

# 1 Demographic pressures

with Howard Reed

Every hour life expectancy in Britain rises by another 16 minutes.<sup>1</sup> As Professor Tom Kirkwood notes, this sustained increase in longevity is ‘the greatest triumph that our species has achieved’ (Kirkwood 2001: 5). A child born in 2006 can expect to live more than twice as long as his or her ancestor born at the beginning of the 19th century, when the average life lasted just 40 years (GAD 2005, Hicks and Allen 1999).

Although increased life expectancy has been the most dramatic demographic shift of the last two centuries, the way we live and the structure of society have also altered radically, even in the past few decades. Across the developed world, fertility is the lowest it has ever been, marriage rates have stalled or started a long decline, levels of emigration and immigration continue to rise and growing numbers of people live in ever more diverse households and families.

These trends have not gone unnoticed. A mass of research, comment and polemic has been produced since the 1960s, warning variously of cataclysmic overpopulation, unsustainable growth and famine (Ehrlich 1971), underpopulation and spiralling dependency ratios (UN 2000), the decline of the family and moral collapse (O’Neill 2002), the evolution of the family and moral progress (Harper 2003), a political clash between generations (Van Parijs 1998), declining innovation (Schieber 2003) and shifting global power (Deutschebank 2002).

Such concerns are familiar across much of Europe; yet they have been considered less pressing in the UK, where the population appears to be ageing more slowly. It is well known in British policy circles that raising or lowering the fertility rate would probably make almost no difference to dependency ratios or public spending up to 2050 (Pensions Commission 2004). This perhaps explains why the Government appears sanguine about demographic change in the UK. Yet new extended analysis by ippr reported on pages 24-25 reveals a very different picture: current fertility trends will have an enormous impact, which will be felt beyond 2050.

Britain is now at a demographic fork in the road: higher fertility would dramatically reduce pressure on public spending beyond 2050, and lower fertility would be close to disastrous. Our findings present a challenge to a progressive government: politicians must decide today whether they are prepared to act to safeguard the demographic legacy for future generations.

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1 Between 1981 and 2004 life expectancy at birth for men rose by six years from 70.9 to 76.9. For women, life expectancy rose from 76.9 to 81.1 in the same period – equivalent to 11 minutes an hour (GAD 2005).

Yet this is only part of the demographic challenge facing the Government. An emerging body of academic research – using recently developed economic modelling techniques – shows that we have not been asking the right questions about demographic change: demography is as important for social justice as it is for long-term macroeconomic stability. Changing population trends have contributed to the huge growth in inequality and poverty seen in many countries over the past 30 years, particularly in the US and Australia.

What is more, Britain has undergone very similar demographic shifts to these countries, and similar effects have been seen: our original econometric modelling, presented at the end of this chapter, provides an estimate of just how important demography seems to have been. Changing demographic shifts have substantially contributed to rising child, pensioner and overall poverty, and exacerbated inequality between 1979 and 2004. Crucially, these trends are projected to continue, potentially creating ongoing pressure towards greater poverty and inequality in the UK. This is the new demographic challenge for progressives.

In this chapter we provide an overview of the most important demographic developments of the last 20 years and the likely shifts over the next 70, briefly drawing out some of the challenges that these will create, and dispelling some commonly held conceptions. As well as revealing that changes to the fertility rate will impact significantly on British public finances in the long term, our analysis highlights three areas – fertility, solo living and migration – in which demographic pressures towards social injustice are likely to be most pressing. We investigate these in more detail in subsequent chapters.

We start by looking at population size before examining the changing age structure of Britain and our increasing longevity. We then investigate the flip-side of ageing – low fertility – followed by a look at the changing patterns of international and regional migration and the growing diversity in family structures. In the final section of this chapter we present findings from our original analysis, which reveals for the first time the impact that demographic change has had on inequality and poverty in Britain over the last two decades. It is clear that current trends will create a substantial challenge.

## Population is growing, slowly

There were just over 60 million people living in Britain in 2005. The population was bigger by 3.6 million people than in 1971 and by 2025 it will be 5.5 million bigger still if demographic trends continue as predicted.<sup>2</sup> In the

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2 Predicting demographic trends is a complex science and any projections should be read with caution. Figures quoted in this chapter are taken from ‘principal’ projections unless indicated otherwise; these are demographers’ ‘best estimates’ (GAD 2005).

even longer term, the population is projected to increase slowly to 69 million in 2051 and then increase very slightly to 71 million by 2074 – largely due to increasing life expectancy and net immigration, rather than births exceeding deaths (Summerfield and Gill 2005, GAD 2005).

But does size matter? Demographers have often thought so. In 1798 Thomas Malthus famously warned that unmediated population growth would lead inevitably to famine. And in the days of Empire, there was genuine concern that Britain's global importance would be partly determined by its population (Jackson 2003). The modern equivalent is perhaps a worry about GDP: parts of the Australian business sector have argued that economic growth will be affected if the population does not keep growing. Since national GDP is the combined output of all workers, a shrinking workforce leads to lower growth in the absence of other factors. In Italy, this has been seen as genuine threat – if Italy's current fertility trends continued for 10 generations, its population would shrink to a hundredth of the size (Chamie 2004).

None of these concerns should hold much sway in Britain. In the modern context of China and India's enormous populations, any conceivable population growth in the UK would make little difference to Britain's international standing. Global power is not as obviously dependent on population size as it may once have been: it is many years since simple population size was an important decider in military conflicts or economic weight. Similarly, productivity increases due to technology will far outstrip the effect of population on economic growth (Young 2002) – and in any case we should be concerned with GDP per head at the very least, rather than total national GDP.

But what of environmental fears? In Australia, there are strong lobbies in favour of a reduction in population: campaigners contend that natural resources, particularly water, are being depleted at an unsustainable rate and in Britain there have been worries about water shortages following hosepipe bans. Yet these concerns miss a crucial point: the most important factor for environmental sustainability is not population size *per se* but population density,<sup>3</sup> geographical distribution and housing growth. The growth in households is a much more important determinant of environmental pressures and is relatively unaffected by population size. And in any case, with timely provision of new water resources and efficiency savings even continued housing growth in the South East of England will not lead to shortages (Every and Foley 2005). Although increased population size could lead to greater traffic congestion, the challenge is to promote better land use and spatial planning – so that people have access to shops,

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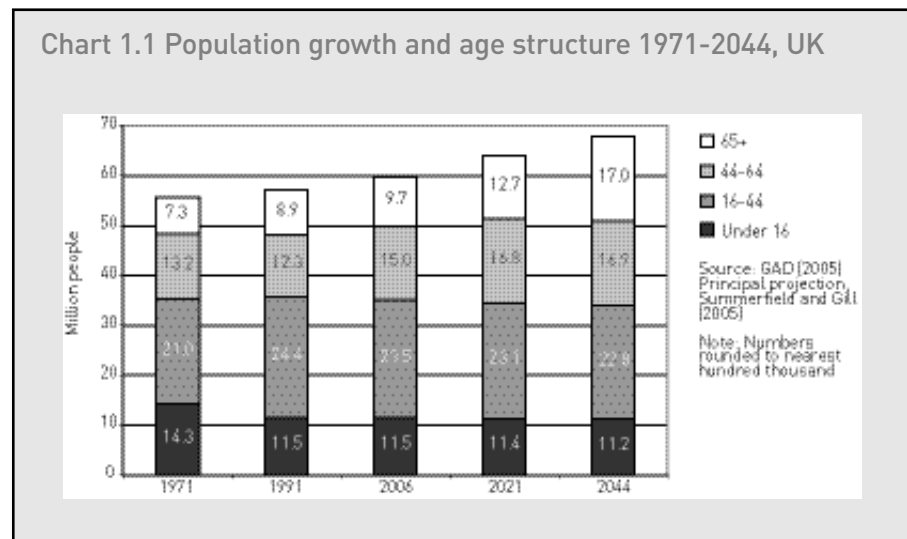
3 Britain is relatively crowded and will become more so as the population increases. Although the five north eastern states in America – New York, Pennsylvania, Connecticut, Massachusetts, and New Jersey – have an area nearly 2.5 times as large as Britain, they have a similar number of inhabitants.

services and employment opportunities closer to home (Foley *et al* 2004) – and to encourage sustainable transport solutions. Implementing a national congestion charging scheme that funded higher spending on public transport (ibid) would be a better long-term response than limiting population size.

This analysis suggests that concerns about overall population size can be put to one side by British policymakers: academics and experts should instead concentrate on the population composition and structure in the UK; it is in these more subtle facets of demographic change that the important challenges present themselves. Here we examine age structure, fertility decline, immigration, regional migration and changes in household composition, noting the key challenges arising from each of these trends.

