Panel 2

Panel 2

Top-heavy load: Trouble ahead for social security systems

Introduction

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The so-called double-aging phenomenon – steadily decreasing birth rates coupled with ever increasing life spans – has turned the developed world's age pyramids into age mushrooms. Low birth rates mean fewer people paying for ever larger legions of old folk for an ever increasing number of years. Much has been said about the effect of this on pensions, but the effects on health care are equally precarious. What is the situation in Europe? What is being undertaken to stave off a meltdown? What can we learn from the experience of other countries?
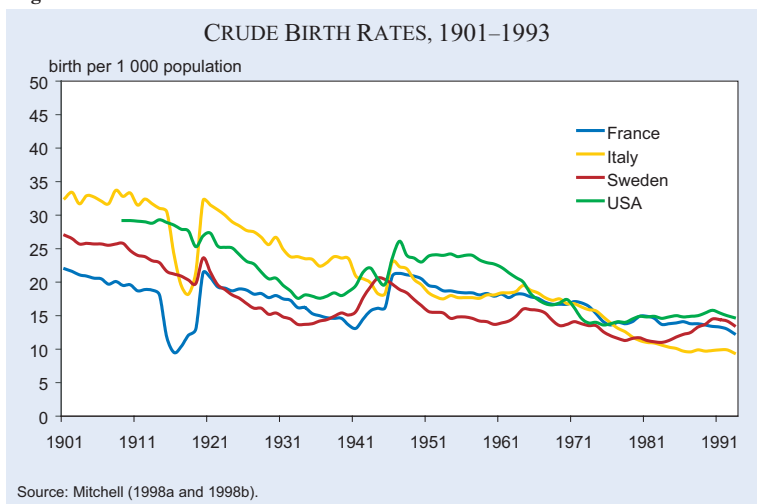
Birth rates have been trending down for a long time. Figure 1 shows a century of information for four countries with readily available data. The baby boom was a large temporary reversal in that pattern, resulting in a rapid decline in birth rates after its end. Mortality rates have also trended down for a long time. The drop in child mortality was very important for the increase in life expectancy at birth. And declining mortality at adult ages has added greatly to remaining life expectancy, measured both from an age typical for the start of work and ical for the start of work and

from an age typical for retirement. Figures 2 and 3 show a century of remaining life expectancy for four countries at ages 21 and 65. Thus, the ratio of the population over 65 to that between 20 and 64, commonly referred to as the old-age dependency ratio, has shown an upward trend for a long time, as shown in Figure 4. That trend is projected to continue and, in some countries, to be more rapid. Hence the aging of the population and the anticipated continued aging.

Accompanying the long-term trend to longer adult lives has been a long-term trend to shorter working lives, to earlier retirement ages, as shown in Figure 5. And it is not just at ages typical of retirement that labor force participation of men has been declining, but also at prime working ages as well, as shown in Figure 6 for the US. Indeed, the decrease in work is not just measured in terms of years of work, but also the length of the work day, the work week, and the work year. The pattern for women is more complex as changing work roles for women have been combined with the same underlying trend.

Given at least a century of these trends, it is natural to ask why aging has become a major issue in pension design over the last two decades. By basic accounting, any pension system, whether fully, partially or not funded, must adapt in some form to this

Figure 1

CRUDE BIRTH RATES, 1901–1993

birth per 1 000 population

Legend: France, Italy, Sweden, USA

Source: Mitchell (1998a and 1998b).

Figure 2

REMAINING LIFE EXPECTANCY AT 21, 1900–1995
Men and Women

years

France
Italy
Sweden
USA

Source: USA: Berkeley Mortality Database; other countries: Human Mortality Database.

Figure 3

REMAINING LIFE EXPECTANCY AT 65, 1900–1995
Men and Women

years

France
Italy
Sweden
USA

Source: USA: Berkeley Mortality Database; other countries: Human Mortality Database.

Figure 4

OLD-AGE DEPENDENCY RATIO[a]

France
Italy
Sweden
USA

projections
2010–2050

a) The ratio of people older than 65 to those between ages of 20 and 64.

