

# **RECORD, Volume 22, No. 3\***

---

Orlando Annual Meeting  
October 27–30, 1996

## **Session 63PD**

### **Asset/Liability Management for Social Security Systems**

**Track:** International  
**Key words:** Economics, Social Insurance, Social Security

**Moderator:** KRZYSZTOF M. OSTASZEWSKI  
**Panelists:** ROBERT L. BROWN  
JAGADEESH GOKHALE†  
**Recorder:** KRZYSZTOF M. OSTASZEWSKI

*Summary: This session presents some of the economic issues associated with the worldwide "old-age crisis," focusing on the management of cash flows in social security systems and how they affect the country's national economy. It addresses several key issues:*

- *comparison of the security of a system under full funding or pay-as-you-go funding*
- *the balance sheet of a social security system and its relation to the country's national economy*
- *management of the growth of a social security system and the national economy*

**Mr. Krzysztof M. Ostaszewski:** Our first speaker will be Dr. Jagadeesh Gokhale, who is an economic advisor at the Federal Reserve Bank of Cleveland. He holds a Ph.D. in Economics from Boston University and has written extensively on the issue of social security systems. I should add that Dr. Gokhale is a guest speaker, as he is not a member of the Society.

Next is Professor Robert Brown, who is an FSA and a member of the Board of Governors of the Society. He is also a past president of the Canadian Institute of Actuaries (CIA). He is a professor at the University of Waterloo, currently on leave

---

\*Copyright ©1997, Society of Actuaries

†Mr. Gokhale, not a member of the Society, is an Economic Advisor of Federal Reserve Bank-Cleveland in Cleveland, OH.

at Simon Fraser University. He has written extensively on the subject of social security systems. He is also my fellow member of the Social Security Committee of the Society, which will have a meeting later. We are looking forward to that meeting, as Rob just told me that it will last all night. Finally, I am Kris Ostaszewski, and I will be the last speaker. I am an ASA and a professor at the University of Louisville.

**Mr. Jagadeesh Gokhale:** I'm an employee of the Federal Reserve Bank of Cleveland, but my remarks should not be attributed to the Federal Reserve System in general or to the Federal Reserve Bank of Cleveland in particular. I've been a student of Social Security for several years, and I think all of you will agree that it is a fascinating subject because it's such a massive and complex piece of legislation that affects the economy and society in several dimensions. It is hard not to be fascinated by the subject.

There are many perspectives one can take on Social Security. There can be social perspectives, sociological perspectives, political perspectives, economic perspectives, demographic perspectives, and different people come to the subject from these different directions. I am an economist and my perspective is an economist's perspective. I'm going to try to convey the underlying rationale for why I have the view about Social Security that I do. I don't want to just convey a point of view; I also hope to convey the rationale underlying that point of view.

I'll give some introductory information about Social Security, partly because I am the first speaker. I expect Kris and Rob can pick up where I have left off given this background about Social Security.

First of all, we know that the revenue side of Social Security is funded by payroll contributions. Currently, the payroll contribution rate, which is taken from employees and employers, is 12.4% of workers' wages. There is a maximum payroll limit on which this rate is applicable. In 1996 it was \$62,000. In 1997, it was just announced that it will be \$65,400. To give you some idea about the way aggregate payroll contributions have evolved, Chart 1 shows how average contributions per worker has evolved since the mid-1940s. It has grown steeply, especially after 1970. How does that compare with the trend in hourly compensation? The dotted line shows that trend. What these two lines show is that workers, over time, are contributing a larger and larger share of their payroll earnings towards financing Social Security.

CHART 1  
AVERAGE CONTRIBUTION PER WORKER

Source: Social Security Administration and Economic Report of the President, 1995

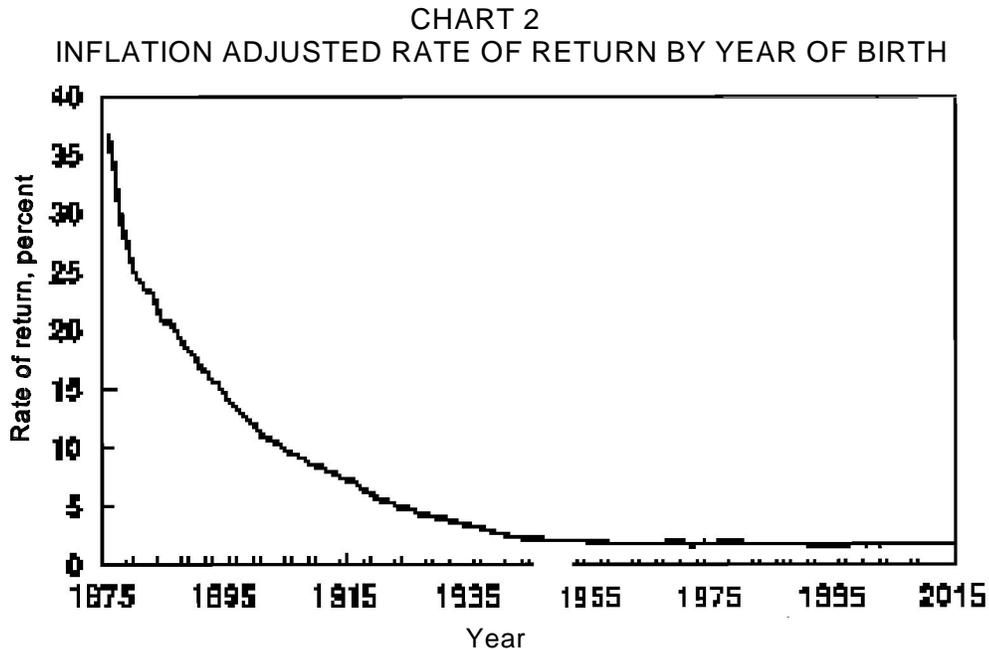
Next, from the benefit side, Social Security provides three major types of insurance. The first type is old-age benefits. People receive old-age benefits as annuity payments every month, beginning from what's known as a normal retirement age of 65, although people can opt to retire early at age 62 and begin to receive actuarially reduced benefits.

The benefits also include survivor benefits to an eligible spouse, and divorced spouses in the past, and children under age 18. Social Security also provides disability insurance to workers, who, for whatever reason, through accident or illness, are not able to sustain their livelihood anymore. Those are the three main types of benefits, although there are many others, that Social Security provides.

Let's look at what's happened to benefits. Given that workers contribute to the system when young, and when working, and receive benefits when old, this activity, this participation in the Social Security system can be viewed from the worker's perspective as an investment for future retirement and future insurance against various contingencies. Therefore, from an economic perspective you can also look at this as an investment, and then ask the question, what's the rate of return that the different workers have received who have participated, over time, in the Social Security system? By the rate of return, I mean the employees' rate of return on their contributions.

Chart 2 shows that people who were born in the late 19th century and the early 20th century received a substantial rate of return on their past contributions, primarily because Social Security, as a program, began in 1935 and those who were

old and eligible for retirement soon thereafter received benefits, but had not contributed quite as much in the past because Social Security did not exist when they were working. When the system was instituted the retirees received very high rates of return on their past contributions. Compared to that, those who were born in the post-war period and will retire now and in future years, are expected to receive a very low rate of return. I think it averages about 1.8% of their past contributions.



Source: Dean R. Leimer, "Cohort Specific Measures of Lifetime Net Social Security Transfers."

Looking at Social Security benefits in this way, in a purely pecuniary way, does not present the entire complexity of the system and the types of benefits it provides. But one way of looking at it is looking at the pecuniary returns and comparing them to the pecuniary contributions that people make and assessing a rate of return on them.