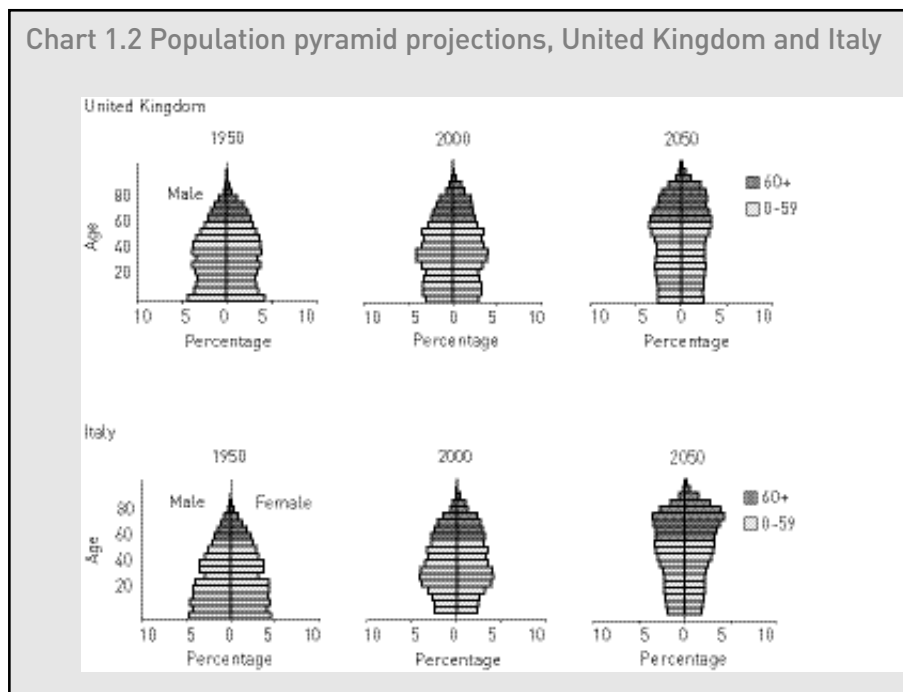
### An ageing society

Looking at the age structure in Britain is much more revealing than surveying overall numbers. Importantly, Britain is older than ever before: as chart 1.1 shows, there were 9.5 million people aged 65 or over in the UK in 2001 and this is projected to rise to 12.8 million by 2021, and to 16.7 million by 2044 – when there will be more than twice as many octogenarians (GAD 2005).



The picture is radically different to that of 30 years ago and will only become more so. In 2001 there were 21 per cent fewer children under the age of 16 and 23 per cent more people aged 65 or older than in 1971; by 2044 these figures will have spiralled to 31 per cent and 56 per cent respectively.

These shifts in the age structure are familiar and have some well rehearsed implications. The number of people of working age for every 'dependent' rose from 1.6 in 1971 to 1.8 in 2001 as the 'baby boom' generations of the late 1940s and mid 1960s entered the labour force, but it will fall to 1.4 by 2044 as these cohorts enter retirement (GAD 2005). This 'ageing of the population' is what convinces the British press that we face a 'pension crisis'. It is also what has politicians in Italy and Japan tearing their hair out in the hunt for a solution to their far more serious pension problems: in these countries the increase in dependency has been much sharper than in the UK; there were 1.61 people aged 15-59 for every person aged 0-15 or 60+ in 2000 in Italy and 1.64 in Japan, but the UN predicts that by 2050 these numbers will have plummeted to 0.86 and 0.82 respectively, compared with 1.04 in Britain. This means that there will be more dependents than those who must support them. As chart 1.2 shows, compared with Britain's relatively healthy demography, Italy's population pyramid looks worryingly top heavy by 2050.



Why did Italy and Japan not take action sooner? One reason is that politicians and demographers are reluctant to look further ahead than the next 30 years, and almost never beyond 50. In 2006, we can see that both Italy and Japan face dramatic hikes in their dependency ratios even by 2025, partly resulting from their fertility histories over the last 20 years. Had these

countries taken action at the first hint of a serious problem in the early 1980s – a full 40 years before their demographic problems become intractable and 70 years before they become almost insurmountable – they would not be in the position they find themselves in today.

This international comparison provides a backdrop against which Britain's problems appear relatively minor, which has encouraged policymakers in Britain to think that there is no need to raise fertility to combat changing dependency ratios. Further, there is some consensus that there would be no point since this would make little difference to dependency ratios in the near future. As the Treasury's long-term public finance report argues:

'Varying the fertility rate ... would obviously affect the number of children over the next 20 years or so, which could have implications for education policy; but would have a very limited impact on the size of the working-age population and no impact on the number of older people. Beyond that, the fertility rate assumption begins to affect the working-age population, in turn influencing trend growth. However, it takes more than 60 years to affect the number of people *above retirement age*.' (HM Treasury 2005: 16)

The Pensions Commission has also expressed similar views, stating in its interim report that 'any feasible pace of increase from current levels will have only a minimal impact on the size of the working population in 2040 ... though the impact would gradually increase thereafter' (Pensions Commission 2004: 8). Policy efforts are therefore being concentrated on encouraging people to save more and work longer as this will have the most impact in the short to medium term on pension funding (Brooks *et al* 2002, Robinson *et al* 2005, Pensions Commission 2005).

Importantly, this fertility rate 'non-effect' remains true across the range of government spending – not just on pensions – as more children effectively cancel out more workers: research by PricewaterhouseCoopers estimates that raising the fertility rate to 1.94 or decreasing it to 1.54 would have 'no material impact on projected public spending as a percentage of GDP in 2050' (Hawksworth 2005: 13).

This seems counterintuitive. How could growing numbers of children not make a difference to dependency ratios? The answer is that it takes at least 16 years for any increase in fertility to feed through into the labour market, and realistically far longer than this, as greater numbers of children go through the education system before entering employment. Even then, relatively small increases in the working age population need to be set against a dependency 'backlog' of many years of higher fertility and the higher child-related spending that this entails. Because demographic projections are increasingly unreliable beyond about 50 years, policy modelling has rarely looked further ahead than this. Even the excellent analysis

undertaken by the Pensions Commission only presents analysis up to 2050 (Pensions Commission 2004).

Yet in some ways this is surprising: the Government Actuary produces estimates up to 2074 and it is possible to use these to model future dependency ratios with some degree of accuracy (in January 2006 the responsibility for producing these estimates moved to the new National Statistics Centre for Demography at the ONS). Importantly, several sets of 'variant' projections are produced, with differing assumptions about fertility, life expectancy and migration. These let us model how changes in fertility rates would affect the population structure – providing plausible confines within which to make an assessment.

A cursory analysis would suggest that fertility does not make a huge difference to overall dependency ratios even up to 2074: in the absence of migration, high fertility (of 1.94) would result in 59 per cent of the population being aged 15-64, low fertility (of 1.54) would result in 56 per cent being of these ages, and current fertility<sup>4</sup> (of 1.74) would result in 58 per cent. Compared with 2006's figure of 66 per cent, the importance of fertility seems minor.

But these crude numbers hide what is really going on behind the simple maths: if fertility had been high up to 2074 then 41 per cent of those not of working age would be under 16; but if fertility had been low, just 29 per cent would be. This is important because public spending per capita is much higher for those older than working age than for those younger: in 2005/06, £15,024 was spent on the average pensioner, £9,454 on the average child and £6,469 on the average person of working age (Hawksworth 2005).

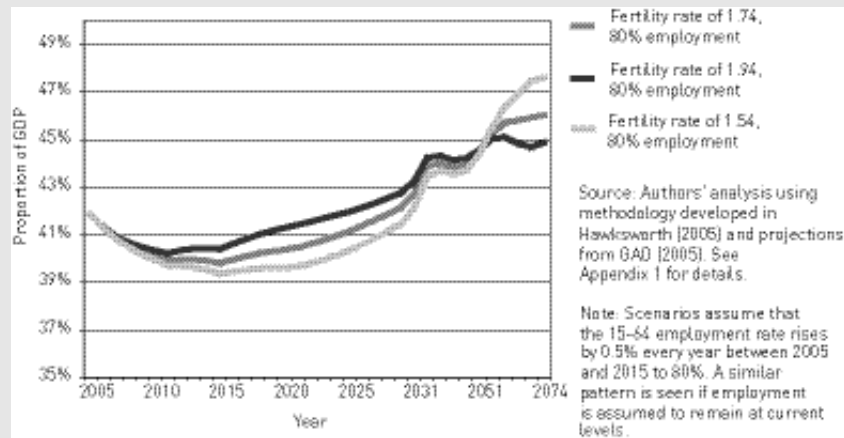
The implications of this simple difference are profound. Chart 1.3 shows the results of ippr's modelling<sup>5</sup> of demographic pressures on public spending up to 2074 under three fertility scenarios: the lightest line projects public spending as a proportion of GDP under an increased fertility rate of 1.94, the darkest line under a decline in fertility to 1.54 and the middle line under (unchanged) fertility of 1.74. The model shows what would happen to public spending as a proportion of GDP if current per capita spending changes in accordance with plausible assumptions (outlined in Appendix 1 and based on HM Treasury 2005 and Hawksworth 2005). It is not meant to be a projection or prediction of the actual level of public spending although our figures are in a similar range to those of the Treasury's *Long-term public finance report* up to 2054 – which is as far ahead as the Treasury currently reports projections (HM Treasury 2005). What our modelling shows is the *pressure* that demographic change will create. It adds to the Treasury's analysis in two important ways: it shows the effect of different fertility levels on public spending and it projects spending up to 2074.

