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MEASURES OF ACTUARIAL BALANCE FOR SOCIAL INSURANCE PROGRAMS

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- o Historical development of long-range Old Age, Survivors, Disability Insurance "close actuarial balance"
- o Purposes for determining actuarial balance
- o How well is the current measure fulfilling its purposes? Is it outdated?
- o Should a similar measure of actuarial balance be applied to hospital insurance and supplementary medical insurance?
- o Possible alternative measures

MR. JOHN C. WILKIN: Social Security consists of four programs. There is the Old-Age and Survivors Insurance (OASI) program, the Disability Insurance (DI) program, the Hospital Insurance (HI) program, and the Supplementary Medical Insurance (SMI) program. Each of these programs has its own trust fund. Yearly the Board of Trustees of each fund reports to Congress on the financial status of the fund. In their annual reports, which are referred to as the Trustees Reports, there is much information including year-by-year projections of the income and outgo of the programs and of the trust fund balances. For the OASI, DI, and HI programs, these projections are made for the next 75 years. The trustees have always made an attempt to make the OASDI Trustees Report more than just a statistical encyclopedia. They have attempted to put a bottom line figure in the report. This is done by summarizing the information for the 75-year projection period into one figure and then using this figure to determine whether or not the OASDI system is in close actuarial balance. Currently there is much discussion concerning the measure of actuarial balance being used to test the adequacy of the financing of the OASDI program. This discussion has resulted in five papers having been written in the last couple of years on the measuring of the financial status of the OASDI program.

Our panelists will present information from those five papers. They are all experts on this subject and they will present historical development of the current test, its strengths and its weaknesses, and proposals to change the test to overcome its weaknesses. Our first speaker is a graduate of both Harvard University and the Johns Hopkins University. He became a Fellow in 1960 and has been active in both the Society of Actuaries and the American Academy of Actuaries. He began his career with the State Mutual Life Assurance Company and then moved on to the Monumental Life Insurance Company, where he became Chief Actuary. He was Chief Actuary at the Social Security Administration from 1979-81, where he was involved daily with the issues of the long-range actuarial balance of the OASDI program. This led to

his *Transactions* (Vol. 33, pp. 541-64) article "Measures of Actuarial Status for Social Security -- Retrospect and Prospect." He is a past president of the Society of Actuaries and the current president of the Mutual of America Life Insurance Company.

MR. DWIGHT K. BARTLETT, III: I am pleased that the profession is giving attention to the subject of this panel discussion. It is a subject eminently worthy of the profession's consideration. I wish I could claim that it was a result of the paper I wrote, "Measures of Actuarial Status for Social Security: Retrospect and Prospect," which reviewed the history of this subject and contained some modest proposals. Obviously that is not the case, although, for someone who is first becoming interested in this subject, my paper may still be a useful reference. Rather, the circumstance which makes this subject a lively topic of conversation is that the OASDI program may no longer be in close actuarial balance as that term has been defined for some years in the Trustees Report. We are rightly concerned with how the media will treat that fact and what the public reaction to it will be. If the program were found to be in close actuarial balance because of a change in definition, we should also be concerned about the public perception of the motives in changing the definition at a time when the program would otherwise fall out of close actuarial balance.

The more I have thought about this subject in recent years, the more convinced I am that a source of our difficulties with this subject is the two different purposes which the actuarial projections in the Trustees Reports are intended to serve. These purposes are related but not identical.

The first purpose is to view the Social Security system as a self-contained system similar to a private pension fund and to determine whether under present law as to benefits and revenues the system is financially viable. Seen from this perspective, it is appropriate to look at both projected revenues and expenses as well as trust fund balances.

As has been noted, it has been customary in the Trustees Report for OASDI in recent years to average arithmetically the expenditures as a percentage of taxable payroll over a 75-year projection period. When the income rate over the same 75-year period is, on average, within 5% of the average expenditures, then the program is described as being in close actuarial balance. In my paper I argued that that was too restrictive a measure, given the uncertainty of the projections in the later years. The Trustees Reports contain projections under optimistic, intermediate and pessimistic assumptions. Examining the relationship between the estimate of expenditures on the three different bases for each 25-year period shows the widening out of the range of the cost estimates in the later years, even under the fixed assumptions used.

Table I shows those relationships as taken from the 1987 Trustees Report. Frank Bayo, in his discussion, makes an ingenious proposal which would involve incorporating a reliability discount factor directly in the calculations, heavily discounting the excesses or deficiencies in the later years of the projection period, thereby emphasizing the early years in the averaging process. Scientifically speaking I believe that his approach is superior to my proposal for widening the tolerance range for close actuarial balance for longer term projections. Nevertheless I believe that it will be a difficult concept for people other than interested actuaries and economists to understand. Therefore for practical reasons I prefer my own proposals for broadening the range to 7 1/2% for 50-year projections and 10% for 75-year projections. I would note parenthetically that

the recommendations contained in the recent report of the U.S. General Accounting Office fail to address this problem and are therefore deficient in my opinion.

TABLE I

Expenditures as a Percentage of Taxable Payroll

OASDI
1987 Trustees Report

	Optimistic	Intermediate (Alter. II-B)	Pessimistic
25-year averages			
1987-2011	9.38% (89.2%)	10.51% (100.0%)	11.74% (111.7%)
2012-2036	11.34% (80.0%)	14.18% (100.0%)	17.52% (123.6%)
2037-2061	11.14% (70.3%)	15.85% (100.0%)	24.01% (151.5%)
75-year average	10.62% (78.6%)	13.51% (100.0%)	17.76% (131.5%)

I also support the recommendation which the American Academy of Actuaries Committee on Social Insurance made several years ago to supplement the traditional test with another test related to trust fund ratios, such as requiring that the trust funds each year should not exceed 125% of anticipated expenditures nor be less than 75% of anticipated expenditures for the year. I believe this test, however, should not be part of the long-range test. It should be confined to a relatively short number of years at the beginning of the projection period, perhaps 10. I believe that Congress did not and should not attempt to adjust the tax rates year to year to match the vagaries in the projected expenditures, even though it has become widely accepted that the program should be financed on a "pay-as-you-go" basis, with the trust funds representing contingency reserves rather than an intentional prefunding of future benefits. This would constitute a short-range test, which would be in addition to the long-range test. John Wilkin, our panel moderator, deserves primary credit for pointing out the inappropriateness of extending this test to the full 75-year period.