Let me give you an idea what Social Security's financial situation is right now. In calendar year 1995 the revenue was about \$400 billion. The outgo was about \$340 billion, of which benefits were about \$332 billion. So much of the outgo consists of benefits to current retirees. As a result there is an annual surplus that accrues into the Social Security Trust Fund, which is about \$60 billion. The assets of the Social Security Trust Fund at the end of 1995 were about \$500 billion. To give you an idea of how large this program is, the federal expenditure in 1995, which is just over \$1.6 trillion, makes Social Security about a fifth of the entire federal government in expenditures.

So it's quite a large program, and it's something that we, as academics and actuaries, should talk about more frequently. We talk about it frequently because that's our profession, but I think there's not enough discussion among policymakers that is apparent, at least in the public domain, commensurate with the size of the program. I don't think policymakers should be talking about it just because it's large; they should discuss it because it has a significant impact on the economy and on society in general. So, compared to how large it is, I think questions about Social Security are, more often than not, ducked by policymakers instead of being addressed directly.

One thing to note is that the year-end assets of the Social Security Trust Fund, about \$500 billion, consist entirely of government securities. So, the Trust Fund takes in monies, pays out benefits, and whatever is left over is lent to the government. And, I'll come back to this point later to explain what that implies.

I want to start my discussion by posing two questions. First, are there good reasons for government intervention in the provision of these types of retirement benefits and retirement insurance? Second, is the public provision of Social Security a good idea? These two questions may sound alike, but they are really different and they have different answers. I'd like to go through the underlying economic rationale that may help us answer both of these questions.

To address the first question—is government intervention justified—you might start by asking, what would happen if there was no Social Security system in existence in any country? Well, there are several types of economic risks that individuals face in an economy. One is that they might end up with inadequate savings for retirement support. This may occur either because people are short-sighted about their financial needs during retirement, or they might be short-sighted about how deeply their productivity or employability may decline as they grow older. They may underestimate that, and as a result, arrive at retirement with inadequate resources.

A more interesting and a more subtle reason for government intervention may be that people may rationally expect that if they arrive at retirement in the state of poverty, then the state or society will take care of them. So they may rationally undersave for retirement knowing that someone will take care of them in the end. This is called free-riding behavior. They are free-riding on public generosity. If a handful of people behave in this strategic rational manner, it's one thing; but if everyone starts behaving, and rationally undersaves, then the problem of old-age poverty will really become very large and the state will have to do something. And the expectation that the state will step in to provide retirement support would become a self-fulfilling expectation. So strategic behavior in this form, leading to rational undersaving leading to old-age poverty therefore calls for the state's

initiative right in the beginning to provide for insurance against old-age poverty. That's one possible reason.

The second economic reason is that the economy is buffeted by various shocks. Sometimes these shocks are so great and cataclysmic that they affect everyone in the economy adversely. You are all familiar with the episode of the Great Depression that actually resulted in the institution of the Social Security system in the U.S. The point to note about these events is that it's not just a handful of people that are affected, but everyone is affected by these shocks. If that is the case, then the risk of these types of large, negative shocks to the economy cannot be diversified among only living generations. They have to be diversified across both living and future generations. No private enterprise can engage in this kind of diversification. It has to be the government, which through its power of taxation, can provide benefits to those affected by these large shocks in the current period, and defer taxation onto future generations, thereby spreading the risk across living and future generations. That's the second reason why government intervention is justified.

Finally, there are certain reasons why insurance markets fail, primarily because of asymmetric information between the buyer and seller; that drives up the price of the insurance product and restricts its supply. I'm sure you're all familiar with the moral hazard and adverse selection that affect insurance products in particular. By stepping in, the government can mandate universal participation. That serves as the third justification for the provision of Social Security. These three reasons lead me to state the answer to the first question in the affirmative. Yes, there are good reasons for government intervention.

We still have the second question—is public provision of Social Security a good idea? Let me refer to the U.S. experience in this regard, and put an economic perspective on it. First of all, Social Security is a very complex kind of legislation that redistributes resources among the different groups in the population. So, in particular, it redistributes these resources from single-headed households in the U.S. to married households. It also redistributes resources from males to females.

This redistribution can be viewed as either intergenerational redistribution from the young to the old, or within generational distribution from the rich to the poor, or within demographic group distribution, or across demographic group distribution as stated here. It still results in the fact that what one gets out of the system is not commensurate with what the same individual puts into the system. In other words, there is a very poor link between contributions into the system made by any person and the benefits that the person receives from the system.

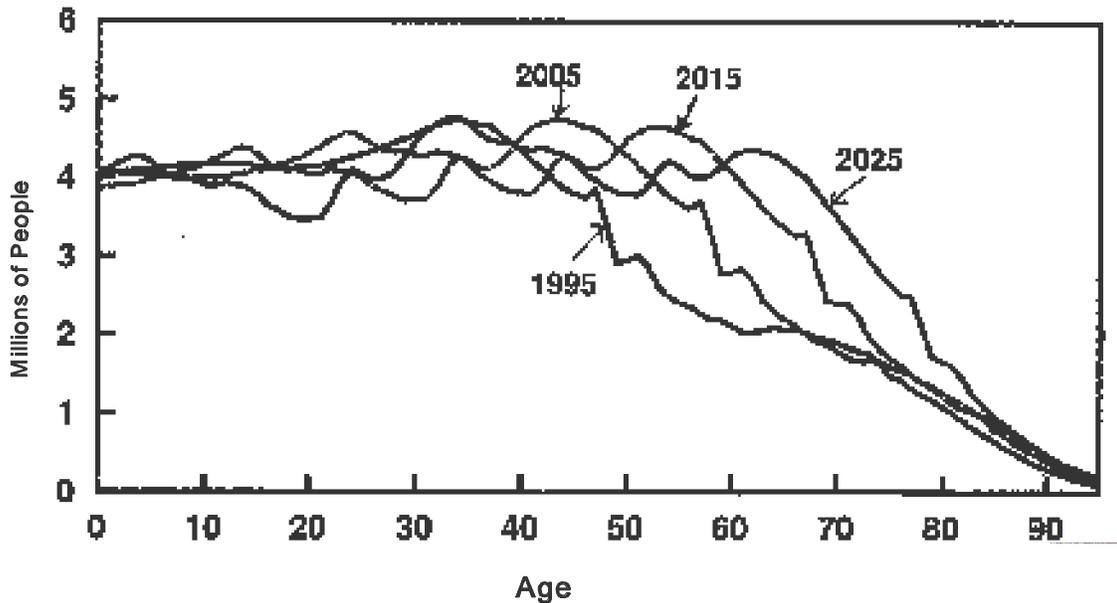
Given that there's a poor link between contributions and benefits, it is not clear how individuals view their contributions, I should say, view their payments. Do they view their payments as contributions for their own future sustenance during retirement? Or do they view their contributions as taxes? If there is no close link between what they put in and what they get out, then they probably view them as taxes. To the extent that individuals view these payments as taxes, it's going to add to marginal income tax rates and provide reduced work incentives for people participating in the system.

Third, the U.S. system is a pay-as-you-go structure. Most current contributions are passed on immediately in the same period to retirees as benefits. That means that most contributions are consumed by retirees, they are not invested in real, physical capital assets. Whatever surplus remains in the system is lent to the government, which also consumes it in the current period. So the entire current contributions are really consumed, rather than invested, in productive capital assets, which is why I guess people call it a pay-as-you-go system. Whatever is paid in is passed along to entities or institutions that consume it all, rather than invest it in capital assets. That has implications that I'll come to later.

Finally, pay-as-you-go systems are susceptible to demographic shocks. If there is a fertility boom, as occurred in the U.S. between the mid-1940s and the mid-1960s, followed by a decline in fertility, that's going to result in a huge baby boom that traverses to the age distribution. Down the road this results in a huge number of retirees along with very few workers who pay into the system, which results in financial insolvency of the fund, as you will see is the case in the U.S.

