1-1-2003

Risk Management for Global Aging: Perspectives on the Challenges Facing Industrialized Countries

Pension Research Council
The Wharton School, University of Pennsylvania, prc@wharton.upenn.edu

Risk Management for Global Aging: Perspectives on the Challenges Facing Industrialized Countries

Disciplines
Economics

Risk Management for Global Aging: Perspectives on the Challenges Facing Industrialized Countries

By the Pension Research Council,
The Wharton School of the University of Pennsylvania

PRC WP 2003-1

Pension Research Council
The Wharton School, University of Pennsylvania
3641 Locust Walk, 304 CPC
Philadelphia, PA 19104-6218
Tel: (215) 898-7620 ● Fax: (215) 898-0310
Email: prc@wharton.upenn.edu
http://rider.wharton.upenn.edu/~prc/prc.html

Pension Research Council Working Papers are intended to make research findings available to other researchers in preliminary form, to encourage discussion and suggestions for revision before final publication. Opinions are solely those of the authors.

The research reported herein will be published in *The Pension Challenge: Risk Transfers and Retirement Income Security*, edited by Olivia S. Mitchell and Kent Smetters. For further information see http://rider.wharton.upenn.edu/~prc/prc.html. Support for this research was generously provided to the Pension Research Council by the Financial Services Forum, and by the Financial Institutions Center at the Wharton School. Editorial assistance was provided by Susan Warner. Opinions or errors remain those of the authors.

Risk Management for Global Aging: Perspectives on the Challenges Facing Industrialized Countries

By the Pension Research Council,
The Wharton School of the University of Pennsylvania

Aging populations in the developed world will have a profound impact on the economy and society of those nations over the next half-century. Furthermore, the impact of population aging will be felt beyond national borders, presenting challenges throughout the globe. The extent of the problems and prospects for globally-based solutions were taken up at the Wharton School during a recent series of discussions on "Risk Transfers and Retirement Income Security". The event was co-sponsored by the Financial Services Forum and the Pension Research Council, with assistance from The Financial Institutions Center of The Wharton School of the University of Pennsylvania.[1]

I. Implications of Global Aging

George Vojta, President of the Financial Services Forum, believes that the events of September 11, 2001 indicate a strong potential for continued violence in a world marked by vast disparities in wealth. To get emerging market economies on a path toward sustainable development, he contends, richer nations need to contribute not only direct aid but also foreign direct investment and encourage global trade. At the same time, industrialized countries face stresses related to the looming increases in their elderly population that will have seismic effects on Western economics. "What is coming to the fore now is a sense that considerable damage will

---

[1] This material is intended for publication in a forthcoming volume from the Pension Research Council, *The Pension Challenge: Risk Transfers and Retirement Income Security*, edited by Olivia S. Mitchell and Kent Smetters; please refer to http://rider.wharton.upenn.edu/~prc/prc.html.

be wrecked on the major economies of the world from the implications and consequences of global aging," he states. "The equation for global prosperity is at risk."

Market Stresses to Come

Maureen Culhane, senior member of the Strategic Relationship Management Group at Goldman, Sachs & Co., marshals data to show that populations of rich developed nations will decline and age, while poorer nations will account for most of the world's future population growth. The impact will be felt in capital markets, in consumer products, and across all industries, including defense, she believes. "Global aging will change everything in the world."

In 1950, there were seven developed countries among the 12 most populous countries: the United States, Russia, Japan, Germany, the United Kingdom, and France. But by 2050, United Nation forecasts show only the United States will remain on the list. The others will be displaced by Pakistan, Nigeria, Brazil, Congo, Ethiopia, Mexico and the Philippines. Culhane adds that the shift in population from rich countries to poorer nations will only heighten global resentments. "Whereas Europe, Japan, and the United State all have approximately the same per capita GDP, this list of other countries mostly weighs in with $800 per capita per year; furthermore, they can see us on the Internet and on TV." Europe made up 22 percent of the world's population in 1950, but it is expected to account for only six percent in 2050 according to U.N. statistics. Japan's three percent share in 1950 will drop to one percent in 2050, and North America will decline from seven percent to five percent. On the other hand, Latin American will grow from seven percent to nine percent. Asia is expected to increase from 52 percent in 1950 to 57 percent in 2050. And Africa, which made up nine percent of the world's population in 1950, is expected to account for 21 percent at mid-century.

Fertility rates are the main reason for the shift, notes Culhane, who states that birth rates typically decline as a population grows wealthier and women more highly educated. She points to U.N. figures that showed the fertility rate in Europe from 1960 to 1965 was 2.6. By contrast, it is now 1.3 with a projected increase to 1.8 in 2045 to 2050. The same current and future rates are estimated for Japan. The U.S. rate of 3.3 in 1960 to 1965 has dropped to 1.6 and is forecasted to rise to 1.9 in 40 years. Asia and Latin America now have rates of 2.5 and are forecasted to drop to 2.1 by 2045 to 2050. Africa with a current rate of 5.0 is expected to drop to 2.4 in 40 years. However, the up-tick projected for industrialized countries is suspect, according to Culhane. After a recent trip to Japan, she concluded that: "There is no one who believes it will happen. They believe it will decline even more. All these numbers are predicated on an upturn and if it does not happen everything gets worse."

Life expectancy has grown in the richer nations, in part by improvements in health care, adding to the aging equation. Japan is expected to lead the world with a life expectancy of 88 in 40 years, with Europe, the United States, and Canada all expected to be over 80. As a percentage of population, Spain, Japan, and Italy are expected to have 35 percent of their populations over age 64 in 2050, with 12 percent over age 79. "People over age 79," Culhane notes, "are expensive people."

Meanwhile, the working age population, which typically helps support retirees through government pension schemes, is expected to decline as a percent of population in many countries over the next half-century. There are now 4.5 workers supporting every retiree, but that will drop to 2.5 by 2050 according to U.N. forecasts. The support ratio in Japan will drop from 3.3 to 1.1, and from 3.4 to 1.1 in Spain. However, the rapidly aging populations still control the vast majority of the world's wealth. "Follow the money," she indicates, "and the money is all in the western world.” In 1998, the United States had 46 percent of the world’s financial assets of $63 trillion. Eight countries controlled 92 percent of the assets. “These are the guys who make the difference,” she argues: “Money makes money.”

Economic growth and productivity are likely to slow with aging populations, she predicts. In Japan’s great industrialization period, GDP tripled in 30 years, Culhane points out. Now estimates are that Japan’s GDP will be just 35 percent higher in 2050. “With slow GDP growth, it is very difficult to stimulate economies,” says Culhane. She argues, that in most measures, the United States is better off than other aging Western nations, with a higher fertility rate and immigration of one million people a year. While productivity is one key to growth, she said, the other is adding people to the workforce. “Every one will be working longer because all these young people have to support all these old people. It’s a huge transfer of wealth, and if you have more wealth, it’s easier to transfer.” In many rich nations, elderly people have been promised rich retirement benefits. In Italy, retirees were promised 80 percent of their wages at retirement in 1999. Italy has had two reforms since, changing the guarantee so that in 15 years the benefit will be only 60 percent of wages. Similar reforms are being discussed in France, Germany and Spain.