I do believe, however, that in their second purpose the actuarial projections are also intended to show not only whether the program is properly financed when seen as a self-contained system, but to help all concerned understand the burden the system presents to the economy in various periods of time in the future. I am concerned that excessive reliance on the concept of "close actuarial balance" presents the opportunity to play games with the numbers, such as raising taxes in the way-out years so that the public can be told that the program is in close actuarial balance without the public understanding the magnitude of the burden of the program when the baby boom generation retires. This is a concern that apparently others share since, as Frank Bayo notes in his discussion, the panel of actuarial and economic consultants to the 1979 Advisory Council stated in its report:

> While we believe that projections for the 75-year period should continue to be calculated and displayed, it is not necessary to take immediate legislative action to raise present or future taxes whenever a deficit appears. Rather the deficit estimate simply serves as a warning calling attention to future problems. The purpose served is to identify the problems, their causes, and stimulate public discussion of possible future corrective actions.

The real burden of the program on the economy is not the taxes that are legislated, but rather the benefits that are paid and the expenses incurred in administering the program. The taxes and the trust fund mechanism are simply devices for allocating the cost of the program across various segments of the economy. It should be noted that the Trustees Report has included for some years in an appendix the estimated program expenditures as a percentage of projected gross national product. Little attention seems to have been paid to these projections, but I believe they deserve more in spite of the fact that the projections of the gross national product are probably subject to as much uncertainty, if not more, than the projections of the program expenditures themselves.

Haeworth Robertson, a former Chief Actuary, SSA, has done an estimable job in educating policymakers and the general public concerning the possible long-range burdens of the present Social Security programs, including Hospital Insurance and Supplementary Medical Insurance. While I disagree with Haeworth about the urgency of making changes to the program in anticipation of possible future problems, I nevertheless believe the profession can make a contribution if it were to debate not only how close actuarial balance should be defined, but also what is the nature of the moral and legal commitments being made to future beneficiaries are. How should we responsibly balance the need to give fair warning to future beneficiaries and taxpayers about the magnitude of those commitments while not emasculating the program by overreacting to scenarios which will not occur for 50 or more years? In that vein, a study by the Social Security actuaries would be interesting of what funds would be required to pay for the presently accrued benefits when the baby boom generation retires, however defined in the Social Security context. The suggestion here is that, just like the ERISA requirement for private plans, no program changes should reduce the already accrued benefits of presently covered workers. Such a study might give us a better idea of how much lead time is required to make program changes, without reneging on promises of presently accrued benefits, if the worst case scenarios materialize.

In closing I cannot resist reminding our audience of the remarkable paper written by Ray M. Peterson 30 years ago, "Misconceptions and Missing Perceptions of Our Social Security System (Actuarial Anesthesia)" *Transactions* (Vol. 11 pp. 812-88). On page 821 of the paper he said, "We should not become anesthetized by the actuarial balance of the Social Security contributions and benefits nor by the soothing concept of self-support. We need to understand better the probable future behavior of our Social Security financing method. What is the nature of this economic creature which we have produced by a 'pragmatic, political process'?" I would assume that he would regard our efforts here as being directed to the discovery of a better form of anesthesia for disguising the fundamental malady of the patient. It is a shame that, for our edification, he cannot recross the Great Divide and let us benefit from the provocative and iconoclastic remarks I am sure he would make if he were here with us today.

I believe we should continue our search for a more useful concept of close actuarial balance, but I do not believe we should let that divert us from that perhaps more important task of educating the public about the extent of the economic burden we are undertaking through the Social Security programs.

MR. WILKIN: Our next speaker began his professional career in the Office of the Actuary at the Social Security Administration. After becoming a Fellow he moved on to the General Accounting Office (GAO), which is the government watchdog for the legislative branch of government. In this capacity he has had

numerous occasions to review the work of his former coworkers. His most recent such effort is a GAO report on the Social Security funds, "Additional Measures Could More Fully Indicate the System's Financial Condition."

MR. BENJAMIN I. GOTTLIEB: I want to talk about the information in the OASDI Trustees Report and how it is presented. This is the actuarial report for the program; it is supposed to tell whether promised benefits can actually be delivered. However, a lot of nonactuaries read and rely on the report, and the report is not really geared to actuaries.

The report has short- and long-range projections. The short-range projections have been particularly important in those painful years when the funds were running out of money. I want to talk about the long-range projections.

The SSA, using open-group techniques, produces thousands of numbers predicting future income and expenditures for OASI and DI. The Trustees Report presents many of these numbers, but the numbers presented are only a small minority of those produced. With the exception of the other panel members, actuaries on the AAA or SOA Social Insurance committees, SSA actuaries, and a small number of other individuals, the bulk of the information in this report is not heavily studied. I would hazard a guess that there are a considerable number of readers who concentrate their efforts on one number, the actuarial balance. Not that this number could capture all the nuances of the financial condition of the two programs, but I do find that a lot of other numbers go into the actuarial balance. I think it's like the final score of a baseball game.

Recently, the United States General Accounting Office did a study that looked at this measure and the ways that it or its presentation could be improved in the Trustees Report. Considering how this number has evolved and considering how different it is from any other calculation in any actuarial report, the GAO has recommended remarkably few changes in the actuarial balance and how it is presented.

Let me define what the actuarial balance is and then describe the changes that we feel will be advantageous to those who read the Trustees Report. Incomes and expenditures are projected for a 75-year period, as is the predicted taxable payroll for the corresponding period. Using these numbers, incomes and expenditures are expressed as percentages of taxable payroll. The two series of numbers are then added up and each sum is divided by 75. The average income minus the average expenditure is then defined as the actuarial balance. The term close actuarial balance is defined then to mean that the actuarial balance is within 5% of the average cost.

