002 to 420% in 2004 (on the OECD earnings measure). However, the short-term revenue boost brings with it additional liability to pay pension benefits in the future.

3. Indexation in practice

27. Most OECD countries have automatic indexation of pensions: in theory, at least. However, looking at the history of benefit adjustments, there are many examples of cases where governments have ignored automatic indexation procedures and adjusted benefits in a discretionary or *ad hoc* way. Times of prosperity often see extra increases while economic stagnation sees lower increases.

28. The question therefore becomes an empirical one rather than a case of setting out (ostensible) national policies. How much did nominal pensions increase over time and how do these increases compare with price inflation and growth in average earnings? The following sections examine the experience of 18 OECD countries.

29. Historical data were provided by national officials. Generally, the analysis focuses on the main scheme in each country. The form of the underlying data depends on the type of pension scheme. For countries with basic pensions – Canada, Ireland, New Zealand and the United Kingdom – or resource-tested schemes – Australia – the time series is the nominal value of the benefit. For earnings-related pensions, the underlying data are the annual percentage increase in pensions.

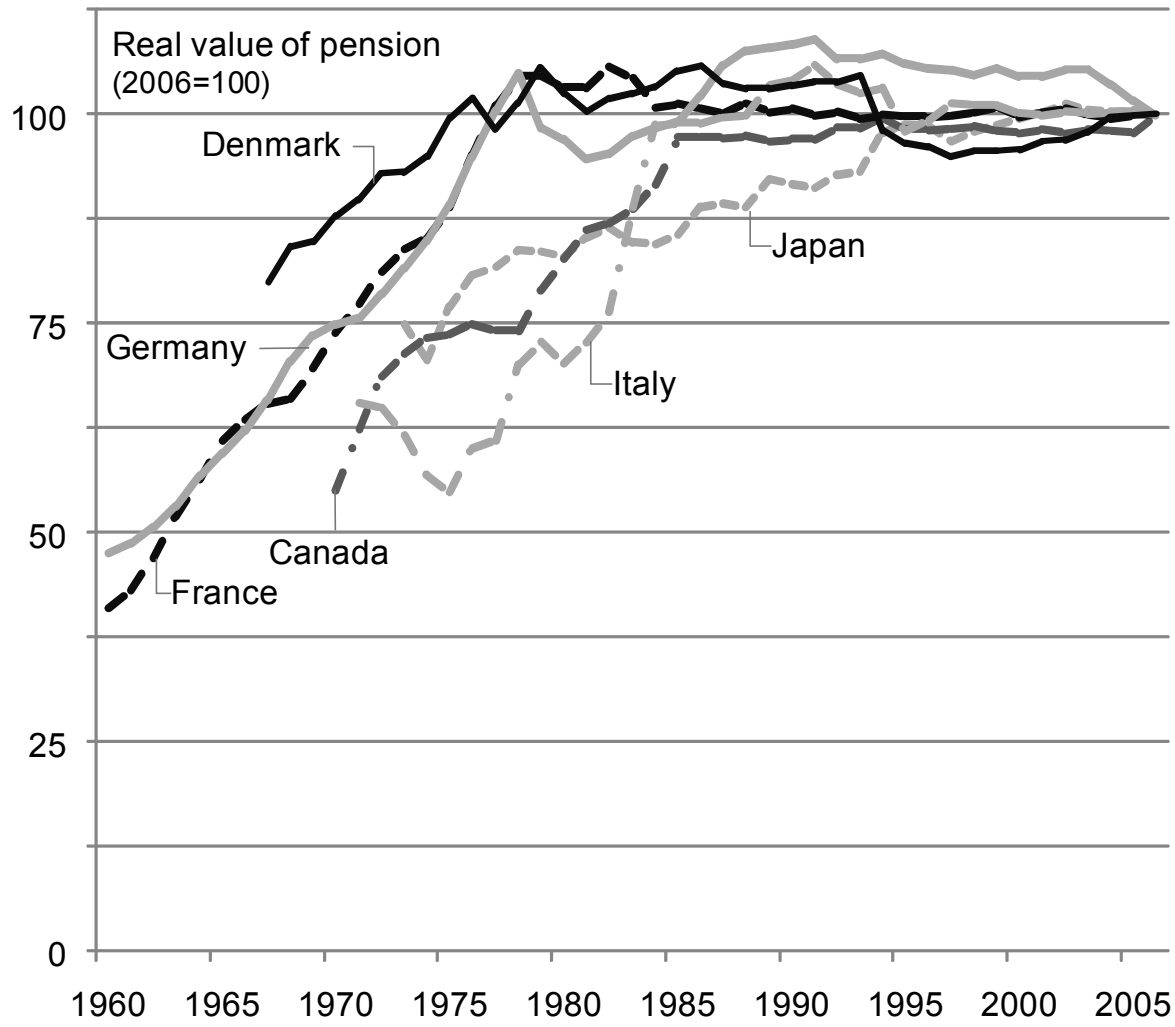
3.1 Pensions relative to prices

30. The first set of charts (Figures 1 to 4) looks at changes in the real value of pensions in payment, that is, relative to price inflation. The data cover the longest period for which national information was provided (although data for periods before 1960 are not presented). The changes in pension values have been deflated by the national consumer price index.[6] For ease of comparison of the changes in different time periods, the annual changes in pension values have been converted to an index whose value is fixed at 100 in 2006.

31. It is important to note that this does *not* show the average pension received by retirees in a particular year. The aim is to isolate the effect of indexation policies and practices on pensions from other factors: financial and economic conditions, the maturing of pension systems, pension reforms *etc.*

6. In many cases (see section 5 below), different indices of costs of living have been used to calculate benefits. Moreover, the timing of changes in benefits relative to the timing of changes in prices can also differ. This means that real changes in pension benefits might be shown in the chart even when countries adopted and implemented price indexation. However, these differences are small and will tend to cancel out over time.

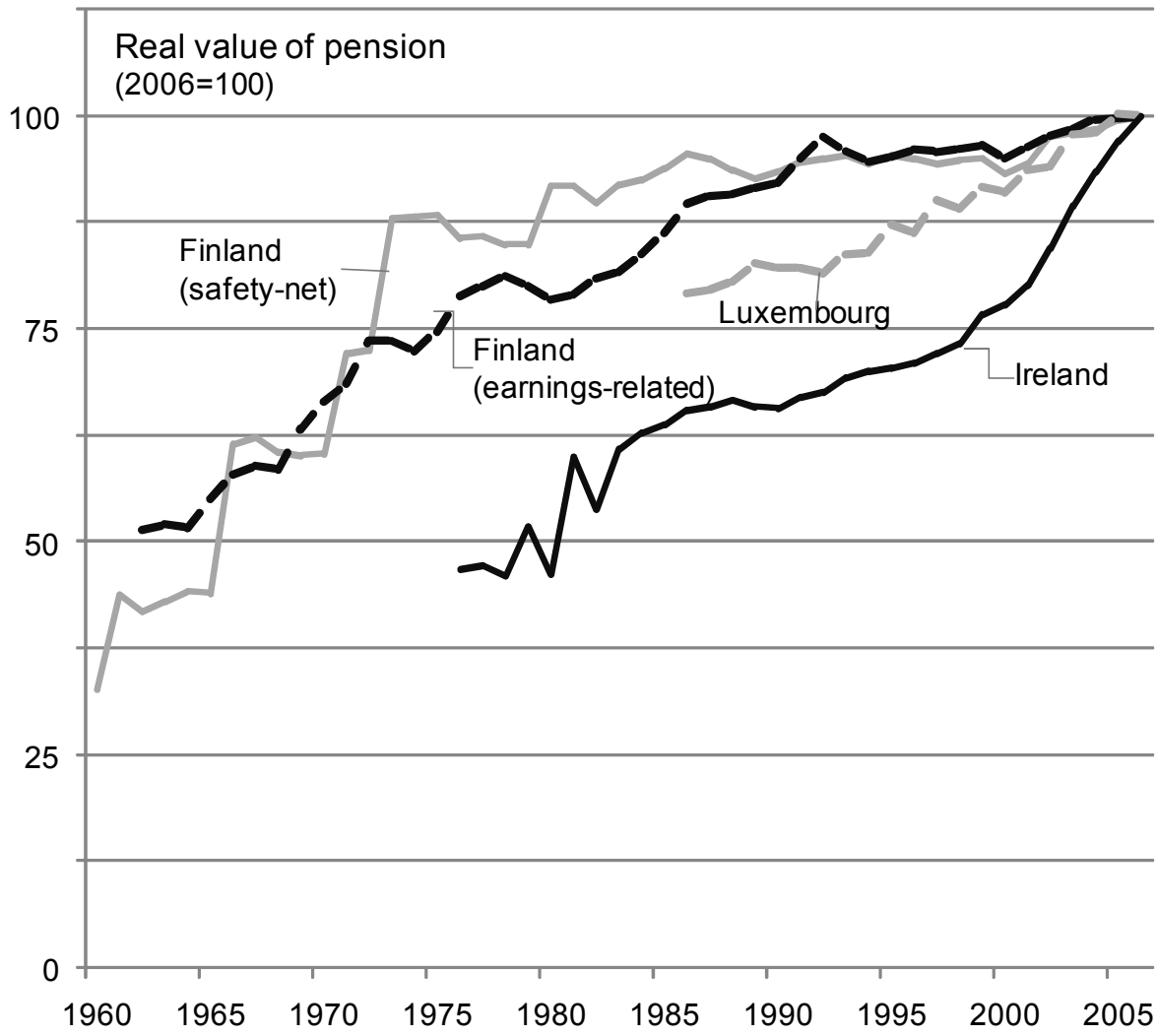
Figure 1. Real value of pension over time:
Canada, Denmark, France, Germany, Italy and Japan



Source: OECD analysis of national information on pension indexation; OECD Main Economic Indicators database.