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4 The fertility rate in 2004 was 1.78, slightly higher than the GAD estimates (ONS 2005).

5 See Appendix 1 for details.

Chart 1.3 Demographic pressure on public spending: estimated total public expenditure expressed as proportion of GDP under high, low and constant fertility scenarios



The model estimates that between 2013 and 2031 higher fertility would raise pressure on government spending by between 0.5 and 0.9 per cent of GDP as more children would not be compensated for by more people of working age; this is in keeping with findings from other research (Pensions Commission 2004). At around 2050, any fertility effects cancel out. But after this date, previous fertility trends appear to have a large and rapidly increasing impact. By 2074 the difference caused by preceding decades of low or high fertility would be as much as 2.7 per cent of GDP and appear to be rising fast.

Projecting demographic trends this far forward is a risky business, still more so when linking public spending to these projections, and it is vital to be sanguine about what the model realistically shows. Up to 2050, the assumptions behind the GDP figures are plausible 'best guesses' (Hawksworth 2005). After this they become less defensible as estimates of public spending – we need to scale down our expectations of what the model shows when looking beyond this date. But this does not mean that chart 1.3 is unrevealing: the way the lines diverge after 2050 is much less sensitive to spending assumptions than the projected GDP figures – it is this *divergence* that is crucially important. What it shows is that the fertility patterns of the next 25 years will start to bite after 2050; Britain's demographic trajectory will be firmly set by 2031.

The key point is that changing fertility patterns take around 40 years to be felt in the labour market and public spending – as larger or smaller generations pass through education and their early careers. Britain in 2006

can decide on its future: we are in a similar position to Japan or Italy, but crucially are several decades behind. If we learn one thing from the experiences of these countries, it should be to look ahead as far as possible. Britain is at a fork in the demographic road but heading in the wrong direction: if fertility remains at current levels, or declines further, we will face much more intractable demographic problems in as little as two decades' time.

#### Other challenges arising from ageing

The threat of these problems should be enough to motivate politicians and policymakers of any political persuasion to take demographic change seriously. But there are other important reasons for doing so too. One obvious implication of Britain's current rate of fertility is that if education spending were to remain constant as a proportion of GDP until 2044, spending per head would increase by two per cent in real terms as the number of children falls. Other controversial ideas are that population ageing may lead to one or both of the following occurring.

#### *A less innovative and flexible workforce*

In 2004 there were 12 per cent more people of working age below the age of 40 than above it; by 2020 this pattern will have reversed – four per cent more will be over the age of 40 than below (GAD 2005). Some commentators have argued that this older workforce could be a less innovative one, although this is a contentious point (Dixon 2003). Some research shows a link between younger workforces and higher levels of entrepreneurship (Schieber 2003), while other research shows that older, more experienced workers are more productive (Disney 1996). The novelist Kazuo Ishiguro recalls the moment he realised how young people were when they wrote their most famous works:

*'Pride and Prejudice* was written by someone in her twenties. The Faulkner anyone remembers comes from his thirties. It goes on: Fitzgerald, Kafka, Chekhov; War and Peace, Ulysses. Dickens went on a bit longer, but his best work was when he was younger' (Kazuo Ishiguro, quoted in *The Guardian* Saturday, February 19 2005).

And David Willets has argued that:

*'...an ageing European society may offer us more Cézannes [who painted his highest valued work at 67] but we will have fewer Picassos' [who painted his highest valued work at 26] – that is a grievous loss' (Willets 2003: 18).*

If these illustrations are somewhat hypothetical, a more rigorous review has shown that an ageing workforce may become less flexible as older workers are less likely to receive training, less likely to migrate to find new work and less likely to move between firms (Dixon 2003). Ageing could bring a unique set of challenges as Europe grows older faster than the US; in social justice terms, there may be differential impacts on different social groups which would introduce new hurdles for a successful progressive and inclusionary skills policy. But the key issue, as Dr Philip Taylor argued at an ippr seminar in 2005, is to design workplaces and economic and business structures that best harness the evolving talents and experience of a slowly ageing workforce.

#### *A political clash between generations*

Steadily increasing life expectancy means that a rapidly expanding proportion of the electorate is over state pension age. In 2005, 19 per cent of the electorate were over 65 years old; this is projected to rise to 30 per cent by 2044 (GAD 2005). This group is also more likely to vote (Dixon and Paxton 2005). The concern is that the interests of pensioners and the younger electorate will increasingly diverge over key areas, including early years spending, healthcare and state pension entitlements, leading to a political 'generational clash'.

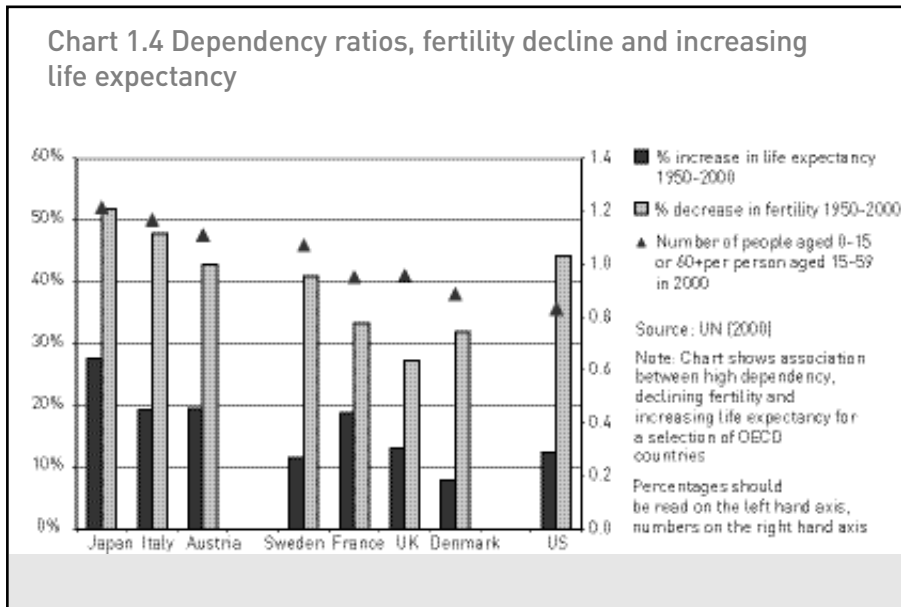
These impacts of population ageing are not well understood, yet they will create significant challenges for policy. As we argue in chapter 2, one criticism of the Government's current approach to demographic issues is that it has not been able to lead debate or conduct in-depth research into these issues and their implications for policy.

#### Explaining international differences in ageing

Although demography is important in the UK, it is clear that Britain is in a relatively good position in 2006 compared with the demographic quagmires of much of continental Europe and the Far East. But why? The answer lies largely in the history of different rates of increase in life expectancy and decline in fertility in these countries. As chart 1.4 shows, the countries with the most severe dependency problems (where the triangles are highest) are often those where life expectancy increased fast (where the black bars are largest) while fertility dropped off sharply (where the grey bars are largest) to very low levels. A more gradual decline, like that seen to date in Britain, has not been as damaging so far.

In one sense, this is good news for Britain but in another, it reveals a substantial failure. Looking at chart 1.4 in more detail shows that Japan, Italy and Austria have had faster increases in life expectancy than other countries – by as much as 28 per cent in Japan between 1950 and 2000 – as well as faster rates of decline in fertility. All three of these countries had lower life expectancy than the UK in 1950 but by 2000 both Austria and Japan had overtaken Britain, with Austria very close behind.

Chart 1.4 Dependency ratios, fertility decline and increasing life expectancy



Longer, healthier lives?

