THE UNRESOLVED OASDI DECOUPLING ISSUE

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ABSTRACT

Since 1972, the year of the last major change in the old-age, survivors, and disability insurance (OASDI) system, there has developed a question of widespread concern that has come to be known as the "decoupling" issue. This paper traces the development of the decoupling issue from its earliest manifestation through the spring of 1977. The issue is still unresolved.

I. INTRODUCTION

THE expression "decoupling" comes from railroad terminology. It is proposed that today's coupling of *actual* benefits (for those already beneficiaries) with *potential* benefits (for those not yet beneficiaries) be broken, with the two benefits going their separate ways. The decoupling proposals are in reality changes in the formula by which the primary insurance amount (PIA) is to be computed for those who will become beneficiaries in the future. These proposals leave untouched the mechanics whereby the benefits for those already beneficiaries increase in step with the consumer price index.

Both coauthors of this paper have been closely associated with the decoupling issue, but in different capacities. Mr. Trowbridge was chief actuary of the Social Security Administration until mid-1973 and later was a member of a panel of actuaries and economists advising the 1975 Advisory Council on Social Security. The council put forth the first of the two prominent decoupling proposals, a proposal that Mr. Trowbridge had a hand in designing. Mr. Moorhead was a member of a different panel of actuaries and economists, under the chairmanship of William Hsiao, F.S.A., engaged by the Congressional Research Service at the behest of the United States Congress. He thereby is associated with the second (or Hsiao panel) approach. The two proposals are similar in several respects but competing in others.

The purpose of this paper is not to argue the merits of these two proposals, although the rationale behind each will be indicated, along with some pros and cons. Instead the purposes are (1) to describe the environ-

ment in which the decoupling issue emerged, (2) to state the problem to which the decoupling proposals are addressed, and (3) to emphasize the importance of a rational solution to the design of the OASDI benefit formula under inflationary conditions.

II. HISTORY OF OASDI ADJUSTMENTS TO INFLATION

A. *The Pre-1972 Formula*

Before the establishment of the "automatic" principle with the passage of the 1972 amendments, the PIA at retirement, death, or disability was governed by two formulas, one determining the average monthly wage (AMW) from the worker's record of covered earnings and the second determining the PIA from the AMW.

AMW: This amount was computed as the monthly average of the n highest years of taxable earnings, where n was (i) the year of attaining a specific retirement age, year of death, or year of disability, minus (ii) 1956, or the year of attainment of age 27 if later. Note that, for retirement situations, n was lengthening with each calendar year. For men reaching age 65 in 1965, n was 9; but n was 14 for men becoming age 65 in 1970. The situation was the same for women, except that the year of retirement (for the purpose of computing n) was the year of attaining age 62.[1] For death or disability, n was shorter if the worker was born after 1929 and hence attained age 27 after 1956. Unlike the increasing n in the determination of retirement benefits, the n for those workers dying or becoming disabled at any specified age y did not lengthen. For example, n was 8 if death or disability occurred at age 35 in any year after 1965; similarly, n was 3 for death or disability at age 30. For any one worker, of course, n increased with age, thus giving rise to one of the anomalies that will be examined later.

PIA: The formula behind the table by which the PIA is computed from the AMW has a long history. It has long been of the form

$$Z_1\% \text{ of the first } W_1 \text{ of AMW}$$

$$+Z_2\% \text{ of the next } W_2 \text{ of AMW}$$

$$+Z_3\% \text{ of the next } W_3 \text{ of AMW}$$

$$+ \ldots$$

In general, each of the later values of W_i represents an extension of the formula arising from a past increase in the taxable earnings base. An important characteristic is that Z_i *in general* decreases as i increases (although there has been one exception in the middle of the range).

[1] The 1972 amendments changed the calculation of n in such a way that the attainment of age 62 is now used as the year of retirement for both men and women who attain such age after 1974.

B. *General Benefit Increases*

Beginning as early as 1958, and lasting through the final enactment of the 1972 amendments, there was a long history of legislated OASDI benefit increases of the flat percentage type. Such increases were enacted in 1958 (7 percent), 1965 (7 percent), 1967 (13 percent), 1969 (15 percent), 1971 (10 percent), and 1972 (20 percent).[2]

The rationale was largely that these increases were rough corrections for inflation. The timing of those that occurred in election years may have been politically inspired. In any event, it seems clear that Congress had beneficiaries already on the benefit rolls particularly in mind when granting these general increases.