32. Figure 1 shows the results for six countries that saw real increases in pensions in the early part of the period that subsequently came to an end. In France and Germany, for example, real pensions more than doubled between 1960 and 1978. During that period, the annual real increase in pensions was 5.3% in France and 4.5% in Germany. Since 1978, the real value of pensions has been broadly flat in both countries. Real increases in pensions in Denmark also appear to have come to a halt at the end of the 1970s. In the other countries shown in Figure 1, increases in real pensions ended later than in Denmark, France and Germany: in 1984 in Italy, 1986 in Canada and 1994 in Japan. In Italy, for example, real pensions grew at a rate of 3.5% a year between 1970 and 1984. But pensions were stable in real terms thereafter.

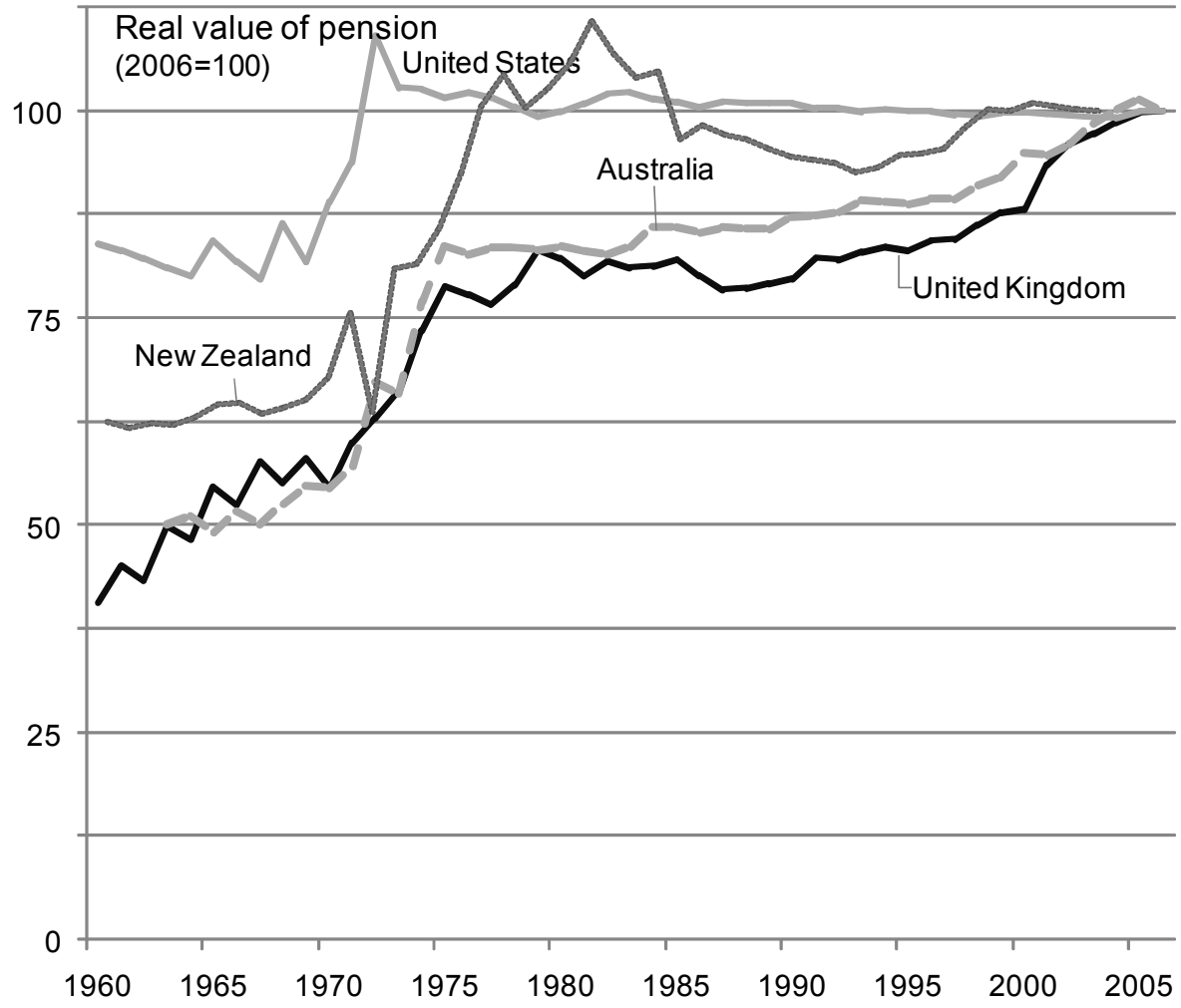
**Figure 2. Real value of pension over time:
Finland, Ireland and Luxembourg**



Source: OECD analysis of national information on pension indexation; OECD Main Economic Indicators database.

33. The second most common pattern observed is that of a near-continuous real increase in pensions (Figure 2). In Ireland, for example, the value of the basic pension more than doubled between the mid 1970s and 2006, an annual real growth rate of 3.9%. In Finland, the real value of the national pension – which combines basic (flat-rate) and income-tested components – increased rapidly until the mid 1970s. The rate of growth over this period averaged 8.5% a year. (This is labelled as the "safety-net in Figure 2.) Since the mid-1970s, the real increase has averaged just 0.7% a year. In contrast, the indexation of earnings-related pensions in Finland has resulted in more consistent growth of real earnings-related pensions than for the national scheme. Pensions increased in real terms by 2.1% a year in the decades of the 1960s, 1970s and 1980s. However, since 1990, the real increase has been just 0.4% a year.

Figure 3. Real value of pension over time:
Australia, New Zealand, United Kingdom and United States



Source: OECD analysis of national information on pension indexation; OECD Main Economic Indicators database.

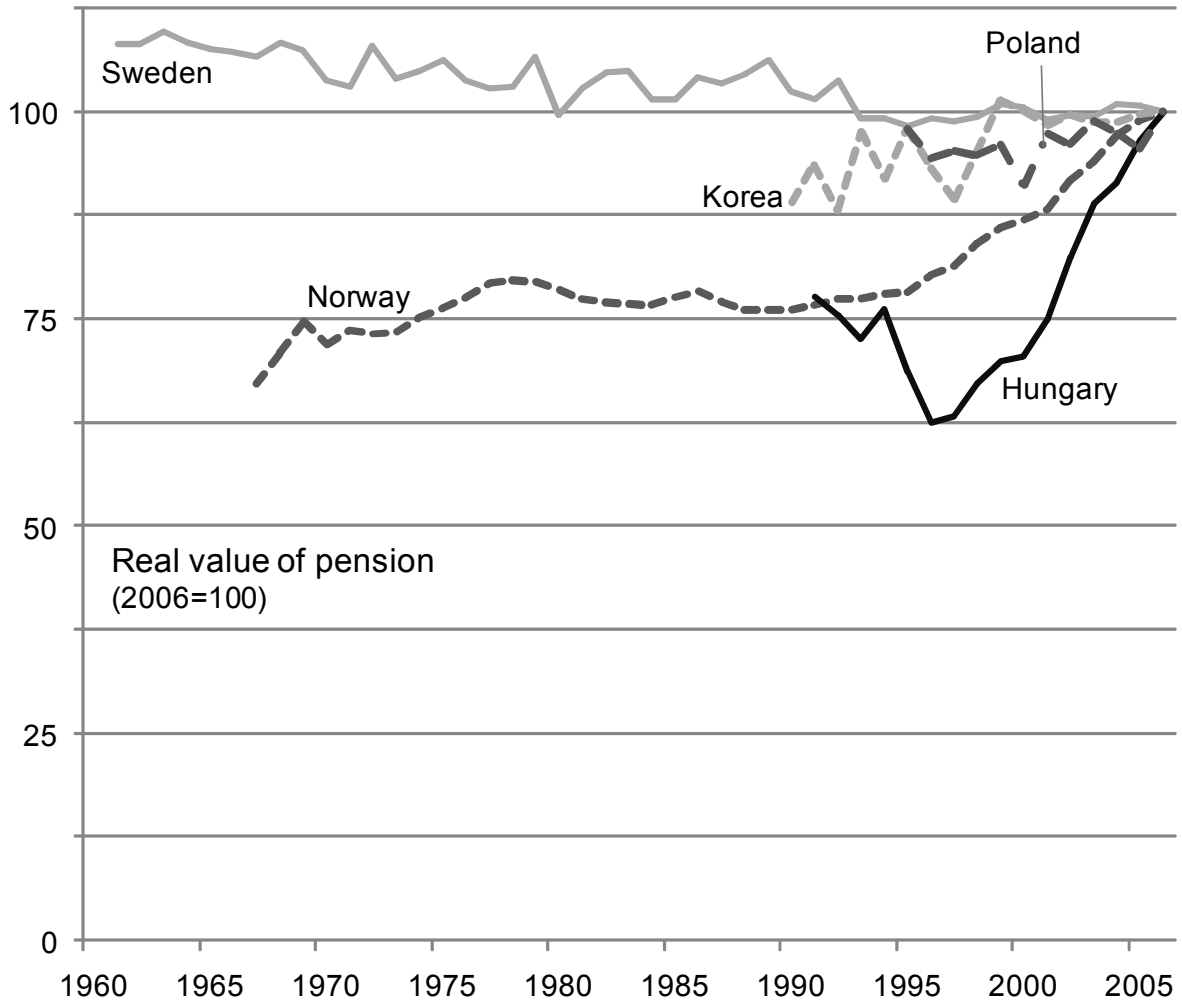
34. Figure 3 shows countries with two different patterns of indexation over time. The time series for Australia and the United Kingdom are remarkably similar, with rapid real increases in pensions until 1975 of around 4.5% a year in both countries. Thereafter, real pension values were relatively constant. There followed a distinct pick-up in real pensions from the mid 1990s in both cases. In the United Kingdom, indexation of pensions to earnings has achieved totemic political significance. But this policy was actually only implemented between 1978 and 1981. Ironically, this was the one period in 50 years when real wages did not grow.