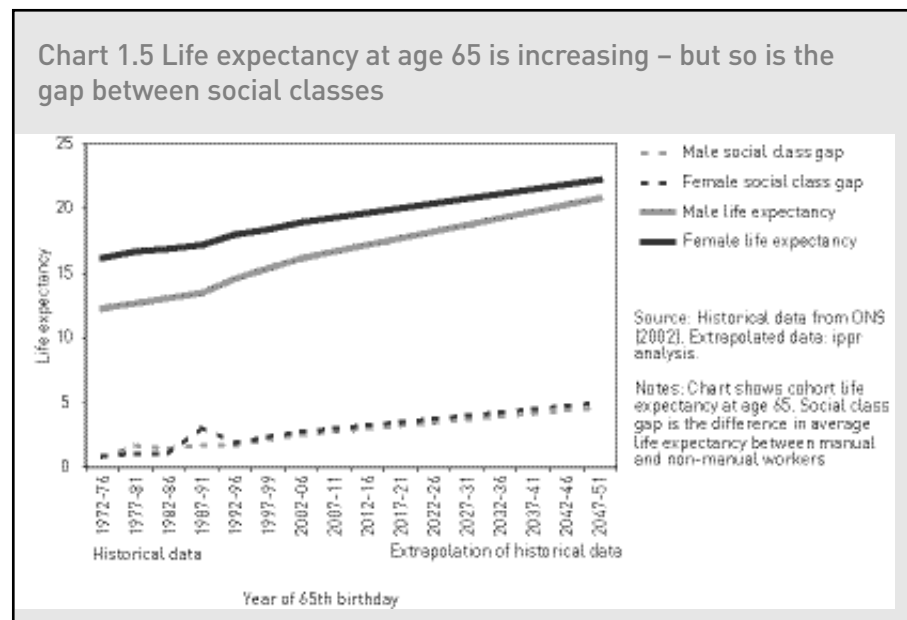
These dramatic increases in life expectancy have been observed across the more developed world over the last century. Yet original research by ippr has shown that few people in Britain really believe they will live longer than the generation before – most expect their health to decline from the age of 70, which partly explains why there has been such strong resistance to raising the state pension age (Robinson *et al* 2005).

But are people right to think that the extra years of life expectancy will be lived in ill health? There is still considerable scientific disagreement. One body of research suggests that older cohorts in many countries are experiencing a ‘compression of morbidity’ in which healthy life expectancy is increasing with little, if any, extension of ill health (Kirkwood 1999, 2001, Wanless 2002, Romeu Gordeau 2005). Others argue that increased life expectancy will lead to longer periods of disability (Rickaysen 2005). The evidence in the UK is mixed at best, but suggests that people will spend less time severely disabled and more time with relatively minor disabilities (Rankin 2006). This suggests that future care needs will increase significantly – that total spending on long-term care will rise by as much as 0.4 per cent of GDP by 2022 (Malley *et al* 2005). Importantly, there are significant differences between social classes here: a third of male manual workers age 50 to 59 report a limiting long-standing illness – a rate only reached by professional men in their mid 70s (Marmot *et al* 2002).

A further concern is the growing gap in life expectancy between the rich and poor. As chart 1.5 shows, life expectancy has increased faster for higher social classes than it has for lower social classes: the gap between female

manual workers and non-manual workers at age 65 increased from just under one year in 1972-6 to more than two years in 1997-99; in 2006, a woman aged 65 can expect to live for 20 years if she is a non-manual worker but just 17 if she is a manual worker – a gap of three years. And if current trends continue the trajectory they have followed since 1972, this gap will increase to around five years by 2050.

One reason for this sustained difference in life expectancy is that people in the top social class are less likely to smoke. But there are other important factors too: those in more deprived areas often have worse access to a range of services and leisure facilities, and suffer from higher levels of pollution (Dixon and Paxton 2005).

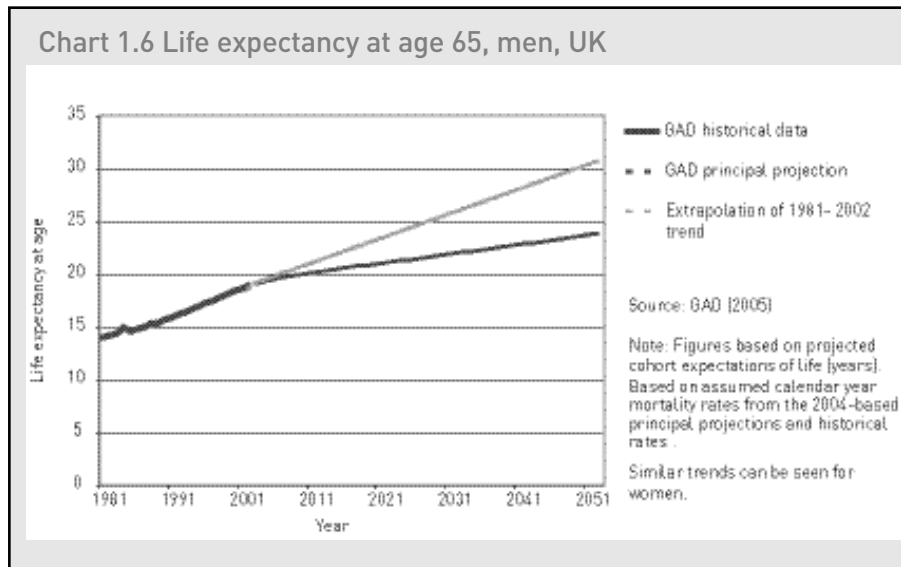


This worrying class gap in life expectancy is another reason why government has been reluctant to raise the state pension age – it could have regressive effects, shifting pensions spending away from the worst off. But this is a bullet that we should bite: raising the state pension age to 67 would enable the state pension to be set at a level that would eradicate pensioner poverty (Pearce and Paxton 2005). Without it, steadily increasing life expectancy will keep making the pensions problem ever more intractable.

In fact, the problem may be much worse than currently thought. As the interim Pensions Commission report noted, demographers have consistently underestimated future increases in life expectancy,<sup>6</sup> assuming that there is a

6 The latest projections, released since the Pension Commission's interim report, revised previous estimates upwards once more (GAD 2005).

natural limit at around the age of 85 (Pensions Commission 2004). Many theorists have questioned this assumption (for example Kirkwood 1999). As chart 1.6 shows, if life expectancy continues to increase at its current rate the Government Actuary's 2005 principal projections for people aged 65 would be wrong by more than seven years by 2054.



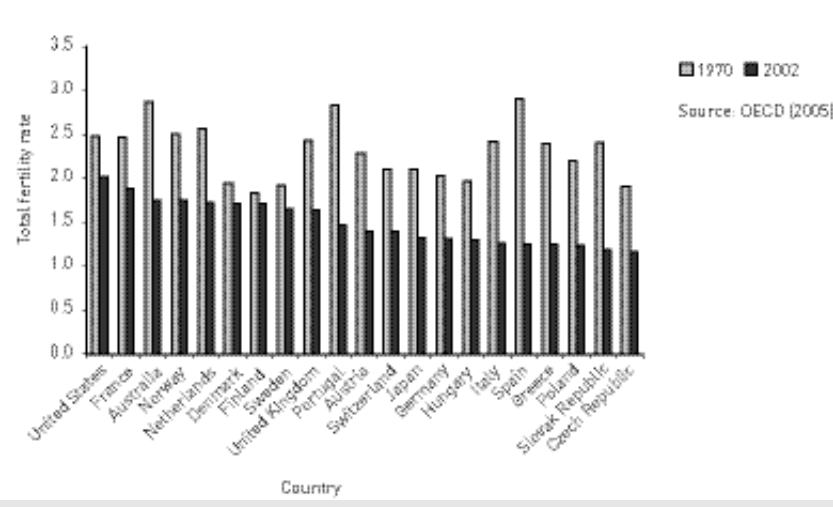
This would be an enormous discrepancy, one which would have substantial implications for government spending in a range of areas.

### Irretrievably declining fertility?

A second major contributor to Britain's changing population structure has been declining fertility. Following its peak in 1964 when the total fertility rate (TFR) – the number of children that would be born to a woman if contemporary patterns of fertility persisted through her childbearing life – was 2.95, it plummeted through the late 1960s and 1970s, and continued a steady descent until 2002 (OECD 2005). As chart 1.7 shows, this was a common pattern across OECD countries.

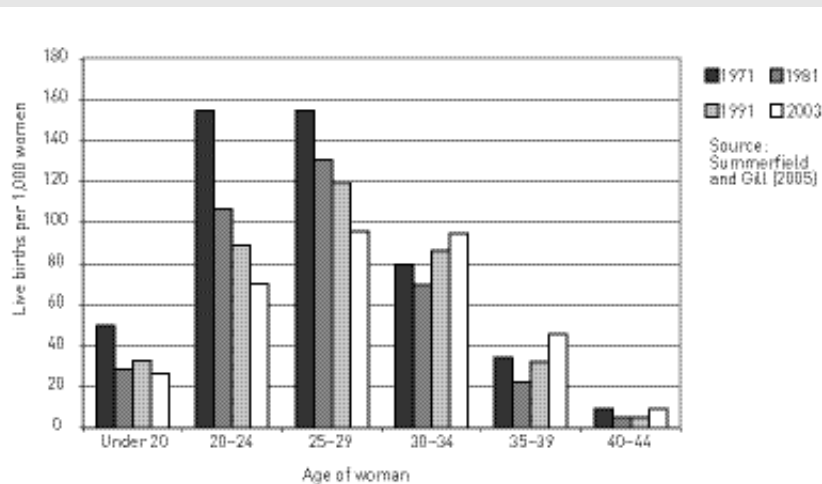
Demographers and government officials were sceptical that it would rise again. But the last four years have seen a slight turnaround in the UK, as fertility rates have appeared to start to increase (ONS 2004a). Although it is too early to tell if this is a permanent shift, the change in direction could be seen as an opportunity for government to bolster the momentum of this tentative trend.

