DEMOGRAPHICS , ECONOMICS AND SOCIAL CHOICE

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[SLIDE 1]

Demographic trends were not till recently a major subject of public debate. Actuaries and demographers have been aware for years that something rather big is happening, but demographics rarely made headlines. But that has changed rapidly over the last few years. As Richard said, I chair the UK's Commission on pension policy, and each week I see the latest press clippings – an endless series of headlines talking of crisis, black holes, and work till you drop. And throughout Europe, pension reform and opposition to pension reform, has shot to the top of the political agenda.

And increasingly commentators and politicians are stressing, correctly, that pension system problems are not some technical issue, requiring just technical solutions, but raise far wider questions. Many press commentators now refer to UN estimates that Europe "needs" tens or hundreds of millions of immigrants if it is to support its old people. David Willetts, Britain's chief opposition spokesman on pensions and employment affairs, recently issued a pamphlet arguing that Europe should consider policies to increase the birth rate.[1]

And the Economist magazine summed it up a few weeks ago with this front-page [SLIDE 2] "Work longer, have more babies - how to solve Europe's pension crisis".

So my purpose this evening is not to explore the details of pension system design, nor tell you about the work of the UK pension commission, but to consider the wider economic and social issues. And to have time to cover those wider issues, I am going to have to skip quickly over some details of pension system economics, asserting some arguments rather than proving them. But as Richard said, I addressed the details of pension system economics in a recent lecture to the Institute and Faculty of Actuaries, a copy of which will be put on the website as a companion to this lecture.

[1] *Old Europe? Demographic change and Pension Reform*, David Willets, Centre for European Reform, 2003

Future demographic trends are uncertain. We know what has happened to longevity and fertility, but any future projections are just projections. And with United Nations estimates of global population in 2050 ranging from 7.4 billion to 10.6 billion, projections come with big caveats. But despite that warning, the direction of the key trends – if not their precise pace, is fairly clear, and I am therefore going to focus on the impact of those trends, using the UN's medium variant projection to illustrate my points.

Europe's demographics are changing as a result of three factors [SLIDE 3]

- One is increasing longevity
- the second, declining fertility
- and the third is the existence of a "baby boom" cohort, a generation born between about 1950 and 1970, which is both larger than the one before and larger than the one that follows.

But I am going to focus almost entirely on the first two factors, and not on the baby boom, because it is the first two which define the long-term challenge, facing the whole world. For specific national pension systems over the next 20 or 30 years, the baby boom effect is very important: it makes changes in dependency ratio more rapid, though in the same direction, as those which would be produced by gradual and one directional shifts in longevity and fertility. But my aim this evening is not to look at the next 20 to 30 years in specific countries, but the overall trends and implications over, say, a 50 year period and at a global level.

So what is happening to longevity and fertility? Well, longevity, life expectancy, is going up almost everywhere. [SLIDE 4] It has gone up in the UK throughout the 20th century– rapidly in the first half, a slight deceleration in the 1950s and Sixties, acceleration since then. And it has gone up across the world, though with a deceleration recently, largely AIDS-related. And it has risen to around UK levels or above in all successful rich economies, in Western Europe, in the US, in Japan, and getting closer in countries like South Korea and Thailand. And in all of those it is still going up.

But for pension systems what matters is not so much life expectancy at birth – which can increase due to lower infant mortality, but without the lifespan of the normal healthy person increasing much– but rather life-expectancy at 60 or 65 – how long people live from the ages at which they typically think about retirement. But that also has gone up rapidly, [SLIDE 5] and again with the same pattern of acceleration in the 1980s and 1990s; and gone up in all rich countries.

The key question, of course, is how far and fast will these trends continue in future?

Current official projections, for instance in the UK from Government Actuaries Department – but other countries' estimates are similar – show 30 years of continued rapid increase, but then a tailing-off. Male life expectancy up by 3 or 4 years by 2050, but by then hardly moving. But this tailing-off reflects a highly contested assumption – the limit-to-life assumption that we can get more and more people to live to full old age – say 90, but that we hit absolute biological limits much beyond that. An assumption for which the deceleration of the 1950s and 1060s appeared to provide support, but which is challenged by the acceleration of the last 20 years, during which official projections have consistently underestimated actual improvements, and in which the forecast date at which slow-down starts has had to be pushed out – always 25 – 30 years away – never getting closer. And there is an alternative school of thought – of both demographers and biologists – which questions whether we have any sound basis for asserting a limit-to-life, and which predicts further straight-line improvements – which would increase life expectancy at 65 over the next 50 years by something more like 8 than 4 years.