35. The time-series pattern of real pensions in New Zealand also shows rapid increases in the 1970s which came to an end in 1979. Real pensions then fell during the 1980s, increased between 1992 and 1998 and since then have remained constant.

36. The evolution of real public pensions in the United States, also shown in Figure 3, has a different profile. Real pensions were constant for much of the 1960s, but then there was a growth spurt. Between 1967 and 1972, the real value of pensions increased by 37%, an annual rate of growth of 6.5%. Formal

indexation of pensions in payment to a measure of consumer prices was introduced by legislation in 1972 and 1973, bringing the real increases in benefits during retirement to an end.

Figure 4. Real value of pension over time:
Hungary, Korea, Norway, Poland and Sweden



Source: OECD analysis of national information on pension indexation; OECD Main Economic Indicators database.

37. The final chart in this first series – Figure 4 – shows countries with different patterns. In Norway, there were some real increases in pensions in the mid 1970s, but they were not very large. However, there has been a consistent increase since the mid 1990s: real pensions have grown by 28% since 1995, an annual rate of increase of 2.5%. In Sweden, real benefits have been pretty much constant over the whole period analysed. For the other three countries, only relatively short periods of data are available and so it is not possible to analyse long-term trends. However, real pensions in Korea and Poland have remained broadly constant over time. In Hungary, in contrast, real benefits grew by 60% in the decade to 2006, an annual real increase of nearly 5%.

38. Table 1 summarises indexation practices of the 18 countries analysed and how they evolved over time. It groups countries into different stylised time-series patterns.

Table 1. Pattern in real value of pensions over time

Pattern	*Countries*
Real increases then stable	Canada, Denmark, France, Germany, Italy, Japan, New Zealand, United States
Continual real increases	Finland, Hungary, Ireland, Luxembourg
Real increase, stable, and then further real increases	Australia, United Kingdom
Stable and then real increases	Norway
Stable	Sweden

Source: data in Figures 1-4.

Box 1. Adjusting pension values under conditions of deflation or low inflation

It can be politically difficult to increase benefits by less than promised under indexation rules or to pay out very small increases when inflation is low.

The retail-prices index, which is used to uprate the basic pension in the United Kingdom, showed an annual increase of 1.1% in 1999. This meant that the basic pension would increase by just 75 pence, from £66.75 to £67.50 a week. The increase was dismissed as "derisory" by pensioner activists and trade unions. Although the government did not back down, it responded by making permanent a £100 annual payment to pensioners (ostensibly to pay for winter fuel) and introducing free television licences for over 75s.

A similar furore in Poland resulted in a change of policy whereby adjustments only occur when cumulative changes in inflation reach 5%. In 2002, the annual inflation adjustment was just 0.5%. Protesting pensioners sent the small number of zlotys increase, in cash, to the social-insurance agency. This caused logistical problems.

However, the political difficulties in Poland and the United Kingdom pale beside the question of what to do in times of deflation rather than low inflation. Deflation – a sustained decline in the general price level or a negative rate of inflation – means that compliance with an indexation rule may well result in cuts in *nominal* pension levels.

The most recent episode of deflation in an OECD country occurred in Japan during the period 1999-2001. Prices fell in successive years by 0.3%, 0.7% and 0.7%. The government chose not to impose reductions in nominal benefits at the time. In part this probably reflects political difficulties in cutting nominal benefit levels. However, there was also an economic rationale: the government was keen to encourage household consumption as a means of boosting the economy. The overall increase in real pensions – because of deflation – over the period 1999-2001 was 1.7%.

However, adjusting pensions to reflect inflation but ignoring deflation has a "ratchet" effect – pensions can go up but never down – which might pose fiscal problems. To avoid such problems, Japan will in future reduce benefits to claw back this gain. A factor of 98.3% (reflecting the overall 1.7% price fall) will be applied to future pension levels. Furthermore, as deflation continued, policy changed. Prices fell by 0.9% in 2002 and 0.3% in both 2003 and 2005. Benefits were reduced in line with these falls in these years.

A similar ratchet effect occurred in the United Kingdom in the late 1970s. Pensions were adjusted in line with average earnings with the additional proviso that the increase should be at least as large as price inflation. This policy lasted from 1978 to 1981. Coincidentally, this was also the only period from 1960 onwards that real wages fell (a result of the "social contract" between government and trade unions). If the policy had continued, then as wages increased after the social contract came to an end, over the full period, pensioners would have seen faster income growth than workers. However, the policy of price indexation was introduced in 1981, thereby removing the ratchet problem that occurs with adjustment of pensions to the higher of wage and price inflation.

3.2 Pensions relative to average earnings

39. The second benchmark used to evaluate national indexation policies over time is average earnings in the economy. This measure is useful for two reasons. First, the comparison with prices shows how pensions change relative to the *cost* of living. In contrast, the comparison with average earnings shows how pensions have developed relative to the *standard* of living of people in work. Secondly, many countries had policies that linked pension to changes in average earnings over at least some of the period under study.

40. The analysis groups countries into the same four sets as in the analysis relative to price inflation in Figures 1 to 4. However, major differences in real earnings growth between countries means that the patterns of pension values relative to wages are different from the real (price-adjusted) values.[7]

41. Figure 5 shows the cases of the six countries that saw an increase in real pensions beginning in the early 1960s. Typically, these real increases came to an end around 1980.

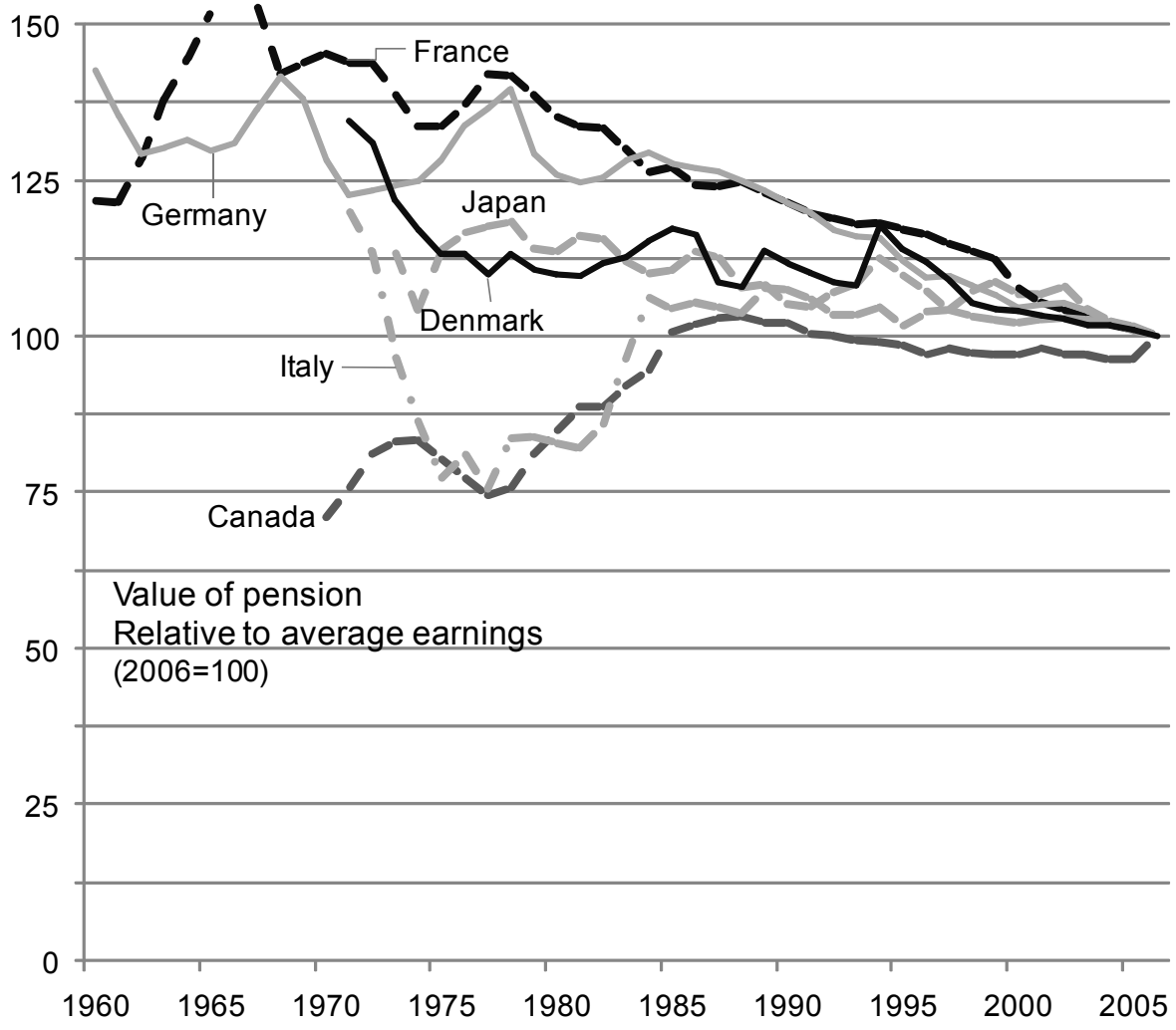
42. In Canada, the pension increases in the 1970s and early 1980s were significantly faster than earnings growth. Since 1985, the pension has been flat relative to earnings, a similar pattern as found for the real pension value in Figure 1. This is naturally because real earnings growth over this period has been very low.