Source: United States Census; Human Mortality Database; United Nations Population Information Network.
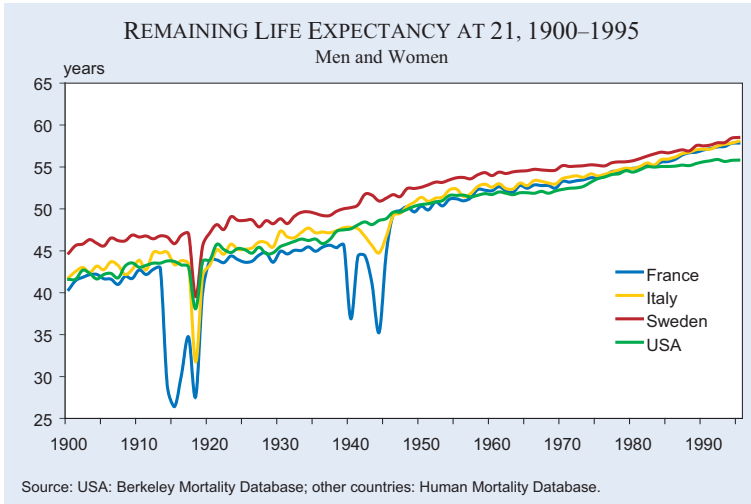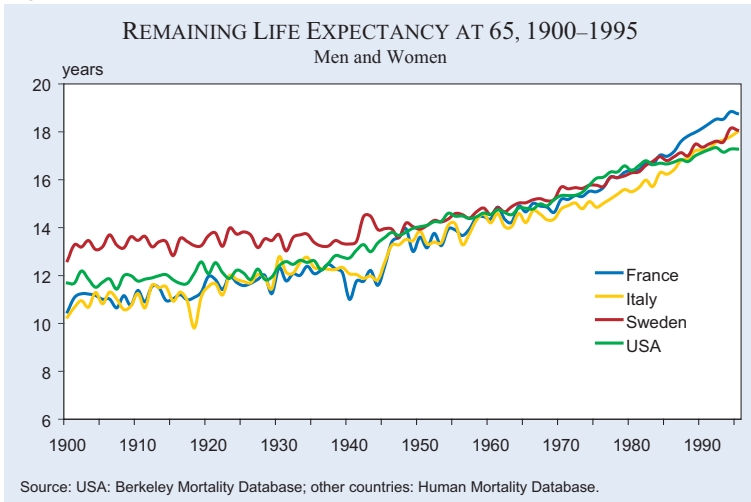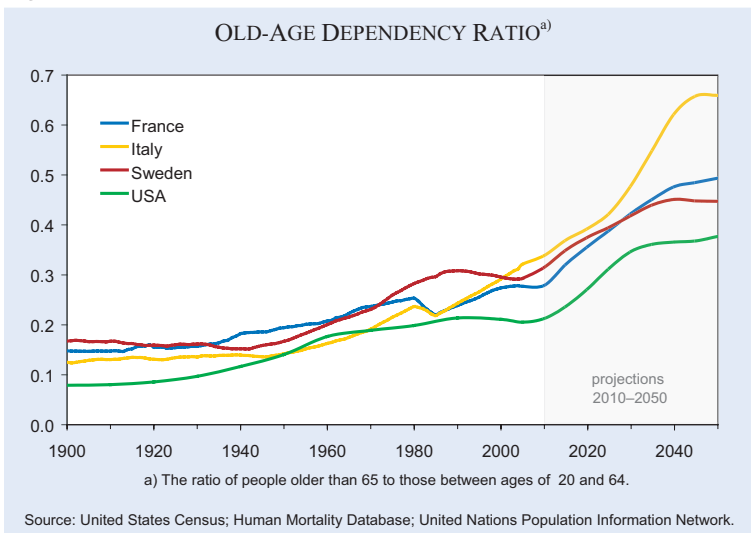
trend in mortality and retirement. The same levels of contribution rates, monthly benefit levels, and retirement ages are not mutually consistent with different demographic patterns. In response to aging, it is necessary to have some combination of increased contribution rates, decreased monthly benefits, and a later starting age for paying benefits. This is true whatever the degree of funding of the pension system.
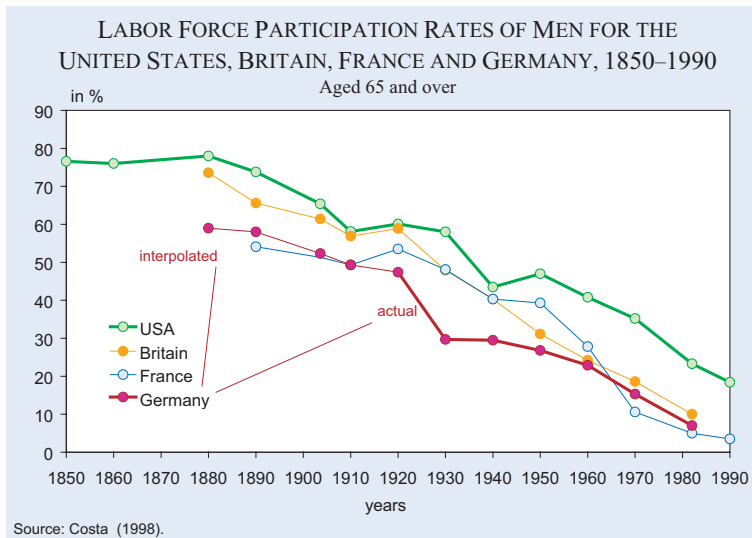
Partially-funded and not-funded (pay-as-you-go) systems must also respond to the changing old-age dependency rate. Key here is not the demography of the entire population, but the "demography" of the covered population. At times, increases in coverage have implied a different financial picture than would be suggested by overall demography. But in advanced countries, coverage is now complete or nearly so, so that a further increase in coverage is not a significant option and so population demography is a key driver.