So a lively debate – which I can only refer to this evening. But from which I would take the following assumptions.

First, that for the next 50 years, we will definitely see continued major improvements in life expectancy, both at birth and at retirement ages. Second, that those life expectancy increases may well be significantly higher than current official projections. Third, that it is possible that for the next 50 years at least, and perhaps for the next century, we may see no slowdown at all in the pace of increasing life expectancy.

Let's turn to fertility. The pattern here is that birth rates are falling to or below replacement levels, wherever economic prosperity is achieved.

[SLIDE 6] In Europe, as measured by total fertility rate, and I will come back in a minute to some caveats required when using TFRs – it fell below replacement, say 2.05 children per woman, in the mid-1970s, and is now well below replacement rates and still falling. And it's below two in every European country, west and east, except Albania.

In North America, which in the UN definition is US and Canada but not Mexico, it fell below replacement slightly earlier, but then has ticked up the bit, but be careful of how you interpret that increase. Split the US figures into ethnic groups – white, black, Asia-Pacific, Native American, and Hispanic – and you will find birth rates at record lows for each individual group and you will find the most prosperous groups – white and Asian-Pacific – have rates significantly below replacement levels. The increase here being

solely the result of an increasing Hispanic proportion due to immigration, a weighted average effect. And once Hispanic fertility rates fall towards replacement, and they are clearly on that course – the average will come down again. [2]

[SLIDE 7] But this is not just a European and American phenomenon. In East Asia the decline is even more dramatic than in Europe. Japan has been at or below replacement rates since the 1960s, and now at only 1.2 children per woman. Korea, Hong Kong, and Singapore are now at levels as low as the lowest European countries. China has declined to 1.8. And while that decline is partly attributable to the one child policy, what these other country lines tell us is that what the Chinese have done is simply bring forward into the demography of a middle income country, a trend which would have occurred a few decades later with rising prosperity.

[SLIDE 8] And finally, fertility rates are falling towards replacement levels, and forecast to go below it within the next 15 years, in some rather surprising countries – in Brazil, in Turkey and in Iran.

And that suggests the striking message of these figures – the universality and almost, it seems, the economic determinism of what is going on here. We sometimes talk of deep-seated cultural differences but whenever we get three conditions – reasonable prosperity, a high level of female literacy, and a supply of contraceptives which are legal, safe and reasonably cheap– we get fertility rates coming down towards replacement levels – and we get that in Catholic Italy and Brazil as much as Lutheran Sweden and Minnesota, in Confucian China and Buddhist Thailand, in Sunni Moslem Turkey and Shiite Iraq. We should always be very cautious of declaring universal sociological truths – but this does actually seem to be one.

And seems to be one even when we consider the pitfalls of fertility rate figures. Because as many of you will know, TFR figures – while having the merits of being available rapidly, and across the world, suffer from a key interpretation difficulty. Which is that if the average age of childbirth is changing, TFR movements exaggerate changes in completed family size. If, for instance, the average age of childbirth rises, which it is happening throughout the world – TFRs will for a period of time fall more rapidly than completed family size. So some of these TFRs trends may slightly overstate the pace of change. But the direction is clear, and analysis of the better but more difficult measure, which is completed family size, still suggests that the trend, wherever we have economic prosperity, is towards fertility rates below replacement levels.[3]

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[2] See US National Vital Statistics Report , Volume 51, Number 4, Figure 3. Interestingly, Canada, which also has significant immigration but with a greater proportion from Asia Pacific and a smaller Hispanic proportion has a TFR in 2000 of 1.48.

[3] See Appendix on *"TFR and Completed Family Size"*

So the future is: longevity rising, possibly without limit. And fertility in all successful economies falling to or below replacement level. If that is the future, what happens to pension systems, and what social choices do we then face?

Well the key thing that changes of course is the ratio of workers to retirees. [SLIDE 9] Population structures can be set out graphically by arranging the number of people in each age band in layers: and in the growing populations of the last two centuries, population structures in almost all countries have been triangles. And the ratio of workers to retirees, for any given retirement age, can clearly be worked out by Area A over Area B. From which it is clear that if people live longer beyond retirement age, B will increase and the ratio will fall. And that if fertility rates fall to replacement, the shape will change over time from a triangle to a column with a small triangle on top, each generation the same size as before, almost all people surviving to, say, age 60 or 70 before dying off over the next 30 years.

So dependency ratios change – and with them the economics of pension systems. And not just pay-as-you-go pension schemes, but funded systems as well. Because it turns out that the difference between the economics of funded and unfunded pension systems is far less fundamental than you might think. But the easy way to understand what is going on is first to consider the classic state-run pay-as-you-go scheme, and then subsequently ask how does this differ if pensions are funded.