At this point I would like to leap the bounds of credulity and make a statement in plain English that I hope I won't have to retreat too far from in the face of an assault on my lack of technical precision. If the program is in actuarial balance, then things are more or less OK. The octagenarians in St. Petersburg can draw a deep breath of relief while they pour themselves some prune juice in the morning and glance through the newspaper.

I recognize that it does little good to be in close actuarial balance in the long range if the trust funds have a short-range dilemma which will prevent them from paying benefits 2 years from now. Fortunately, that is not the case now, but that would be an example of the program being in close actuarial balance, and yet things not being OK. I do believe the converse statement is true. If

the program is out of actuarial balance on the negative side, then things are not OK and something should be done about it.

Now that we get some idea of the importance of this measure, I think it is appropriate for us to consider whether this is really the number that we want to be disseminating. Let me start by saying that the number is not the worst measure in the world of the program's future financial prospects. However, the number has one elemental fault that needs correction and can be corrected fairly easily. No account is given of the starting balance in the trust fund. That has to be wrong. I know my ability to meet my financial obligations depends on income, expenses, and any assets I may have at the start of the time period that I'm concerned about. Harry and George are both earning $50,000 per year and spending $51,000 per year. Harry has about half a million safely stored under his mattress, and George has $350 in his checking account. I maintain that these two individuals are not in the same or even similar financial circumstances.

Therefore, the GAO has recommended that the starting fund balance be part of the calculation of actuarial balance. How should it be considered? The easiest way is just to add it to the receipts in the first year. This adjustment could only have a "positive" effect or influence on the actuarial balance. However, as long as we're breaking into the system to make a change, is it really OK for the program to finish the 75-year period without any money in the fund? I think not. Therefore, why not include a goal of one year's expenditures as a balance for the trust fund (or funds) at the end of the 75-year period? The expenditures for the 76th year would then be added to the 75th year expenditures before dividing by the 75th year taxable payroll. With these two changes, we have christened the new measure that GAO calls the "adjusted actuarial balance."

I really would like to know how you judge the value of this new or revised measure. Truthfully, I personally would like to have come up with something more clever and even simpler, if that's possible. But, of course, it would have to bring in the starting balance.

The GAO has recommended that this new measure replace the current measure -- the actuarial balance -- in almost all places in the report. There is a problem in the Trustees Report for the tables that contain 25-year actuarial balances. While it would be possible to develop an adjusted actuarial balance for a 25-year period, that could turn out to be a somewhat elaborate calculation. Therefore, we think the tables with the 25-year actuarial balances should remain as they are.

I'll say this before the criticism starts. Our recommendation can lead to a report containing an actuarial balance and an adjusted actuarial balance. The resulting strain on the gray cells of some of the readers will be more than they can bear or recover from. However, when balancing the discomfort of this recommendation against the added accuracy of the primary measure of actuarial soundness, the latter holds sway.

Pages 25 through 27 of the GAO report illustrate and discuss some specific examples where the actuarial balance leads to some misleading impressions about the financial soundness of the OASDI program. These examples are based on projections starting in the year 2020. In these examples large total assets have built up in the two trust funds. In addition, program changes have been assumed that prevent the trust funds from being depleted during the 75-year period starting in 2020. However, the program is still out of close actuarial

balance (using the current measure) in that year, basically because the large initial trust fund balances have not been considered in the measure.

When I was stumbling through math courses in college, this would be considered proof by counterexample. I hope that I am not going to be subjected to the argument that the trust funds will not get large; and therefore, the adjusted actuarial measure is not necessary. Something as basic as this should work for all circumstances, or at least the maximum possible number of circumstances. Social Security has been hurt in the past by measures that did not work well under all circumstances.

Tackling another but related subject, I think the worst thing an actuary can do is say the financing of a program is OK when it's not OK. It doesn't take a genius to look at the numbers in the 1987 Trustees Report and see that expenditures will be more than receipts in the years immediately after the 75-year valuation period. Assuming that the II-B projections are perfect and that there will be no changes to the program means two things, or really the same thing analyzed and expressed two different ways. First, the program really can't pay for itself, or second, it is about to go out of actuarial balance.

The GAO weighed the significance of this latter situation and decided to recommend that if projections showed that OASDI would go out of actuarial balance in the 10 years following the valuation date, this information should be reported in the Trustees Report. The Report would be saying in effect that the program is "temporarily in close actuarial balance." I think this is a more accurate description of the true financing picture, and such a description will help Congress and the administration to understand the trends better and take whatever action is appropriate.

This revised description of the financial status of the program would obviously not be applicable if the program were already out of balance or if the year of imbalance were to occur more than 10 years after the valuation date. The 10-year period was selected arbitrarily. The year of imbalance for the 1987 Trustees Report is around 1989.

The OASDI program is responsible for the physical well-being of a good part of the American population. Its existence and its continued ability to mail out those checks are responsible for the psychological security of these people. I think articles in the newspaper about the funds not being adequately financed or running out of money in a certain year are damaging to this group of people. And let's face it, they've sustained a lot of damage over the last dozen years. This damage is not economic. Old people as a group are doing better than ever economically, but any real or perceived threat to the financial solvency of the OASDI system can be fatal to their collective psyches. I believe the GAO recommendation will alleviate this problem.

The argument has been made to me by one of the distinguished panelists that having to report that a program *will* go out of actuarial balance will cause the same reaction as reporting a program *is* out of actuarial balance. That's possible, but I still think that the Trustees Report should give the most accurate possible picture of the program's financial status.

The two recommendations that the GAO made regarding the OASDI program and the Trustees Report were not the only changes we considered. Some of the others were: (1) using present values instead of arithmetic averages of

percentages; (2) calling a program out of actuarial balance if it is projected to run out of money anytime during the 75-year valuation period; and (3) extending the valuation period beyond 75 years.

None of these were recommended although there are some arguments for each of them. It is certainly hard for an actuary to fight against using present values. The table on page 35 of the GAO report gives tacit support for the present value case. It's another counterexample, and it shows where arithmetic averages don't tell the story. The arithmetic average is at best an estimate of the present value calculation. However, it is, or at least seems to be, more easily understood.