43. Italy saw a significant fall in pensions relative to earnings in the early 1970s due to very rapid growth in real earnings that averaged 10% a year. The late 1970s and early 1980s saw a partial reversal of this, with an increase in pensions relative to earnings of around a third. Since 1985, pensions have fallen relative to earnings but, as in Canada, the decline does not appear large because real earnings growth has been quite slow over this period (less than 0.5% per year).

44. The one-third increase in real pensions in the early 1960s in France was much more rapid than wage growth over this period. Through the 1970s, pensions remained roughly constant relative to earnings. In Germany, pensions kept pace with earnings growth through the 1960s and 1970s (with some short-term fluctuations, perhaps related to the electoral cycle). However, both France and Germany have seen declines since 1980, with pensions losing around 30% of their value relative to earnings. In Denmark and Japan there have also been consistent declines in pension relative to earnings, but at a slower pace than in France and Germany.

7. Unfortunately, the OECD's database contains information on earnings growth for shorter periods than for price indices for some countries.

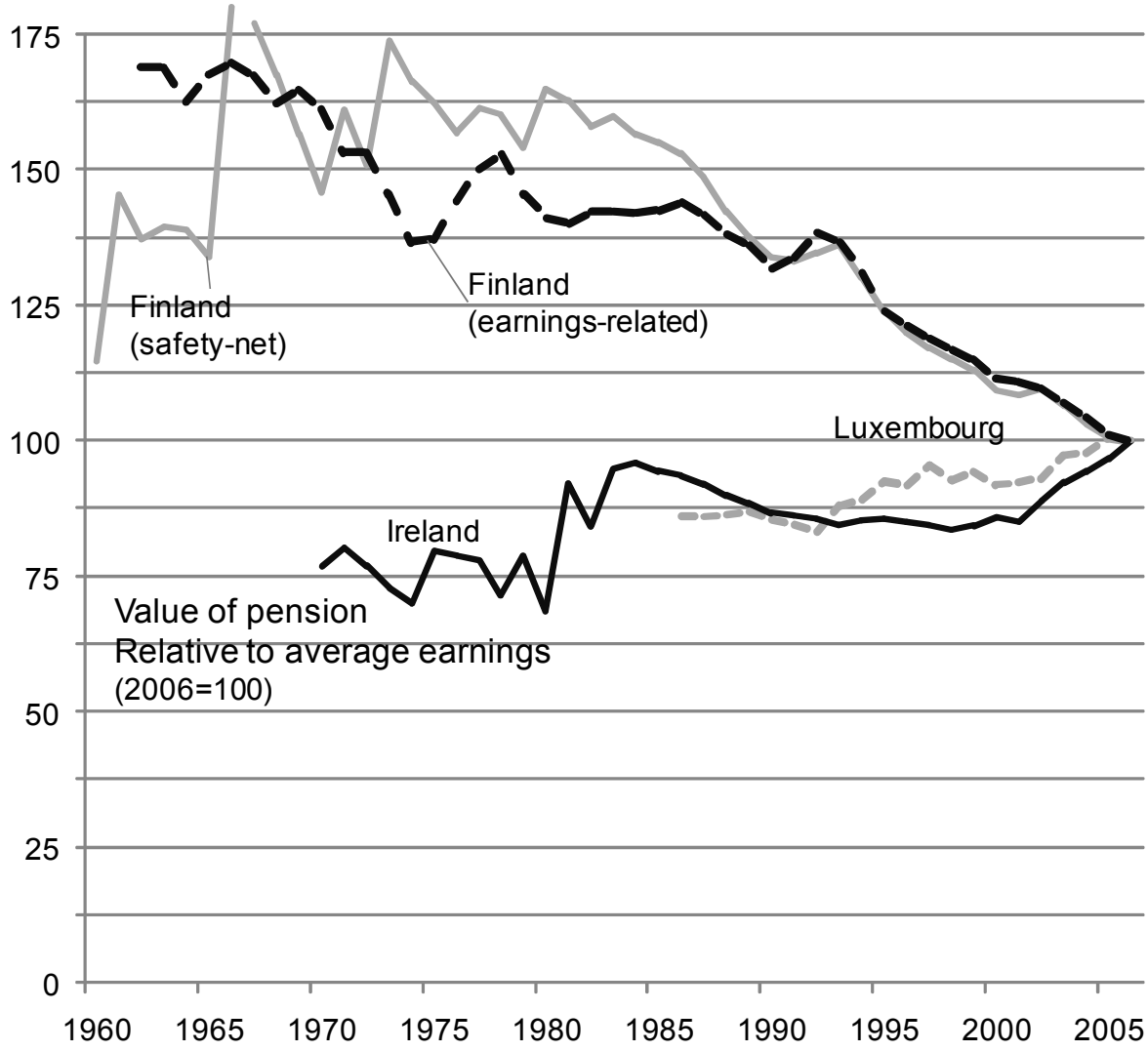
Figure 5. Pensions relative to average earnings over time: Canada, Denmark, France, Germany, Italy and Japan



Source: OECD analysis of national information on pension indexation; OECD Main Economic Indicators database.

45. The second set of countries were grouped together in Figure 2 because they saw near-continuous real increases in benefits. Figure 6 shows that benefits have increased slightly faster than earnings growth in Luxembourg, particularly since the early 1990s. In Ireland, pensions fell slightly behind earnings in the late 1980s, a period of rapid wage growth. The last five years have seen increases faster than earnings as the government has set a target of large increases in the basic pension. Pensions have fallen relative to earnings in Finland since the mid 1970s by a total of around a third.

Figure 6. Pensions relative to average earnings over time: Finland, Ireland and Luxembourg

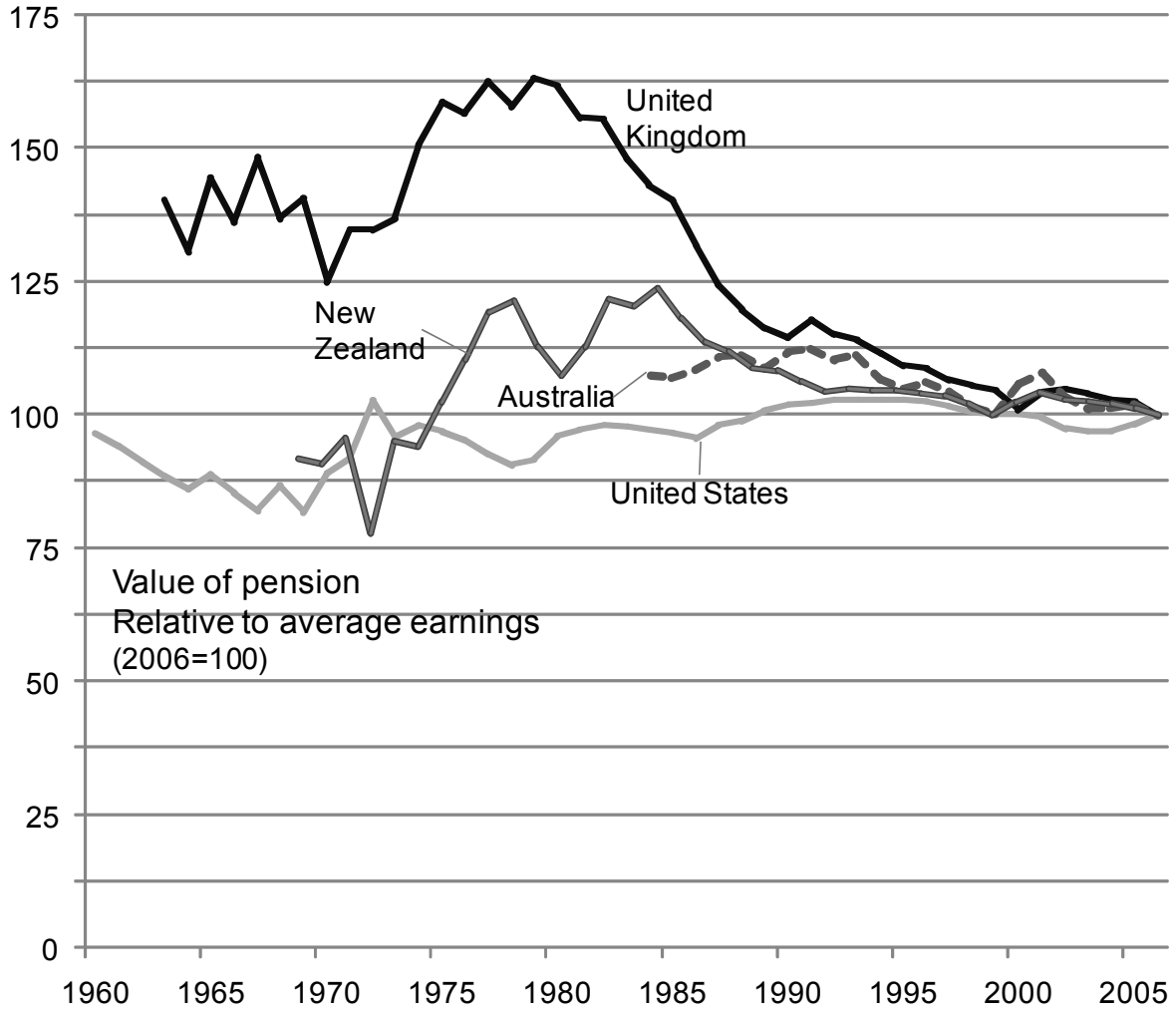


Source: OECD analysis of national information on pension indexation; OECD Main Economic Indicators database.