Things are never quite that simple, however. A benefit increase to all those on the rolls produces anomalies and inconsistencies if potential benefits for those to retire in the near future are not increased similarly. Social security technicians recognized this problem early and solved it rather simply. If a K percent increase was being granted to those already retired, all the Z_i's in the PIA formula were multiplied by $(1 + K/100)$. The effect of this was to increase all benefits, potential as well as actual, by K percent.

There was one relatively minor exception to the mechanics just described. In several cases the general benefit increase was accompanied by a concurrent increase in the taxable earnings base. Whenever the earnings base was increased, a new W_i was added to the array, representing the AMW bracket between the old base and the new. The Z_i for the newly added AMW range was set at 20 percent in recent years (the value of Z traditionally introduced at the highest end of the scale).

C. *Inflation during the 1960's*

During the decade of the 1960's, the CPI increased by 26 percent, which is effectively an annual rate of 2.3 percent. The average earnings per worker in covered employment over the same period increased by 53 percent, or at an annual rate of 4.3 percent. The gain in real earnings over the 1960's was therefore in the neighborhood of 2.0 percent annually.[3]

During this decade two general benefit increases became effective, 7 percent in 1965 and 13 percent in 1968, compounding to 21 percent in

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[2] The 1958, 1967, and 1969 increases were each effective in the following calendar year. The 1972 increase was effective prior to the 1972 amendments.

[3] The average for the year 1969 is compared with the average for 1959 in developing the gain in real earnings illustrated above. The gain over the decade of the 1950's had been somewhat higher.

all. The maximum taxable earnings base, $4,800 in 1960, became $7,800 for 1969, a $62\frac{1}{2}$ percent increase. The general level of benefits had almost kept up with the price level during the 1960's, while the increase in the taxable earnings base was somewhat larger than the rise in average covered earnings.[4]

It is also noteworthy that the technique used in the actuarial estimates throughout the 1960's employed a level earnings assumption. Wage levels were treated as if they were not expected to rise in the future. When they did in fact increase, the effect on the estimates of future revenues was greater than the effect on the estimates of future benefits, resulting in an actuarial gain. The benefit increases during the 1960's were financed in part by increases in the taxable earnings base and in part by these actuarial gains.

D. *The 1969 Proposals for Social Security*
   "Automatic" Provisions

The major initiative of the Nixon administration, which took over the executive branch of government early in 1969, was a proposal that "automatic" provisions be incorporated into the social security benefit formulas. Essentially, this proposal was in three parts: (1) that benefits for those already retired be increased once each year in step with the CPI (unless such CPI increase were less than 3 percent), (2) that the taxable earnings base be increased once each year in step with increases in average covered earnings (such increase to occur only if there were a benefit increase), and (3) that the PIA table be increased and extended by the procedure used in the past, thereby providing that increases for those already retired be granted also to potential beneficiaries.

It was thought that this proposal was essentially "self-financing," that is, that no additions to social security tax *rates* would be necessary. Higher taxes per worker were contemplated because average covered earnings were expected to increase. This additional income to the system was thought to be enough to offset the additional outgo arising from the automatic benefit increases. If the rates of price and wage inflation experienced during the 1950's and 1960's had continued, the automatic provisions could well have had this self-financing characteristic. It was recognized, however, that the future might be subject to stronger inflationary forces, and that increases in the tax rates might be necessary.

These "automatic" provisions were endorsed by the 1971 Advisory Council on Social Security and eventually became law with the passage

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[4] A similar comparison over a different time period would not necessarily give the same indications.

of the social security amendments of 1972. Meanwhile there were three further "ad hoc" general increases—15 percent effective January, 1970; 10 percent as of January, 1971; and finally, just prior to the 1972 amendments, 20 percent as of September, 1972.