The GAO examined several examples of how close arithmetic averages were to present values and concluded that they were close enough for most purposes. That does not mean that the Trustees Report would not be improved by using present values.

Has anyone ever represented an insurance company and successfully made the case before state auditors that your assets were less than 5% below your liabilities, and, therefore, no action need be taken? I would guess that you might have difficulty relying on that argument. My respect for my fellow panel members goes from great to awe-inspired; they have been successful in making the analogy to such an argument.

It does bother me that the program can be called in close actuarial balance when they have predicted a year in which they won't be able to make benefit payments, naturally assuming everything goes as predicted. I'm tempted to say this is a continuing part of declining standards in our society (not the Society of Actuaries). This started before the IRS Commissioner celebrated the fact that his study showed that only 25% of answers given by his agency were wrong.

Regarding the 75-year valuation period, there is no magic about 75 years. It seems more like a political decision than an actuarial one. I do hope they never make it shorter than that.

MR. WILKIN: Our next speaker has had a long and prestigious career that includes academic, governmental, and consulting experience. After graduating from Lehigh University and the University of Iowa, he began working for the Social Security Administration in 1934, and he retired in 1970 after being Chief Actuary for 23 years. His retirement did not even slow down his involvement in Social Security. In addition to returning as the Deputy Commissioner, he was a member of the National Commission on Social Security and the Executive Director of the National Commission on Social Security Reform, and its report led directly to the 1983 amendments. He has been on missions of technical assistance to 34 different countries around the world, which gives him a very broad background from which to analyze the Social Security program. He is a past president of the Society of Actuaries and currently is the Chairman of the Committee on Social Insurance for the American Academy of Actuaries. This committee has recently released the report "Measurements of the Actuarial Status of the Social Security System."

MR. ROBERT J. MYERS: To some extent this session bears certain parallels to the joke about the officers of the *Titanic* as it was headed right toward the iceberg. They were more concerned with what kind of brass polish to buy to use on the brass works of the vessel. What I'm trying to say here is that in

talking about an appropriate measure of actuarial balance, there is no good measure for the system as it is presently funded because the funding basis for the program as it exists is really anomalous and, I would even say, erroneous. As most of you probably know, under present law, if the intermediate estimate works out right, we will build up a huge fund, and it will then be used up by the end of about 60 years from now. That certainly is no way to fund any pension plan or social insurance system. Either you should operate on a pay-as-you-go basis, which I believe is correct, or else you should build up a big fund, maintain it, and then use the interest earnings to help finance the program. What we have now is a type of funding that is really impossible. I'm sure it won't come about the way it is, and to try and measure whether the system is or is not in balance under that kind of a funding basis is really not too relevant.

At any rate we have this problem of measuring the actuarial balance as it has been done for years. Let's look first at why it is done. I think it was very necessary, and is very necessary, so that actuaries can tell the general public what the general nature of the financial arrangements is to meet these longrange commitments. Looking back in history to 1935, when the law was originally enacted, the measure that was used then was quite different from anything that has been described so far. At that time, the measure was that a fund would be built up and maintained; and then in that far distant future year of 1980, it would level off. Income and outgo at that time would be equal, and the system was said to be in actuarial balance, or self-supporting.

In the 1940s and 1950s, a level-premium concept was developed, involving discounting at interest, which was very much like what private pension plans would use if they were operating on an open-group basis. Present values of income and outgo were compared, and if they were reasonably close the system was said to be in actuarial balance. Initially, these computations were made into perpetuity, but the problem was that many lay folks just couldn't understand how you could get a single value from an infinite series of numbers. This can certainly be done, but this was beyond their scope of understanding, and it was suggested that the valuation be limited to a finite period.

There were many people in the early years of Social Security who felt that the long-range cost estimates were unfavorable toward the system because they showed that there was going to be increasing financial burden from the system. In their efforts to expand the system, they did not want the general public to understand the magnitude of the burden involved. However, there were plenty of fiscally responsible people, both in the administration and Congress, who said the whole picture had to be presented.

It was decided that perpetuity was a concept that people couldn't understand very well, and it was suggested to limit the valuation period to only 10 or 20 years. However, the argument was made and won that you should take a long enough period to at least include the life span of the youngest workers in the system at the time of the valuation. Consequently, a nice round figure of 75 years was selected for the valuation. Again, present values were used and account was taken of the fund on hand on the valuation date. Under this valuation procedure, the test of actuarial balance that was being used was a very close balance, not even as much as 5% at the time. This had a dual purpose. First of all, it hopefully described the system as being self-supporting. If it wasn't, then something could be done about it in the legislation that occurred roughly every 2 years back in the 1950s and, to some extent, in the

1960s. The chances for corrective action to a perceived problem in the actuarial balance were possible because the benefits were adjusted not on an automatic basis as it is now, but on an *ad hoc* basis.

The estimates were made using static economic assumptions. Every year or two, things in the economy changed. Wages and prices went up, and you ran another valuation that usually showed a surplus because of the higher wage level and the effect of a static benefit formula that was weighted heavily for low wages. Under these circumstances, every valuation would show the good news that money was available. Benefits could be increased to reflect changes in the cost of living, and the system was therefore always kept in close actuarial balance by legislative action. However, as the previous speakers have described, in 1972, when the system went to an automatic-adjustment basis, the present method of evaluating the actuarial balance was developed. This valuation of the long-range balance is not required under present law, but was done as a simplifying matter. It was felt that the general public would better understand if discounting at interest wasn't used. I think it was a mistake, but that's what was done.

The Committee on Social Insurance of the Academy did make a study of this matter and issued a report about it in 1987. The report has perhaps been somewhat misunderstood. The report addressed the question, Assuming the system is to be financed on a pay-as-you-go basis, how do you measure whether the system is in actuarial balance? The report first demonstrated, at least the committee thought it demonstrated, that the intent of Congress and the Board of Trustees was that the system was supposed to be financed on a pay-as-you-go basis, whereas, in fact, it is not so financed, as I have described previously. If it were financed on a pay-as-you-go basis, this is the way the actuarial balance should be measured. We said you should have a new measure and that the fund should be neither too small or too large, certainly within the first 1/2 or 2/3 of the 75-year valuation period. This is where I differ slightly from Mr. Bartlett, because he said you should only use this measure for about 10 years. I think to determine if the system is on a pay-as-you-go basis, if that is the underlying philosophy, you have to look ahead quite a number of years. You can't go the full 75 years because, if the system is not quite in balance, it may fall below at the end of that period.