“These four countries have no funded pension plans,” points out Culhane. As of 1999, Germany had set aside just seven percent of GDP to cover private and public pensions; Italy had set aside six percent, France five percent, and Spain only two percent. In the United Kingdom, the United States and Canada, where there is a greater emphasis on private and defined-contribution plans, Culhane finds that the situation is better, with a range from 54 percent of GDP in Canada to 95 percent in the United Kingdom, set aside. Beyond government programs, total household financial assets reached 380 percent of GDP in the United States in 1999, where consumers have only a moderate amount of debt. But in Germany, she said, only 154 percent of GDP is held in financial assets. "That's all they have, 1.5 years of GDP," concluding that this will imply very high taxes.

In France, things are worse, with pensions and other government outlays accounting for 51.4 percent of every dollar of GDP, according to 2001 OECD statistics. Healthcare expenses for a 65-year-old are three to five times that of a person under 65, she notes. The concern is that high taxation to support government pension promises and other programs will eventually choke off global competitiveness. She argues that in Germany, workers are the most productive and expensive in the world, but they take home only 49 percent of their pay. Social security and other payroll taxes consume 34 percent of a German worker's pay and income taxes another 17 percent. "They're taking home no money," states Culhane. On a recent visit to Germany, she uncovered great concern about how the country would maintain employment. "No one is building operations in Germany," she says. "No one."

Turning back to the capital markets, Culhane notes that funded pension assets have a strong correlation with a nation's stock market capitalization as a percent of GDP, with Switzerland, the Netherlands, the United Kingdom, and United States showing a better performance in funded assets. Norway, Brazil, Spain and Italy had lower stock market capitalization and fewer pension fund assets as a percent of GDP. As for asset allocation, the United States and the United Kingdom both had more than half their pension, insurance, and mutual fund assets in equities, followed by Canada with just under 40 percent in 1999. "Basically, no one else out there has much in equities," she adds. Culhane forecasts pension assets held in equities will grow in Japan and Europe by 2010. For example, she predicts that Germany's equity allocation for pension assets will grow from 22 percent to 47 percent, and

Spain's will double from 22 percent to 44 percent. However, in her view, the United States has peaked at 56 percent in 1999, largely because of the fall-off in share prices that has already occurred.

The Outlook for Aging Nations

Paul S. Hewitt, Director of the Global Aging Initiative, is known for his rather pessimistic outlook for the world's aging nations. However, he does offer some room for hope, arguing that globalization linking the economies of poor, growing nations with the developed countries creates new sources of money to fund the aging world's retirement years. He recalls that he recently explained to the chief executive of Fiat that the United States will experience a 20 percent decline in the number of people aged 25 to 45 in the next 20 years. The chief executive said he was less concerned about that, than the fact that half of Italian men under 30 are unemployed. "The upshot," said Hewitt, "is that Fiat will take its money out of Italy and it will move to where markets are growing." "Hopefully," he continues, "this is a good sign that capital is mobile and that capital will have high earnings. But there are potential bumps in the road."

Hewitt envisions two possible scenarios arising from the aging of the Western Industrial nations and Japan. The first he calls "The Aging Recession" scenario, in which the aging nations wind up resembling financially stricken Argentina. In this view, a rising aged population and low birth rates lead to slow or declining economic growth. Against this political backdrop, however, it would be very difficult to raise taxes or cut benefits. That could lead to default, points out Hewitt. "There will be global capital shortages as everybody sticks a straw into the capital pools and sucks hard," he continues. "There will be political instability because the Third

World won't like the fact that old rich countries are using up all the capital they need for investment to be more productive."

The other scenario, which he calls "A New Global Era," has a rosier outcome. In this vision, global dynamism shifts from Europe to China, for example, where rates of return on investment are high. At the same time, European countries adhere to the Maastricht Treaty and avoid piling on debt, and somehow the ailing Japanese economy stabilizes. "The developing countries become tremendously wonderful places to invest. We have a boom of cross-border trade, and everybody lives happily ever after," opines Hewitt.

Worldwide, just about every country is skewing older because of increases in life expectancy, Hewitt affirms. But the aging explosion is primarily a problem in the developed countries. China also is facing a boom in elderly and will have an older age structure than the United States by 2030, he notes. People over 65 made up only two to three percent of the population 100 years ago. "Today they make up 15 percent and that will grow to 30 percent by 2050," states Hewitt. "This is an ongoing problem," he concludes.

Hewitt also discusses the impact of aging and depopulation on financial markets, and he concludes: "Asset values will be at risk, particularly real estate assets." The nature of investment will also reflect the aging population, he finds. "You'll have pressure for higher spending, and pressure for protecting older, less efficient industries," points out Hewitt. "Investment preferences will become more conservative, and as the overall investment environment becomes more conservative it will be less prone to generate spectacular breakthroughs."

Looking at demographic patterns over the next 30 years, he indicates: "It never gets any better." In Italy, for example, there are now five people for every one over age 80. By 2050, there will be more people over 80 in Italy than under age 20. "No country has ever gone down this road," explains Hewitt. He cites OCED growth estimates that in 2025 European economic growth will average 0.5 percent a year compared with 1.4 percent in the United States and 0.6 percent in Japan. "We aren't used to living with very slow growth, but it could become a way of life," believes Hewitt.

There will also be financial effects as retirees spend down savings "if they have any." Hewitt points out that 56 percent of Europeans have no savings and many Americans do not either. Fiscal pressure on governments will increase, citing a plan already in the works by the U.S. Social Security system to borrow $11 billion. "As we look ahead, even the most advantaged of the countries will have trouble," warns Hewitt. If Japan's shortfalls lead to default, European capital markets will suffer from contagion, with governments pressed to meet obligations to retirees. The ability to raise taxes is already limited, in his view, and dissaving will begin in earnest by 2015.

Government spending projections do not fully account for what is to come, believes Hewitt. "Our estimate is that health and pension benefits are going to grow more rapidly in the future than many governments project," he states. For example, the Japanese government predicts there will be no increase in spending for long-term care going forward, said Hewitt. He projects that if all pension fund obligations were financed with debt, by 2030 they would soak up all of the world's capital. The demographic shifts will also have implications for lifestyle, he said. For example, if aging countries try to keep the ratio of workers to retirees constant by increasing the age of retirement, the average person in France will be working until age 74. The typical retirement age in France today is 58.

Globalization, argues Hewitt, must be a key resource for the aging industrial nations. "You can outsource your labor-intensive work to the developing countries and concentrate on more highly compensated, higher productivity work," he concludes. Immigration, he adds, could also help ease labor shortfalls. "The good news is that we can invest our pension funds in countries with low productivity and large labor forces. This infusion of capital might be able to generate large returns, which can be shared back. In this way, young people can still support old people over national borders." Managing this transition will require significant change, particularly to existing entitlement programs. He feels that retirement funds must be more market-based and emphasize economic efficiency over job protection. "All of our social, trade, and investment policies are geared toward protecting employment," states Hewitt, "but going forward the primary source of social crisis will be labor shortages."

Finally, Hewitt points out that aging societies need to retool their welfare states to encourage life-long productivity instead of workforce withdrawal. "It's the global economy that will be either the savior or the bane," Hewitt argues. "It's going to require a lot of work in the developing world to take advantage of the potential capital flows that will be coming their way."