And fully-funded and partially-funded systems must also respond to changes in wages and interest rates, which can be affected by the demographic trends. I suspect that globalization and the increasing development of poorer countries will be far more important for wages and interest rates than the demographic trends.

Adjusting benefits

Most advanced countries now have payroll tax rates that are sufficiently high that they are not considering significant further increases in contribution rates, so

Figure 5

LABOR FORCE PARTICIPATION RATES OF MEN FOR THE
UNITED STATES, BRITAIN, FRANCE AND GERMANY, 1850–1990

Aged 65 and over

Source: Costa (1998).

tality projection). This is the approach taken in the hybrid defined benefit system called a Notional Defined Contribution system, and has been implemented in Sweden, with quasi-actuarial adjustments. And the Swedish approach also adjusts the increase in benefits for a delay in the start of benefits on a quasi-actuarial basis. The Swedish approach to increasing benefits for a delay in their start is an excellent way of avoiding excessive implicit taxes on continued work, which unfortunately encourage too much early retirement and plague many systems.[2] Some system of automatic adjustments for life expectancy seems to me a valuable part of pension design. And the lack of such adjustments has been a major part of the financial concerns generated by the demographic trends.

I will focus on the other two variables, the level of benefits and the ages at which benefits can be claimed.[1] To frame the options, consider the adaptation to demography of a mandatory fully-funded, defined contribution pension system that bases annuities on market pricing. In this case, all of the adjustment would be in terms of the monthly benefit for any given retirement age. And the adjustment would be automatic, not requiring changes in the pension system rules. Of course, workers could choose to work longer in order to have larger monthly benefits. And the size of the benefit increase for a given delay in the start of benefits would also automatically adjust to changing life expectancies. It would take changes in the rules to raise the earliest age at which benefits could be started or to raise the contribution rate. Either of those might make sense if the replacement rates – monthly benefits relative to past monthly earnings – became too low to be doing a good job of fulfilling the social needs that the pension system is trying to address.

Similarly, a defined benefit system, with or without some assets, could adjust benefits automatically based on mortality data (with or without a mor-
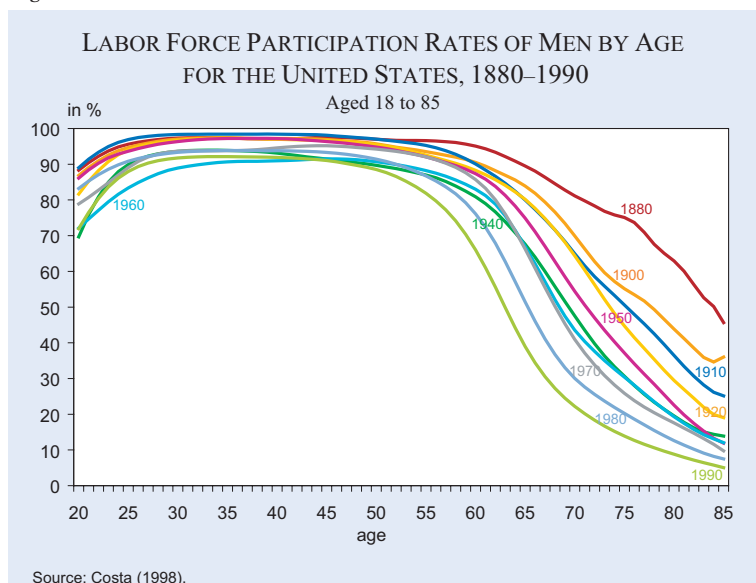
But an adjustment for remaining life expectancy, by itself, is not necessarily sufficient for financial stability with decreased growth in the payroll tax base and thus in revenues. So Sweden has also incorporated an adjustment in the pension system's notional interest rate based on the financial position of the system. This can further reduce future benefits to limit the

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[2] Excessive implicit taxes on continued work have plagued some retirement systems. But a zero implicit tax on continued work is not part of an optimal system providing insurance and redistribution.