I'm sure you are all aware of this, I just want to make it very explicit. If a fertility boom is followed by a fertility decline, this will lead to a lower contribution base and lead to an insolvent system. To give you an idea of how the age distribution in the U.S. is expected to evolve from now on, Chart 3 shows the age distribution of the population in 1995.

CHART 3  
TOTAL POPULATION BY AGE



Source: Social Security Administration

The vertical axis has millions of people; the horizontal axis has age. There is a big chunk in the age distribution of people in their 20s to their mid-40s. You can see what is expected to happen in 2005. Look at 2015 and 2025. Compare 1995 with 2025. As you can see in the older part of the distribution, there's a big gap. The line for 2025 is much higher than that for 1995, but among the younger age group, the two lines are almost the same. So there's going to be a big increase in the proportion of retirees to young workers, and that reflects a relatively low contribution base, relative to the aggregate payouts that are required to sustain retirement support for the large number of elderly. The implication of this is, of course, that the ratio of the young individuals to old individuals will decline considerably by the middle of the next century; also the ratio of workers to beneficiaries in the Social Security system is expected to decline. Therefore the Social Security system in the U.S. is expected to face severe financial difficulties in the early part of the next century.

Let us look at the long-range state of Social Security. There is the total income projection from the Social Security Administration. Compare that with the outgo projection. Outgo is expected to surpass total income around 2018 or so, but we know that there's accumulating surplus along the way, because right now, and for quite a few years in the future, the surplus is expected to continue. So we have the assets of the Social Security Trust Fund growing until 2020. Then these assets are expected to decrease significantly after 2020, which is quite rapidly. By the end of the third decade, the Social Security Trust Fund is expected to run out of assets to finance these benefits.

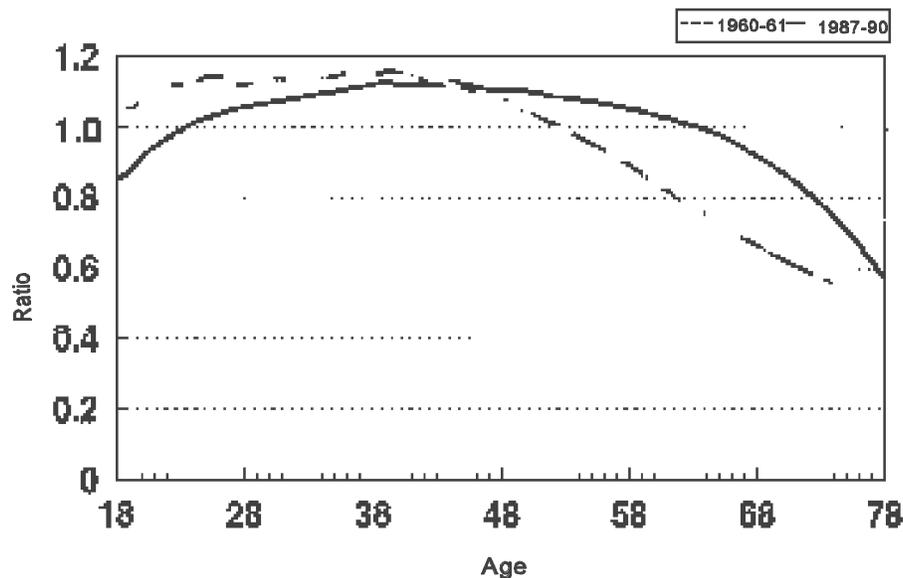
That's the official line about when the Social Security System will become insolvent. It's caused by population aging, in particular. But really, we should be looking at when the outgo begins to exceed the total income of the Social Security System. The reason being is, as I've already mentioned, most or all of the Social Security contributions are consumed. There are no real physical assets, or income-earning assets, that back the Trust Fund. When the outgo starts exceeding income, the government will have to step in and provide the difference through some other income sources. In particular, it's going to have to finance the excess of outgo over income by additional tax payments. So, really we should say that the Social Security system is going to be insolvent around 2018 or so. Even that is not quite correct, actually, because part of the income is really interest income that the Social Security Trust Fund gets from the government.

If I net out interest income from the total income profile here, I come to 2012 as the date when Social Security outgo exceeds the net contributions into the system. We look at total income net of interest income. That is the date when the financing of the outgo will spill over to revenue sources other than contributions into the system. So that is really the point in time when one should say the Social Security System becomes insolvent. That's not the official line. The official date is 2030, but because Social Security assets are not really backed by any income-generating, real capital assets, the date of insolvency should really be thought of as earlier. The year 2012 compares unfavorably when you think about the fact that the earliest of the Baby Boomers will start retiring around 2008, pretty soon after the onset of the Baby Boom generation's retirement and stepping into the retiree pool.

I want to turn your attention to another matter. I said earlier that the Social Security program is important not only because it is large, but also because it has an impact on the economy. I want to focus, in particular, on the impact on national saving. Think about Social Security as affecting the distribution of resources among individuals in the economy.

Here is a resource profile, the distribution of resources, a relative resource profile by age, computed as of 1960–61. What I did was I took total per capita resources in the economy and called that a unit. I arranged every age group's resources per capita relative to that unit, and I get this profile. For 1987–90, I get the dotted profile, which suggests that growth in Social Security and also Medicare and Medicaid programs has resulted in a tilting of this profile in favor of elderly generations.

CHART 4  
RELATIVE RESOURCES BY AGE



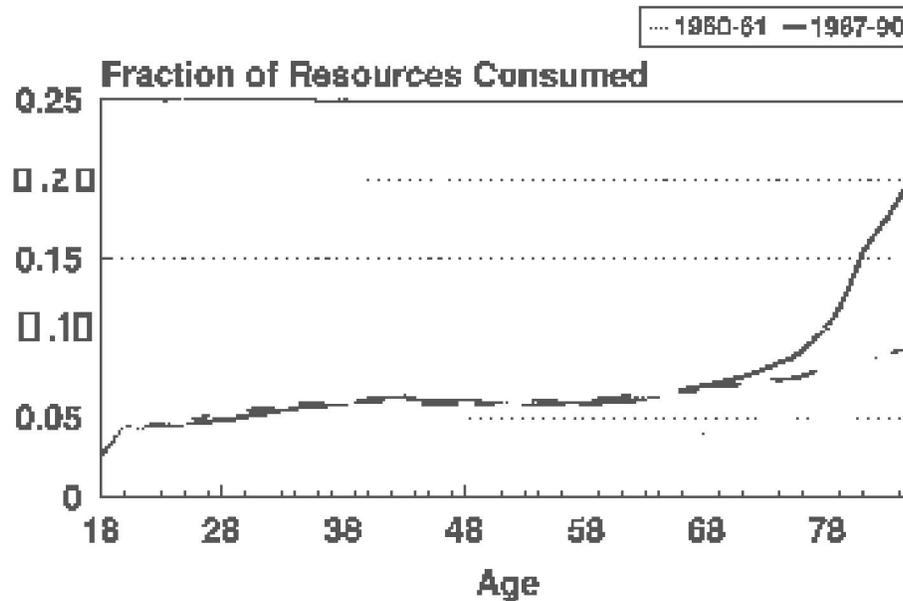
Source: Author's calculations.

Now let's look at the so-called propensity of different generations to consume other resources. As we see in Chart 5, the propensity to consume other resources are upward sloping. When taken in conjunction with the earlier picture of the elderly having more resources relative to the young in the later periods, this implies that there's going to be more consumption in the economy because the older generation consume more out of their resources than do younger ones. In particular, in 1987-90 the consumption profile is tilted upward quite sharply for the elderly. So, not only is aggregate consumption higher because of the resource redistribution from young to old generations, it's also higher because the older generations, who are getting these increased resources, are also consuming much faster out of a given dollar of resource.