The Future of Retirement Income Security

William G. Shipman, chairman of CarriageOaks Partners LLC and co-chairman of the Cato Project on Social Security Privatization, also puts a global twist on the implications of rapidly aging populations. "Retirement income security is one of the most important domestic issues any and all countries will face in the next 25 years or so," states Shipman. He feels that most countries in the world provide some kind of income security for their elderly that is usually financed through specified payroll taxes. "It is terribly important to keep these payroll taxes at a reasonable level and that there be a lot of workers relative to beneficiaries," he points out. "But birth rates are going down and there is a demographic squeeze that makes it more difficult to finance retirement plans through a payroll tax. This is what's happening around the globe."

Most governments have responded by raising taxes, because they view the issue as a cash-flow problem, Shipman believes. More recently, countries have gone from raising taxes to cutting benefits. But this too, he warns, takes a cash-flow approach, rather than addressing the underlying causes of the looming pension funding shortfalls. “Neither raising taxes nor cutting benefits has anything to do with, or influences either the birth rate or life expectancy,” indicates Shipman. “These are nothing more and nothing less than financial patches.” He feels that taxes are already at a point where politicians find it difficult to raise them any more. Raising taxes can also have the opposite of the desired effect if it creates economic shortfalls because taxpayers simply avoid paying taxes. In the last two to three years, political leaders have begun to look at alternatives, most importantly a shift from pay-as-you-go government financing to a market-based system.

“This raises a whole host of issues and objections,” says Shipman. First, there are concerns about liquidity and whether capital markets could handle the new volume. But Shipman believes that capital markets can easily handle the inflow. His analysis found it would add an additional six minutes a day to fill the orders. “So if we can handle all of this from a liquidity perspective, can we handle this from the point of view of administration? How could we possibly go to a market-based structure in the United States with 140 million workers and do it in such a way that is cost effective?” he asks. “Many people have suggested you can’t do it. It’s too expensive.” He says: “Let me suggest to you this problem is solvable.”

In Shipman’s view, a three-level approach is required to remedy this situation. The first level would be a large, balanced, money-market fund, in which all investors would earn the same rate of return. These funds would be held in a stable dollar portfolio; after a year the portfolio would be unitized, and the investor would receive a certain number of shares. After some time, the funds could move to a second level, where workers could elect to invest in one of three funds. One would be comprised of an asset allocation similar to today's major defined-benefit programs, more or less a 60-40 mix of equities and bonds. A second fund, for those willing to take more risk, would have an 80-20 stock-to-bond ratio. The third fund would be more conservative, weighted 50-50 between equities and fixed-income investments. "These investment choices might be seen as age specific," notes Shipman. "If you know nothing about markets and finance, you do know something - you know your age. All you have to do is apply your age to the balanced fund setup." After time passed and the portfolio grew, Shipman argued that an investor might move up a third level, in which retail money managers could offer to manage the investment. These investment firms, Shipman cautions, would still be constrained in their asset allocations to avoid moral hazard problems, but it would provide competition.

In addition to this horizontal retail competition, Shipman also suggests that there must be competition between the second and third levels, allowing investors to switch back and forth. "With this horizontal and vertical competition you ensure the greatest number goods and services at the lowest cost," states Shipman.

Turning back to the issue of global aging, Shipman also suggests that globalization could play a critical role. He, too, points to the problem of rapidly aging populations in Europe and Japan. "Japan is aging at warp-speed," he finds, adding that Japan's population could be half its current size by the end of this century. "These are enormous challenges," says Shipman. But at the same time, the world's overall population is expected to increase 50 percent in the next half-century. "So maybe what we're going to see over the next 50 year or so is a reordering where there are extraordinary opportunities to sell products to an increasingly large population. It just may not be in the same places we normally go to," finds Shipman.

He also cautions that population is not the only factor in new markets: “If that were the case, China would have been one of the greatest economic opportunities and Hong Kong would not have existed.” But before developing nations can attract capital and create attractive returns on it, they must undergo structural changes. These include a shift to the rule of law from the rule of man, better enforcement of contracts, and stable currencies and inflation. Emerging industrial countries, he states, must provide “an environment that is friendly to capital, not just an environment that has a lot of people.” “If countries that are growing in population move this way,” he argues, “the opportunities will be unprecedented. We will see movement globally from financing social services by taxing people, to financing social services from savings and investment.” In sum, he believes that “if that happens, and if it is done correctly, we may be entering not a difficult period rather we may be entering a global renaissance in which markets become much more important in achieving the objectives of humanity across the globe.”

Forecasts Remain Uncertain

Further discussion of these points finds Culhane acknowledging that despite her dire forecasts, individual per-capita income in Europe and other parts of the developed world will continue to grow. “It will depend on how many people work and productivity,” she states, “but in almost all cases, in the developed world, per capita income will continue to grow. Our children will be better off than we are. “The larger problem,” she concludes, “is the redistribution of wealth within per capital income.” In a country like France, where 50 cents of every dollar of GDP is spent by government, employees believe they are working mainly to support the elderly. Eventually, she concludes, the tax burden will discourage people from working. Add to that global competitiveness problems and a country can find itself in a “selffulfilling" cycle of decline even with high per-capita income. "You will have high per-capita income but it will go from workers to non-workers," states Culhane.

Hewitt, too, stresses productivity and growth. He warns that the European population projections are probably not reliable, saying that it is an "open secret" in Europe that official projections indicate *increased* rather than *declining* labor force participation. "When one looks over the history of recessions, or slow growth, one finds it is accompanied by very low productivity growth," he notes. "Productivity does not grow when opportunities are not expanding and where markets are shrinking. The big question is whether productivity will continue to grow." As consumers age, he believes, demand will fall; whether capital will flow to riskier, but growing, markets overseas remains to be seen. "The big question for an aging society is, 'Can old workforces that are less adaptable and less inclined to embrace change actually become more nimble?' Everything will have to be geared toward increased productivity and that's going to be a very difficult trick."

Hewitt thinks individuals will need to work later, recalling that today's leisure-oriented retirement is a post-World War II phenomenon. "It was geared to dealing with the problem of unemployment which had been the root of social upheaval in Europe," he concludes. During the Cold War retirement helped keep social peace by taking older people out of the workforce to make room for returning veterans. On the issue of protection for women in retirement, he states that the problem is that women tend to leave the workforce at least for some time after they have children, pushing down their retirement savings and entitlement through defined-benefit plans. "In Germany there are no married women with children in the labor force," he indicates. "You make a make a choice, so culture matters, and in some cases it's going to have to change fairly quickly."

Culhane points out that women tend to live longer and, historically, have not had as much savings accumulated as men. “In countries without a high social security payment, like the U.S. and Canada, you do see women living less well,” she says. “In more socialistic countries that’s not the case.”

Cross-National Perspectives

Culhane believes that, in Germany, high taxes are discouraging investment. She recently met with officials at the Bundesbank who indicated that they fear it impossible to restructure the system, though had they stated that had they started reforms a decade ago, “we would have had a chance.” The crunch, when it comes at the end of this decade, will require them to cut benefits of people already retired. “This is going to be a serious problem,” concludes Culhane. She adds that when Japan recently tried to raise taxes to close budget gaps, consumption died off and with it economic growth and revenues from taxation.

Raimond Maurer, a Professor of Investment, Portfolio Management and Pension Systems at Goethe University in Frankfurt, suggests that Culhane’s assessment of German competitiveness might be too negative. In his view, budget limitations can be attributed to the extraordinary opportunity to reunify Germany. In the long run, reunification will be a boon to Germany. “I’m not so pessimistic,” he concludes, noting the rush by U.S. investment banks to participate in German pension reforms.