III. RECOGNITION OF THE PROBLEM

Even before the final passage of the 1972 amendments, actuarial cost estimates on a dynamic basis[5] were pointing up the sensitivity of these estimates to the future course of consumer prices and covered earnings. Increases in consumer prices obviously would have an upward effect on benefits, because of the direct tie between benefits and the CPI. Just as certainly, increases in earnings levels would have an upward effect on the income to the system, because OASDI taxes are expressed as percentages of taxable covered payroll. When both prices and earnings are expected to increase, it is not obvious immediately whether the theoretically adequate tax rate (essentially benefits paid as a percentage of taxable payroll) will rise or fall. The assumptions actually used by the social security actuaries at the time of the 1972 amendments were 5 percent annually for earnings increases, $2\frac{3}{4}$ percent annually for CPI increases, and accordingly a gain in real earnings of about $2\frac{1}{4}$ percent annually. Under these assumptions the system after the 1972 amendments was close to being in actuarial balance, as indicated by the 1973 trustees' report.

This report also illustrated the sensitivity of the cost estimates to economic trends by computing the actuarial balances on several alternate assumptions. This sensitivity testing clearly indicated the following:

1. For any specified level of CPI increase, the *higher* the assumption as to gain in real earnings, the *lower* the tax rates theoretically required. For example, for a CPI increase of $2\frac{3}{4}$ percent, the tax rates could be *lowered* if the gain in real earnings were above the $2\frac{1}{4}$ percent level assumed.
2. For any specified level of gain in real earnings, the *higher* the assumption as to price inflation, the *higher* the required tax rates. For example, for a gain in real earnings of $2\frac{1}{4}$ percent, the required tax rates are higher than those calculated for the trustees' report if CPI increases are above the $2\frac{3}{4}$ percent assumed.

It was clear to the Social Security Administration (SSA) actuaries that this sensitivity of the cost estimates to events over which the system had no control was an important problem, one that certainly would cause difficulty in the future. Attempts to find a better answer were started

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[5] Recognition of the automatic principle incorporated into the 1972 amendments led to the abandonment of the level earnings assumption previously employed. Cost estimates that recognize changes in prices and earnings are said to be "dynamic."

within the Office of the Actuary even before the passage of the 1972 amendments, although little real progress was made until 1973.

Study of this sensitivity problem traced the basic difficulty to the mechanics whereby potential benefits (for those not yet beneficiaries) were indexed to the CPI, but some part of the increases in taxable earnings flowed through to potential benefits as well. Potential benefits were price-indexed (due to the coupling with benefits for those already beneficiaries) and to some extent wage-indexed as well. Potential benefits would grow over time, but at rates different from earnings levels. If CPI increases exceeded that part of earnings increases held back from benefits (for reasons to be examined later), benefits would grow faster than earnings, and replacement ratios would increase. On the other hand, if CPI increases were smaller than that part of earnings increases held back, then replacement ratios would decline. The whole design had the basic fault that the important replacement ratio varied with price and earnings changes over which the system had no control.

This unfortunate characteristic of the coupled mechanics had largely escaped the attention of the public, although to some extent it was brought to its attention by the 1973 trustees' report. Meanwhile a consulting actuary, Mr. Geoffrey Calvert, pursuing an investigation for one of his corporate clients, had noticed that the coupled automatic system could lead to obviously excessive replacement ratios. In a presentation to the American Pension Conference in New York City in December, 1973, Mr. Calvert drew attention to this basic problem, although he offered no clear solution.

Prior to the 1974 convening of what was to become the 1975 Advisory Council on Social Security, the problem of drifting replacement ratios (and therefore an unstable system) had been well recognized by some technicians within the SSA, and by actuaries and economists who had read closely the work of Mr. Calvert and the 1973 trustees' report. The problem was only partly identified, however, and satisfactory solutions were lacking. There had been some worthwhile suggestions, notably one from Mr. Robert J. Myers to the effect that changes in the benefit formula factors for those not yet on the rolls be limited to the smaller of the CPI increase or one-half of the increase in average covered earnings.

IV. THE 1975 ADVISORY COUNCIL, AND ITS SEQUELS

A. *The Preliminaries*

Early in 1974, at one of the first meetings of the 1975 Advisory Council, the staff of the SSA presented for the council's consideration a paper analyzing the decoupling issue and offering a tentative solution. This

paper was written by Mr. Trowbridge, and built upon work done in conjunction with Mr. Francisco Bayo[6] while both were SSA actuaries.