Why have consumption propensities increased with the elderly? There are two reasons. First, they have started receiving Medicare and Medicaid benefits, which are incoming benefits that must be consumed. You cannot save anything out of a transfer, which is in-kind and a transfer of services. Second, Social Security and Medicare and Medicaid benefits really represent annuitized benefits rather than lump-sum benefits. This is important because when benefits are paid in a lump sum, people still face the uncertainty of how long they are going to survive. That induces cautious behavior when deciding how much to consume out of resources, which are in stocks and bonds and mutual funds shares. When resources are annuitized, essentially you receive an insurance against the uncertainty of the length of life. That encourages more rapid consumption out of remaining lifetime re-

sources, which explains, in part, the higher consumption propensities of the elderly.

CHART 5  
AVERAGE CONSUMPTION PROPENSITIES



Source: Author's calculations

How has resource annuitization changed over the years? In the early 1960s only 20% of the resources of the elderly were annuitized, but as in the late 1980s just under 50% of their resources are annuitized. So higher annuitization of resources has enabled the elderly to consume a much larger fraction of the resources, which shows why their consumption propensities have become steeper. Higher aggregate consumption obviously means lower saving, given national income. And that has actually transpired in the U.S. Net national savings rates have plummeted quite sharply. They used to be around 8–9% in the 1960s and 1970s. In the 1980s and early 1990s they have declined sharply, so that they are only about 3% or 4%. Lower aggregate savings cost translates into a lower capital in the future, which means a lower labor productivity and therefore a lower ultimate living standard. So the growth of these entitlement programs, and the fact that they provide resources in annuitized form, can directly be traced to lower U.S. national saving.

What are the answers, or the upshot of all of this? Are there good reasons for government intervention? Yes. Is public provision of Social Security a good idea? I really want to say no, but I'm trying to be conservative here, so I'll say probably not.

Turning to future policy options, of course you're all familiar with the question, what can we do if there's a shortfall of income over outgo that's projected out in the

future? You can increase contribution rates or you can reduce benefits, or you can reorganize Social Security.

I will ask the question whether "privatize" is the appropriate word. Some people think privatize is a harsh word, others think that it's a nice cuddly word. I'll leave it up to you, as I'd rather use some other term, but I'm going to use privatize. The Social Security Administration suggests that the 2.19% hike in payroll taxes will take care of the problem until about 2070. But given what I've said so far, it will continue intergenerational resource transfer that is ongoing in the U.S. That leads to bad saving outcomes, as I've pointed out. It will also continue the within-generation (intragenerational) and within-demographic or across-demographic-group redistribution of resources that leads to a bad link between contributions and benefits. That will provide working disincentives in the population.

Should we reduce benefits? One question is fairness. Expected returns on past contributions are really low for those retiring in the future. Further reduction of benefits will make them negative. In addition, people's saving behavior is contingent upon their expectation of receipt of benefits in the future, so it's probably not fair to suddenly turn the tables on them and pull these benefits away. So, reducing benefits has the disadvantage of not being fair to many generations. It's similar to defaulting on the government debt, because even though the promise of benefits in the future is implicit, it's still a promise and it will lead to the erosion of confidence among people in public policy.

Finally, as the Baby Boom generation grows older, they're going to be politically more potent; it may be politically infeasible to reduce benefits as time goes on.

Let's turn to the other option that I pointed out. Should we reorganize Social Security? One thing to note is the future consumption must come out of future output. Two things are important: the size of future output and the distribution of the ownership of claims to that future output. First, the strategy must somehow allocate a larger fraction of current contributions to investment rather than consumption to expand the stock of capital in the future. Second, it must establish closer links between contributions and benefits to include work incentives. That ought to be the direction in which a reorganization of social security systems should go.

Regarding privatization or, I should say, reorganization, I'll first say that whatever new system is in place, it should be economically viable. It should be sustainable over the long term. It should minimize economic distortions. It must also be politically feasible. To ensure that it will preserve benefits of current retirees, it must also retain the same or better retirement resources for younger generations.

One might think about a simple framework when trying to think about how to reorganize Social Security. Older generations may be kept under the current system. They could make their contributions as before and receive benefits projected under the current rules. You might think younger generations can gradually be shifted over to a privatized system. It might be that they have to forfeit all their accrued benefits. If people are below some cut-off age, you might have them forfeit all their benefits that are promised to them under the current system, but allocate a fraction of current contributions to funding benefits of current retirees; the contributions of the current elderly are not going to be enough to fund the benefits promised them.

Some of the burden of financing their benefits has to be current with the younger generations. After you've devoted a part of younger generations' contributions to financing the benefits of the elderly, you might then invest the rest of them in private capital markets at a higher rate of return. Again, establishing this kind of a system may not guarantee that all younger generations will make good investment decisions and receive a higher rate of return, so you might want to establish another, separate system that provides a minimum flow for old-age support.

I've done a simple calculation using current Social Security projection of benefits by age and sex, etc., and I come up with the following numbers for using this kind of a framework in terms of determining a cut-off age for people—those who are below that cut-off age will be transferred to a new system. People above that age will be in under the current system. I came up with an age of 42 in the simple calculation. This is a very provisional calculation, and I still have to refine it to take into account some details of how the system works, but it's just something that you might think about to explain this framework.

Those above 42 continue to contribute into the current system and receive benefits under current rules. The fraction of contributions of the young that will be devoted to financing the benefits of older generations is 18%; that's the number I come up with. So 18% of these are devoted to financing the contributions of older generations and 82%, which is the rest, is invested in private capital markets.

One particular thing to note about this, we know that in the past some retirees have received much more than they paid into the system. That burden has to be paid for by future generations, and it has to be distributed among all future generations. The economic theory suggests that the best way to distribute that and to minimize economic distortion is to distribute it equally among all future generations. Putting an 18% so-called tax rate on their contributions for all future generations will ensure that. That's another feature that this proposal has.

What does a privatized system ensure? Does it insure a private link between contributions and benefits? Does it improve work incentives? Reduce the currently ongoing intergenerational transfers resulting in the national saving outcome?

It will result in the contribution of current participants going into productive assets. Future retirees will own the claims on the future assets, and retirement security may be less susceptible to demographic shocks. Of course, there's a need for caution in this because in private-contribution-based systems individuals bear greater political risk in terms of what the future holds for them because the government may suddenly change the law, reduce benefits, raise taxes. Furthermore, because the contributions are invested in the private capital markets, they'll bear a greater market risk; that's why there's a role for a separate minimum support, and a public source. There may also be reduced ability to diversify across generations through a privatized system. These are two notes for being cautious about a transition to a privatized system; nevertheless, I think a move towards a more privatized system is worth it, given all the shortcomings of the current system.

In conclusion, the program is insolvent in the U.S. over the long run because of population aging. It has an improper structure, which results in the contributions being consumed rather than invested, and it has a poor benefit-contribution linkage. It provides bad work incentives and bad savings outcomes. Privatization, I think I should really say reorganization, of Social Security is worth considering because it will lead to contributions being invested in real, productive assets, rather than being consumed. There will be a higher contributions-benefit linkage, and there will be better returns on savings per dollars.

**Mr. Ostaszewski:** Our next speaker is Professor Robert Brown.

**Mr. Robert L. Brown:** I think there are two things that I'm going to suggest will happen. One, you will leave having more knowledge than when you entered, and number two, you will leave more confused than when you entered; and those are not contradictory statements. Sometimes the proof of how much you know is realizing how little you know. I'm also going to talk about funding of Social Security, and in some ways look at the issues of privatization, whether we should be moving to more prefunding, and if so, what should be done with the assets. I will move through topic areas, such as why we have the pressures for more prefunding, which you have just heard. Are prefunded plans demographically immune because the implicit presentation just given was that they are. What is the essence of security for Social Security? Should we go to a defined-contribution plan?