Figure 6

LABOR FORCE PARTICIPATION RATES OF MEN BY AGE
FOR THE UNITED STATES, 1880–1990

Aged 18 to 85

Source: Costa (1998).

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[1] In contrast, together with Peter Orszag, I have called for tax increases to be part of the adaptation to longer life expectancy in the US (Diamond and Orszag 2005).

risk of inadequate finances. And Germany has included an adjustment of benefits for the system's dependency rate.

While useful, putting a pension system completely on automatic pilot for its finances may inhibit revisiting design to better fulfill the social goals of the pension system. For example, if pensions in payment increase more slowly than wages, as can happen with price indexing of benefits in force, longer lives after retirement mean that the lagging of pensions behind wages becomes more important. Or a system that includes a minimum pension might find it appropriate to revisit the size of the minimum. Or evolving relative life expectancies of men and women, along with evolving patterns of marriage and divorce, might call for reexamining the way the pension system works for all present and past family members.

Another approach, taken in the US in 1983, is to reduce future benefits based on projections of future life expectancy. I think this approach is not as good as automatic adjustments since there is great uncertainty about future mortality. Indeed there is considerable debate among demographers and actuaries about the likely trend in future mortality. Several recent reform proposals in the US do incorporate automatic adjustments for life expectancy.

Automatic changes in benefits based on life expectancy should follow three principles. First, the rules should relate to the date of birth not the date of retirement. Otherwise many workers will retire just before a reduction in the benefit formula in response to improved mortality. Such an incentive to retire is inefficient. Second, changes should be made annually. Otherwise the system will produce large changes in benefit levels across nearby cohorts. Such large changes are inequitable, as benefits will differ more significantly between those born in successive calendar years, some of whom are born just days apart. Large changes are also more difficult to sustain politically. And third, it is better to have explicit rules for changing benefits, rather than relying on some group to review and adjust them in light of experience. Greater predictability and decreased political pressures seem better with automatic adjustment with given rules. Nevertheless, there always remains the option of legislation to change whatever the automatic rules produce.

The earliest age for starting benefits

If benefits vary with the age at which they start in a roughly actuarial way, then increasing the age at which benefits can first be claimed with no other changes does not significantly impact the finances of the system. To see the interaction between the earliest pension age and finances, let us consider the system in the UK. Currently, the earliest pension age is 65 and if a worker chooses to delay the start of benefits until age 66, the monthly benefit is increased by 10.4 percent. To increase the earliest pension age without also reducing benefits at ages when they can still be claimed, eligibility to claim benefits could start at 66 rather than 65, without reducing the size of benefits paid as a function of the age at which they start at 66 or beyond. In contrast, the 10.4 percent increase in benefits for the first year of delay in benefits beyond age 65 could be removed, with or without denying the ability to claim (reduced) benefits at age 65. By eliminating the right to claim benefits at 65 without lowering benefits at 66 and beyond, the pension system has lower expenditures for workers at 65 (since benefits are not being paid) and higher expenditures for those 66 and beyond (since more workers are receiving the 10.4 percent increase for not starting benefits at 65). The net impact on finances, on a present discounted value basis, is not large (indeed it is zero if the benefit increase is strictly actuarial). Thus, the earliest pension age should be based on fulfilling its social role, on seeing that pension levels are adequate and are available by the time a significant fraction of the population should sensibly be receiving them. Unfortunately, the UK uses the same variable, the State Pension Age, for these two separate functions – the earliest age for claiming benefits and the key parameter for determining benefits. Thus it is not simple to change the two separate functions on different schedules, as should probably be the done.

Mandatory pension systems are mandatory because of a concern that left to their own devices too many workers would not save adequately for retirement. This concern does not fully go away as workers age and is the basis for judging what would be a good earliest age for claiming benefits. Increasing the earliest pension age from 65 to 66 would hurt some workers who ought to start benefits at 65, given their job opportunities, financial position and life expectancy (including the position of their spouses). On the other hand, increasing the earliest age for claiming benefits helps workers

who would start benefits at 65 but would be better off if they waited until 66, because of the increase in annualated benefits (possibly their only annuity) and possibly because working another year, given available options, is worthwhile for improving their remaining lifetime finances. Choice of an appropriate earliest age for claiming should balance these two factors.