The apparent irony is that policy makers must now cope with aging and depopulation issues, whereas just a few years ago there was concern about overpopulation. “You still have problems with overpopulation in some countries,” he says. He points to Saudi Arabia, which had a population of 3.2 million in 1950. By 2050 Saudi Arabia’s population is projected to be 91 million. Hewitt does believe there are some advantages to global aging. In Sri Lanka, for example, the median age has risen to 30 and power seems to be transitioning from rebel bands to more mainstream political institutions. He also notes that during China's bloody Cultural Revolution, the country's median age was 18. "It's like getting older personally: a little maturity is a good thing," suggests Hewitt.

Shipman finds that the apparent 180-degree turn on the nature of the population problem is typical in many public discourses. "There are always alarmists. It is a way of getting attention for their point of view," he contends. "In most countries around the world, people have chosen to finance the needs of the elderly with a tax on the less elderly. That's not necessarily alarming, but we've got to do something about it. That's the great challenge countries face."

Culhane says that the combination of population decline in rich countries and overpopulation in developing nations adds to the difficulty of the global aging dilemma. "People are being born into $500 to $800 a year per capita lives, and at the same time the developed nations are shrinking," she notes. "For everyone's sake, there is a distribution issue that we're facing. It's not great to have all these children born into places where they will die and starve. That is the problem."

New Roles for Labor and Capital

Enron aside, numerous studies have shown a link between company stock holdings and productivity, and many company stock plans have made their employees wealthy. Shipman notes that Enron simply joins a long list of failed companies including Studebaker and the Bank of New England. "This is not a new issue. One reason Enron was brought to the fore is that there was hanky panky going on. The fastest way to stock market wealth is to own one stock," says Shipman. "It is also the fastest way to get poor. That's what diversification is about. People should not view markets in a poor light because a single stock failed."

Robert Myers, former chief actuary for the U.S. Social Security Administration, questions whether these forecasts of the impact of aging might be somewhat overwrought. He suggests that researchers should take into account the likelihood of people working longer, and he challenges the notion that U.S. payroll taxes cannot be raised. Instead, he says, workers will continue to enjoy higher real earnings. “Part of those real earnings can be taken away for Social Security taxes with the worker still having more real income and enjoying higher standards of living,” argues Myers.

Shipman concurs that many workers could stay on the job longer, “except for one ugly fact: there are expectations binding those working and those who want to retire with benefits rising as a function of age.” As to whether taxes could be raised, Shipman feels that they could “but what happens is there is a political backlash; at some point, people stand up and say, ‘I want to look at this in a different way.’ When they see this disconnect, they don’t want to raise the taxes further, they want to find a different solution.”

Finally, on the question of the role of technology in labor markets and its impact on the aging crisis, the speakers appear unconcerned that automation might be “killing off” jobs that could help pay for future retirement benefits. Some have been asked: “What about shifting the reliance from human labor to a tax on technology transfer?” Shipman, speaking for the assembled group, finds that there could be any number of new approaches. “There are other models out there,” he said. “But what is clear is that there must be new sources of savings and investing to get needed economic growth.”

II. Understanding Pension Risk Transfers

During the global stock market boom of the 1990s, retirement savings began to shift into defined contribution plans, away from defined benefit plans. But the recent market downturn and the highly publicized Enron collapse has breathed new life into the idea of adding guarantees to these new plans. The costs and benefits of pension risk transfers are the focus of ongoing research by Olivia S. Mitchell, executive director of the Pension Research Council and a Professor of Insurance and Rick Management at Wharton, and several other academics as well as practitioners. Mitchell served recently on President Bush’s Commission to Strengthen Social Security, and she notes that the commission did discuss guarantees thought it did not take a formal position. She concludes: “We all realized that we needed a lot more information about the costs and benefits of pension risk transfers.”

International Pension Guarantees

An analysis of retirement guarantees around the world to lend global perspective of the debate has been prepared by Jan Walliser, an economist in the African Department of the International Monetary Fund. He finds that most mandatory public defined-contribution plans feature some form of guarantee. In some cases it is a flat benefit, independent of contributions, while in other cases it is “topped up” to provide a minimum benefit. Still others provide a guaranteed rate of return. He notes that pension guarantees are intended to protect retirees’ income and alleviate poverty, though they can be costly and introduce moral hazard into saving and investment decisions. The advantages of a flat benefit are clear: the costs are easy to project, based on simple demographic and economic assumptions. On the other hand, a poorly targeted flat benefit will result in costly payments to affluent members of the society. A guaranteed flat benefit can also distort portfolios, encouraging people to hold more risky assets. By offering a contingent minimum benefit, retirement systems can save on cost, but their true cost then becomes more difficult to calculate, leading budget authorities to underestimate potential liability.

Walliser suggests that governments must manage pension risk with tight monitoring and be prepared to aggressively seize assets if a risky situation develops. This may be difficult to do in the case of individual accounts, of course. Providing price guarantees for underlying risk is also difficult to do in a defined contribution context, he argues, because of the many different portfolios. Walliser finds three main models for retirement guarantees around the world. The British model is a two-tiered system with a flat benefit, and a second, optional tier, which permits a large variety of choices but limits the level to which government is ultimately liable for retiree pensions. Other countries with historic ties to Britain have similar systems. In Australia, the income guarantee is means-tested and financed out of general revenues. A difficulty with this approach is that retirees tend to spend their lump sums on real estate or assets that are not counted against eligibility. Singapore and Malaysia use provident funds in which retirement savings are pooled in a single large account with a government-guaranteed minimal return. This leads to conservative investment and poor returns.

A second model, popular in Latin America, is one in which the government offers a guaranteed rate of return but also takes a portion from the upside gains. Yet a third approach is used by the transition economies of Eastern Europe, where an older population and larger labor markets led companies to maintain a larger pay-as-you-go financed pillar than in Latin America. In Hungary, for example, reformers supplanted the unfunded defined benefit system with a mandatory defined contribution pillar with a contribution rate of 6 percent. This will augment the defined benefit replacement rate of 50 percent after 40 years, according to Walliser's research.

Voluntary defined contribution plans too have been subject to various types of risk transfer, as explored by John Turner, Senior Policy Advisor in the Public Policy Institute at AARP and David Rajnes, a research associate with the Employee Benefit Research Institute.

They find that such rate of return guarantees can be nominal or indexed for inflation; some guarantees are fixed and others are linked to a particular rate or to a capital market index. A "point guarantee" is similar to a cash balance plan, in which the worker receives a specified rate of return and the sponsor keeps returns above the guarantee. With a minimum guarantee, the worker receives the entire rate of return above the guarantee. Guarantees can be structured to provide "catastrophic" protection at a low rate of return or they can be set high to provide rate-of-return smoothing. This was used at Enron where executives received 12 percent returns. Guarantees can also be voluntary or mandatory, and they can account for the risk that the guarantee will be changed. The primary means of managing these risks is to hedge with insurance products or to develop a highly diversified portfolio. According to Turner, "hedging involves eliminating some of the risk but you give up some of the gain". Institutions providing capital to back the guarantees can include the employers' own operations or the defined-contribution plan itself through associated reserve funds.