And the best place to start with the economics of PAYG pensions is a classic article written by Paul Samuelson in 1958 in which he set out – although it was not actually the primary purpose of the article – the crucial influence of demographics on pensions.[4]

[SLIDE 10] Think first about a pay-as-you-go pension system in a world of no population growth and no productivity growth. Each working generation – of equal size – pays a percentage contribution of wages to support retirement pensions. In that world, you can easily show, the ratio of average retirement income over average worker contribution will be equal to the ratio of years spent working to the years spent in retirement. If on average you work 45 years and retire for 15, then a stable soundly financed pension system could have pensions 60% of average earnings and worker contributions of 20% of earnings, a 3-1 ratio. Or it could have 30% pensions and 10% contributions; or 90 and 30 or any other three to one relationship you want. And the implicit rate of return on contributions made into the PAYG scheme in this case would be nil. For every £1 of income sacrificed as a worker contribution, you would in retirement get £1 of income back, but with no return on your "investment".

[4] *An exact consumption-loan model of interest, with and without the social contrivance of money*, Paul Samuelson, Journal of Political Economy, 66, 1958

But now add population growth [SLIDE 10A] – but not yet productivity growth – and something rather useful happens, which is that the ratio of average retirement pensions to worker contributions, is now – working years over retirement years multiplied by the population growth which has occurred between one generation and the next. Now if you have 45 years' work and 15 years retirement, but also one per cent per annum population growth, we can have a stable PAYG system into which workers pay 20% of income, but with the pensioners getting not 60 per cent but over 80 per cent, because there are now more workers per pensioner.

And it turns out that in this case the implicit rate of return you get on your "investment" in the social security fund is the rate of population growth. A rate which Samuelson labelled the biological rate of return, the return which you would get indeed in the very simplest retirement support system which is children looking after their elderly parents, in which you would clearly be better off in retirement the more children you have.

Finally, [SLIDE 10B] if we add productivity growth, we simply add another term to the equation. So that the implicit rate of return on your investment in a social security system is now population growth plus productivity growth, which is the rate of growth of the economy.

But it is on the population term in both the second and third case here that I'd like to focus, because it is that term which creates the key feature of PAYG pension schemes in rising populations. Which is that PAYG pension schemes in rising populations are, to a degree, pyramid schemes, chain letters, Ponzi schemes – in that the benefits they promise in relation to what you put in crucially depend on there being more people in the next generation, in the next layer of the chain letter or pyramid scheme.

And the essence of what is happening to pension systems in the face of falling fertility is that the pyramid scheme is coming to an end.

But not just that of course – but also the impact of rising longevity. Because rising longevity also affects these ratios – as is clear [SLIDE 11] if we now look at the determinants of the support ratio – the number of workers over the number of retirees. The support ratio is equal, in a simple steady state model, to working years over retirement years multiplied by population growth between the generations. And it therefore falls if one of two things happens:

Either if longevity increases but not the age of retirement, so that years in retirement increase

or fertility falls and thus population growth .

And the striking thing is how dramatically this ratio changes, given quite possible changes in longevity and fertility rate.

This slide [SLIDE 12] presents the figures from a simple steady-state model, allowing us to look at the impact of increased longevity and falling fertility, without the real world complexity of the baby-boom. We assume working life starts at 20, and in both columns the retirement age is assumed to be 65, but with a 15 year life expectancy in column 1 and 20 years in column 2. And there are three different population growth rate scenarios. So to take the top left hand figure, if population growth is +0.5% and the retirement age is 65, the support ratio is 3.5 [SLIDE 12A] But it will fall to 2.8 if life expectancy at 65 rises from 15 to 20 years, exactly the sort of order of magnitude likely over the next 50 years.

[SLIDE 12B]

And it will fall even further to 1.9 if the population growth rate falls from plus 0.5% to minus 0.5%, which is the sort of growth rate change actually occurring between the Europe of 1980 and Europe of 2030.

Which is why the UN's real world projections suggest very similar results. [SLIDE 13]

Forecast falls in support ratios from 3.7 to 2.1 for the UK, 3.4 to 1.4 in Italy, 4.8 to 2.8 for the US.

But even more dramatic for countries like China and Korea, support ratios falling from well above current western levels to well below in just 50 years.

And that shift in support ratios challenges pension systems throughout the developed world. It faces a society with essentially just three choices [SLIDE 14]

- increased average retirement ages, i.e., longer working lives.
- Poorer pensioners relative to average earnings.

- Or bigger worker and employer contributions as a per cent of earnings.