If replacement rates shrink in response to longer lives, it becomes plausible that a better earliest pension age is a later one. But, I have not seen any appealing simple principle for adjusting the earliest pension age in step with life expectancy. Such a link would need to be based on an expectation of how much longer people who retire early should work in response to lower mortality rates. But the age at which it is sensible for a worker to retire depends on more than just life expectancy. It depends as well on a worker's ability to work, interest in work, and the availability of jobs. All of these will change as mortality decreases, but not necessarily in a simple relation to life expectancy. A sensible retirement age also depends on the extent to which, because of the trend to higher earnings, workers are more interested in retiring earlier. Furthermore, the diversity in the labor force and the appropriateness (in some cases the need) for some workers to take early retirement also underscore the importance of preserving some early retirement options. And future declines in mortality will widen the variance in ages at death. And they may continue to involve more rapid rates of decline in mortality rates for higher earners. These factors, if anything, *increase* the importance of providing an option of early retirement for those with shorter life expectancy.

There may be a perceived political gain from hiding a cut in monthly benefits (from any given starting age) by increasing the earliest pension age and providing the same benefit as had been provided at the earlier age. But that is a cut in monthly benefits at any given age of starting benefits. Apart from its politics, the choice of an earliest pension age should be based on fulfilling its social role.

Early retirement and unemployment

Some people think encouraging early retirement is a good way to reduce unemployment. But that is a fallacy that ignores the reaction of the supply of jobs to the supply of labor. When more workers are available, firms are more willing to hire because suitable labor is easier to find and equilibrium earnings tend to be somewhat lower. The century-long trend to earlier retirement, noted above, has not been accompanied by a matching decline in unemployment.
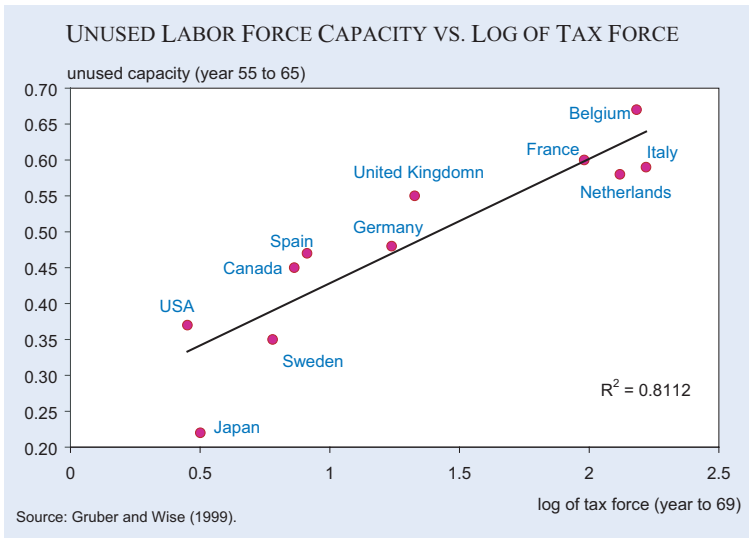
This trend suggests that greater income levels (both higher earnings and access to better investment opportunities) are a key driver of retirement decisions. Yet the details of pension systems also matter greatly. This has been found in the comparative studies of pensions and retirement in 11 countries by a team led by Jonathan Gruber and David Wise (Gruber and Wise 1999). In particular they employed a simple measure of the incentives inherent in pension rules by calculating an implicit tax on earnings; that is, the decrease in expected lifetime income as a consequence of the pension rules should a worker continue earning for another year. The studies in the Gruber-Wise volume calculated such implicit taxes for each of the 11 countries in the project. And they defined a variable they named the "tax force" by adding up the implicit taxes from the age at which a male worker becomes eligible to claim a retirement benefit up to age 70.[3] In a crude, aggregate way, this variable measures the extent to which the design of the pension system contains a financial incentive to do less work, reflecting both the earliest age for starting benefits and the implicit taxes thereafter.

To see how this measure of retirement incentives is related to retirement across their sample of countries, they used a simple aggregative labor supply measure. For each age between 55 and 65, they calculated the fraction of the male population not in the labor force and then added up these fractions over these ages. They named the variable "unused productive capacity." Regressing unused productive capacity on the logarithm of the tax force, there is a strong correlation and a sizable, statistically significant coefficient, as shown in Figure 7.[4] Moreover, time series evidence and analyses based on individual data suggest that at least a large part of this correlation is causation from implicit tax incentives to early retirement.