Chart 1.7 Total fertility rate, selected OECD countries, 1970 and 2002



Looking at the changes in British fertility over the past few decades in more detail shows that there are subtly evolving patterns. Perhaps the most noticeable, as shown in chart 1.8, is that women are having children later in their lives: fertility at ages 20-24 fell by 55 per cent between 1971 and 2003, while fertility at ages 35-39 went up by 34 per cent. The issue is that falls in fertility early in life have not been made up for by increased fertility later – so overall fertility has fallen.

Chart 1.8 Fertility rates by age, 1971-2003



This postponement has contributed to the challenges caused by an ageing population highlighted above. As women start families later, they are less likely to have large families, and face higher risks of medical infertility and childlessness. But there may also be some beneficial effects. Original data analysis<sup>7</sup> by Maria Iacovou at the Institute for Social and Economic Research, University of Essex for ippr has shown that – controlling for a range of background variables – children with older parents tend to have better educational outcomes, perhaps as a result of more experienced parents – although the effects are small (Iacovou 2001, 2005).

### Immigration: a panacea for old age?

Immigration has sometimes been seen as a panacea for the problems of ageing societies. Because immigrants tend to be younger than the domestic born population and enter the labour force immediately, some commentators have seen immigrant labour as a way of offsetting dependency ratios. Research by ippr has shown that immigrants provide a modest net economic benefit to the UK (Sriskandarajah *et al* 2005) – contrary to some assumptions made by elements of the press (Lewis 2005).

But although net immigration is high by recent historical standards<sup>8</sup> it is nowhere near enough to offset increasing dependency ratios. Britain would have to receive more than one million net immigrants each year to maintain the current support ratio (UN 2000), which would be politically unpalatable. International migration should not be seen solely in terms of dependency. Although it is very relevant to wider demographic issues, it has much more complex implications – particularly in social justice terms (see chapter 6 for a detailed discussion).

One important effect will be to change Britain's ethnic composition. Between 1991 and 2001, the minority ethnic population of the UK rose from three million to 4.6 million and is expected to rise further. About half of this group are Asian or Asian British and about a quarter are black or black British (ONS 2001).

### Internal migration and geographical inequality

Migration policy often focuses on international trends. Yet there are important migration patterns within Britain. More than five million people moved between local authority areas in 2001 (ONS 2004b), shaping labour markets, housing demand, planning requirements and public service requirements. The effects of these population shifts are not well under-

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<sup>7</sup> See Appendix 2

<sup>8</sup> Although international migration is high in comparison with recent years it is much lower than in the pre-WWI period (Jackson 2003)

stood but there is some evidence that they may be exacerbating regional and even local inequality (Gregg *et al* 2005, Dixon and Paxton 2005).

One important trend here is that higher skilled workers are more geographically mobile than the rest of the population: people tend to secure a job in a new area first rather than moving pre-emptively. This favours high skill workers, as those with low skills are often less able to access good information on employment prospects as these are not well advertised at a national level, and may also be prohibited by high housing costs (Gregg *et al* 2005). This has resulted in some less prosperous regions, such as the North East, experiencing an ongoing 'brain drain' of graduates – affecting their economic growth and prosperity (see chapter 6).

A second challenge is the way urban communities have polarised over the last 20 years. This period has seen a 'cascade' of people moving from large conurbations to smaller cities and from smaller towns to villages. Importantly, professional and skilled workers were more likely to relocate (Champion and Fisher 2004), which has meant that many relatively deprived areas in large conurbations have experienced declining prospects, as those who are most able to move have done so, leaving those with few options with fewer still. This has resulted in growing economic and social segregation and regeneration difficulties (Esposito and Nathan 2005). However, there is some evidence that this cascade may be starting to flow uphill: the latest projections indicate that major cities are once again experiencing population growth, which may improve prospects (Champion and Fisher 2004, Esposito and Nathan 2005).

Some migration trends appear to have slowed down. For example, the shift from rural to urban areas which happened relatively rapidly over the period 1975 to 2003 appears to have almost stopped. The UN estimates that by 2015 just 1.1 per cent more of the British population will be living in urban areas than are today. This follows a trend across much of the more developed world, including the US and even Australia (UNDP 2005).

## Solo living and increasingly diverse families

The combination of these trends in life expectancy, fertility and migration has resulted in the population as whole growing by six per cent between 1971 and 2003. But changing patterns of family life have meant that the number of households grew at more than five times this rate: by 32 per cent over the same time period (Summerfield and Gill 2004). Two trends have underpinned this shift. First, increasing numbers of people live alone,<sup>9</sup> par-

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9 Solo living and living alone (in a one-person household) should not be confused with single living (defined in terms of marital status), although these terms are often used interchangeably in the media.

ticularly at young ages: just 18 per cent of households consisted of one person in 1971, compared with 29 per cent in 2004 (ibid). Second, people are living in smaller families – the average household size has decreased from 2.9 in 1971 to 2.4 in 2004. This has created serious pressure on housing supply, particularly for social housing, and there are good reasons to believe that the projected ongoing increase in solo living will also create substantial pressure towards greater poverty and inequality and bring new challenges for social justice (see chapter 5).

Changing patterns of family life have been partly caused by profound underlying shifts in marriage and cohabitation. People are marrying later and less often, and cohabiting to a far greater extent and for longer periods (Harper 2003). Between 1972 and 2004 the number of marriages fell by 36 per cent, the average age of marriage rose from 25 to 31 for men and 23 to 29 for women; and between 1986 and 2004 the proportion of men and women cohabiting more than doubled to 25 and 27 per cent respectively (Summerfield and Gill 2005). As might be expected, patterns in divorce have followed this trend, albeit 20 years behind. Divorce rates rose rapidly up to 1993 – partly explaining why the proportion of children living with a single parent tripled over the period 1972 to 2004 to 24 per cent of all children – although rates have fallen since then as the number of marriages has declined (ibid).

These changing patterns of household composition, formation and dissolution that are so evident in the UK have underpinned rising inequality and poverty seen in the US and Australia over the past two decades. Yet crucially these trends have also been seen in many other countries which have *not* experienced similar rises in inequality and poverty – suggesting that other welfare states have responded better to demographic change than these Anglophone countries.

### Inequality and demography in Britain: 1979 to 2005

The trends outlined above will create significant policy challenges, many of which we highlight in this report. The pressure current fertility rates will bring to bear on overall public spending is the most serious of these in the long term. But in the short and medium term the most important challenge is likely to be the impact of Britain's evolving demography on levels of poverty and inequality.

In the US between 1969 and 1989, demographic change – particularly the growth in non-traditional family structures – explains up to 50 per cent of the huge rise in inequality and poverty over this period. Between 1989 and 1998, the influence of demographic shifts became more pronounced, resulting in 62 per cent of the increase in inequality (Daly and Valletta 2004). Similar processes were taking place in Australia between 1982 and

1997/98 — about half of the growth in inequality over this period was due to change in household and family composition, labour force status and other demographic characteristics (Johnson and Wilkins 2003).

ippr has been able to carry out a similar analysis for Britain, revealing for the first time the extent to which shifting demography has underpinned the huge rise in inequality and poverty since 1979. Unfortunately, current methodology is not yet advanced enough to allow us to easily isolate the shifts that have been most damaging for levels of inequality and poverty – although we know that fertility patterns, rising marital homogamy and growing solo living are important (Kenworthy 2004, Esping-Andersen 2005, Gregg and Wadsworth 2004, Hills 2005). At this stage in such an emerging field, a sufficiently nuanced policy response needs to be based on a detailed investigation of ongoing and projected demographic change, taking account of the subtleties and interplay of national, regional and even local trends.

#### ippr's econometric modelling

Our econometric modelling<sup>10</sup> shows for the first time the pressure that demographic change is likely to have placed towards higher poverty and inequality in Britain over the last 25 years. Commentators have long analysed the effect of taxes and benefits (Clark and Leicester 2004), technological change (Goos and Manning 2004) or labour market developments (Dixon and Pearce 2005), but no recent analysis has looked at whether and how demographic shifts have made it harder to achieve social justice. Yet there are good intuitive reasons for thinking that it should have had this effect. Single person, older and lone parent households are all statistically more likely to be in poverty than the average. As these groups grow relative to the rest of the population, this is likely to place pressure towards greater poverty and inequality.