Turner finds instructive the experience of countries with alternative types of pension guarantees in their voluntary defined contribution systems. For example, Brazil offers an "open" defined contribution plan that guarantees a real rate of return of six percent, with excess credited to workers' accounts. The weakening of Brazilian financial markets has retarded this plan's implementation, however. In Denmark, occupational funds have purchased insurance to underwrite guaranteed returns; in practice, however, the guaranteed set rate has decreased steadily from 4.5 percent in the early 1990s to 1.5 percent in 2001. Germany has capital guarantees, and in some industries, supplemental plans offer returns in the 3.5 percent range. New Zealand has changed the rate guaranteed in its provident funds for local government employees from four percent a year to four percent cumulative from the date of entry into the plan. There are interesting plans in the United Kingdom that offer a combination approach to benefits, in which the worker receives whichever is higher, the defined-benefit or defined-contribution payout.

In the United States, pension law restricts the structure of plans, although non-profits have considerably more freedom. Turner and Rajnes evaluate the United Methodist Church and YMCA plans where a board supervises reserve funds and each year determines the guarantee for the following year. The Methodist plan has reduced its guarantee from 6.5 percent in the 1990s to 3.5 percent in 2001. Other U.S. defined contribution plans covering government workers have plans that are linked to defined-benefit guarantees, though few voluntary defined contribution plans offer no guarantees. Looking ahead, Rajnes argues that rate-of-return guarantees will be central to future policy debates on pension reform.

Of course, investment performance during working years is only one of several risks in a defined contribution plan, states Judy Weiss, executive vice-president at MetLife in charge of Retirement and Savings in Institutional Business. Others include longevity risks and the prospect that inflation will erode the purchasing power of diligent savers. While the approach used by the Methodist Church and the YMCA is not allowed under ERISA, portfolio smoothing can be simulated with insurance products. She also predicts that the popularity of inflation-linked plans will fluctuate over time, saying: “I expect to see their popularity wax and wane as inflation goes up and down.” Nominal guarantees, she points out, require more capital than relative guarantees, and relative guarantees are of more value to individuals. “Financial well-being is largely a relative measure,” she notes, while agreeing that governments must understand upfront the cost of guarantees and their potential impact on behavioral risk. Weiss also endorses new and expanded public education, not only on saving for retirement, but also on how defined contribution funds should be spent during retirement. As retirees draw down savings, they are likely to spend a greater share on services than on goods, but services historically, are more prone to inflation. "An adequate single measure of inflation might be more difficult to determine because the cost of goods may not inflate nearly as much as services," she notes. "This means retirees will be needing these services just when the funds are depleted the most."

Zvi Bodie, Professor of Finance at Boston University School of Management, suggests that policymakers must distinguish between two types of guarantees: one that guarantees against market risk, and another that guarantees against default risk. The market-risk guarantee would be more relevant for defined-contribution plans, he believes. The other guarantee would be similar to the type of guarantee provided by the Pension Benefit Guaranty Corp., which protects beneficiaries of corporate defined-benefit plans. Others, including Kent Smetters, assistant professor of Risk Management at the Wharton School, worries that defined benefit plans have a mechanism to spread intergenerational risk, while individual defined contribution plans cannot be structured to pass through that risk. He feels that pricing guarantees becomes difficult, particularly in a political context. Projections could be made on a risk-adjusted basis, but it would generate a long list of numbers and almost all of them would turn out to be wrong. As Smetters argues, "Go to a policymaker and tell them that all those numbers are wrong and they're going to say, 'What's wrong with you?' The politics tend to be gravitating toward getting the "right" number, rather than doing it in a risk-adjusted way."

Weiss is wary of guarantees that could result in "closet" indexing by plan providers and ultimately drive down returns. She suggests that any guarantee should be developed in an environment where providers vie to become approved investment managers. "You would find many players wanting to gain market share, who would take risks, so they might have a chance to make a name for themselves," says Weiss. She also endorses annuities as a solution to longevity risk. "The risks don't end when you retire and get your check. You have to look at it in the retirement context as well." While focusing on rate-of-return guarantees might be helpful, she argues that the payout stage is also critical to the welfare of beneficiaries.

III. Designing Robust Pension Promises

The global move toward reform of pension systems has taken an interesting turn over the past few years as it shifted from a debate over pay-as-you-go versus funded schemes, to a more nuanced discussion.

International Pension Reform Movement

Increasingly, countries are moving toward the notion of a first layer of publicly funded security and another layer that is privately funded and managed. While exploring risk management in pensions, one must not overlook problems with government-managed pension reserves, a point underscored by Robert Palacios, senior pension economist in the Social Protection Unit of the World Bank. He finds that, when examining risks associated with public defaults, it is necessary to separate sponsor risk and market-based risk. Government pension schemes around the world have a poor record of managing reserves, according to Palacios. These problems can stem from failure in a number of areas including governance, pre-funding objectives, investment policy and processes, reporting and disclosure. "Doing one or two correctly is not enough," he states, "and one done badly could easily bring down the rest."

Palacios explores aspects of recent reform initiatives in Canada, Ireland, Japan, New Zealand, and Sweden, believing that these offer lessons on how countries can pre-fund retirement accounts and minimize the risk of political interference, which has historically been the root of poor investment returns in government plans. Japan and Sweden had significant reserves with low returns, but in these countries the funds were used for other public policy objectives. In Japan, they were used to fund the nation's so-called "second budget" of economic incentives; in Sweden, for mortgage lending. In New Zealand, the Green Party has forced ethical investment principles. Palacios proposes that nations must be mindful of such specific conditions when designing a plan. He also notes that each of the five countries arrived at the pre-funding option after rejecting the idea of private individual-account systems, primarily over concerns about administrative costs. Canada, Ireland, and New Zealand have professional boards overseeing the funds, which is not commonly seen in government plans. Canada and New Zealand use a two-step nominating process removing the finance minister by at least one step. Japan still has strong ties to top levels of government, but control has recently been switched from the Finance Ministry to the Ministry of Health and Welfare. All require external audits and allow external management of a portion of the accounts. The five countries studied also apply objective monitoring criteria, use benchmarks and, except for Japan, specify that commercial investment must be made.

Palacios has developed an index of accountability for 65 countries and the five countries with the new initiatives appeared near the top, with Japan ranking the lowest at only 13. Greater accountability is crucial to the long-term sustainability of a national pension scheme, says Palacios. However, he cautions that it will take time to see if these examples take hold and he said many countries do not have the conditions that make these reforms possible, such as open foreign exchange. He says a compromise hybrid solution might be to create a default central fund with an opt-out possibility that could require a shift to a defined-contribution scheme for pre-funding. That might eliminate the problem of partial pre-funding. "Ultimately the reliance is on the public to lead the board to accountability," he concludes.

Pensions in the Public Sector

Risk management for pensions in the public sector argued is often inherently biased against future taxpayers, according to Jeremy Gold, from of New York-based Jeremy Gold Pensions. He objects to the use of actuarial techniques arriving at the “expected” return on plan assets, preferring instead an arbitrage approach. His work shows that using an expected rate shortchanges future generations of taxpayers, by failing to consider the cost of uncertainty in investment markets. Gold explains that first-generation taxpayers might pay 95 cents for every $1 of guarantee if they buy safe treasury bonds. But an actuary could argue that the liability should be only 91 cents based on expected returns based, for example, on the S&P 500 index. The next generation then pays 91 cents, but in effect it has lost four cents between the safe and the expected rates. The gap continues through succeeding generations of taxpayers. Understating liabilities, Gold said, leads governments to make other bad decisions, including poorly negotiated wage and pension contracts, skim funds and the use of costly Pension Obligation Bonds.