46. Figure 7 shows that pensions fell rapidly relative to earnings in the United Kingdom in the 1980s due to a policy of price indexation of benefits and rapid growth in pay. The decline has slowed recently following discretionary real increases in benefits since the mid 1990s (as shown in Figure 3). The pattern in New Zealand is similar, with pensions growing significantly faster than wages in the 1970s. After a period of stability, relative pensions fell in the late 1980s and early 1990s and have remained fairly constant since then.

47. In Australia and the United States, pensions have remained roughly constant relative to earnings over long periods. However, the causes are different. In Australia, this reflects real increases in the benefit level while in the United States, the reason is that real earnings have not grown.

Figure 7. Pensions relative to average earnings over time: Australia, New Zealand, United Kingdom and United States

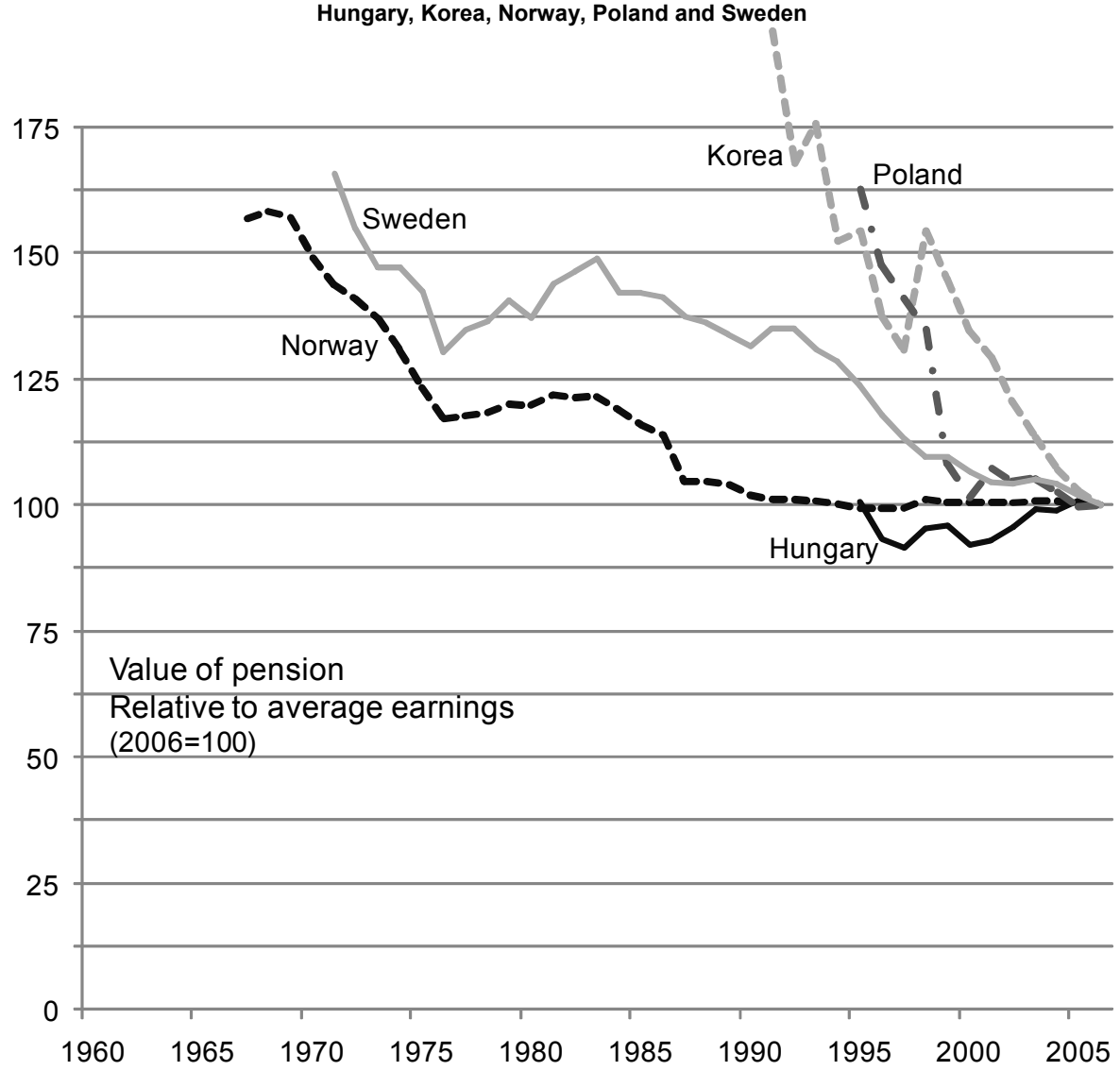


Source: OECD analysis of national information on pension indexation; OECD Main Economic Indicators database. Earnings data for New Zealand before 1989 are from national sources: Department of Labour Half-Yearly Survey and New Zealand Quarterly Economic Survey.

48. The three countries in Figure 8 for which only a short time series of pension levels is available – Hungary, Korea and Poland – also happen to have seen rapid growth in earnings over the past decade, averaging 4-5% a year in each case. In Korea and Poland, this has led to a rapid erosion of the value of retirement benefits relative to economy-wide earnings: halving in Korea in the last 15 years, for example. In Hungary, however, pension increases have broadly kept pace with real earnings growth.

49. Norway shows a consistent pattern of a decline in pensions relative to earnings until the mid-to-late 1980s, followed by a stable ratio. In Sweden, benefits have fallen behind pay each year for most of the period. The exception – in the late 1970s and early 1980s – was a period of falling real wages.

Figure 8. Pensions relative to average earnings over time: Hungary, Korea, Norway, Poland and Sweden



Source: OECD analysis of national information on pension indexation; OECD Main Economic Indicators database.

4. Should pensions be indexed to prices or earnings?

4.1 Microeconomic issues

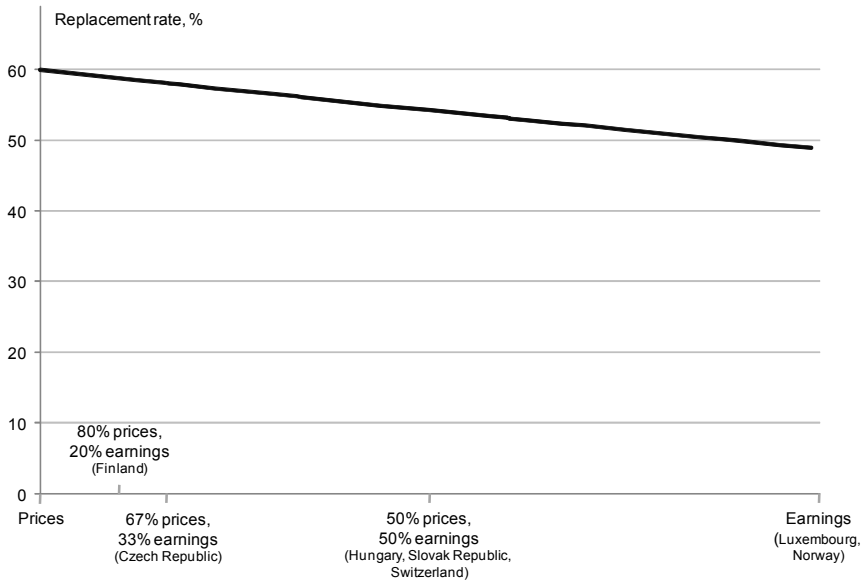
50. Indexation of pensions in payment to price inflation maintains the real value of retirement benefits. But it implies a steady erosion of purchasing power during retirement relative to the living standards of the population as a whole. Earnings indexation of pensions in payment, on the other hand, has often been considered too expensive by many governments. Wages commonly increase faster than prices do. A key policy question is, therefore, whether the benchmark for assessing purchasing-power risk should be the *cost* of living (that rise in line with price inflation) or *standards* of living (which increase in line with nominal earnings or household incomes).

51. Keeping the replacement rate constant but moving to a more generous indexation policy would increase pension costs. The indexation issue, therefore, is best viewed as a trade-off: for a given pension

budget, smaller increases in pensions during retirement mean a higher starting point for the benefit at the time of retirement and *vice versa*. Any country can afford to index pensions in payment to earnings, but it might mean a lower benefit at the point of retirement. Gronchi and Aprile (1998) explain in more detail: "Without prejudicing the constraint of financial sustainability, a pension scheme may choose any one of an infinite number of pairs (combinations) of initial award and indexation rates; or, in other words, any of an infinite set of curves of the total benefit over time."