One enduring question is why inequality did not fall under seven years of a Labour government between 1996/7 and 2003/04, a period which saw the introduction of measures such as tax credits and the minimum wage, and employment rising to record levels (Dixon and Paxton 2005). The Gini coefficient for disposable income – an established measure of inequality – was 34 in both 1996/97 and 2003/04, compared with just 25 in 1979 (ONS

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10 See Appendix 2 for a full description of ippr's econometric modelling using the Family Resources Survey 2003/04 and the Family Expenditure Survey 1979. Essentially, this shows what the income distribution would be in 2003/04 if patterns of household composition, fertility trends and the age distribution were the same as those of 1979; this lets us see what the simple effects of changes in household composition, fertility patterns and ageing have been for poverty and inequality measures. The model does not take changes in female labour force participation or the interaction between demography and other labour market and societal factors into account and is therefore a simple measure that may significantly underestimate or overestimate the precise impact of these demographic changes.

2005b, Shephard 2003). Such persistently high inequality has been seen as a marked failure of the current government, by both the left and right wing press:

‘Widening inequalities is going to be the biggest challenge for the prime minister’ (Guardian 2004)

‘Divide between rich and poor is getting wider’ (Daily Telegraph 2004)

‘[Labour] should try and do the same for fairness and equality as it has done for public services and shift the terms of political debate’ (Financial Times 2004)

ippr’s analysis indicates that demographic change may in fact have been a crucially unacknowledged factor in continuing high levels of inequality.

Had Britain’s demography not altered as it did, it is likely that inequality would have fallen under the Labour Government over this period, although it is important to bear in mind the complex interplay between demographic trends and the interaction between these trends and other changes to the labour market, welfare system and society. Our modelling shows that a fifth of the enormous rise in the Gini coefficient between 1979 and 2003/04 was due to changes in household composition – particularly the growth in single person households, and ageing and shifting fertility patterns; all trends that are projected to continue over the coming decades.

It also reveals that if Britain had had the same household composition, fertility patterns and age structure in 2003/04 as it did in 1979, there would be 240,000 fewer households in poverty,<sup>11</sup> 280,000 fewer pensioners in poverty and 70,000 fewer children in poverty (with other factors remaining equal).

This analysis starts to show how important demography is for social justice. Of course, many of the societal changes that have caused these demographic shifts are to be welcomed: we should not wish a return to the Britain of nearly three decades ago. And there is a complex interplay between demography, labour markets and culture that refracts the effects of demography in ways not captured by our analysis. But the simple point remains: demography matters for poverty and inequality.

The next chapters outline a progressive response to this new perspective: if demographic change is a social justice issue, what is the role of a progressive government in mitigating its negative effects?

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11 Poverty rates measured before housing costs on a 60 per cent of median equivalised income measure and reported to the nearest 10,000.

## References

Note: web references correct January 2006

- Brooks R, Regan S and Robinson P (2002) *A new contract for retirement* London: ippr. Available at [www.ippr.org](http://www.ippr.org)
- Chamie J (2004) *Low Fertility: Can Governments Make a Difference?* Paper presented at the annual meeting of the Population Association of America Massachusetts: 2 April. Available at <http://paa2004.princeton.edu/download.asp?submissionId=42278>
- Champion T and Fisher T (2004) 'Migration, residential preferences and the changing environment of cities' in Boddy M and Parkinson M (eds) *City Matters* Bristol: Policy Press
- Clark T and Leicester A (2004) 'Inequality and two decades of British tax and benefit reform' *Fiscal Studies* 25. Available at [www.ifs.org.uk/publications.php?publication\\_id=3045](http://www.ifs.org.uk/publications.php?publication_id=3045)
- Daily Telegraph (2004) *Divide between rich and poor is getting wider* 2 August. Available at [www.telegraph.co.uk/news/main.jhtml?xml=/news/2004/08/02/nrich02.xml](http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2004/08/02/nrich02.xml)
- Daly M and Valetta R (2004) 'Inequality and Poverty in the United States: The Effects of Rising Male Wage Dispersion and Changing Family Behavior' *Revision of FRBSF Working Paper 2000-06* San Francisco: Federal Reserve Bank of San Francisco. Available at [www.frbsf.org/econsrch/workingp/2000/wp00-06.pdf](http://www.frbsf.org/econsrch/workingp/2000/wp00-06.pdf)
- Deutschebank (2002) *The demographic challenge* Frankfurt: Deutsche Bank Research
- Disney R (1996) *Can we afford to grow older? A perspective on the economics of ageing* Massachusetts: MIT Press
- Dixon M and Paxton W (2005) 'An Audit of Social Injustice' in Pearce N and Paxton W (eds) *Social Justice: Building a Fairer Britain* London: ippr. Available at [www.ippr.org.uk/publicationsandreports/](http://www.ippr.org.uk/publicationsandreports/)
- Dixon M and Pearce N (2005) 'Social Justice in a Changing World' in Pearce N and Paxton W (eds) *Social Justice: Building a Fairer Britain* London: ippr. Available at [www.ippr.org.uk/publicationsandreports/](http://www.ippr.org.uk/publicationsandreports/)
- Dixon S (2003) 'Implications of population ageing for the labour market' *Labour Market Trends* 111(2). Available at [www.statistics.gov.uk/ci/article.asp?id=374](http://www.statistics.gov.uk/ci/article.asp?id=374)
- Ehrlich P (1971) *The population bomb* New York: Ballantine Books
- Esping Andersen G (2005) 'Inequality of incomes and opportunities' in Giddens A and Diamond P (eds) *The New Egalitarianism* Cambridge: Polity Press
- Esposito L and Nathan M (2005) *What drives high performance in cities, and why some cities have performed better than others* ippr Centre for Cities Working Paper no. 2 London: ippr
- Every L and Foley J (2005) *Managing Water Resources and Flood Risk in the South East* London: ippr. Available at [www.ippr.org.uk/publicationsandreports/](http://www.ippr.org.uk/publicationsandreports/)

- Financial Times (2004) *Wealth Gap has Widened under Labour* 3 August
- Foley J, Grayling T and Dixon M (2005) 'Sustainability and Social Justice' in Pearce N and Paxton W (eds) *Social Justice: Building a Fairer Britain* London: ippr. Available at [www.ippr.org.uk/publicationsandreports/](http://www.ippr.org.uk/publicationsandreports/)
- Goos M and Manning A (2004) *Lovely and Lousy Jobs: The Rising Polarisation of Work in Britain* London: Centre for Economic Performance
- Government Actuary's Department (GAD) (2005) *Current national projections (2004-based)*. Available at [www.gad.gov.uk](http://www.gad.gov.uk)
- Government Actuary's Department (GAD) (2005) *Cohort expectations of life (years)* London: TSO. Available at [www.gad.gov.uk/Life\\_Tables/Period\\_and\\_cohort\\_eol.htm#eols](http://www.gad.gov.uk/Life_Tables/Period_and_cohort_eol.htm#eols)
- Gregg P and Wadsworth J (2004) *Two Sides to Every Story: Measuring the Polarisation of Work* Royal Holloway University of London Discussion Papers in Economics 04/03, Royal Holloway University of London: Department of Economics. Available at [www.rhul.ac.uk/economics/Research/WorkingPapers/pdf/dpe0403.pdf](http://www.rhul.ac.uk/economics/Research/WorkingPapers/pdf/dpe0403.pdf)
- Gregg P, Machin S, Gibbons S and Green A (2005) 'Is Britain Pulling Apart? Area inequalities in employment, education and crime' in Pearce N and Paxton W (eds) *Social Justice: Building a Fairer Britain* London: ippr. Available at [www.ippr.org.uk/publicationsandreports/](http://www.ippr.org.uk/publicationsandreports/)
- Guardian (2004) 'A Big Theme for Labour' August 3. Available at [www.guardian.co.uk/leaders/story/0,3604,1274659,00.html](http://www.guardian.co.uk/leaders/story/0,3604,1274659,00.html)
- Guardian (2005) 'Living Memories' Saturday, February 19. Available at <http://books.guardian.co.uk/departments/generalfiction/story/0,,1417665,00.html>
- Harper S (2003) *Changing families as societies age: Research report number RR103* Oxford: Oxford Institute of Ageing
- Hawksworth J (2005) *How far can a higher employment rate offset the upward pressures on public spending as the UK population ages?* London: PricewaterhouseCoopers
- Hicks J and Allen G (1999) *A Century of Change: Trends in UK statistics since 1900* House of Commons Research Paper 99/111 London: TSO
- Hills J (2005) *Inequality and the State* Oxford: Oxford University Press
- HM Treasury (2005) *Long-term public finance report: an analysis of fiscal sustainability December 2005* London: TSO
- Iacovou M (2001) Family Composition and Children's Educational Outcomes Essex: ISER. Available at [www.iser.essex.ac.uk/pubs/workpaps/pdf/2001-12.pdf](http://www.iser.essex.ac.uk/pubs/workpaps/pdf/2001-12.pdf)
- Iacovou M (2005) Unpublished original analysis. See Appendix 1
- Jackson S (2003) *Britain's Population* London: Taylor and Francis