It seems to me that the present method of measuring actuarial balance provides insufficient information for the public to understand the financial status of OASDI. The public will interpret the phrase "not in close actuarial balance" to mean "bankrupt." I can just see the press coming out in a week or two, whenever the Trustees Report comes out, saying Social Security has another financial crisis. The system's bankrupt, and we were told just 5 years ago that it was all fixed up. This is in spite of the fact that for the next 2 or 3 decades at least, the funds are going to be built up at a tremendous rate. In fact, I think the real problem that Social Security financing has at the moment is too large an accumulation of funds, not too little.

I'm quite certain the public is going to misinterpret this phrase. This misinterpretation will be largely unintentional, but there will be some people who will do this intentionally, to suggest that the system is not financially feasible. Such people will imply that it's time to scrap the system and start over again. I think that the realization among the public generally is that OASDI is not a fixed contract, so that changes in benefit and/or contribution provisions can be made whenever necessary. This need not necessarily be done right away. If the

problem is way off in the future, it should be recognized now and there should be concern about it, but it doesn't mean you must put out the fire at once.

I would make the following changes in measuring the actuarial status of OASDI. First of all, I would do as the GAO has recommended, that is to consider the existing balance. Second, I would also use discounting at interest, which the GAO looked at and spoke favorably about, but did not come down heavily for in the end. Then, I would do something very much like Dwight suggested -- look at the three periods, only I would do it on a cumulative basis. I would look at the actuarial balance as it is measured now -- for the first 25 years, then for the first 50 years, and finally for the first 75 years -- all discounting at interest, and not just present one single figure to the public. The trustees then could look at these figures and say, as they would under present law by this approach, "In the first 25 years we have too much money; there is a problem there. Over the first 50 years the system is probably in pretty good shape. In 75 years, however, it's out of actuarial balance to a significant extent. This means that something will have to be done about the long-range situation at some point -- either cut certain benefit expenditures out in the distant future or raise taxes then." In other words, I would not do what has been very convenient in the past -- having a single figure and saying it's all black or all white -- it's in close actuarial balance or it's not. That is not serving the public well, even though it is perhaps an easy thing to do.

Another thing that I think should be emphasized, as I think Ben Gottlieb said; people should look at what is going to happen after the end of the 75-year period. There is a great imbalance of income and outgo at that point. Of course, if the system were put on a truly pay-as-you-go basis for the long-range tax schedule extending over the 75-year period, you would not have that problem, since the estimates show that after about 50 years from now, costs more or less level out as a percentage of payroll, the baby boomers notwithstanding. Of course, it should always be emphasized that the estimates are subject to considerable variation, and that just because there is a problem way out in the future, there is no reason that legislative action be taken immediately, to cut benefits currently or raise taxes currently. I noticed one article in *Business Week* reporting a leak that the Trustees Report was going to show that the trust funds were out of balance, and that therefore payroll taxes would have to be raised now by 1% on the employer/employee combined. That would just make the situation worse concerning this huge and very dangerous build up of the trust funds that is coming down the road.

Now, finally, what about the two Medicare trust funds? I think the same procedure used for OASDI should be used for Hospital Insurance (HI), but not for Supplementary Medical Insurance (SMI). I think there should be 75-year cost projections for SMI. But it is not susceptible to the type of valuation used for the other three programs, because its financing is set on a year-by-year basis. It is set on a year-by-year basis to be sufficient to meet the costs that are estimated to accrue. Of course, the rise in costs may be a matter of economic concern, but they are not a matter of actuarial concern, because it's specified that the financing will be adequate year by year, and the fund on hand will be sufficient to meet the accrued but unpaid obligations.

MR. WILKIN: Our final speaker joined the Social Security Administration 30 years ago after studying actuarial science at the University of Michigan. Of his 30 years at Social Security, 20 years have been spent as Deputy Chief Actuary of the long-range estimates. Of those 20 years, he spent about 5 years as the

acting Chief Actuary -- between Myers and Trowbridge, between Trowbridge and Robertson, and then finally between Robertson and Bartlett. This gives him more experience as Chief Actuary than Trowbridge, Robertson, or Bartlett. He has also provided technical assistance to numerous countries, which gives him a very broad perspective in which to view our Social Security system. He is a prime architect of the current measure of long-range actuarial balance, and now is the prime advocate for changing that measure. His suggestions are described in a paper "Proposal to Modify the Test of OASDI Long-Range Actuarial Balance."

MR. FRANCISCO BAYO: I hope that you read my paper with the view that this is just an initial step in a new direction regarding the summarization of OASDI actuarial projections for decision making about the future of the program. What I propose in that paper should not be taken as a final step, because it certainly can stand a lot of improvements.

While you read it, I also suggest that you keep in mind the situation that moved me to start looking in that direction. It is my judgment that a government program like OASDI, which is projected to have enough income to cover all expenditures for the next 50 or 60 years under the most reasonable assumptions, should not be regarded as being bankrupt and in need of immediate repair. Please be aware that a significant amount of information is published in the OASDI Trustees Report, and that other data about the financial status of the program are available from the Office of the Actuary in the Social Security Administration.

My paper refers only to the summarizing measure that is being used to judge the long-range actuarial soundness of the OASDI program. This measure is used to determine whether or not the program needs modifications in order to be financially viable. Without a measure of this type it would be more difficult to obtain the effective decisions needed about modifications in the program or in its financing.

I regard my best assumptions as being just that -- my best assumptions. My many years of experience in this subject lead me to believe that it would be pretentious to claim having accurate knowledge about what will happen 10 or 20 years from today in the U.S. and in its economy. To claim knowledge over a period of 75 years would be arrogant. It is, therefore, with a sense of modesty that the OASDI long-range projections are presented to the decision makers and to the general public.