52. The scale of the trade-off can be illustrated empirically using the OECD pension models (see OECD, 2005, 2007). The calculations show that providing an earnings-indexed pension costs around 23% more than a price-indexed pension, using OECD average mortality rates and the standard assumption of 2% annual growth in real earnings. Figure 9 shows the result in terms of a replacement rate. At the left-hand side, it is assumed that the replacement-rate target is 60% with prices indexation. Moving to earnings indexation, overall pension costs would remain the same if the replacement rate were just 48.5%. The chart also shows the impact of mixed indexation policies adopted in five OECD countries.

Figure 9. Replacement rate under different indexation policies with constant costs



Source: OECD pension models.

53. Which criteria should determine the choice between (i) a lower starting benefit and real increases (earnings indexation) or (ii) a higher initial pension and no real increase (price indexation)?

54. Most important is how much people want and need to spend at different ages during their retirement. Younger retirees have more opportunities for spending on holidays and other leisure activities, which they are less capable of enjoying as they age. In the economics jargon: the marginal utility of income falls with age. Working in the opposite direction, health expenditures may increase with age, especially for long-term care. The economics literature shows that consumption falls with age. However, it is not possible to determine whether this reflects individual choices or whether older pensioners' consumption is constrained by lower incomes relative to younger pensioners.

55. A second issue is the rate of growth of earnings in the economy. If real wages are growing rapidly, pensioners may be left behind the working-age population in their living standards. This has been

the case in the countries of Central and Eastern Europe, and in Ireland, in recent years. A policy of increasing real pensions may be needed in the short and medium term to protect the relative living standards of the oldest old even if this involves extra pension spending. However, it is important to ensure that this policy does not become embedded in the pension system in the long term. As these economies converge on the performance of the OECD as a whole – with much lower real-earnings growth – a move price indexation would be appropriate.

56. Indexation policy, thirdly, also has distributional consequences. For example, it is well established that people with lower incomes have a shorter life expectancy (see Whitehouse and Zaidi, 2008 and Brown, 2000). This means that more generous indexation procedures – to earnings rather than prices, for example – redistribute from poor to rich.[8]

57. The final argument relates to individuals' flexibility to choose their own preferred consumption path during retirement. Earnings indexation provides a lower starting replacement rate but a more rapidly growing pension than under a policy of price indexation (with a given budget constraint for pension expenditure). If individuals wished to "undo" the effect uprating of pensions in line with earnings growth, they would need to dis-save early in retirement to reach the higher consumption level available with price indexation of benefits (again, within the public budget constraint). Older people find it very difficult to borrow, meaning that liquidity constraints might prevent this strategy. In contrast, individuals in a system with price indexation can easily save early in retirement to provide the resources for increasing real consumption during retirement (to match those offered by an earnings-indexed benefit). Thus, price indexation of pensions in payment provides more flexibility for individuals to follow their preferred consumption path during retirement.

4.2 Macroeconomic issues

58. There are other possible indexation rules. These have been proposed or implemented as a way of stabilising the finances of pay-as-you-go pension systems.[9]

59. One example is the "balancing mechanism" that is used to adjust the notional-accounts component of the Swedish pension system (see Settergren, 2001). The norm is to increase these pensions in payment by the increase in average earnings less 1.6 percentage points. However, a lower rate of pension increase is imposed if the finances of the scheme are unsustainable. The details are complex, but essentially sustainability is assessed by calculating the present value of the future flow of contribution revenues plus the value of the reserve fund and comparing this total with the present value of pension liabilities. If future pension costs exceed future revenues, then current pension uprating is reduced until financial balance between these variables is restored. The balancing mechanism has not yet been invoked: over the period 2003-06, the assets (reserves and contributions) averaged 100.76% of liabilities. However, the current financial and economic crisis may affect the finances of the system and result in lower pension benefits.

60. Germany also recently introduced a "sustainability adjustment" into its pension-point scheme. The value of the pension point will be adjusted to reflect changes in the ratio of pensioners to contributors (known as the system dependency ratio). Because Germany has a points system, these adjustments affect equally the value of pensions in payment (*i.e.*, indexation policy) and the future pension rights of current workers (*i.e.* valorisation). Official demographic projections show that this policy will reduce the real value of pensions in the long term by 18% (OECD, 2007, p. 127), although such projections are, of course,

8. See Creedy, Disney and Whitehouse (1993) and Disney and Whitehouse (1993).

9. See Valdés-Prieto (2000) and Robalino and Bodor (2008) for a detailed treatment of these issues.

subject to a high degree of uncertainty.[10] In 2008, the government over-rode the requirement under the rules for a 0.46% increase in pensions in 2008 and instead increased the point value by 1.1%.

61. Germany and Sweden are the only two OECD countries that have adopted these "conditional-indexation" policies. However, there is an important difference between them. The adjustments in Germany are based on current values of variables while the Swedish adjustments are calculated using the present value of future flows.

62. Conditional indexation raises important issues of the sharing of risks – demographic and economic – between generations.[11] The idea is to reduce the uncertainty faced by taxpayers and contributors in the amount they must pay into the pension system.[12] The corollary, of course, is an increase in the uncertainty of the real value of pensions. Risk, of course, cannot be made to go away: instead, it should be allocated to the people best able to bear it. It seems reasonable to think that people of working age are better positioned to absorb negative economic shocks than retirees.

5. Which price index?

63. A policy of indexation naturally requires the choice of an index. Estimating a cost of living index requires a set of assumptions, a methodology, the collection of price and expenditure data and, finally, the calculation of the index.[13] Most countries use a version of the consumer price index (CPI) to adjust pensions in payment, which has the great strength of simplicity. Yet difficulties arise because such indices are expected to serve multiple purposes: guiding monetary policy *etc*. For the adjustment of pensions in payment, the use of the CPI raises a number of policy issues.

64. First, what is the appropriate basket of goods and services? The recent disquiet about food and fuel prices has often emphasised that older people spend proportionally more of their incomes on these goods. This may put short-term pressure on the purchasing power of pensioners. In the United Kingdom, for example, price inflation for pensioners in 2008 reached 7.4% compared with 5.4% for the population as a whole. There are also differences among pensioners. The inflation rate for the poorest, oldest pensioners was 9.0% compared with 6.1% for the youngest, richest retirees (Leicester, O'Dea and Oldfield, 2008).

65. Should, therefore, the adjustment of pensions in payment reflect differences in expenditure baskets between retirees and others? Longer-term studies in the United Kingdom, for example, suggest that a price index based on the expenditure basket of pensioners varies relative to the overall price index year-on-year. However, there is no particular trend or long-term difference (see also Crawford, 1994; Crawford and Smith, 2002; Crawford and Image, 2004). The appropriateness of the expenditure basket used to calculate the price index for adjusting pensions in payment is an issue that requires further research.

10. See Whitehouse (2007), Part II, and the references therein.

11. See Bohn (2001, 2002) on the risk-sharing properties of different indexation procedures.

12. See Alho *et al.* (2005) for a formal treatment.

13. See Deaton (1998), for example.

Box 2. Measuring inflation: are there flaws in the consumer price index?

The Boskin Commission*, established by the United States Senate, examined the question: Do CPI-based indices overstate the effect of inflation on living standards? Several potential biases were identified.

- Substitution bias: a fixed basket of goods and services does not reflect consumers' switching to cheaper rather than more expensive goods when relative prices change.
- Outlet-substitution bias: consumers shop around and the move to lower-price shops in times of inflation is not taken into account.
- Quality-change bias: improvements in the quality of goods are measured inaccurately or not at all: electronic gadgets have more features, energy efficiency improves *etc*.
- New-product bias: it often takes a while before new gadgets get into the basket of goods and their price tends to fall rapidly.

Aggregating these effects, the Boskin Commission's best estimate of the size of the upward bias in the CPI was 1.1 percentage points per year. The range of plausible values for this bias was 0.8 to 1.6 percentage points per year. The findings of the Commission, however, did not affect policy over indexation of public pension benefits in the United States.

There is no obvious reason why these biases in the CPI should differ substantially between OECD member countries. The implication is that indexation of pensions in payment to the CPI increases the genuine purchasing power of retirement incomes over time.**

* It was formally called the "Advisory Commission to Study the Consumer Price Index in the United States", generally known for short as the Boskin Commission (after its chairman).

** See Gordon (2000, 2006) and Greenlees (2006) for responses to and analysis of the report's aftermath.

65. Some countries already use different versions of the CPI to adjust pensions. Some of these incorporate moral judgements about what how older people should spend their money. For example, Belgium excludes tobacco, alcohol and petrol and France excludes tobacco from the index used to adjust pensions in payment. The United Kingdom uses a version of the retail prices index to adjust benefits. (This index differs from the CPI principally in its treatment of housing costs.) The basket of goods and services used, however, excludes the expenditures of the richest 10% of the population.

66. The second issue is whether the CPI is a good measure of changes in the cost of living. This complex yet important question is beyond the scope of this paper. Nonetheless, Box 2 briefly summarises a comprehensive analysis of this question in the United States that specifically aimed to consider how pensions in payment should be adjusted.