- Johnson D and Wilkins R (2003) 'The effects of changes in family composition and employment patterns on the distribution of income in Australia' *Melbourne Institute Working Paper* 19/03. Available at [www.ecom.unimelb.edu.au/iaesrwww/wp/wp2003n19.pdf](http://www.ecom.unimelb.edu.au/iaesrwww/wp/wp2003n19.pdf)
- Kenworthy L (2004) *Egalitarian Capitalism: Jobs, incomes, and growth in affluent countries* New York: Russell Sage Foundation
- Kirkwood T (1999) *Time of our lives: Why ageing is neither inevitable nor necessary* London: Weidenfeld and Nicolson
- Kirkwood T (2001) *The End of Age: why everything about ageing is changing* London: Profile Books
- Lewis M (2005) *Asylum: Understanding Public Attitudes* London: ippr. Available at [www.ippr.org.uk/publicationsandreports/](http://www.ippr.org.uk/publicationsandreports/)
- Malley J, Wittenberg R, Comas-Herrera A, Pickard L and King D (2005) *Long-term care expenditure for older people projections to 2022 for Great Britain Report to ippr* PSSRU Discussion Paper 252, London: London School of Economics
- Marmot M, Banks J, Blundell R, Lessof C and Nazroo J (eds) (2002) *Health, Wealth and Lifestyles of the Older Population in England – the 2002 English Longitudinal Study on Ageing* London: Institute for Fiscal Studies
- OECD (2005) *Society at a Glance: OECD Social Indicators* Paris: OECD
- Office of National Statistics (ONS) (2001) *Population Size*. London: TSO. Available at [www.statistics.gov.uk/cgi/nugget.asp?id=273](http://www.statistics.gov.uk/cgi/nugget.asp?id=273)
- ONS (2002) 'Inequalities in life expectancy by social class, 1972-1999' *Health Statistics Quarterly* 15 London: TSO
- Office of National Statistics (ONS) (2004) *Focus on Migration* London: TSO
- ONS (2005a) *For the first time women in early 30s have higher fertility rates than women in late 20s* London: TSO. Available at [www.statistics.gov.uk/pdfdir/birthstats1205.pdf](http://www.statistics.gov.uk/pdfdir/birthstats1205.pdf)
- Office of National Statistics (ONS) (2005b) *Table 27: Gini coefficients for the distribution of income at each stage of the tax-benefit system* London: TSO. Available at [www.statistics.gov.uk/STATBASE/ssdataset.asp?vlnk=8247](http://www.statistics.gov.uk/STATBASE/ssdataset.asp?vlnk=8247)
- O'Neill R (2002) *Experiments in Living: the fatherless family* London: CIVITAS. Available at [www.civitas.org.uk/pubs/experiments.php](http://www.civitas.org.uk/pubs/experiments.php)
- Pensions Commission (2004) *Pensions: Challenges and Choices* London: TSO. Available at [www.pensionscommission.org.uk/publications/2004/annrep/index.asp](http://www.pensionscommission.org.uk/publications/2004/annrep/index.asp)
- Pensions Commission (2005) *A New Pension Settlement for the Twenty-First Century: The Second Report of the Pensions Commission* London: TSO. Available at [www.dwp.gov.uk/publications/dwp/2005/pensionscommreport/annrep-index.asp](http://www.dwp.gov.uk/publications/dwp/2005/pensionscommreport/annrep-index.asp)
- Rankin J (2006) 'A good old age? Older people and disability' in Pillai R, Rankin J

- and Stanley K with Bennett J, Heatherington D, Stone L and Withers K (eds) *Disability 2020: Opportunities for the full and equal citizenship of disabled people in Britain in 2020* London: Disability Rights Commission and ippr trading ltd
- Robinson P, Gosling T and Lewis M (2005) *Working Later: Raising the Effective Age of Retirement* London: ippr. Available at [www.ippr.org.uk/publicationsandreports/](http://www.ippr.org.uk/publicationsandreports/)
- Romeu Gordeau L (2005) *Compression of Morbidity and the Labor Supply of Older People* Max Planck Institute for Human Development. Available at: <http://gsbwww.uchicago.edu/labor/Romeu.pdf>
- Schieber S (2003) *Presentation at EU Conference* Brussels: March 3
- Shephard A (2003) *Inequality under a Labour Government* IFS Briefing Note 33. Available at [www.ifs.org.uk/bns/bn33.pdf](http://www.ifs.org.uk/bns/bn33.pdf)
- Sriskandarajah D, Cooley L and Reed H (2005) *Paying Their Way: The Fiscal Contribution of Immigrants in the UK* London: ippr. Available at [www.ippr.org.uk/publicationsandreports/](http://www.ippr.org.uk/publicationsandreports/)
- Summerfield C and Gill B (2005) *Social Trends 35* London: TSO. Available at [www.statistics.gov.uk/statbase/Product.asp?vlnk=5748&More=N](http://www.statistics.gov.uk/statbase/Product.asp?vlnk=5748&More=N)
- United Nations (2000) *World Population Ageing: 1950-2050* New York: United Nations. Available at [www.un.org/esa/population/publications/worldageing19502050/](http://www.un.org/esa/population/publications/worldageing19502050/)
- United Nations Population Division (UNPD) (2000) *Replacement Migration: Is it a solution to declining and ageing populations?* New York: United Nations. Available at [www.un.org/esa/population/publications/migration/migration.htm](http://www.un.org/esa/population/publications/migration/migration.htm)
- United Nations Population Division (UNPD) (2005) *Human Development Report 2005* New York: United Nations
- Van Parijs P (1998) 'The Disfranchisement of the Elderly, and Other Attempts to Secure Intergenerational Justice' *Philosophy and Public Affairs* 27 (4): 292-333
- Wanless D (2002) *Securing Our Future Health: Taking a Long-Term View: Final Report* London: TSO. Available at [www.hm-treasury.gov.uk/consultations\\_and\\_legislation/wanless/consult\\_wanless\\_final.cfm](http://www.hm-treasury.gov.uk/consultations_and_legislation/wanless/consult_wanless_final.cfm)
- Willets D (2003) Speech at launch of pamphlet *Old Europe?* 23 September 2003. Available at [www.davidwillets.org.uk/ccoarticle.jsp?type=speech&sectionID=2&objectID=72980](http://www.davidwillets.org.uk/ccoarticle.jsp?type=speech&sectionID=2&objectID=72980)
- Young G (2002) *The implications of an ageing population for the UK economy* Bank of England Working Paper 159. Available at [www.bankofengland.co.uk/publications/workingpapers/wp159.pdf](http://www.bankofengland.co.uk/publications/workingpapers/wp159.pdf)

## Appendix 2 Modelling demographic pressure on poverty and inequality

Howard Reed

Chapter 1 reported ipp's econometric modelling, which reveals for the first time the impact demographic change may have had on levels of poverty and inequality in Britain over the last 25 years.

If Britain's demography – understood in terms of fertility and household composition patterns and an ageing population structure – had not altered as it did, it is likely that inequality would have fallen under the Labour Government over this period, although it is important to bear in mind the complex interplay between demographic trends and the interaction between these trends and other changes to the labour market, welfare system and society.

Our modelling shows that approximately one fifth of the enormous rise in the Gini coefficient between 1979 and 2003/04 was due to changes in household composition – particularly the growth in single person households – ageing, and shifting fertility patterns, all trends that are projected to continue over the coming decades.

It also reveals that if Britain had had the same household composition, fertility patterns and age structure in 2003/04 as it did in 1979, there would be 240,000 fewer households in poverty<sup>45</sup>, 280,000 fewer pensioners in poverty and 70,000 fewer children in poverty (other factors remaining equal).

This appendix describes the data and methodology underpinning our econometric analysis.

### Data

We use two data sets: the Family Expenditure Survey (FES) for the calendar year 1979 and the Family Resources Survey (FRS) for the financial year 2003/04. The Family Expenditure Survey was an annual cross-sectional survey of household expenditure and individual income covering about 7,000 households each year. Until 1994 it was the main source of data on the income distribution in the UK (used in the UK Government's official income distribution statistics). The FRS is an annual cross-sectional survey of household and individual incomes and other characteristics. It is bigger than the FES, covering approximately 27,000 households per year.

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45 Poverty rates measured before housing costs on a 60 per cent of median-equivalised income measure and reported to the nearest 10,000.