He likewise criticizes Actuarial Standards Practice No. 27, adopted by actuaries in 1996, because it changed the way actuaries looked at economic assumptions of pension obligations. These changes seemed appropriate in a rising stock markets, but now that markets have declined, defined benefit pension funds have been caught short. He does caution that his arbitrage-based argument may be difficult to apply to large national systems such as Social Security where other forces may bring equilibrium. Gold noted that in 2005 corporations will be required to make fair-market accounting of pension liabilities, but he said public pensions are likely to do the same “approximately when hell freezes over.” But the change in corporate accounting may have an impact on the public sector, argues Gold. “People will demand more transparency, and when they do, I look for the impact of bad public policy on municipal debt or on housing prices.”

Evaluating Guarantee Costs

Guarantees do not come without cost, stresses Marie-Eve Lachance and Olivia Mitchell, from the Insurance and Risk Management Department at The Wharton School. Their research lays out six lessons related to guarantees of individual accounts. The first lesson is that benefits have an economic cost, and that the cost is often underestimated. The second lesson is that the design of a guarantee matters greatly. Plan sponsors much first decide how generous they want to be. While guarantees can be extremely expensive, even a cautious approach can come up short. A third lesson is that because of market volatility, a long investment horizon does not necessarily mean that guarantees will come cheaper. One must not look at this issue by using annualized returns; rather compound returns, which are subject to greater volatility, are the more valid measure. Lesson four is that investment must be restricted by weights in asset classes to prevent moral hazard problems. “If participants have a floor they will have more stock,” Lachance says. “If the stock market turns down, they will get the same amount. If there’s an incentive to hold more stocks, the higher will be the cost of the guarantee.”

Lesson five from this work is that pension plan designers must clearly define who pays for the guarantee: it could be self-financing, or pay-as-you-go. In a self-financing plan, participants would pay a premium for an optional guarantee. The drawback is that some participants may not be able to afford this. The other alternative is to finance guarantees through taxes, but this shifts costs to future generations. Finally, individual account guarantees differ from insurance and cannot be protected through diversification over time. This can lead to the need to pay out claims all at once, or not at all: “Either the premiums are insufficient or you can have a big pot money doing nothing," says Lachance. An alternative strategy, would be to purchase derivatives with premiums. "The only tricky part here," she points out, "is to make sure capital markets can provide such products."

European Advances

Research by Raimond Maurer, Professor of Investment, Portfolio Management and Pension Systems at Goethe University in Frankfurt, illustrates that Germany faces the same demographic problems as much of the Western world, in which increasing numbers of aged as being supported by a shrinking number of younger workers. To cope with the looming shortfalls, the government enacted reforms in 2001, with an aim to stabilize taxes for pension costs which command more than 19 percent of salary at present. The maximum pension benefit was cut from 70 percent of average net salary during the retiree's working life, to 67 percent by 2030. The German system combines compulsory participation in the state plan with the opportunity to invest some pretax salary into a voluntary individual account with tax incentives. Individuals are free to make pension investments in a range of regulated products provided by financial institutions such as banks, mutual funds or life insurance companies, but they cannot use the funds to invest directly in stock, bonds, or real estate.

According to Maurer, the government is trying to encourage competition to bring down the expenses and encourage innovative new products. The government is also attempting to make sure individuals use the savings only for income in their post-retirement years and prevent investors from making what he called "too bad" investment decisions. A key feature is the system's money guarantee in which plan providers must promise investors will get back at least what they put into the system. The plan providers make the promise, not the government, stresses Maurer. "The money-back guarantee represents a fixed liability," he states. "If at retirement the cash value of the policy is less then the provider has to fill the gap, if he is not insolvent."

The German government has strong banking and insurance industry supervision, requiring solvency capital for plan providers. For the insurance providers and commercial banks that was a problem, because they must work within a fixed interest rate (usually higher than seven percent). The problem was even more difficult for the mutual fund industry, which assumes no obligation to produce guaranteed returns beyond reasonable and prudent management. The German solution is to free mutual funds of capital requirements as long as returns are within a band comparable to, or above, zero-risk bonds. "If the cash value of a mutual fund is higher than this critical line, then there is no risk and if there is no risk, there is no need for equity capital," argues Maurer, who adds that it took considerable time to convince conservative government lawyers and banking regulators to go along with this plan. To avoid default, Maurer enumerates several ways that providers of individual account plans produce the money-back guarantee, including self-financing, investment in zero bonds, lifecycle models, and portfolio insurance strategy. He says that risk transfer and reinsurance are another possibility, though reinsurance is not popular at the moment. The economic costs of the guarantee, he believes is reduced upside potential because of asset-allocation requirements and the additional costs of supervising the risk-management system.

Other Country Experiences

John Piggott, Professor of Economics at the University of New South Wales in Australia, points out that defined contribution systems expose individuals to investment and inflation risk, so governments usually combine them with some form of annuity payout. His research examines five kinds of annuities: level life annuities, which guarantee a nominal payment over a lifetime but no protection against inflation; variable annuities which include investment risk based on an assumed investment return; inflation-indexed annuities which protect against expected inflation; term annuities which guarantee payment for a specific period only; and phased withdrawals within a range depending on life expectancy. His work shows that the variable annuity would be preferred, particularly by individuals with lower accumulations. His research also implies that inflation-insured annuities products will be popular as the population ages, particularly among wealthier retirees and those with strong aversion to risk.

According to Scott Macey, Senior Vice President and Director of Government Affairs at AON, the initial challenge in developing pension guarantees is to decide whether to fund them or not. “We need to focus the public policy debate on financing, before we get to the important discussion about the allocation and underwriting of risk,” he states. The biggest risk facing the defined-contribution model is how to deal with cohort longevity risk, in his view: “This is the risk that people outlive their invested assets. I haven’t seen private sector solutions to deal with that.” Macey is also concerned with the issue of retiree health insurance, which goes hand-in-hand with retirement income security. Companies are seeking to limit exposure to retiree health benefits, and Medicare is having difficulty keeping pace with costs, mainly because it does not offer a pharmaceutical benefit. Finally, he is concerned that, at least in the United States, people are not saving enough. “They are too optimistic about what their likely returns will be over the long-haul in an individual account scheme, and they may not be saving enough because they overestimate what their returns will be.”

IV. Pension Asset Allocation Issues

The collapse of Enron has focused attention on the risk exposure of employees who make company stock part of their 401 (k) plans. It further raises the question of how plan sponsors should construct pension investment choices.

Pension Investment Choices

Zvi Bodie, Professor of Finance at Boston University School of Management, argues that the investment industry carries a strong bias toward investing in the stock market. He challenges the financial planning notion that stocks make the best investment over a long time horizon. Two different statements are often heard in the investment arena: “The longer you have until retirement, the more heavily your household should be invested in equities,” and “The longer you plan to hold equities, the less risky equities are.” The first statement implies that that “if you’re younger, you can tolerate greater risk,” says Bodie. “In the second case you are saying equities are actually less risky.” The second statement implies that regardless of one’s tolerance for risk, there is something inherent in the long-term horizon that makes equities less risky for everyone. This, he believes, is wrong.