6. Who should be indexed?

67. Some OECD countries have now adopted procedures for "progressive indexation" of pension benefits. Austria, Greece, Italy and Portugal, for example, have or have had more generous indexation procedures for smaller pensions than for larger.[14]

14. These policies should not be confused with the proposal in the United States, championed by Posen, one of the members of the President's Commission to Strengthen Social Security. This proposal for "progressive

6.1 Greece

68. The most complex case among these four countries is that of Greece. Table 2 sets out the rules for pension increases applied over an eight-year period. In three of those years, all pensions were increased proportionally. Perhaps coincidentally, these increases were all 4%, when inflation was somewhat lower (3-3.5%). In the other five years covered in the Table, increases for the first slice of pension benefits were generally higher than the rate of price inflation. In contrast, the adjustment was well below prices for higher pensions in 2001-2004. Indeed, there was no real increase for the top slice of pensions in 2003 and 2004.

Table 2. Adjustments to pensions in Greece, 1999-2006

Year	1999	2000	2001	2002	2003	2004	2005	2006
Inflation	2.6%	3.2%	3.4%	`3.6%	3.0%	2.9%	3.5%	2.9%
Increases (bands)	3.9% (<€ 733)	4.0% (all)	5.5% (< € 352)	3.5% (< € 400)	4.0% (< € 500)	5.0% (< € 500)	4.0% (all)	4.0% (all)
	3.4% (> € 733)		2.75% (< € 587)	1.5% (< € 620)	2.0% (< € 1 000)	3.0% (< € 1 000)		
			1.4% (< € 880)	0.75% (< € 910)	0.0% (> € 1 000)	0.0% (> € 1000)		

Source: OECD (2005, 2007), national information.

69. It is difficult to gauge the effect of these adjustments to pensions in payment on the basis of the parameters in Table 2 alone. The only measure that can capture the impact of different indexation policies is that of "pension wealth". A pension is a flow of payments while pension wealth while pension wealth is a stock: the present value of lifetime benefits at the time of retirement. (See Queisser and Whitehouse, 2006 for details of these calculations.) Figure 10 shows the impact of these different indexation policies on pension wealth of men and women.

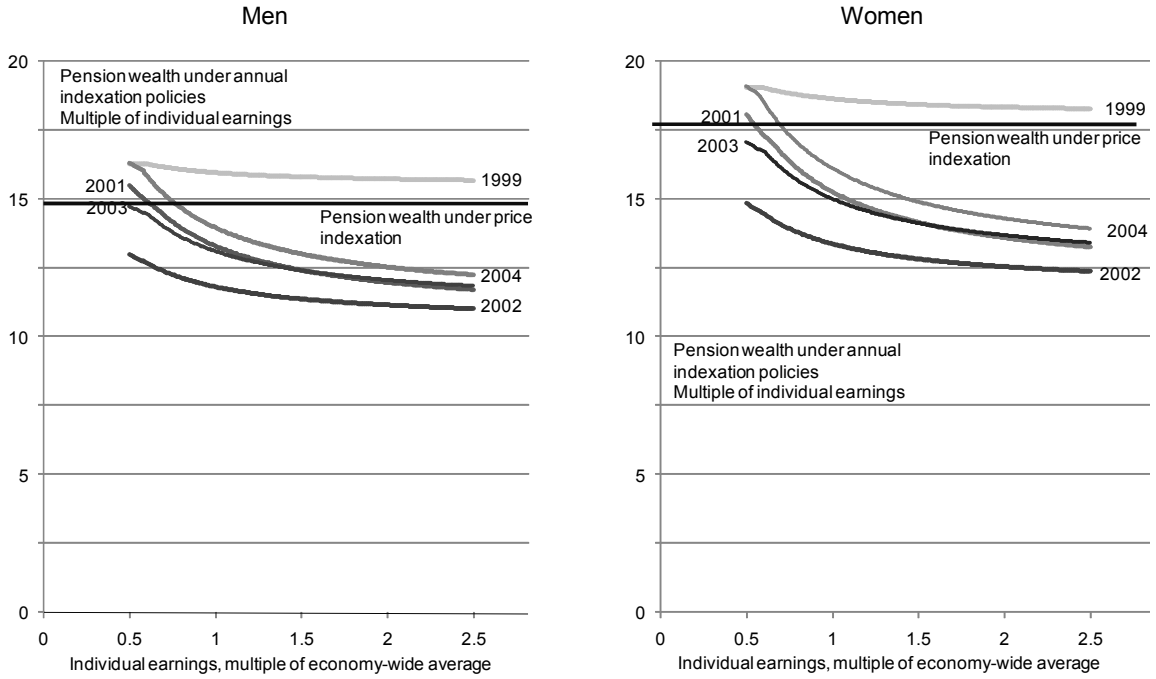
70. The horizontal axis shows individual earnings (when people were working) and the vertical, pension wealth at retirement. The calculations assume that workers have a full career (from age 20 to normal pension age) and that they earn the same proportion of economy-wide average wages each year. The analysis assumes that each year's policy was applied throughout retirement. As a benchmark, the charts also show pension wealth under a policy of pure price indexation. For men, this is just less than 15, meaning that the present value of a pension of € 10 000 is € 150 000. Because women live longer than men, pension wealth under price indexation is higher: just under 18.

71. In 1999, there was only a small token difference in the adjustment of pensions at different levels: pension wealth for high earners (on double average pay) was just 3.5% less than that for people with low earnings (half of the average). In the other four years, however, there were huge differences in pension wealth by earnings. In 2001 and 2004, for example, pension wealth of high earners was 25% less than for low earners. For 2002, the curve is flatter, but all pensions were increased by less than price inflation that year. The lowest pensions were increased by more than price inflation in 2003. But even for workers on half average earnings, the overall pension increase was around the same as price indexation for men and less for women. This is because the band over which these above-inflation increases were given was very

indexation" relates to the adjustment of benefits *before* retirement, akin to what the OECD terms "valorisation" (and others have called "actualisation". Here, the term indexation is used only to refer to the adjustment of benefits after retirement.

narrow. Even in 2001 and 2004, earnings of more than 60% and 75% of the average respectively would deliver pension increases of less than price inflation for men.

Figure 10. Pension wealth by individual earnings and sex under different indexation policies, Greece



Source: OECD pension models.

6.2 Italy

72. For benefits up to three times the minimum pension in Italy, there is full price indexation of pensions in payment. This threshold is € 1 260 per month for 2005 (which is used to index pensions in 2006) and € 1 283 for 2006 (for 2007 indexation) or approximately two-thirds of economy-wide average earnings. For benefits between three and five times the minimum pension, pensions in payment are uprated by 90% of price inflation. Above this threshold, indexation falls to 75% of prices. The indexation applies separately to each slice of a large pension.

73. The effect of this policy on the pension wealth of workers at different levels of earnings is illustrated in Figure 10. The analysis uses the standard OECD assumption of 2.5% inflation.

74. The threshold for having lower-than-price indexation is very high: only people who had earnings when working of around 135% of the economy-wide average would be affected, and then only marginally. For an individual on double average earnings, for example, pension wealth is just 1.5% lower for men and 1.0% lower for women than for people with full price indexation.

6.3 Austria

75. In 2005, pensions in payment in Austria were adjusted in line with prices up to the median pension; pensions above this threshold were increased by a flat amount, which was equal to the absolute increase given to the median pensioner. From 2006 to 2009, it is envisaged that pensions will be fully indexed to prices up to 15 times the daily contribution ceiling which for 2006 was € 125 x 15 = € 1 875.

76. Figure 10 shows the impact of this policy on people with different levels of earnings. The analysis is complicated by the fact that there is a ceiling on pensionable pay. In 2006, this was € 52 500 a year, corresponding to 165% of economy-wide average earnings. Above this point, pension wealth (which is defined relative to individual earnings) obviously declines. Figure 10, however, also presents results that ignore the effect of the ceiling so as to focus on the effect of progressive indexation alone (as indicated in the charts).

77. Full-career workers earning up to 85% of the economy-wide average will receive full price indexation. Richer workers can expect a smaller level of pension wealth: around 10% lower than for the majority.

6.4 Portugal

78. Pensions in payment are indexed to prices, with larger increases for smaller pensions. For 2006, for example, inflation was 3.1%. An increase of 3.1% was given to pensions up to € 596, with and 2.6% for pensions between € 597 and € 2 387. Above that threshold, the increase was 2.4% with no increase on pensions above € 4 774.

79. From 2008, indexation will depend on the size of the pension and the rate of GDP growth according to the matrix in Table 3. Down the left-hand side are four bands related to the value of the pension relative to the IAS, a measure of subsistence income). Across the top are different bands of GDP growth. With low growth, only the very smallest pensions would be price indexed with other benefits falling in real terms. With high growth, most pensions would increase by prices or even faster. However, the level of the thresholds appears to be very high. Individuals would need to have a pension worth more than 54% of economy-wide average earnings to see real reductions in benefits. Zero adjustment applies only to pensions worth more than 428% of economy-wide average earnings, of which there will be very few even thought there is no ceiling to pensionable pay.

80. Given the level of these thresholds, Figure 11 confirms that progressive indexation has only a small effect on pension wealth. (Note that the analysis is based on the middle level of GDP growth in Table 3.) As with Austria, an adjustment is required to the pension-wealth numbers to reflect the progressive pension benefit formula. The accrual rate – the pension as a percentage of individual annual earnings – varies with earnings, from 2.0% to 2.3%. Adjusting for this variation in accruals shows the effect of progressive *indexation* alone. With this adjustment, the pension wealth of higher earners is around 4% lower than for the majority (slightly higher for women, lower for men).