Why do we have increased interest in prefunding Social Security as opposed

to staying with pay-as-you-go? And I'll just repeat that we know that life expectancy is up, fertility rates are down, which means that the dependency ratios are changing very rapidly. However, what's just as important is that beyond pure demographics are some of these economic issues. The productivity of the workers has been relatively flat and real interest rates are high. I'm going to try to explain to you why these are all important, and perhaps equally important. These certainly are just as important as the first three. The reason is that the rate of return you've heard discussed is different in pay as you go versus fully funded.

In the fully funded plan, such as a private plan or a privatized Social Security system, the rate of return is the real rate of interest. So your discount rate, in an actuarial sense, in a fully funded plan is the real rate of interest. In a pay-as-you-go (pay-go) plan, it's the increase in national income. And that, in turn, is a function of the increase in the size of the labor force, so that females entering the labor force is good for pay-go Social Security, but increases in productivity are equally as beneficial. And if the labor force gets smaller, but every worker becomes more productive, we're still alright. So the rate of return in pay-go is this increase in national income. The rate of return in fully funded is the real rate of interest. And where am I better off? It depends on where I'm better off in terms of these aspects. That's not a given. You don't start with the answer to that. It's variable.

I'm working with some Canadian data here, but the U.S. data are not remarkably different. Canada introduced broad social security in 1966 on a pay-go basis, and at that time, looking at the previous 10–15 years, I think a wise actuary would have made the following types of assumptions in terms of dependency ratios, real rates of increase in wages, and real rates of interest these are all very important. A pay-go system in terms of the size of the Canada Pension Plan, which has a replacement ratio of 25%, would have cost about 11% of payroll under pay-go, and about 16.5% of payroll in a fully mature system, or long-term funding under fully funded. So it was wise, given the assumptions that would have been made in the 1960s, to choose pay-go.

But the future, as they say, "ain't what it used to be" because here we are now with quite a different set of variables. Senior dependency ratio long term, if you were now setting the assumptions, would be remarkably different. Real increases in wages are way down, in fact 1% might be viewed as optimistic by some people. And real rates of interest are extremely high. I could go out right now and earn 6% in Canada, net of inflation, but long term as an actuarial projection I might assume 4%. If I do my costing of a mature social security system with a replacement ratio of 25% a pay-go would cost 14.5% of payroll and fully funded 7.2%. Now what should I do if I were setting up Social Security? I might say, well, let's have it fully

funded. Of course, these are all variables. Another generation from now I might be able to pull my 1960 slide out and relabel it 2025. We're not sure, are we?

So one of the important first questions we're going to come to is this. Does pre-funding of a pension plan, make it demographically immune? I think about my actuarial education. When I finished my fellowship, and of course at that point I was omniscient, I knew that fully funded pension plans were demographically immune, right? Wrong. They're not. They are not demographically immune. The reason for that, I think, is the fallacy of composition. And I will give you an example of composition.

If I'm at a sports event and I can't see very well, if I stand up then I can see better. But if everybody stands up then nobody's better off. If I want to invest in a pension plan and I'm one person, I can go into an open market and buy and sell and trade, and then when I want to retire I can turn my assets into income by liquidating, and hopefully everything will work out like I was taught in Pensions 101. But if a huge part of the national income chooses to invest and run into the stock market when I'm running into the stock market, and then all liquidate when I want to liquidate, I have a completely different set of circumstances.

In fact, I may be forced to go into the stock market when it's high, perhaps at the end of a six-year bull market, and then forced to liquidate when there aren't very many people who want to buy my assets. Similarly who's going to buy my four-bedroom house when nobody wants a four-bedroom house? In fact, the real security is not from funding. It is how much is being produced and how many people want to consume the production. It's a production-consumption equilibrium. The real variable is output. The real concern is a healthy economy. The real security for Social Security is a healthy economy. It's output. So then the real question is, not whether you create assets per se, it's whether you increase output. Is there a connection between prefunding and output that doesn't exist between pay-as-you-go and output?

Just to repeat that, what we're really looking for is a healthy economy. For pre-funding to be the preferred choice to get to a healthy economy I think you have to satisfy three statements. All three have to be satisfied. First, you must be able to show that prefunding does, in fact, in and of itself, increase gross national savings. Second, having increased gross national savings because of pre-funding, those savings must be used to increase productivity. If you don't have that link you've not done anything. And, three, there can't be any better way to achieve this. If there's a better way to do it, then why choose prefunding of Social Security to do it? That wouldn't be wise.

Does prefunding increase gross national savings? We've had an indication that pay-as-you-go decreases gross national savings. You just heard it. I also have a paper that I was reading just before I came down here, by Olivia Mitchell and Chris Bone, two people I respect highly. They have mathematical proof that prefunding Social Security doesn't increase gross national savings. So we now have an addition to the literature, but in total the literature is inconclusive.

Does prefunding increase gross national savings? For example, when pay-go Social Security was introduced, your intuition would have said, ah ha, we're going to see an immediate decrease in gross national savings. In fact, the immediate impact was the opposite because it increased people's knowledge about retiring and they wanted to retire, but they only received a 40% replacement ratio from Social Security. You can't retire on a 40% replacement ratio. With the ability to retire heightened they then saved more so they could retire comfortably, they could retire earlier, and I mean at age 67 instead of age 78. They also had the ability to bequeath wealth to the next generation, something they didn't have before. So you have to have behavioral response built into all of your systems before you can answer these extremely important questions.

Now, let me give you one factual piece of evidence. In 1980, Chile, the example of all that is wonderful in the world of social security, had a pay-as-you-go social security system and the gross national savings rate was 21%. They then introduced new social security in terms of individual retirement accounts with mandated worker contributions of 10% of earnings, and by 1989 their gross national savings rate was 20%.

Does prefunding enhance worker productivity? Literature is inconclusive. Isn't this terrible? There's one wonderful quote that says if you go into the library with your conclusions formed, you will be able to find support for your conclusions. But if you go into the library with your mind open, you will come out confused. The problems here are many.

Why can't we say that prefunding enhances workers' productivity? Well, sometimes these funded plans have too much political control and influence. They are used for political purposes; they're used for lemonade.

We have many examples of this. These are not just words. This may even get to the point of fraud, although that would be in what I would call Third World or developing countries, not in North America. There's certainly evidence that with these side funds, the populace then says, we can afford more, why can't we have more? So there's pressure to increase benefits. Also, in funded social security systems, the funds then start to get used for fiscal reasons. There's unemployment?

Let's jig Social Security. There's inflation? Let's jig Social Security. Well that's not what Social Security is supposed to be all about. You start to get perverse responses as a result. So there's quite a few questions that need to be answered.

What about this idea of having a much stronger link between contributions and benefits? The strongest link would be to move from defined benefit to defined contribution, and again, that's exactly what happened in Chile. There's several advantages of defined-benefit systems that need to be kept in mind. One of the strongest is the low administrative cost. Old-age, survivors, and disability insurance (OASDI) had administrative costs 0.8% of cash flow. We'll look at Chile in a second.

There's risk sharing, and that's the whole idea of Social Security. Why do we have public insurance systems if it isn't for the insurance value? Of course, there's redistribution when there's insurance. There has to be. Plus you can have a complete system. You can have death benefits and disability benefits within a defined-benefit system. On the other side of the coin, there are some disadvantages to defined-contribution plans. There's this risk that you've shared among 275 million Americans that is borne on the shoulders of the individual. It's very difficult to look after the ancillary benefits. You have to set up some sort of a separate insurance program, but then people are individually risk rated. You get preexisting exclusions and females and males getting different amounts, which we'll talk about later.