I would feel uncomfortable taking the position that because the program would be able to pay benefits for only 60 years into the future, according to my best projections, it should be labeled "out of close actuarial balance," and that it should be immediately modified. Obviously, if my best projections turn out to be very accurate, the program would need to be modified sooner or later. But I believe that the modifications should be required at the appropriate time, not any sooner nor any later than necessary. There is no need to require that changes be made in the OASDI program in 1988 that will not be effective until well into the next century. There is plenty of time to determine more precisely what the magnitude is of the possible problems and then decide how to resolve them.

For many politicians and administrators there is never a right time to modify the actuarial assumptions and projections, unless these would result in a more favorable prediction. But it is turning out that for many actuaries there is never a right time to change methodologies, unless these result in a more unfavorable

prediction. Some actuaries are of the opinion that, because under the current average-cost method of calculating the summarizing values, the program may soon be shown to be out of long-range actuarial balance, and the current measure should not be modified. I believe, to the contrary, that an approximation should not be used once it starts yielding incorrect conclusions, and the average-cost method needs to be modified.

Others believe that rather than modify the measure of actuarial balance, it would be preferable to modify the OASDI tax rate by an increase of 1.5% each (employer and employee) in about the year 2045. They claim that this increase in the tax rate, which would place the OASDI program in close actuarial balance, would better inform today's younger generation about the cost that they would have to pay. But I have some reservation about the reason that is given. The idea of keeping the younger generation informed is appealing, but a tax rate increase is not the only way of doing it. The published projections of the annual costs provide information about ultimate high cost rates. I believe that the members of the younger generation would rather make decisions about the program themselves than have us institute now a solution for them to follow later. There is, also, the practicality of informing the younger generation. Assuming that people retire at age 65, the oldest of the younger generation that would be affected by the tax increase and that we would need to inform today would be those of age 8. How can we inform children age 8 and under about the increase in social security taxes that they would have to pay when they get to be old workers?

Another group of actuaries believes that OASDI should be financed on a pay-as-you-go basis, and that my proposal would hinder a move in that direction. Although, for different reasons, I believe that OASDI should be financed with the accumulation of only contingency funds, I fail to see why my proposal would hinder a move in that direction.

MR. WILKIN: Bob is the Chairman of the Committee on Social Insurance for the American Academy of Actuaries, of which Frank and Dwight are also members. Frank's paper was distributed to the members of that committee, and there were immediate reactions. One reaction was written by Richard S. Foster, who is Deputy Chief Actuary at the Social Security Administration, Toni S. Hustead, who is the Chief Actuary at the Department of Defense, and Steven F. McKay, who is a supervisory actuary at Social Security. Because Toni could not be here, she has asked me to summarize their paper.

Their paper states that changing conditions may mean that the valuation of the OASDI system in isolation from the rest of the government's budget may no longer be sufficient. They note two facts. First, the OASDI system is inextricably linked to the rest of the budget as far as taxing, borrowing, and deficit levels are concerned. Second, the OASDI trust funds are invested solely in government bonds. This means that increases in the OASDI trust funds provide the government with revenues that can be used for general purposes. Correspondingly, decreases in the OASDI funds, as well as interest earnings on those funds, must come from general revenues, which in turn come from general taxes or borrowing.

Evaluation of the program's financial status in isolation does not question the nature of the principal or the interest. They are treated as normal income, and their source is not considered. The authors suggest that in view of the projected surplus accumulation and deaccumulation, together with an overall federal budget deficit, it is necessary to examine the underlying nature of the assets

and the interest and certain implications that reach beyond the trust funds alone. Current OASDI surpluses are being spent because the government budget as a whole, usually referred to as the "Unified Budget," is running a deficit. When Social Security costs become larger than Social Security taxes, the general fund will have to increase its borrowing or raise general taxes. They contend that we are not building a true fund, but merely accumulating a right to future general revenues. In particular, in a period of deficit financing, an accumulation of OASDI assets will not partially advance fund the cost of benefits to the baby boom generation.

They submit that we do not meet the goal of informing the American people of the costs and the sources of funding of the OASDI system when we merely tell them that the present system is in balance by normal standards. The present value method takes direct account of what they consider to be problematic interest income, adding to the misunderstanding of the financial condition of the OASDI program. They believe that this is a step in the wrong direction. In addition, they believe that the ultimate cost of the OASDI system beyond the current 75-year evaluation period should be recognized in some manner. A pattern of large trust fund build-up followed by rapid disinvestment and depletion of the trust funds, with no planned source of funding for the deficit after the depletion of the trust fund, is improper for a social insurance program. Such a pattern should not be characterized as being in actuarial balance without a full discussion of the unusual aspects and long-term implications of the financing basis.

MR. MYERS: I think I agree with the conclusions in the Hustead, Foster, and McKay paper, but, by no means with how they got there. I agree that this building up of a huge fund and then spending it down is a terrible way of running a social insurance or pension plan. It has two great dangers involved. First, it masks these horrendous budget deficits we have, because the Secretary of the Treasury can readily borrow some $30-$40 billion a year painlessly from the trust funds. Second, by building up these huge trust fund balances, it is going to have people out there saying, "Look at all that money. Let's liberalize the benefits in the program." That approach just creates more problems down the road. In fact, already there have been two instances where people have their eyes on all that money that has accumulated. First, the infamous "notch" babies and second, one of the presidential candidates has suggested that $6 billion a year of the Social Security surpluses for the next 10 years can be spent for other social needs. Where I think the Hustead, Foster, and McKay paper goes wrong is that the money that the general fund gets from the trust funds is not money that it would not have otherwise needed, assuming the availability of these surpluses does not make Congress any more extravagant than they are. If the trust funds did not have this money, that is, if social security were funded on a current cost basis, the general fund would have to go out and borrow that much more from outside sources -- people in this country or in other countries. When that debt is redeemed in the future, this is not a new obligation on general revenues. It is an obligation that general revenues would have anyhow, regardless of who bought the securities -- the trust funds or other people. I think that when they say building up this fund would not help the financing of program, they are completely wrong because they ignore the fact that this money would have had to have been borrowed from somebody anyhow. If the trust funds put it up, it is a valid investment of the trust funds, unwise as it is to do so.