Table 3. Future adjustment of pensions in payment, Portugal

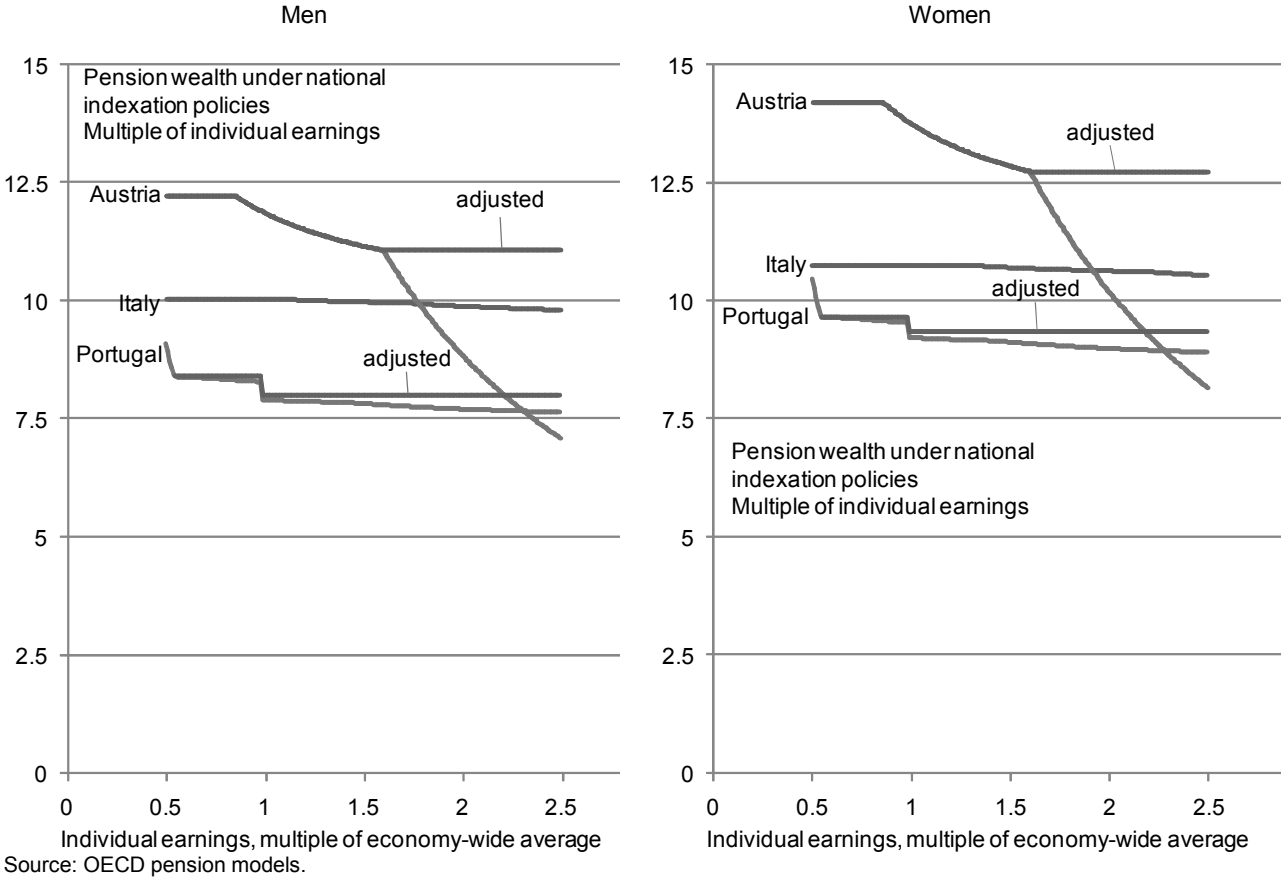
Pension multiple of IAS (% of average earnings)	GDP growth		
	<2%	2-3%	≥3%
<1.5 (<54%)	CPI	CPI + 20% GDP growth*	CPI + 20% GDP growth
1.5-6 (54-214%)	CPI – 0.5 p.p.	CPI	CPI + 12.5 % GDP growth
6-12 (214-428%)	CPI – 0.75 p.p.	CPI – 0.25 p.p.	CPI
≥12 (≥428%)	Zero	zero	zero

Note: CPI = consumer price inflation; GDP = gross domestic product; p.p. = percentage point. The IAS is a measure of a minimum subsistence income. For 2007, the IAS will be based on the minimum wage for 2006 (€ 385.90) uprated by inflation for 2006 (3.1%). It is not yet determined how the IAS will evolve over time, but the analysis assumes that it will track average earnings in the long term. The figures for pensions as a percentage of average earnings should be viewed as approximate.

* Subject to a minimum limit of 0.5 percentage points above inflation.

Source: OECD (2007).

Figure 11. Pension wealth by individual earnings and sex under different indexation policies: Austria, Italy and Portugal



Source: OECD pension models.

7. Conclusions

7.1 Indexation policy and practice

81. The empirical investigation of the development of pensions over time – relative to both prices and average earnings – has revealed some common patterns. Where possible, data were collected from 1960 to 2006. This 46-year period encompasses the most important developments in public-pension policy. For instance, most countries' schemes were either introduced or radically altered in the post-war era.

82. The results tend to show real increases in pensions in the 1960s and 1970s – sometimes even faster than the growth of average earnings – which then came to an end or were reduced. Usually, this changed occurred in the 1980s. This pattern was observed in Canada, Denmark, Finland, France, Germany, Italy, Japan, the United Kingdom and the United States. Although the outcomes for pension adjustments were similar between these countries, their policies were very different: discretionary indexation, *ad hoc* adjustments, price or earnings indexation were all public policy at various points. These policies – and changes in them over time – are not generally apparent in the empirical analysis.[15] Indexation rules seem to have been widely ignored.

83. Periods of economic expansion saw generous treatment of retirees. Perhaps, also, there was deliberately generous treatment of early cohorts covered by public pensions. People retiring in 1970, for example, might only have 20 years covered by the public-pension system. Large real increases in pensions may have been compensation for the fact that these early cohorts had limited opportunities to build up rights in earnings-related pension schemes.

84. As pension systems matured, the fiscal costs increased. Moreover, the 1970s and 1980s saw a series of financial, economic and fiscal problems. As a result, the United States suspended indexation for 1984, Belgium for the three years 1983 to 1985, Spain, for the period 1983–88, New Zealand for the two years 1992 and 1993 and Italy for six months in 1992, despite the fact that indexation was written into the law in all these cases. Other common measures include delaying the date of the benefit adjustment, changing the index or changing the period over which inflation is measured.[16]

85. Nevertheless, the arguments for indexation are strong. Pensioners, above all, want to minimise the risk and uncertainty in their purchasing power of their retirement incomes. This is because retirees cannot change their earlier work and savings decisions should real benefits prove less than expected. Automatic indexation avoids having regular political horse-trading about the level of pensions in retirement and are a way of maintain an intergenerational contract over the long term. In times of economic or fiscal pressure, it may be fair that pensioners bear some of the pain with reduced benefit adjustments. But that practice, although common in OECD countries, does not remove the argument for automatic indexation as a norm. Indeed, the spread of indexation from only half-a-dozen countries in the 1960s to virtually the whole of the OECD today is evidence that this view is widespread.

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15. Similarly, Vording and Goudswaard (1997, 1998) show that over the long term, pension adjustments have been much the same between countries despite different formal procedures. However, they only looked at four countries: France, Germany, the Netherlands and the United Kingdom.

16. Wartonick and Packard (1983).

7.2 Prices or earnings?

86. The paper also examined the options and arguments for indexing to prices or to average earnings. Increasing pensions in line with earnings is more expensive than price indexation because real earnings tend to grow over time. If pension spending is held constant, then a policy of earnings indexation means a lower benefit at the time of retirement. The paper argued that price indexation of pensions in payment is appropriate for most OECD countries for distributional reasons and because of the greater flexibility it offers for pensioners.

7.3 Measuring inflation

87. The rapid recent increase in food and fuel prices has hit pensioners particularly hard. However, a survey of the large literature on issues in calculating cost-of-living indices showed evidence that price inflation faced by pensioners over time tends to be the same as the population as a whole.

7.4 Progressive indexation

88. The paper examined four countries that have had policies of "progressive indexation", meaning that larger pensions are increased by a smaller proportion than smaller ones or, indeed, not at all. The impact of these policies is difficult to gauge from a description of the rules alone. However, a detailed examination of their effect on the lifetime pension benefits of people with different levels of earnings reveals that the impact of these policies is tiny in Italy and Portugal. Indeed, it is hard to conclude that the policies in these countries are anything other than political tokenism. The overall public-expenditure saving from this policy will also be very small.

89. The effects of progressive indexation on the pension wealth of people with different levels of earnings when working are rather larger in Austria and Greece than they are in Italy and Portugal. Both Austria and Greece have policies of discretionary adjustments to pensions in payment, subject to periodic negotiation. The effect of these policies is to introduce a redistributive element to pension systems. However, the degree of redistribution is arbitrarily linked to the rate of inflation. Progressive indexation – when effective rather than "tokenist" – is a poor and arbitrary substitute for a progressive benefit formula or a two-tier pension system with redistributive and earnings-related elements.

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