And with the size of the swings required in factors two and three quite large if you do not change factor one – retirement ages. If your support ratio falls by 43%, which is precisely the projected fall for Britain on the previous page – and if you do not increase average retirement ages, you either have to cut pensioner income by 43% - or you have to increase worker and employer contributions by 76%.

Which means of course that average retirement ages are going to have to rise.[5]

And a reasonable rule might be that retirement ages must rise in line with rising life expectancy, keeping the ratio of working years to retirement years constant.

[SLIDE 15]

But it is important to realise that even that would not be sufficient to keep support ratios. It would if the only thing we were facing was an increase in longevity. But because we face falling fertility as well as increasing longevity it isn't.

[SLIDE 16]

This is the same slide as before but with a new column added in which when life expectancy at 65 rises to 20, the retirement age moves to 68 and three-quarters keeping constant the ratio of working years to retirement years. And it shows that if your population growth rate is steady at plus 0.5%, raising the retirement age proportionately fully offsets the increased life expectancy effect. The ratio falls from 3.5 to 2.8, but goes back up to 3.5 with the increase in retirement ages. But if at the same time your population growth rate has fallen from plus 0.5 to -0.5% driving the support ratio down to 1.9, raising the retirement age proportionately only gets you back to 2.55, and you would have to take the retirement age to something like 73 to keep the support ratio stable. And that is the scale of the demographic challenge which Europe, and the US, but also much of Asia are facing, and which eventually the whole world may face – falls in support ratios which cannot be fully offset even by retirement ages rising fully in line with increased longevity.

[5] Note that average retirement ages can rise even if "official" or "typical" retirement ages do not rise, via increase in employment rates among, e.g. 50-65 year olds. And increases in average retirement ages may well be accompanied by an erosion of the idea that there are specific "retirement ages" at which people switch from full to nil employment.

Which means that workers are going to have to make bigger contributions and/or pensioners are going to get poorer, even if retirement ages rise proportionately.

But so far I have only been speaking about pay-as-you-go state run schemes. Don't funded pension systems get round this demographic dilemma, since workers pile up capital assets rather than being dependent on future workers paying taxes?

Well the short answer to that is no. And the long answer is set out in the companion lecture, to which I referred earlier. But let me set out the key points of the argument you will find in that lecture: [SLIDE 17]

- First, in any pension system, non funded or funded, today's pensioners are dependent on the output produced but not consumed by the current generation of workers – and what differs between funded and non funded systems is how the resource transfers flow and the risks associated with the pensioner's claim in future output.
  A PAYG claim is a claim on future tax resources and is subject to political risk. A funded claim involves the ownership of a capital asset which gives you a right to receive future profit and rent streams: and it is subject to various categories of economic risk. But either way a pension claim is a claim on future output and is dependant on future workers producing that output.

- Which means therefore, that funded systems can only help overcome demographic challenges if they increase total national savings, total investment and therefore total future GDP or GNP, thus increasing the future output on which future pensioners are able to draw. Which is a "no free lunch" condition. With PAYG systems you need higher taxes if you want to avoid poorer pensioners or rising retirement ages; with funded systems you need higher savings. And interestingly it turns out – you need higher savings not just in this generation, but in future generations. Either way you have to cut workers' consumption to make pensioners better off.

- Third, that the return on additional savings is subject to demographic risks. An increase in savings to overcome rising longevity will everything else being equal produce a fall in the marginal rate of return. And a falling population, which means that Generation 2 is smaller than Generation 1, will tend to produce a period of falling asset prices, relative to the constant population alternative, since Generations 2's target asset accumulation will be smaller than Generation 1's.

- Fourth, that as a result, and this is where it gets tricky to explain briefly, so you either have to take it on faith or read the companion lecture, demographic changes carry very similar implications for the mathematics of funded schemes as for PAYG schemes,. Thus, with a PAGY scheme, if you have a rise in longevity alone, a proportionate rise in retirement age is a sufficient policy response, removing any need for increased taxes. And thus similarly, within a funded scheme, if you have rising longevity alone, a proportionate rise in the retirement age removes any need for increased savings, or any danger of declining marginal returns or depressed asset prices. But once you have a fertility decline as well, both types of system face more difficult problems, which simply show up in different ways.

So to return to my really brief answer – no, funded systems do not give us an escape route from demographic challenges. And they do not do so – at least in the long term – even when we take an open economy rather than a closed economy view.