Conventional wisdom offered by financial planning websites and other sources of consumer advice stress a diversified portfolio, and they imply that longer time horizons dictate that a greater portion of the portfolio should be in equities. But, says Bodie “the conventional advice has a pro-equity bias and is logically flawed.” Economic theory shows no connection between a person’s time horizon and risk tolerance. Hedging, rather than diversification, is the best way to manage risk over time: “diversification works cross-sectionally at a point in time, but it does not reduce risk over time. There is no such thing as time diversification.” With the shift to individual management of defined contribution plans, the investment industry needs to develop more user-friendly menus with fewer investment choices. He appeals to 401 (k) plan sponsors to provide the opportunity to invest in inflation-adjusted treasury bonds, which became available in 1997. These bonds allow investors to earn an inflation-protected return of 3.4 percent over the next 30 years, but they have not been widely marketed to date. “There’s a lot of talk going on now in policy circles in Congress about how to improve the risk reduction possibilities open to people in the wake of Enron and similar problems,” he states. “The lack of attention paid to inflation-protected bonds strikes me as an incredible failure of public policy.”

An alternative perspective is offered by Jeremy Siegel, Professor of Finance at The Wharton School. He believes that stocks are a better investment over a long period, relative to a random walk scenario, but he concedes they do not become absolutely safer. Also he contends that risk tolerance is linked to labor income, so younger people can work longer if they invest in equities that go bad. He suggests that retirement program managers should ask participants directly: “If we put you in stocks and stocks do badly, would you be willing to delay your retirement and work harder? If they say, ‘Yes’ that would imply higher equities.” Yet Siegel questions whether people would really be able to answer that question. “Often we say one thing, but when it comes to that time 10 or 20 years out, we could change our minds.” He also stresses that the sequencing of equity returns can be crucial in whether an investor has enough money to retire. Even if stocks outperform bonds in 95 percent of every 20-year period, bad returns at the beginning of an individual’s retirement years could mean the investor runs out of money.

Turning to portfolio allocation issues, Siegel too, likes the inflation-adjusted treasury bonds, which he believes are beginning to gain a following. “Nominal bonds are far from risk-free,” says Siegel. “Over 30 years, the real return risk on standard nominal bonds has been as high if not higher than the risk on a standard diversified portfolio.” Now Siegel believes the premium for investment in equities is now about two to three percent. With tax-adjusted bonds returning 3.5 percent, he estimates a real return on equities of five to six percent going forward. “This it is far less than what we’ve enjoyed in the past, but certainly it is positive,” he concludes. “The premium is lower because price-to-earnings ratios are higher and deserve to remain higher” he says. He disagrees with some market forecaster who forecast a decline in the ratios to around 14. “My feeling is stocks should earn five percent or so,” says Siegel.

The Role of Company Stock in DC Plans

The debate over employee ownership of company stock in 401 (k) plans has prompted an analysis of the risk that company stock creates in a portfolio. Krishna Ramaswamy, Edward Hopkinson, Jr. Professor of Investment Banking and a Professor of Finance at The Wharton School, says that larger companies are the ones that make their contributions to defined contribution plans in company stock. He cites research showing that only three percent of plans offer company stock, but 42 percent of all participants and 59 percent of all defined-contribution assets are covered by these plans. Some plans make it very attractive for participants to allocate company stock to their defined contribution funds. For example, he discusses a complicated defined contribution sign-up form that has company stock as the first option, followed by the appealing phrase: “If you entered 100% stop, and go to the end! You’re done!” It turns out there are “self-inflicted wounds,” says Ramaswamy. “Participants actively engage in putting additional money in company stock.” Ramaswamy acknowledges that his research takes into account only the diversification of the individuals’ 401 (k) assets, and it does not take into consideration whether employees have other diversified investments.

While there is no agreed-upon measure of proper diversification, Ramaswamy’s analysis shows that employees with 30 percent of their defined contribution assets in company stock have an efficiency measure of only 64 percent. At a contribution level of 50 percent, the efficiency measurement drops to 39 percent. By comparison, defined benefit plans are restricted to holding no more than 10 percent of other assets in company stock. At that level, the efficiency measure for average risk is in the 90 percent range. To put a dollar figure on these inefficiency costs, the professor uses an exchange option formula against different time frames. Ramaswamy finds that it would cost $178, or 17.8 percent, to purchase insurance against the risk of the company-stock for every $1,000 in portfolio for a period of one year. For three years, the amount would rise to $303, or 30.3 percent. "It should frighten people to think that if they want to insure $1,000 in company stock with an equal $1,000 in the S&P index, they have to give up 17 percent," he notes. "That's overpaying for something you don't need."

Stephen P. Utkus, a Principal at The Vanguard Group, leads the research in the company's participant education department. He believes that the issue of volatility is often related to forecasts of stock-price appreciation. Volatility is often usually dismissed as a technical issue for the company treasurer, but a discussion of appreciation involves the top levels of the company. He believes that Ramaswamy's index could help diffuse this touchy discussion saying: "It isolates people from the question of return and gets to a more dispassionate question, which is volatility." He notes, "In the media there seems to be a belief that $1 worth of stock is worth $1 in cash." "The academics, of course, don't believe it, but practically everyone else does." On-going debate asks whether a change in U.S. law restricting on defined contribution assets held in company stock would simply reduce company matching. "The assumption is that employers would replace $1 worth of stock by a smaller cash contribution and workers would be worse off," says Utkus. "The research response from the academic world is "not necessarily." A dollar of stock is worth a lot less, depending on the volatility of the stock, than cash."

A research study by Utkus and Olivia Mitchell show that other factors to consider in any debate over company stock are risk preferences and how much in total employees have exposed to company stock, perhaps in the form of options or other compensation. On-going discussion is focusing on what Utkus calls the "Hurricane Andrew Problem", which can arise when key market-makers expose themselves to systemic risk errors. One example was Florida's East Coast, which began developing rapidly in the 1950s, continuing through the 1970s with few severe hurricanes. Over time, notes Utkus, "the probability of a hurricane fell -- until it occurred." Similarly, "in December of 2000, market makers would have been happy to make a very low-cost insurance product for the 401 (k) investors at Enron. A year later, probably not."

This raises the important issue of the advice that defined contribution plan participants receive. Bodie contends that participants should consider the degree to which their future earnings are exposed to stock-market risk, regardless of what firm they work for. "The Enron case has raised the issue of lack of diversification in investing in your own company's stock. Let's say you're a stock broker or anyone whose future earnings are tied to financial services: your future income is very much like an investment in the stock market. You are already heavily invested in the stock market. Do you really want your defined-contribution pension fund to be invested in the stock market also?" In his analysis of financial planning advice engines, this broader issue is never raised. According to Michael S. Gordon, a lawyer who helped draft the ERISA pension laws, "you have people who are possessed with a quasi-religious belief in company stock. You can no more deal with that in an academic way as you can with the problems in the Middle East today."

By contrast, Lisa Muelbroek, associate professor of finance at the Graduate School of Business at Harvard University questions whether the link between employee stock ownership and economic performance is overstated. Concentration may be a problem for top managers, but rank-and-file employees tend to have only a small impact on corporate performance, regardless of their equity stake.

Bodie remains concerned about individuals' ability to manage this crucial task. "We are now in a very strange situation where government has retreated, and other institutions have retreated, from their active participation in various aspects of the economy," he contends. Though he considers himself a free-market oriented economist, he believes government should play a bigger role in helping people with the complexities of managing their retirement portfolios. "What do ordinary people know about that?" he queries. "It's like asking people to perform surgery on themselves, as a solution to the problem of medical-cost inflation. It's nuts, as far as I'm concerned."