Let's look at administrative expenses in Chile. I've seen estimates as low as 15% and as high as double that. Because you have to advertise and pay sales commissions, you compete for money and, of course, you have to administer 15 different funds with 15 different forms. In a pure defined-contribution system, there's no wealth redistribution; in fact the systems are usually regressive, for two reasons. One, administrative costs are higher the lower the fund is that you're running. A poor worker pays a higher percentage of expenses, and two, the rich live longer. That kind of regressivity may exist in Social Security, but not if has ancillary benefits. Females will get less. In a modern society, is it acceptable that for two workers with exactly the same work records, at age 65, your gender determines whether you live well or not?

What happens when you explicitly move the unfunded actuarial liability of pay-go social security into national debt? It has really always been there, and Kris will emphasize this. It's off the books, but the unfunded liability of social security is part of the national debt. But, as you move it explicitly into the national debt, how do you pay it off? The way they did it in Chile is they have issued recognition bonds that have a defined lifetime. And if you pay them off separately from the rest of the

national debt, it means that the transition generation has to pay twice. They have to fund their own and pay off the unfunded liability of the pay-go system.

As we have seen, the government is going to have to guarantee some minimum benefits; then you're going to have anti-selection at the point of the minimum benefit. Why should I work if I'm only going to get \$1 more than the minimum benefit if I contribute all my life, and if I just go into the underground economy I'll get the minimum benefit. So you've got all of these problems.

When you have prefunding, of course, you have funds, but what do these funds really mean? I would argue, and I think you can accept, that if the funds are all government bonds, then what do you really have? If you're both a taxpayer and a contributor or a participant in Social Security, then what change is derived by funding Social Security with government bonds? The cash flow of the system remains exactly the same in total, in both amounts and timing. When you buy and fund all the bonds, the government then has a cheaper source of funding and you don't have to see the same rate of increase in your taxes at that time. So your taxes go down, your left pocket lighter or heavier because your money's there, but your Social Security contributions go up. When you liquidate, and when the Baby Boom retires and wants to consume, you're the person backing those bonds. So in the total system you haven't changed anything. But what you have done is increase deficit financing because you've made it easier for the government to fund its deficits in the short run. Then we had better invest in the private sector, if that's the case.

It could still be a zero-sum game because somebody still has to buy the government bonds. So you just sort of shuffle the cards, but do they really change?

Is your economy undercapitalized? I think there's good reason to argue that the U.S. needs more savings, but we need to answer these questions and understand to what extent it is. And are you going to keep all the money in the U.S., or is there going to be foreign investment? That may not be as difficult a question for the U.S. because of the size of its economy, but it's a very difficult question for other countries of the world. I think it would be a very important question for Canada, for example. How much should be invested overseas?

One of the nice things about investing offshore is that you can try to find someplace that doesn't have your demographics. You can get out of some of your demographic problems by finding a country where there will be workers when you need them, and then transfer that risk. Of course, there will be political influence, and we have seen this even in Canada, even with the Quebec Pension Plan. We have seen that the private-sector investment of assets has had a political peg attached to

it. I won't overemphasize that, but it's true. Of course, as the government fiduciary of the government system, you're going to be entering the stock market as the Baby Boom enters the stock market and selling when the Baby Boom sells, so I think you're going to be buying high and selling low. I wouldn't want to be the person that was blamed for that.

Finally, we know that the balance between pay-go and full-funding is similar to the difference among worker productivity rates of increase, national income rates of increase, and real rates of interest. Right now real rates of interest are very high. But if I put another \$600 billion into the market, can those real rates of interest stay that high? If I drive them down, then I will be the first one to come back with a transparency saying, "Hey guys, you've just driven real rates of interest down, now pay-go is better. Let's get back. I'll be here." Furthermore, on these prefunding issues, you now have a risk of inflation. One of the nice things about pay-as-you-go is that the money comes in as contributions and goes out as benefits. You can have cost of living built into them because of that, but with prefunding you have the money coming in and then when 40 years go by the money goes out as benefits, so there's an inflation risk. I think, as I said before, that the more funds there are, the more pressure there will be from your electorate to increase benefits.

To create funding you have to have a rate that is higher than the pay-go rate, and right now I think is a bad time because of the impact of payroll taxes on the labor force. It's a bad time to be doing this. Why not pay off the debt? If you want to raise money, if you want to increase taxes, then should you be doing it to create a \$600 billion asset pool behind Social Security, or should you be paying off national debt? What should the priority be? And remember, there must be some maximum tax rate.

Contributions to Social Security are treated in terms of labor force response and employment response, as taxes. Isn't there a better way? Well, I think there's a better way, and the better way is to provide better incentives to private pension plans. The U.S. puts so many barriers between wanting to save for retirement and actually doing it, through administrative complexities and through all the forms. Why not open up Individual Retirement Accounts (IRA), as opposed to funding Social Security? Is this the best way?

I'm going to sum up here. All I've really done is ask you some questions. Before you make these public-policy decisions, I just ask you to provide answers to each of these questions. Remember, in my mind at least, the key is a strong economy. You must create wealth before you can distribute it; and the more wealth you create, the easier it is to let everybody have what they want. If we can become more productive, we can have Social Security and Medicare and a chicken in every

pot and a car in every garage. But, we've got to create that wealth. And the way to do it then is to increase savings and use those savings to increase productivity. We must do it in an optimal manner. The question that remains with you, then, is whether or not funding of Social Security is the right way to address these real issues.

**Mr. Ostaszewski:** This reminds me of the story of two economists walking down the street who saw two women arguing with each other from their windows across the street. One of the economists said, "Obviously they can never come to a conclusion."

"Why is that?" asked the other economist.

"Because they're arguing from different premises," replied the first one.

That is a bit of a problem, I think, in this debate about Social Security. I think there is overwhelming evidence supporting the idea that the old-age problem is a problem, and the data in the U.S. is stunning. I have recently reviewed the data about the wealth accumulation for the U.S. By age 65, 3–5% of people have substantial wealth, if you don't count Social Security.

Social Security is the overwhelming source of wealth in the U.S., and that says a great deal about the nature of the problem. If there is one thing that I would try to convince you of is that the phrasing of this debate is wrong. I disagree with Robert about this one point. Phrasing this debate as funding versus prefunding misses the central premise, because I believe, and I will try to convince you, that pay-go is no different than any funding. It is just very ingenious financial engineering, but that is the key. And how do I intend to go about this?

I want to first ask you, what is asset/liability management? What is the meaning of it? If you hear about it, and if you look at the descriptions in courses, you'll think it is duration, convexity and all these things, and maybe interest-rate scenarios. But, the central premise of asset/liability management is something else.

What is the first reaction when you mention asset/liability management for social insurance? I've heard this first response: there are no assets. Well, there are no assets because we call it pay-go. Actually, that's not true. Let's ask what is asset/liability management? Well, it's this C–3 risk. It's this interest-rate risk, so it's duration, convexity, and so on. Really? Because the research in this area indicates that the key issue is managing cash flows of a company. That's how the whole field started. That's what Reddington said in his paper of 1952.

Which cash flows? In-force business or going concern as the firm continues? In 1993 Bill Panning wrote an amazing paper about asset/liability management on the going-concern basis, where he shows that if you take that perspective for a property/casualty company you get a totally different value of the firm versus what you would get if you just take the in-force business. Why am I saying this? The central nature of our business and of social security systems is transferring of cash flows between assets and liabilities.

How do you value securities? If you buy a stock, what's the value of that stock? It's whatever you can get, in terms of cash flows, out of it in the future. All the accounting entries don't matter. They are not important. And, given that, I would like to stress that we've already seen this happening to us, as we more often have to look at the insurance companies this way because of the evolution of the industry.