Some of you probably spotted that the falling return and asset price effects to which I referred under point 3 imply a closed economy, in which savings have to be matched by investment. And in an open economy the alternative exists of investment overseas, with the benefit coming back via the overseas investment income line of GNP, not via domestic output. Which still requires a higher savings rate – so there really is no free lunch – but which at least means that the higher savings will not earn a falling rate of return, and that future pensioners do not have to sell accumulated assets solely to a smaller next generation of domestic workers.

And that's true, the open economy case slightly changes the argument. But only up to a point and for a transitional period.

For the problem is that the countries you would like to invest in, themselves face changing demographics.

[SLIDE 18]

China within 50 years will have a demographic structure almost exactly in line with Britain's. China is already debating its pension time-bomb and would like to build up claims outside China to support its future retirees, not build up liabilities to support pensioners in other countries. Any British or European strategy that assumes our pensioners supported by Chinese workers, via capital claims on their output, cannot in aggregate work, if China is pursuing the same strategy.

Which does not deny the potential of overseas investment as a transitional phase, but a transitional phase with a problem suggested by this slide [SLIDE 19]

Which is that there is a clear though not perfect correlation between economic success and falling fertility. Most of the countries which the capital markets would describe as attractive investment destinations, are already at or near replacement level fertility – countries like China, Korea, Thailand.

While at the other end, the only countries we can be confident are going to generate a demographic pyramid into the late 21st century are countries like Bangladesh, Congo, Iraq and Pakistan– in which most people would be wary of investing their pensions.

Now yes, there are today some in the intermediate category – India in particular stands out as a country of attractive investment opportunities and large and still expanding population. But the big picture and the long-term "catch 22" still remains. Wherever you get economic prosperity you get fertility falling to below replacement level. Therefore the stable and successful countries in which you would like to invest will develop column shaped demographies. And if the whole world develops a stable population, with a column shaped demography, the world cannot solve its support ratio problem by investing in the moon. Therefore in the long run, you have to develop pension policies in individual countries and across the world, which can cope with column shaped demographies – rather than dream of escaping that challenge via overseas investment designed to marry your capital to the base of someone else's population pyramid.

Which creates a big challenge for the already ageing and low fertility countries – for Europe in particular. Our support ratios are falling: our PAYG schemes are under pressure: funded schemes are only a partial solution, not fundamentally different: and overseas investment is at best a transitional answer.

What to do?

One possibility is to try to change our demographics via either increased fertility or increased immigration. And the immigration option is now extensively debated, and to a degree is happening whether people like it or not, because immigration is to a degree unstoppable. Immigration to Britain is now running at about 170,000 per annum, up from zero in the early 1990s. The British government has recently increased its estimate of long-term sustainable GDP growth from 2.50% to 2.75%, entirely because of higher labour force growth resulting, primarily, from higher immigration. And the Economist magazine when not arguing for more fertility, argues for more immigration – a recent

lead editorial was headlined "Net immigration into Britain is higher than it has ever been – good".

And newspaper articles now frequently refer to estimates of how many immigrants Europe needs to keep its support ratios constant. But the problem is that these numbers are huge, implying not only massive immigration but an exploding size of total population. [SLIDE 20] The UN has calculated the immigration needed to keep support ratios constant. The result would be the UK population growing from 59-136 million, Europe's from 372 million to 1.2 billion over 50 years. And then rising as rapidly in the next 50 years because when you import immigrants to fix a support ratio problem, they grow old,and themselves become pensioners and then you need more immigrants to support them.

And you only have to look at these figures to realise that this scale of immigration is undesirable and impossible. Fortunately it is also unnecessary. Undesirable because even the most committed multicultural list would probably admit concerns about our ability to integrate those numbers: and because almost every one would dislike the environmental consequences of such huge and rapid growth. And impossible, for the same reason that the overseas investment route is impossible as a long-term solution, which is that if the whole world population stabilises you can't go on importing immigrants. If the world's demography becomes a column, you can't solve your ratio problems by laying claim to the base of someone else's pyramid, either via overseas investment or by immigration.

And unnecessary on this scale, because these figures, assume unchanged retirement ages. [SLIDE 21] And if you don't change retirement ages in the face of rising longevity, stable support ratios require not only maintained population growth but accelerated population growth.

But unchanged retirement ages is an absurd assumption: retirement ages will and should rise. But we noted earlier that even a proportional rise in retirement ages is not sufficient to stabilise support ratios if fertility is falling. And that means that while these figures are a bit of a nonsense, an impediment to sensible debate, there is a more realistic choice to be debated.