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[3] The focus here on male labor force experience recognizes that increases in female career patterns that have marked many countries in recent decades have varied in timing and size across countries, making it harder to isolate the impact of pension rules on labor supply by analysis across countries.
[4] At the mean, the elasticity of unused capacity with respect to tax force is 0.36.
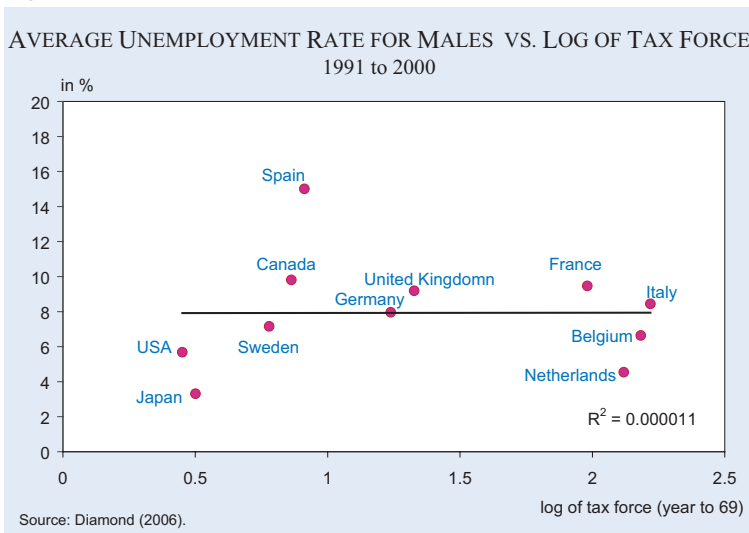
Figure 7

UNUSED LABOR FORCE CAPACITY VS. LOG OF TAX FORCE

Source: Gruber and Wise (1999).

erally shorter term and not systematically improved long-term. Discouraging work by high implicit taxes is an example of large inefficiencies (deadweight burdens) which do not accomplish social goals and should be avoided.

Increased funding

What is the role of increasing the funding of pensions for dealing with the demographic trend? As indicated above, a fully funded pension system needs to adapt to changing demography as well.

Thus the implicit taxes from the pension plan have a strong effect on retirement. One can then check whether they also have a strong effect on unemployment by regressing male unemployment rates, measured by a decade long average unemployment rate, on the same variable – the log of the tax force. Whether interpreted as the impact of implicit taxes from pensions on unemployment or as an instrumental variables measurement of whether early retirement affects unemployment, the answer is clear – there is no effect, as shown in Figure 8 (see also Diamond 2006).

Thus it is a mistaken policy to have very high implicit taxes that strongly encourage early retirement (and which may affect the pension system long-term) as a response to unemployment which is gen-

The extent of the needed change for longer lives is similar to that of an unfunded system. The change needed in an unfunded system for slower labor force growth is replaced by the change needed for lower interest rates, if that should happen. Thus the essence of increasing funding for the mandatory system is to distribute the costs of adapting across revenue sources as well as benefit cuts and to distribute the patterns of benefit cuts and tax increases differently across generations. Funding may also alter the political viability of different kinds of changes, possibly for the better or for the worse. Of course, some individuals will sensibly respond to lower replacement rates in the mandatory system by increased voluntary savings, and such a response is sensibly encouraged by tax policy.

Economists recognize that the real gain from the funded defined contribution (DC) accounts is a change in intergenerational distribution; that a widely-made argument of higher returns from funded DC accounts is not a legitimate argument. Let me present and correct that argument. Some analysts and politicians compare the long-run return on assets with the long-run return in a pay-as-you-go (PAYG) system, which, as is well known, is the rate of growth. Since long-run rates of return exceed rates of growth, this is sometimes presented as a

Figure 8

AVERAGE UNEMPLOYMENT RATE FOR MALES VS. LOG OF TAX FORCE
1991 to 2000

Source: Diamond (2006).

pure gain. But it is wrong to ana- lyze policy by considering only the long run, not including the short-run costs and benefits. It would be wrong to say that hav- ing the rate of interest exceed the rate of growth implies that a funded system is better. A full analysis shows that there is no gain available for everyone from funding per se, but an intergenerational redistributi- on, which may be worthwhile or may not be worthwhile.