What cash flows then? Well, I didn't tell you but there is going to be a test now. I'm an academic; I just can't resist. Imagine this. On January 1, 1995 a citizen transfers \$1,000 to the government and then on December 31, 1995 the government transfers \$1,050 to the citizen. Now I would entertain answers to the following question. What was the transaction? I'm sure you have some answers. What was that transaction?

**From the Floor:** A loan.

**Mr. Ostaszewski:** That's what you think? That's our first answer. Any other answers?

**From the Floor:** Maybe it's an investment.

**Mr. Ostaszewski:** On the part of the citizen, you mean?

**From the Floor:** Yes.

**Mr. Ostaszewski:** But that's also a loan to the government. Yes, it could be this. But it could be taxes followed by a transfer payment. This person got poor by the end of the year. He (or she) was rich in the beginning of the year and is poor now. Things changed. It could also be a loan. Or, it could be better. It could be a real-life situation where they exchange cash flow but they just net them because what really matters is cash flows.

Now, let me ask you a different question. How does the name of the transaction matter for its economic value? This is another example of the "strawberry principle," which I always explain in linear algebra classes. The strawberry principle

originated with Soviet scientists. They once announced that they produced a new type of a raspberry. It was as big as a strawberry, it looked like a strawberry, it smelled like a strawberry and it tasted like a strawberry. That's the end of the joke.

What matters here is that this is a 5% transaction. Any name you call it, this is a 5% transaction. In terms of the price of money, it's 5%; that's what matters. What you call it has no bearing whatsoever on its economic value. I'm saying this because, in the "Encyclopedia of Finance," Laurence Kotlikoff wrote that Social Security is just an ingenious way to borrow money by the government. He didn't call it off-balance-sheet financing, but that's what it is.

Think about this. It's done precisely for the reason I just gave you. Most nations have this problem. People turn 65 but are unprepared for their retirement. That gets resolved one way or another, but we probably don't want it resolved in such a way that people arrive at 65 with \$1,000 in the bank, and they don't have a job. That is a very significant problem. But, nevertheless, the Social Security system is basically equivalent to what I just wrote here.

The initial beneficiaries' generation receive wealth through transfer payments and the government issues bonds in return for tax contributions. Benefits are called contributions plus interest, and there are special taxes and transfer payments to make sure that people receive the scheduled benefit that they are supposed to receive. What is the significance of this model? Well, the significance is that we should think about this like the strawberry principle. If it looks like a strawberry and smells like a strawberry and tastes like a strawberry, it's a strawberry. It's the same thing. And if it's the same thing, how do we manage government debt? Why does debt matter? How are the two related?

They are related because we manage a certain growth of government receipts and a certain growth of government outlays. Here are the factors that affect the inflows and outflows of the Social Security system. And as we manage those, we manage them just like the inflows and outflows of the government. What kind of questions do we need to ask ourselves about this? We created this system for a certain function. But there is also a question that this is like the other strawberry, like collection of taxes and borrowing and all the other things.

What is the optimal tax and borrowing policy? What is the optimal policy so that the total economic pie will be as big as possible? The amazing thing is that we do ask ourselves various questions about funding. It's not really funding. The key question is, what is the source, the origin of the wealth of nations, and what is the origin of the poverty of nations? How do we make sure that the pie is bigger?

There is a book about that. There is no book about the origin of poverty of nations. But we had practical studies about that in the 20th century, which were really amazingly designed. In the 1920s Ludwig von Mises said that the socialism experiments would fail because the government wouldn't be able to calculate the prices of resources without markets. The factors that affect the cash flows of pay-go and of Social Security are the same factors that affect the collection and disbursement of government cash flows in its regular budget.

Let me ask you this. Do you see the tremendous difference in the accounting for government bonds, for budget, the regular budget, and the Social Security system? If the Social Security system were accounted for the same way as government debt, what would happen? For every single dollar in tax receipts, payroll tax receipts, the government would have to issue a bond that would be the present value of future benefits. I know this is not very simple to calculate; it's a messy thing. But in the 1960s, according to Bob Myers and Bruce Schobel's calculations, the government was collecting \$1 in payroll taxes and issuing a \$10 bond in return for that because that was a money's-worth calculation. That generation of return in the 1960s got about \$10 for each dollar that they paid in, and I'm talking about \$10 accumulated actuarially, with provision for interest and mortality.

Where did this \$9 come from? Well, of course we had to debit future generations. So the proper accounting would show: we would have \$1 cash collected, plus \$9 from future generations, and then we issue a \$10 bond. If so, what is the problem with issuing government debt? Why is that a bad thing? If you can get away with it, it may not be a bad thing. In fact, this whole strategy was invented by David Ricardo in Britain after the Napoleonic Wars. The debate in Britain was, do we go back to the gold standard or is it better to just inflate out of debt? They went back to gold standard and David Ricardo was influential in making it happen. But he also said, don't pay it off. Just roll it over. Borrow and pay interest and then you can borrow and again pay interest. It worked great for Britain in the 19th century. In fact, this is exactly what the Social Security system does. It rolls over the debt.

What's the problem with this strategy? The problem is that the system is a political creature, and a political creature works this way. If this generation got ten times its money's worth, then the next generation wants that, too. And the next generation wants that, too. And, if they can vote for that, they will. If they can vote to get it, they will. Fiscal realities? That's irrelevant. If you can move the funding into the future, let's do it.

Think about this. I heard a story from a New York investment banker. In the 1970s a group of Latin American politicians came to New York to renegotiate a loan, as they were having problems paying it off. And they talked and talked, and one

representative from Latin America was a general who got really tired of all the talking and finally said, "OK, all this about interest rates and terms is boring. How much fresh cash do I get out of this deal?"

Well, what's the danger if you do that? The danger is something that is called "hard-landing." Hard-landing is the situation when the investors who lend you money, be it the people who pay the payroll tax or somebody else who finances the debt, say, "Wait a moment, this is too much; we're not going to finance this. We're not going to fund you." This has happened in other countries.

This is more or less what happened in Eastern Europe, in the Soviet Union and all of the Eastern European communist economies. This is what happened in Sweden in 1991. It was a moment when the government of Sweden didn't have the cash and the interest rate went to 500% overnight. This is what happened in Mexico in 1994.

The point that I think is urgent for us is that we have developed the widest, the largest, long-term actuarial deficit in social insurance ever in the period of economic recovery. In 1998, we will have a negative cash flow in the combined social insurance system in the U.S., Medicare plus Social Security. By 1998 we could be in a recession. I think it's very likely. So these are some points that I mention.

The urgent question is about the next recession. Will there be a next recession in the U.S. economy? Well, I think there will be one. I have learned in my life that I should be more optimistic. My experience shows that I should be more optimistic than I generally am. But still, I think it is possible that we will have a recession. How is that going to affect us? We have a 4% savings rate, and we have a government that needs to roll over massive amounts of debt, massive really, compared to what it used to be. We have most of this debt inside the social insurance system. So the question I want to pose for you is, are we prepared for this?

Also, I would argue that the main rationale for privatization is to stop the acceleration in the growth of benefits, because that is off-balance-sheet debt. The political process is not showing any signs of stopping it. The political process in the U.S. until now, has shown itself to be unable to stop the issuance of benefits beyond what we are capable of paying. That's why I think it's very important for us to consider transferring that process to the economic sphere. We need to feel our pain. In politics, we have shown that we don't want to do that. So, that's my issue.