[SLIDE 22] If the European support ratio falls from 3.5 to 1.9 because of increased longevity and falling fertility, the first arrow, and if we offset some of that fall by a proportional increase in the retirement age, the second arrow, should we also plan to increase it further back to 3.5, the third arrow, implying population growth of, say, 30% over 50 years, the UK population growing from 60 to 80 million, the European Union

from 370 to 500 million, a similar sort of population increase as is expected in the US, and requiring, for instance, an inflow into the UK at about twice the current annual level.

That sort of scenario is possible and is worth debating – it poses a real social choice for Europe.

Should we welcome a mass immigration into Europe, and a population increase of, say, 20% - 30%, in order to keep our support ratio constant or at least falling less slowly?

Well, entirely from a Pension Commission point of view it would be useful.

But there are far wider issues here than support ratios, issues I will consider under four headings – political/cultural, environmental, economic and geopolitical.

The political/cultural issue is whether Europe can integrate successfully or indeed wants to integrate this scale of immigration. Which is of course a very sensitive issue.

Throughout Europe there is considerable opposition to immigration. But also many people who argue – if America can integrate 30% in 50 years, why can't Europe, isn't the only problem the conservatism and racism of the old continent? And even among the pro-immigration lobby, there are divisions between integrationists and multi-culturalists – should immigrants to Britain be required to learn English both to help them and to aid integration, or is that cultural imperialism? A complex debate which I cannot deal with in detail.

But to which I would like to make one contribution. Which is to suggest that the comparison with the US is facile, since it fails to recognise the far more difficult integration challenge which Europe faces.

We often talk of an American melting pot as if it is a successful mixing of quite different cultures. But, on the whole, it is not. The majority of the melting pot is a mixture of different variants of European culture – Italian, German, Irish, Jewish. And the vast majority of current immigration is Hispanic, involving people who speak a European language, whose catholic religion has been for centuries a major American religion, and who come from countries, such as Mexico which while poorer than the US, are functioning middle-income market economies, extensively influenced by American culture and attitudes.

And the only American experience of mass immigration from a completely different culture – which was involuntary black immigration via slavery – has left a legacy even 140 years after the abolition of slavery – of very incomplete integration – with for instance measures of black/white interracial marriges, or mixing of housing districts, lower in the US than in Britain. American does not provide us with a proven success story of the rapid integration of very large numbers of immigrants coming from very different cultural and economic starting points.

But that is what Europe would have to achieve, in order to fix the pension challenge via immigration. Because the immigrants would not come from the nearest European cultural and economic analogue of Mexico; they will not come – in any significant numbers – from Eastern Europe, or even from Russia or the Ukraine, because the populations of these regions are small and falling rapidly, Eastern Europe's population likely to fall from 126 million today to 104 million in 2050. So that immigration of even 10 million people from Eastern Europe, would be a vast demographic shift, leaving a social catastrophe of unsupported pensioners in Eastern Europe, but making almost no difference to Western European support ratios.

Instead, to make a difference to support ratios, Europe needs mass immigration from Africa and Western Asia, here defined as Pakistan, through the middle east, to Turkey – a region which, with, the notable exception of Turkey, sadly includes the world's greatest concentration of very poor people, of failed states, and of fundamentalist regimes and cultures. The starting point economic and cultural distance between Europe and its major potential source of immigrants is far greater than between the US and Latin America.

That does not answer the question, what level of immigration would be optimal, it just says that mass immigration is bound to be a more difficult political issue, and difficult integration challenge, for Europe than for the US.

My second set of issues is environmental. And here the issue is not whether we want immigration, but whether we want population growth – via more immigrants or more babies. And here I will express a personal point of view, or rather a personal dilemma. As Chairman of the Pension Commission, I would find population growth very helpful. As an individual concerned about our environment, and as a lover of English countryside, I would like population stability in the UK, in Europe and, hopefully eventually across the world. We cannot permanently solve global environmental challenges – such as increasing demands for fresh water – unless at some time we reach population stability.

And in South-east England, another 10 million or even 5 million people, means a destruction of countryside and a level of traffic congestion which arguably would degrade quality of life quite as much as would a decline in the support ratio. And all for only a

temporary solution to the problem. Because if you keep the ratios constant with 30% population growth up to 2050, you need another 30% – another 25 million people in Britain, to keep them stable up to 2100, and again every 50 years thereafter. Which in the end might prove impossible if the whole world reaches population stability, and you can no longer raid the base of someone else's pyramid. Posing the question – if at some stage we need to design a society which works with column shaped demography – why not do it now with a population of 60 million, rather than 50 or 100 years later with a population of 80 or 100 million.

So there could be quality of life reasons to Europeans to oppose population growth – and therefore immigration. This could be the welfare-maximising choice.