## Methodology

The key concept in this analysis is that of a *demographic profile* for the UK in a given year. In any household-based<sup>46</sup> survey containing information on a vector of  $n$  household characteristics  $z$  (where  $z$  includes such characteristics as age of head of household, number of adults in household, number of children in household, and so on), we can arrange these characteristics  $z_1, z_2, \dots, z_n$  into discrete indices. (For discrete categories such as 'number of children' this is a trivial process, for example {no children, one child, two children, more than two children}.) For continuously distributed variables such as age it is done by *banding* the variable into categories, for example {16-24, 25-34, 35-44, ..., 75 or over}.

For this exercise the 2003/04 FRS and the 1979 FES were both grouped into categories, defined in each case on the basis of the following variables:

### Household composition: five categories

- single childless man
- single childless woman
- lone parent
- married or cohabiting couple
- household with multiple single people, multiple married/cohabiting people or mixture of married/cohabiting people.

### Average age of adults in household: eight groups

- 16-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65-74
- 75-84
- 85 or over.

### Number of children in household: four groups

- no children
- one child
- two children
- three or more children

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<sup>46</sup> Note that the definition of household here is a group of people living at the same address who share common living facilities (e.g. lounge, kitchen) This is, in many cases, a larger unit than a family because some households can consist of more than one family, or of several single people.

Age of youngest child (if household has children): three groups

- 0 to 4 years
- 5 to 10 years
- 11 years or over

The theoretical maximum number of cells here is 280. In practice, however, many of the groups do not exist in the data, although this does not affect the validity of the analysis.

The FRS and FES data are both classified into cells based on combinations of the characteristics shown above. An example of a cell would be {households with a lone parent, aged 35-44, with two children, youngest child aged between 5 and 10}.

Hence, for each FRS cell  $k_{FRS}$ , the number of households in that cell as a proportion of the total FRS can be calculated as

$$\mathfrak{r}_{FRS}^k = \frac{(\text{number of households in cell } k_{FRS})}{(\text{total number of households in FRS})}$$

And for each FES cell  $k_{FES}$ , the number of households in that cell as a proportion of the total FES can be calculated as

$$\mathfrak{r}_{FES}^k = \frac{(\text{number of households in cell } k_{FES})}{(\text{total number of households in FES})}$$

The *relative weight* of households in cell  $k_{FES}$  compared with households in cell  $k_{FRS}$  is given by

$$\mathbf{w}_k = \frac{\mathfrak{r}_{FES}^k}{\mathfrak{r}_{FRS}^k}$$

This relative weight is a measure of how much more or less likely it is that households of a certain composition, age profile and number and age of children will be found in the 1979 FES relative to the 2003/04 FRS.

This estimation strategy is effectively a nonparametric analogue to the regression-based approach taken by Daly and Valetta (2004) to measure the contribution of demographic factors and changes in the underlying income distribution to explaining trends in income inequality in the US. The regression-based approach has the advantage of making it easier to decompose trends into different demographic factors (for example, assessing the relative contribution of changes in the population age distribution to inequality and poverty compared with the contribution of changes in family composition.) However, in this project we have restricted ourselves to estimating the *overall* impact of demographic shifts between 1979 and 2003/04, and for this the nonparametric approach offers maximum flexibility and ease of estimation.

### Grossing factors

There is one crucial further step which would improve the accuracy of the analysis: ideally we would also use the *grossing factors* in both datasets to gross up the number of households in each cell in the FES and FRS to the relevant population totals for 1979 and 2003 respectively. Unfortunately, however, the grossing factors for the FES are not available from the UK data archive for any year prior to 1998. Thus we have left the data ungrossed.

This is valid under the assumptions that (a) the interview selection criteria for the 1979 FES (in terms of stratification, the way clusters are selected, and so on) and the 2003 FRS are the same, and (b) levels of non-response to each of the surveys does not vary systematically by demographic group. Each of these assumptions is fairly stringent but both are impossible to check without more detailed information on the sampling strategy and rates of non-response than are available in the public documentation for the 1979 FES in particular. With this in mind our eventual results should be viewed as approximate estimates only. We hope to carry out more detailed work on this topic in the future, using a dataset with a consistently defined set of weights over time (for example, the General Household Survey).

### Calculating inequality and poverty statistics for the 2003/04 sample

The inequality and poverty statistics we use are based on income which has been equivalised using the McClements scale to take account of family size.<sup>47</sup> The income definition used was chosen to match the Department for Work and Pensions 'Households Below Average Income' (HBAI) definition as much as possible. Thus it includes all sources of disposable income (earnings after tax and national insurance, benefits and tax credits, and other unearned income) and is measured before housing costs.

The inequality statistic we use is the Gini coefficient. The Gini Coefficient is a widely used summary measure of inequality that condenses the entire income distribution into a single number between zero and one, with a higher value corresponding to a greater degree of income inequality. A value of zero represents 'total equality' with each household having exactly the same income. A value of one represents inequality in its most extreme form with a single household having all the income in the economy.<sup>48</sup>

The poverty statistics are calculated using a poverty line set at 60 per cent of median household equivalised disposable income in 2003/04. Median income figure (Before housing costs) for 2003/04 was £336 (DWP 2005).

We calculated three different poverty rates:

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47 For more information on the McClements scale see DWP (2005), Appendix 6.

48 For more information see Brewer *et al* 2005, appendix B.

- Overall poverty – the total number of people in the UK living in households below 60 per cent median household income.
- Child poverty – the number of children in the UK living in households below 60 per cent median household income.
- Pensioner poverty – the number of pensioners in the UK living in households below 60 per cent median household income.

### Calculating equivalent statistics for the 2003/04 sample using the demographic profile of the 1979 sample

The inequality and poverty statistics are then recalculated using the relative weights calculated earlier to reweight the 2003/04 FRS data so that it takes on the demographic characteristics of the 1979 population. Thus, households with demographic attributes that were more common in 1979 than in 2003 will receive a higher weight in these ‘2003/04 data with 1979 demographic profile’ statistics, whereas the converse is true for households with demographic attributes which were less common in 1979 than in 2003.

Note that this methodology assumes that all other aspects of the 2003/04 data are unchanged. In particular, the income and earnings distributions in 2003/04 are assumed unchanged (conditional on age and household type). Thus, it is a way of deriving the ‘pure’ impact of demographic change on poverty or inequality statistics. This decomposition process is rather artificial: in reality it is doubtful that the changing age and household structure of the population can be separated from changes in underlying economic variables such as the income and earnings distribution. For example, if levels of income have a causal impact on health (as many studies in the health literature suggest) then there will be knock-on effects on the age structure of the UK that result from changes in the distribution of income and earnings in the 1980s and 1990s. Likewise, it is probable that at some margin income and wage levels affect the decision whether to have children.

## Results

Tables A2.1 and A2.2 below contain detailed results of the analysis, showing the estimated impacts of demographic change. These are discussed further in chapter 1 in the main report.

Table A2.1 Impact of demographic change since 1979 on Gini coefficient

Data used	Calculated Gini coefficient
1979, actual (FES)	0.25
2003/04, actual (FRS)	0.34
2003/04 with simulation of 1979 demographic profile	0.322

Table A2.2 Impact of demographic change since 1979 on poverty rates

- A. Number in population, millions
- B. Poverty rate (official statistics)
- C. Number in poverty, millions
- D. Poverty rate (1979 demographics), %
- E. Number (1979 demographics), millions
- F. Fall in number
- G. Reduction in poverty rate [% pts]

Group	A	B	C	D	E	F	G
all	24.1	17.0	4.10	16.0	3.85	240,000	5.9
children	12.5	21.0	2.56	20.0	2.49	67,000	2.6
pensioners	10.3	21.0	2.16	18.3	1.88	279,000	12.9

## References

Note: web references correct January 2006

Brewer, M., Goodman, A., Shaw, J. and Shephard, A. (2005), *Poverty and Inequality in Britain: 2005, Commentary no. 99*, Institute for Fiscal Studies, London, 2005.

Daly M and Valetta R (2004) 'Inequality and Poverty in the United States: The Effects of Rising Male Wage Dispersion and Changing Family Behavior' *Revision of FRBSF Working Paper 2000-06* San Francisco: Federal Reserve Bank of San Francisco. Available at [www.frbsf.org/econsrch/workingp/2000/wp00-06.pdf](http://www.frbsf.org/econsrch/workingp/2000/wp00-06.pdf)

Department for Work and Pensions (2005) *Households Below Average Income 1994/95 – 2003/04*, London: HMSO. Available at [www.dwp.gov.uk/asd/hbai/hbai2004/contents.asp](http://www.dwp.gov.uk/asd/hbai/hbai2004/contents.asp)

Kenworthy L (2004) *Egalitarian Capitalism: Jobs, incomes, and growth in affluent countries* New York: Russell Sage Foundation

Shephard A (2003) 'Inequality under a Labour Government' IFS Briefing Note 33. Available at [www.ifs.org.uk/bns/bn33.pdf](http://www.ifs.org.uk/bns/bn33.pdf)