V. Market Potential for Pension Securitization

If pension plans do propose to provide guarantees, a number of possible financial vehicles may be explained and evaluated.

New Financial Products

New research by David Cummins, Harry J. Loman Professor of Insurance and Risk Management at the Wharton School, and Christopher Lewis, from Fitch Risk Management, suggests how new derivative securities can be created based on non-traditional assets, to help institutional investors enhance their portfolios. Such asset-backed securities could offer investors the opportunity to further diversify and, at least for now, provide a premium because they are still novel. These securities will spread, the authors believe, extrapolating from the popularity of mortgage-backed securities which for 20 years have allowed investors to participate broadly in the housing market. The authors recognize that one drawback to using these new types of bonds is that they are still unfamiliar and complex. Pricing is difficult because many of these securities are linked to low-frequency, but high-severity, events.

Sponsors can use such securities to enhance credit quality, by moving risk off their balance sheets and gaining greater access to capital markets. They can also help meet regulatory requirements for risk-based capital and accounting requirements. The largest segment of the market now is mortgage-backed securities, with $140 billion in new issues in 2001. But Cummins says that market derivatives are developing based on auto loans, home equity loans, and equipment leases. “Right now there’s some very attractive investment opportunities for people who know what’s going on,” notes Cummins. Many non-traditional asset-backed securities are linked to credit, but newer forms are being linked to insurance. Weather-related bonds, for example, allow natural gas companies to hedge their risk against unusually warm winters. Other new securities include airline equipment leases and stranded costs of deregulated public utilities.

An advantage to investors is that these products allow them to gain exposure to a market impossible to enter otherwise. For example, they allow non-banks to gain exposure to bank loan credit risk, without being a bank. Yet Cummins cautions that these securities are only for sophisticated institutions. A major risk is information asymmetry: underwriting any credit risk requires significant knowledge and experience in the underlying reference credits. These products can also generate moral hazard problems and adverse selection. Yet the yields are attractive: catastrophic bonds yield 3.24 percent, energy weather derivatives are at 4.52 percent, and Japanese earthquake 2.72 percent. “We think these offer significant advantages,” said Cummins. “But go slow and make sure you know how to price them before going full speed.”

Canadian Experiences

The Canadian experience with segregated fund guarantees is also relevant, according to Heath Windcliff, from the University of Waterloo's Department of Computer Science. Using a mathematical approach to valuing and hedging exotic derivatives, he shows that segregated funds are similar to mutual funds but are bundled with long-term maturity of around 10 years and also pay a death benefit. They also typically have reset features so investors can lock in market gains. These funds initially took off in Canada while equity markets were rising. "It was a way to sell equity products to risk-averse people," Windcliff comments. Unfortunately, there were problems with consumers lapsing on the funds and they carried a typical fee of between 40 to 80 basis points on a pay-as-you-go basis. His research indicates that in the early years, the products were profitable because customers lapsed and fund sponsors pocketed the fees. "But in year 10 we started to see trouble with the put options coming due," he notes. Also, Canadian regulatory authorities were concerned and slapped capital requirements on the funds. Another obstacle was that there was no way to hedge against a market downturn except shorting stocks under the management of the fund, a practice frowned upon by regulators and investors. In the end, he said, it proved very expensive to hedge the funds given the strict regulations imposed. Though the products ultimately were unsuccessful, some of their design features could be used in structuring future individual account guarantees.

Securitizing Survival

Nontraditional securities are also potentially viable for the pension decumulation phase, according to Arthur Fliegelman, vice president-senior credit officer in the Financial Institutions Group of Moody's Investors Services. "We at Moody's see a significant opportunity for insurance companies in the annuity market," he argues, believing that demand will be driven by the shift from defined benefit to defined contribution plans and growing concern over the stability of the Social Security system. The baby boom generation represents “huge untapped market potential,” and insurers will have this market all to themselves. His work points out payout annuities offer longevity insurance to beneficiaries, which cannot be duplicated by systematic asset withdrawal. Insurance providers are protected from shortfalls by the law of large numbers and due to the long-term nature of the liabilities. However, insurance companies do face asset and equity-market risk, as well as longevity risk if people live longer. In addition to asset and longevity risk, Fliegelman said insurers also face risk in their own sales practices because these products are easy to misunderstand by both consumers and salespeople.

While longevity risk can be overcome by a large pool of beneficiaries, long-term trends in mortality are difficult to predict. He has constructed models showing different scenarios including discovery of a cure for stroke and pneumonia that left companies in the black. But cure cancer, diabetes, and heart disease, and insurers will lose money. “If they lose enough money over time it becomes a major problem,” Fliegelman notes.

Product design, he says, is critical. He said insurers need to diversify life risk and annuity products and must carefully consider age and selection issues. Reinsurance, he said, is not practical in the life insurance industry. One new product is the variable immediate annuity, in which payouts respond to the performance of an underlying investment pool, including equities. Performance is linked to an assumed interest rate, so income streams will increase over time if the investment performance is satisfactory. Long-term care coverage is also becoming more popular, along with products that bundle mortality risk with long-term care risk. The concept is you are dead or you’re sick. You can’t be both,” he remarks. “A lot of it is getting people sensitive to that and being able to market these products economically and efficiently.” Of course there are regulatory and structural problems with developing securitized mortality instruments.

"It's a puzzle to me why life is not more securitized," argues Cummins. "It seems more natural than catastrophic risk because basically it is a financial product and with prudent hedging you could deal with the mortality risk." On the other hand, John Kalamarides, senior vice president of Marketing and Product Development at CIGNA, offers an insurance perspective on such financial vehicles. He agrees there are advantages to the non-traditional asset-backed securities, but feels that the issue of information asymmetry will prevent most institutions from adopting them. The market for these products will not take off without development of a secondary market, better understanding of significant but infrequent events, and the creation of a trusted agency or consultancy to provide oversight. "Non-traditional asset-backed securities heighten the anxiety in an environment already concerned about fiduciary and market risk," he points out. Though hedging can increase annualized return on capital, the segregated funds products used in Canada would be too expensive to offer. "Finding a correlated asset to the underlying mutual fund is very expensive," he says. "The volatile markets and real liquidity risk require daily or frequent hedging."

While agreeing that annuities offer a great opportunity for insurers, he feels that mortality risk, particularly following the Human Genome Project, along with investment risk, are remaining concerns. The average U.S. 401 (k) plan has a median value of about $15,000 and no annuity is going to address the obvious saving shortfall. "If we're going to develop that product and sell it, finding participants is important." Furthermore, some scientists predict that life could be extended to 130 years, so workers will not be able to retire at 65. He envisions people working longer with a series of sabbaticals and multiple careers. The worrisome issue is that today, 70 percent of the population is uninvolved in retirement planning. Employers must therefore become more active in educating employees about retirement. Though employees trust their employers more than government to supply retirement-planning advice, employers often do not want to take on the added responsibility. “Ultimately, the employee has control and responsibility for retirement planning,” he concludes. “Historically, control and responsibility have been dependent on the employer and the government. With defined contribution plans, we’ve shifted to the individual.” This explains the drive to afford risk to insurers. The irony for retirement systems, according to Kalamarides, is that “individuals want control but they don’t want responsibility.”