**From the Floor:** Regarding your description of income and outgo, I would suspect that perhaps the picture isn't quite as bad as it looks if you adjust the income by the federal income taxes that some of us retirees pay on our income so that we get

income, but we also have to pay out federal income taxes on the income. So it seems to me that's partially a washed transaction. The other comment is on the picture showing that when we first installed Social Security, the initial beneficiaries had a very, very good deal, and if we want to change over to some other system, an approach would be to either disadvantage the generation of people during the changeover, or somehow disadvantage people forever after the changeover. It seems to me that this question of fairness is also handled by having a means test. I mean, why not simply go to a system whereby those of us that don't need it, don't get it. It seems to me that is also fair because it is a social system.

**Mr. Gokhale:** The proposal that I put up about having to disadvantage some generations was never in the proposal. That 18% tax rate, or 18% of the contributions of future generations to be devoted to paying off obligations to current beneficiaries, essentially achieves an equal distribution of that net burden onto all future generations. So that's part of the deal.

About means testing, I think you may want to think about the fact that the private response to a means-tested system may be strategic response. As you see, all of these speakers emphasized the need to increase savings. Means testing may actually result in lower savings in the future because, if I am a young worker and if I save a great deal, my Social Security benefits in the future are going to be means tested. If I have a lot of wealth in the future, I'm not going to get anything, and I have no incentive to save. Means testing does have its problems in the sense that if people's responses are strategic, it will actually result in lower saving.

**Mr. Ostaszewski:** Let me stress that the current system, the so-called pay-go, which is really a system funded with government bonds, does exactly that; it rolls over the debt to all future generations; it spreads the burden evenly. That's not the problem with the system; my suggestion is that the biggest problem is there are no barriers to growth of benefits; that you can gain more through political pressure than by saving, so that's what you do.

I think that is the biggest problem. I don't know if there are any political barriers whatsoever to the growth in benefits, except for hard landing for the government, through lack of cash flow. And that, by the way, may happen in 1998. Such a scenario really could happen when the combined social insurance system will have a negative cash flow in 1998. It is not 2012 that's relevant because current idleness is caused by Social Security having a positive cash flow that can be used to offset the negative cash flow of Medicare. But these two combined will become a net user of cash for the federal government in 1998. And that will be a significant event, I think.

**Mr. Frank A. Irish:** My question is more technical. I hear a great deal about the resources of retired people and how this fits into public policymaking. I also hear a great deal about calculations of how much is available to fund one's living standard in retirement. What I didn't hear was a discussion of the question of the value of residence, which is a fantastic resource for people of my generation and the immediately preceding generation because of inflation. We all have houses worth a great deal of money. How do you factor the value of that into your public policy calculations? Of course, another question is, how does the retired person liquidate that value in order to make use of the value? He or she needs to keep his or her house. Eventually he or she will die, and the value will go to his or her successors. It would be better public policy, I would think, if he could use the value of the house to finance his living standard during his retirement. But it raises all sorts of questions.

**Mr. Ostaszewski:** Let me give you one very quick comment, and I think that Rob may have an answer. It's essential for this person to understand that you can't be selling only to people your age all the time. Eventually the younger people will have to buy it, and in order to buy it, they have to have a job and resources. And if they don't, there will be no inflation. It will be exactly opposite of inflation. Rob, did you want to say something? I see that Jagadeesh wants to comment first.

**Mr. Gokhale:** Let me answer all three questions in sequence. First of all, the federal income tax revenue from taxation of benefits is included in that income graph. That's total income. It includes the income tax payment on Social Security benefits. That is in the income. Second, Social Security was instituted in 1935. It is true that initial beneficiaries got a good deal. You don't disagree with that, right? So, the fact that you gave more benefits to some people than what they paid into the system implies that the difference has to be paid for by someone. It can either be paid for by a finite number of future generations, or it can be paid by extended payments for that so-called debt, which can be extended onto all future generations through infinity.

With regard to value of residences, do you remember those total resource, relative resource profiles that we looked at? One was from 1960–61 and the other was for 1987–90. Those resource profiles include all wealth. In particular, they include net worth of living generations, which includes their stocks, bonds, residences, and the whole thing—the net worth. Plus, for younger generations, in particular, it includes the present value of their future labor earnings, which is human wealth. It also includes the present value of future pension benefits, which is also part of their wealth. It also includes the most important category—the net tax payments to the government that they will make over their remaining lifetimes.

When I say net tax payments, it means taxes net of all transfers that they will receive, including Social Security, Medicare, and Medicaid. The shift in that relative resource profile in favor of the elderly, relative to the young in the later period, indicates what was true in the 1960s—in the 1980s the elderly were better off. And given that, as one gets older, one consumes a larger fraction of one's total resources. This kind of a shift in resources in favor of the elderly means that aggregate consumption would be higher.

The second point is precisely the one about annuitization. If resources are not annuitized, they are all in lump sum. Let's think of two cases. One where a retiree at 65 has lump-sum resources; he or she has a house, stocks and bonds, and so on. He or she has to decide how fast to consume all of his or her resources so that he or she can live comfortably throughout his or her life, and not run out of resources before death. He wants to avoid that situation where he consumes too fast and runs out of resources before death so he's poor at the end of life. That is an undesirable outcome. In that situation a person would consume in a conservative manner out of those lump-sum resources.

If resources are annuitized, that means you're getting a check every month that you are alive. When you are dead, the check stops coming. What this does is relieve you of the fear of overconsuming your wealth before you die. It insures you against your uncertain length of life, which means out of the same present value of resources you can consume more, after a time and at a faster rate, if your resources are annuitized than if your resources are in lump-sum form.

The growth of Social Security, Medicare and Medicaid programs (which have provided resources to the elderly), the shift in the profiles (also providing them in annuitized form), implied that out of a given present value of resources at retirement, retirees can consume those annuitized resources at a faster rate. Thus they will, in general, leave lower bequests to the younger generations because, in the lump-sum case, you're consuming conservatively, and at the point of death you still have something left, which gets transferred to the younger generations as an unintended bequest. But in the case of annuitized resources, you consume out of your resources pretty rapidly, and at death you stop. So there's nothing left over to transfer to the younger generation.

In other words, the lower bequests generated when resources are annuitized is also a form of transfer from younger to older generations. Because the younger generations get lower bequests when resources are annuitized, you can see the trend because growth of Social Security, Medicare, and Medicaid is toward greater annuitization of resources of the elderly. This means that bequests are going to be lower and, in fact, the greater annuitization of the elderly enable them to consume

their resources better, or spread their consumption across their remaining lifetimes better than if they were in lump-sum form. So it's good for the elderly, but the unfortunate consequence of greater annuitization is that it increases consumption and lowers the aggregate saving in the economy, and leaves younger generations with lower bequests receipts. Therefore, it reduces the capital base of the economy down the road, which will mean lower labor productivity and so on. So, although annuitization is good for the elderly and it provides them a type of insurance that is desirable for them, it has dynamic consequences for the economy.

**Mr. Brown:** I'm going to take a different tack, but it may come out sounding negative. I think the housing situation has exacerbated what has been referred to as this intergenerational transfer of wealth. Not only was there a transfer of wealth in Social Security but, because of the Baby Boom, your housing values were inflated. Let me be almost rude about it; this was not because you were particularly wise in the choice of investment in housing, but because demographically you were born in a very good year. The other side is that the youngest of the Baby Boomers, now in their upper 30s, are followed by the baby bust.

I don't know about the U.S. in detail, but in Canada, housing has not been a good investment for the last eight years. I don't think it will be for about as far as the eye can see, except for some local geographic exceptions. In Canada, it rarely stays warm in the winter, except for Victoria, or British Columbia. But, for those people who are looking at their \$400,000 houses as a \$400,000 asset, I say, no, you're wrong. You probably won't get \$400,000 for it in real terms. If you put that into your financial planning and on your yellow line as \$400,000, then you're going to have egg on your face as opposed to having your retirement nest egg.