This correct argument can be seen by considering the infinite- horizon present-discounted- value (PDV) budget constraint for social security. Basing benefits on individual accounts does not change this constraint per se – taking some social security revenues and moving them into funded indi- vidual accounts leaves behind a revenue gap. Combining the need to fill this revenue gap with the other effects of creating the accounts leaves the PDV constraint roughly unchanged. The overall rate of return, which equals the rate of interest on assets, minus the extra taxes needed because of the revenue gap, is equal to the rate of growth, just as before. In contrast, raising revenues or lowering benefits do change the future PDV constraint. And obtaining a higher rate of return on whatever assets the system holds changes the PDV constraint as well.

There are two aspects to increased funding, both of which matter. One is the growth of national capital and the other is the fiscal (or accounting) position of social security. More growth of na- tional capital increases resourc- es available in the future; a stronger fiscal position for social security affects the politi- cal process that allocates costs and benefits in the future. So, economists tend to favor fund- ing that increases national sav- ings, not funding that is merely re-labeling or shuffling liabili- ties. To this end, increased fund- ing within social security should not be offset by larger govern- ment deficits outside social security.

Figure 9

SOURCES OF MEDICARE COST GROWTH SINCE 1970
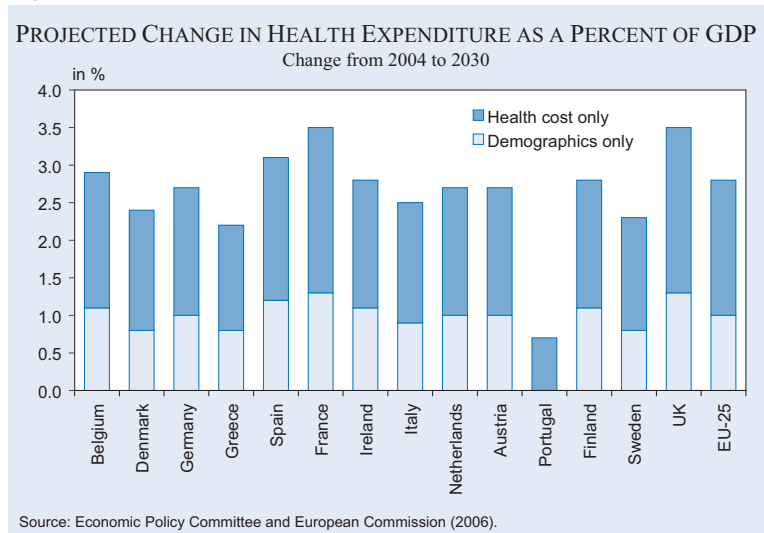
Source: US Congressional Budget Office.
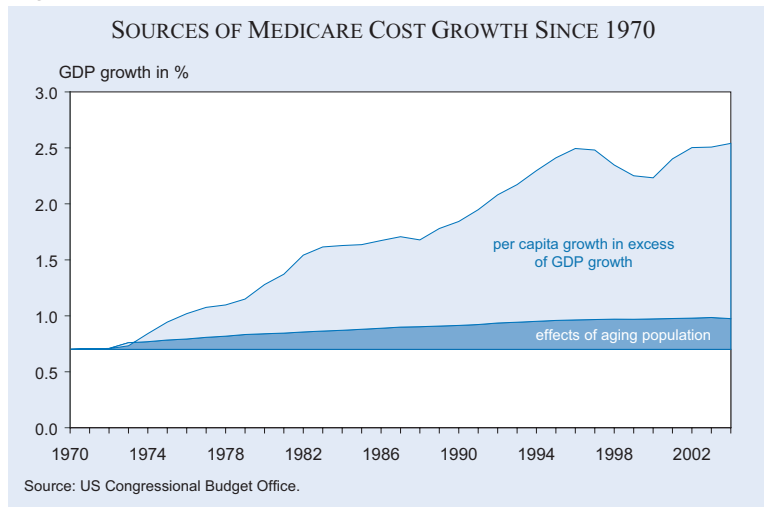
Medical expenditures

Turning to the expense of medical care, the issue is more complex for two reasons. One is that the impact of longer lives on medical costs depends on the changes that occur in the pattern of health across different ages. Hence different assumptions about improved health imply different rates of growth of medical expenses. The second reason is that aging alone does not explain all of the medical care cost growth we have experienced or anticipate experiencing. The steady changes in medical tech- nology, indeed the revolution in biology, have pro- found implications for both the quality of medical care that can be delivered and its cost. While in principle ongoing research and development could raise or lower the cost of medical care, it seems to me that the future is likely to resemble the past, with better medical care resulting in greater expen-

Figure 10

PROJECTED CHANGE IN HEALTH EXPENDITURE AS A PERCENT OF GDP
Change from 2004 to 2030

Source: Economic Policy Committee and European Commission (2006).

ditures. Figure 9 shows the historic pattern for the over-65 population in the US. Similarly, projections of medical expenses note that aging alone is only a portion of anticipated cost increases, as shown in Figure 10. This makes it important to focus on the details of incentives (on both demanders and suppliers) to use medical care, incentives that affect prices of medical services, and incentives for research and development.