MR. BARTLETT: It seems to me that the issue of whether the buildup of the trust funds as a way of trying to prefund the benefits for the baby boom generation is good or bad has to do with whether the buildup of the trust funds will, in fact, increase the productive capacity of our nation. I have been very much a skeptic of that notion and thought we were deluding ourselves by thinking that the buildup of the trust funds would result in such an increase. If the trust fund buildup does not result in an increase in productive capacity of our economy, then it is the benefits and the expenses of administering the program that are the true burden of the program, not how the trust fund balances build up, or what taxes we legislate for the program. However, I did have a conversation with Henry Aaron of the Brookings Institution, a well-known economist who has been heavily involved with Social Security matters in recent years. He told me recently that Brookings had done a study for the Social Security Administration, which he says purports to demonstrate that the productive capacity of the country would be increased as a result of the buildup of the trust funds. Nevertheless, I remain a skeptic on that subject.

MR. BAYO: I have two remarks concerning the Hustead/Foster/McKay paper. First, the paper states that the present-value method of summarizing the 75-year projection to obtain an actuarial balance would not yield a representative figure because higher weight is given to the earlier years than to the later years. This is applicable to all present values, but I do not know of any other way you can get a present value. They say present value is a bad methodology. I wonder what has happened to the actuarial profession that this method is no longer good. Second, the paper states that those funds that would be accumulated by the OASDI program would be mere handwritten entries in a book. However, I do not know of any other way for a human being to record the transactions that are in the distant future. Maybe we should record it electronically so that nobody can see them.

MR. STEPHEN CHARLES GOSS: I have two remarks about the topics covered by the panelists. First, in reference to Ben Gottlieb's excellent suggestion that both starting and ending trust fund balances be included in the measure of actuarial balance, I would like to describe a way of including these trust fund levels in each of the three 25-year subperiods as well as in the full 75-year valuation period.

The actual starting trust fund balance at the beginning of the 75-year period would be included in both the 75-year balance and the first 25-year balance as an income entry. For the second and third 25-year subperiods the desired trust fund balance at the beginning of each subperiod would also be included as an income entry. (The desired trust fund level, as a percent of one year's outgo, could either be chosen to progress gradually through time from the actual starting level to the desired level for the end of the 75th year, or it could be chosen as the same value for the end of each of the subperiods.) In addition to these income entries the desired trust fund level at the end of each period would be added as a cost entry.

When averaging the resulting three 25-year adjusted balances, all of the trust fund entries would cancel except for the actual starting balance and the desired balance for the end of the 75th year. This procedure is conceptually equivalent to the "trust fund building and maintenance" factor that has been included in the Hospital Insurance Trustees Reports for some years, and was used in determining the OASDI actuarial balance prior to 1975. The overall effect on the long-range actuarial balance is to reflect the approximate hypothetical cost

(either positive or negative) of progressing to the desired ending trust fund ratio based on the assumption that income (excluding interest) is exactly equal to outgo for each future year.

My second remark relates to the underlying basis for the calculation of the long-range measure of "actuarial balance." The actuarial balance represents an attempt to characterize, in a single value, the financial status of a program over a period of several years based on projections for each individual year. In order to combine the individual-year projections into a single value, some means of making the individual-year projections comparable, or equivalent, over time must be found.

Actuaries are trained to work with insurance and pension plans that are, in general, intended to be advance funded. Perhaps the best example is the entry-age-normal valuation of many pension plans. For such plans, the cost of benefits, for a given year, is intended to be met through the prior contributions on behalf of the current beneficiaries, together with accumulated interest. The equivalence of monetary values over time is thus clearly determined by the rate of interest. The use of present-value calculations with discounting at the rate of interest is the obvious choice for any single-value measure that must combine projections for several individual years and characterize the long-term financial status of this type of plan.

But for plans that are not intended to be advance funded, as is the case for most social insurance and employee group insurance plans, equivalence of monetary values over time does not necessarily need to be related to interest rates. Consider the example of a plan that is intended to be financed on a pay-as-you-go or current-cost basis. Current benefits are paid from current contributions with little or no advance funding. The prior contributions of current beneficiaries bear no particular relationship to their current benefits. In addition, no significant amount of interest is even being earned.

For the pay-as-you-go plan, equivalence of monetary values over time for the purpose of calculating a single-value actuarial balance might better be accomplished by characterizing these values in terms of the source of current financing -- taxable payroll. Because interest is not a significant consideration, values for different years can be argued to be of comparable significance if they represent the same level of relative cost to the contributors, i.e., if they represent the same percent of the taxable payrolls for their respective years. This approach, sometimes called the average-cost approach, was used exclusively in OASDI Trustees Reports for years 1973 through 1987 and was also used, but not exclusively, in the 1988 report.

Few plans are financed on a purely pay-as-you-go basis. In fact, the OASDI program is building a fund that is projected to peak at a level equal to over five times annual expenditures. However, the average fund level over the long-range (75-year) projection period is only about one year's worth of expenditures. Because an advance-funded OASDI program on an entry-age-normal basis would require a fund equal to between 20 and 30 times annual expenditures, we can conclude that the program is far closer to being financed on a pay-as-you-go basis than it is to an advance-funded, entry-age-normal basis. Thus, the average-cost approach to calculating the actuarial balance presented in the 1973-1988 Annual Trustees Reports may be more appropriate and of more significance than alternative approaches based on present value with respect to interest rates. Certainly this area is open to further study; the current level of our

understanding should lead us to avoid making what might appear to be final judgments.