But of course that is not the choice that the US appears to be making. In the US – as in Europe – fertility rate trends would fairly soon produce population stability in the absence of immigration. But the population of the US is predicted to rise by 30% over the next 50 years, almost entirely due to immigration and its knock-on effects. So why is it different for the US?

Well, one very simple reason is population density. [SLIDE 24] US population density, even excluding Alaska from the calculation, but keeping the expansive wastes of northern Sweden and Finland in the European comparison, is one third of that of the European Union's. And even what we think of as the densely-populated parts of the US are far less densely populated than Europe. 50 million people live in England: roughly the same number live in five of America's more densely populated north eastern states – New York, Pennsylvania, Connecticut, Massachusetts, and New Jersey. But the population density of those states is 40 % of England's. But it is not actually those states where most population growth is now occurring – but in still less densely populated states like Florida, California, Texas, Arizona. Two-thirds of all US population growth over the last 20 years has been concentrated in nine southern and western states with an average population density a third of Europe's and a 10th of that of England of the Netherlands, and a similar proportion is forecast to be in those states in future.

And that changes the politics and indeed the rational economics of immigration quite fundamentally. Americans who do not like the changing ethnic complexion of their neighbourhood, or Americans who just want more space – still have the option of moving to the spacious suburbs being carved out of greenfield land on the edges of Atlanta, Dallas, San Antonio, Phoenix and Denver. Europeans cannot. Americans can still get the support ratio benefits of immigration without as many integration difficulties, and without local environmental pressures. And that, rather than the inherent racism or conservatism of Europe is, I suggest, why the politics of immigration are quite different in Europe than in the US.

And why indeed the economic impact of population growth could be different. Because another issue raised by this population growth debate is the economic costs of population density, an issue which I believe receives insufficient attention in our comparison of US and Europe economic performance. The US has a significant productivity advantage over Europe: and that productivity advantage has increased in the last 10 years – the US "productivity miracle". But detailed analysis does not reveal a generalised efficiency advantage across the economy; but instead that almost all the difference is concentrated in specific sectors where expansive physical layout and ease of transport flows can have a big influence on productivity – i.e., retailing and wholesale distribution. And the most striking studies suggest that 60% of the entire difference between US and European productivity in the last 10 years is explained by the huge productivity improvements achieved by new US retail formats opening on large greenfield sites – Walmarts, Home Depots, etc, the big out-of-town sheds.

Greenfield developments which are far easier in the US due to more plentiful supply of land zoned for commercial use. Leading some people to argue for looser planning restrictions in Britain to unleash actual productivity growth. But our tighter planning controls are a natural response to population density. Welfare maximising planning rules trade-off the potential productivity benefits if easier and more expansive development, against consumer preferences for preserved countryside, less noise, less congestion. But, almost any specification of a utility preference function would suggest that the value consumers place on those benefits will increase the higher the population density. A value, by the way, which has a concrete economic expression in the way that house prices vary according to location.

And that means that the optimal trade-off is bound to entail tighter controls in a more densely populated country, and that densely populated countries, compared with less dense, should sacrifice the final few points of productivity potential.

Suggesting perhaps some internal contradictions within government assumptions and desires, the UK government has increased its sustainable growth estimate to reflect higher immigration: it is interested in easier planning rules to enable higher productivity: and it is worried about the high and rising level of house prices. But if the population rises further, public demands for tight planning can only increase, and house prices will go up further. Even in purely economic terms, we face more complex issues and trade-offs than support ratios alone.

Finally, a comment on geopolitics. The implication of what I've said – on culture, on environment, and on economics – could be that the rational welfare maximising choice for Europe would be a population growth rate slower than the US, and therefore a lower rate of immigration. Europe might be a happier place with a stable population, even if that means that either worker or pensioner consumption has to be lower than in the

alternative growing population case. But even if this were a rational choice in terms of individual welfare, it would clearly have consequences for geopolitical power for influence, [SLIDE 25] since given equivalent levels of productivity increase, US total GDP would grow significantly faster, in line with faster population growth. The continued rise of the US geopolitical and military power – relative to Western Europe, and relative to Russia – is about bound to continue. Which might, in Robert Kagan's words – be another case of Europe choosing Paradise over Power. And raising a still wider set of issues, which however I shall have to leave aside for now.

So if not immigration, what about increasing fertility – as "The Economist" seems to be urging, and as David Willetts in a recent pamphlet suggested we should consider. And I am sure many of you will spot immediately that the problem is that higher fertility solutions carry the same total population implications as immigration – indeed on average they require slightly larger total populations than immigration because of children. Under both, you need a permanently expanding population, because workers age into retirees and then you need more workers to support them. But at least immigrants can enter the country as workers, rather than having to grow up first . But that effect aside, immigration and increased fertility are the same in terms their implications for permanent population growth.