As a closing note, let us remember that projections are just projections and the future is uncertain. Thus systems need to be adaptive, to some extent automatically adaptive, rather than designed for a particular future, one that may not occur.

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PANEL

In addition to the above speakers, the panel, which was chaired by **Martin Wolf,** Associate Editor and Chief Economics Commentator of *Financial Times,* consisted of experts from business, interest groups and the public administration.

Edward Palmer, Professor of Social Insurance Economics, Uppsala University, stressed that the current EU projection assumes a long-run fertility rate of 1.5 children per woman for the EU-25. Demographic risks caused by increasing longevity and low fertility can be managed to a large extent "if countries' social systems – especially pension policy and family policy – are appropriately designed to accommodate not only today's but also tomorrow's demographic and economic realities". Apart from a family policy that subsidizes child birth and supports female labor force participation,

a well-designed pension system is urgently needed that counterbalances the effects of increasing longevity and low fertility on pensions. Both, the financial defined contribution (FDC) scheme and the non-financial defined contribution (NDC) scheme accomplish this, albeit in different ways. Moreover, the defined contribution (DC) schemes seem to have the advantage over the defined benefit (DB) schemes. The DC schemes are amenable to flexible retirement, which can promote longer working careers for older workers, while they are neutral with respect to labor mobility.

Hans Rudolf Schuppisser, Confederation of Swiss Employers, presented the Swiss government's future strategy to overcome the financial shortages caused by the rapidly changing demography. "At the moment the Swiss government is trying (1) to stabilise its health insurance system, (2) to find a solution for the old age pension system by introducing the retirement wage of 65 for both women and men combined with a slower revaluation of pensions (the 1st pillar) as well as by lowering the conversion rate of occupational pension plans from the current 7.1 percent to 6.4 percent in 2014 (the 2nd pillar), for example." A discussion about raising the retirement age to 67 is not on the agenda at the moment. For years his organisation has recommneded the introduction of a higher official retirement age in the next decade and an improved combination of children day-care facilities and school system in Switzerland.

Craig L. Fuller, Executive Vice President of APCO Worldwide, Washington DC, reported the serious US problems related to the financing of the social insurance system. "Today the ratio of workers to social security beneficiaries is 3.3 to 1 in the US. And, in 2040 there will be two workers for each beneficiary. At the beginning of this year the US Social Security Trustees suggested that the annual sum of social security benefit payment will exceed the flow of tax income into the system starting in 2017. Thereafter the Trust Fund assets held by the Treasury will be utilised; however, they are projected to be exhausted in 2041." Furthermore the US Medicare programme paid benefits of \$402 billion in 2006 while yielding income of \$437 billion. Quoting the recent report of the US Medicare Trustees he argued that the Hospital Insurance Trust fund is also expected to be exhausted in 2019 and the financial outlook for the Medicare programme continues to raise serious concerns in the US.

Peter Schnabel, General Director of the Social and Cultural Planning Office of the Netherlands in The Hague, pointed out that there are several types of social security systems in the OECD which include: the liberal, Anglo-Saxon type, the corpora-tist/conti-nental model, the social-democratic/Nordic regime, the system prevalent in the Mediterranean countries and that in the new, modern EU states in Eastern Europe. Examples of social security systems that are the most vulnerable but are also quite flexible in adjusting to future needs appear to be the corpo-ratist regimes that are presently in effect in coun-tries like Germany, the Netherlands, Belgium and France. He added that the pension systems do not always run parallel to the social security systems. They can be organised publicly or privately, capital-based or tax-based, coverage can be universal or selective, they can offer low or high level pensions, and be partly voluntary and partly mandatory. In his opinion, pensions are likely to become a serious problem sooner in those countries where the absence of a capital-based system is combined with universal coverage and generous allowances. Apart from the cases in France and Germany this has also recently emerged as a sensitive political issue in the Netherlands.