MR. BARTLETT: I'd like to relate something that happened while I was at Social Security. As you know, there has been a high rate of turnover among Social Security Commissioners in recent years. In a little less than 3 years that I was Chief Actuary, I worked under four different Commissioners. So I can tell this little story without disclosing who made this suggestion. I received a phone call from the Commissioner right after the Trustees Report came out, which showed that the program was not in close actuarial balance. He was very upset about this, and he said that next year in the Trustees Report we were going to show another column labeled "other income." I responded by inquiring what this other income might be. He said that it was inconceivable that Congress would fail to legislate whatever funds were required to pay the benefits. So for any year showing a deficit, we would throw in another column called "other income" to keep the program in balance. I guess that's the political version of "close actuarial balance." Fortunately, he left as Commissioner before the next Trustees Report came around.

MR. BRUCE E. JACKSON: I'm mainly a life actuary, and as I listen to these comments it seems to me that you might profit from adopting the perspective of the life insurance people. From that perspective you have a net-level premium, and for the shorter term you estimate a kind of deficiency reserve. Then you have to leave it up to the politicians to decide whether they want to fund for that deficiency reserve or try to get by without holding a deficiency reserve -- until a problem hits and you are expected to come up with that money. It really is a kind of pay-as-you-go system. You keep things nice and level with as level a tax as you can get over a long range. Then, if there are bad years to come, why tax now for something that is going to happen 50 years from now?

I can't believe with all the different kinds of assumptions that you have to make, high and low projections and all the different things that go into it, how you can get all the projections down to one number. If you do that just for simplicity, maybe you would want to change it into one graph. You could come up with a simple explanation in a graphic form with a few scenarios.

Since there are some people here advising other countries, I was wondering if there was anything we could learn from them in this regard. Here in the United States when the price of food or gas went up, as a percent of income, everybody complained for a while. But after a year or so of complaints, everybody got used to it. In other countries, I can imagine trying to fund for starting a new old-age benefit could be quite a change to their economy. Would it not be more comfortable to just project people expecting to pay more and then just fit it into their budget?

MR. BAYO: There are several questions that I would like to comment on. The first one is why a single measure? Naturally, we would love to have a decision made on the basis of several measures. However, when you work with the high-level politicians, you find that they want a place where they can hang their hat. They want something to coalesce around, so that they can have an agreement among the committees. Sometimes there are fifteen, twenty or more of them. When you have many different concepts floating around, it is very difficult to get an agreement. Somehow, we have to reduce the information provided to the minimum number of parameters that they can handle and still come up with a conclusion. Politicians have an ability of finding ways not to make a decision.

So somehow we have to corral them into making a decision, so that the program can continue to work. I would like to have many more measures used in the decision making process, but it is impractical.

The other question is in regard to level-premium financing and deficiency reserves. The problem with that analogy is that Social Security covers the entire United States, while an insurance company covers just a portion of it. For Social Security, you cannot accumulate assets; that is, claims from somebody else's production. If we have a large amount of money in the Social Security trust funds, we have a claim on ourselves, which does not have much meaning. The truth is, whatever is going to be consumed -- be it a product that you can get a physical hold of, or services that are very difficult to hold -- those products cannot be stockpiled. They have to be provided at the time of consumption. No matter what kind of financing we are going to have in our Social Security program, you will find that the benefits that will be obtained by the beneficiary in the year 2050 will have to be produced by the workers in the year 2050, or just a few years earlier. What we really are talking about is that if you accumulate a large fund, the beneficiary will have first claim on those services or products as compared to the taxpayers. However, if you do not accumulate a fund, then the fight, or should I say the shoving and pushing, that is so essential in our political system would be more evenhanded.

That is why I say I am for pay-as-you-go financing. I would like to have just enough contingency funds to tide us over for a short period of time, but not big amounts so that one group in the future can have a strong claim against another because of something that was done 30 to 50 years before. People should be making the decision at that time. The difference that I have with Myers and the Committee on Social Insurance of the Academy is that I think that the decision to go into pay-as-you-go financing should be an open decision made by the true decision makers. We are not the decision makers. We are just advisers. If the measure that is being proposed by the Academy committee were to be imposed on the decision makers through actuarial means, then I think we would be trying to dictate to them. I believe strongly in our political system. Regardless of what people say about politicians, I think we have been blessed by the kind of politicians we have in this country. If you doubt that, go to other countries in the Americas, except for Canada, and you will find there will be something to be desired. We technicians should not try to take the politicians' responsibilty and exercise it -- advise them, bring it to them, and hopefully they will decide on pay-as-you-go. Up until now, they have been staying fairly close to pay-as-you-go. Let's hope that they will do that, and that those funds will not get accumulated.

MR. MYERS: Let me try to clarify what the Academy's committee was trying to do. It was not trying to tell the policymakers that the system should be financed on a pay-as-you-go basis, but it started off on the presumption that the system is to be financed that way. The Congress has said it should be. The Board of Trustees has said it should be. We said that if this was your policy, then this is how you should measure. The present measure does not take into account the intent that you have expressed that the system is to be financed on a pay-as-you-go basis. That is another battle -- whether the system should or should not be financed on a pay-as-you-go basis. I think actuaries have something to say in that area, but naturally we are not the controlling group on it. If people think that the system is financed on a pay-as-you-go basis, then I think it is our actuarial function to tell them how to measure whether or not that goal is being reached.

MR. AILEY BAILIN: I'm just going to give a little international perspective for the benefit of the previous questioner. In Canada, we do not have any such concept as "close actuarial balance." Some 2 years ago, the financing of the Canada Pension Plan, which is the program that is similar to the OASDI in Canada, was reworked with a 25-year program of annual increases in the contribution rates from employers and workers. The method used for determining what the increased contribution should be was basically a pragmatic approach -- you need money in the fund in order to pay the benefits and that fund does not need to be huge, but there has to be enough money so that there is something to pay with. It is essentially a pay-as-you-go basis with a little bit of a fund buildup and some interest being earned on the fund. That is essentially all that was needed.

The selection of a 25-year period again was a pragmatic approach. That was the period over which the huge increases were going to be experienced and, therefore, that was the period that was legislated. When the program again needs another shot in the arm, we will again see legislation, and I assume it will also be on a pragmatic approach. However, I have some sympathy for the close actuarial balance concept. Just in the last 2 weeks, two people (who should know better) expressed that they do not expect to get any benefits from the social security system in Canada when they reach age 65 because it is going to be bankrupt.