Which implies that if you do not want to keep support ratios constant by immigration, because of environmental concerns, you should be as opposed to driving fertility back above replacement levels. Even, that is, if you could actually achieve that, which is extremely doubtful, there being no late 20th century case of a country which has fallen below replacement fertility and then risen above it. Suggesting that while the immigration based route to maintaining stable support ratios is debatable but at least possible, the fertility based route is impossible.

But there could still be a good argument for trying to increase fertility rates in Europe, and also for instance in East Asia, at least somewhat. Because if environmental considerations argue for population stability, they do not require population decline. And when you get actual population decline, the support ratio mathematics become so extreme that it is difficult to imagine any combination of retirement age change, and increased worker taxes or savings which can prevent large falls in pensioner living standards. [SLIDE 26] And some European countries, in particular Italy and Spain – are presently on target to move not from pyramids to columns, but well, to what might we call them, sort of beehives.

And there would be major economic benefits if European birth rates returned not to the 2.5s or 3s of the 1950s, but up towards replacement rate, rather than staying at the much lower levels we see today.

And the good news is that if that is feasible, it almost certainly depends on enabling women to make the choices they want to make rather than cajoling them to become hero mothers of the European Union as their contribution to solving our pension crisis. For it is a striking feature of several surveys, that when you ask women in rich developed countries, how many children they expect to and would like to have [SLIDE 27] the answer is usually higher than the present actual levels and indeed rather fortunately is close to two. But what happens is that a variety of barriers – difficulties of taking career breaks, delays in forming families driven by economic considerations – prevent women, and in particular graduate, professional women, from meeting those aspirations.

Which implies that the modern natalist strategy, far from being one which attempts to return women to the traditional limits of hearth and home, is one which better enables women to combine working life and family life ,careers and children. [SLIDE 28] An hypothesis confirmed by the fact that across Europe, while all countries have fertility rates below two, the lowest are in those countries – Italy, Spain, Greece and Germany – where levels of female participation in the workforce are low, and where aspects of social organisation such as shop opening or school hours, have not been well designed to make participation easy.

Perhaps we <u>should</u> have a strategy to encourage European birth rates to rise. But if so it is one which reinforces rather than undermines the changing role of women, which has been the driver of the fall in birth rates from historically high levels.

Let me sum up and suggest some implications for public policy debate. Demographic change faces us with social choices far more fundamental than those between different pension systems. And there are indeed still wider social and cultural issues which I have not considered – such as whether an ageing and low fertility society is less innovative or entrepreneurial.

But from what I have considered I draw out these key points.

First that we probably will have to face, hopefully eventually throughout the world, increased longevity and at most replacement fertility rates, which implies column shaped not pyramid shaped demographics. And overall that is very good news, because people are living longer and because the world population may stabilise.

Second, however this poses a severe problem for pension systems, because pension systems have always previously operated within pyramid demographics. All our inherited pension systems are to a degree pyramid schemes, their economics of contributions and receipts, only sustainable because until now each successive generation

has been larger than the one before. When the population stabilises – the pyramid scheme comes to an end. And that is a big problem which cannot be fully offset even by fully proportional rises in retirement age.

Thirdly, that attempts to get round this problem, by investing overseas, or by encouraging immigration, i.e., by attempting to lay your hands on the base of someone else's population pyramid, can only be transitional solutions, and in the case of mass immigration have wider implications – political, environmental and economic, which we need to debate.

Fourth, therefore, that we will not be able to avoid changes in the pattern of inter-generational transfers, either by significantly increasing worker contributions or savings, or by accepting less prosperous pensioners. Adjustments which could occur, either as a result of public policy decisions, or via market forces encouraging individuals to adjust life cycle consumption-smoothing decisions .

Fifth, however, that there are policies which clearly make sense, since they help limit the deterioration of support ratios. These policies are labour market focussed . We need to increase average retirement ages, implying careful thinking about the tax and pension system changes which would encourage that, but also about the labour market policies – anti-age discrimination, training, flexible working – which will make it possible for older people to be valued employees. We need to encourage high levels of employment participation by the working-age population, because that too contributes to better support ratios. But we also need women participating in the workforce to be able more easily to combine that with having children. And that implies an approach to labour market regulation, for instance, to parental leave rights – both maternal and paternal – which recognises the legitimate role of some regulation to support essential social objectives, while still preserving the flexibility which we know is required for high employment levels.

But above all and overall – we need to start debating the full set of social choices we face. Because they are much more far reaching than the details of pension system design.