The analytical part of the paper can be summed up as follows:

1. If the mechanics were changed so that CPI increases affected only those already beneficiaries (and with no other changes), the resulting decoupled system would be unsatisfactory, for two reasons:
   a) Replacement ratios would not stabilize but instead would decline steadily.
   b) There would be a troublesome incongruity between benefits for those who retired just before, and just after, a CPI adjustment.
2. While it would seem that the benefit formula should cause PIA's to rise at about the same rate as covered earnings (as normally would be the case under most private pension benefit formulas), there are two special features of the OASDI benefit structure that prevent such a result:
   a) Since the averaging period is increasing, AMW's (being based on the average of the n years of highest earnings records) do not increase as fast as the earnings themselves.
   b) As AMW's increase, the PIA's increase at a slower rate because of the decreasing nature of Z_i. This depressing effect becomes stronger with each addition of a new W_i as the maximum taxable earnings base (and hence the potential maximum AMW) increases.
3. The specific proposal, which was for a decoupled system that would have stable replacement-ratio characteristics, addressed the problem by concentrating on the two effects just stated. It was thought that these two effects could be counterbalanced, producing a stable decoupled system. Two changes would have accomplished the objective of holding replacement ratios constant:
   a) Freezing the averaging period for retirement situations at the point reached when the new legislation took effect; n might be held constant at 20, for example, instead of increasing each year until it reaches 35.
   b) Developing a simpler formula of the type PIA = $\$A + B \times$ AMW, A and B being chosen so as to fit closely the old-law PIA formula as of the date of change, and with the important proviso that the value of A will increase, like the taxable earnings base, in step with average earnings.

The proposers of this change knew that the freezing of the averaging period n would have some unfavorable side effects, especially with respect to overgenerosity to those in the system for less than a full career. They had further suggestions as to how these effects might be minimized.

After this initial decoupling paper had been studied by other members of the panel of actuaries and economists serving as technical advisers to the council, the solution was modified and refined. The most important improvement was that of indexing the earnings records instead of freezing the averaging period.

[6] Mr. Bayo, A.S.A., is still deputy chief actuary of the SSA.

If each year's earnings record is multiplied by the ratio that average covered earnings in the year just prior to death, disability, or retirement bear to the average covered earnings in the year the earnings record was made, then the average of such "indexed monthly earnings" depends much less heavily on the averaging period n. The effect of changes in the general wage level is neutralized, although the effect of changes in the individual's relative place within the wage structure remains. The effect of the changing maximum taxable earnings base is also neutralized, provided the base increases (as it does under the 1972 amendments) in step with average covered earnings.

This earnings-record indexing was seen by the panel as an improved solution to the problem largely because it avoided unfavorable side effects. In fact, the indexing of earnings records was found to have a good corollary feature, in that the effect of the very short n in young age death and disability situations was partly neutralized, thereby slowly removing a much criticized overliberality in the AMW (and hence PIA) calculation for young beneficiaries.

Adoption of the concept of earnings-record indexing, in itself, would not require abandonment of the PIA = $\$A + B \times$ AMW formula of the original Trowbridge-Bayo suggestion, but it would require a lower value for B. When the AMW is replaced by the average indexed monthly earnings (AIME), B must be reduced to link the new formula to the old law as of the date of change.

The Advisory Council had by this time voted to recommend phasing out the minimum PIA concept.[7] It also was disturbed by ratios of PIA to AIME greater than unity, as certainly would occur for workers whose AIME's were less than $A/(1 - B)$. Ultimately the Advisory Council panel recommended the formula

$$PIA = \quad Z_1 \times \text{first } W_1 \text{ of AIME}$$

$$+Z_2 \times \text{next } W_2 \text{ of AIME}$$

$$+Z_3 \times \text{remainder of AIME} .$$

In appearance the PIA formula ultimately recommended is much like that behind the table in the current law, but there are three important differences.

1. The earnings-indexed AIME has been substituted for the nonindexed AMW.
2. There are at most three terms in the proposed formula, rather than the multiple (and increasing) number of terms in the current formula.

[7] There has long been a minimum PIA that often produces overgenerous benefits for workers with short periods of covered service.

3. The breakpoints W_1 and W_2 are also indexed, in step with average covered earnings. This indexing of the breakpoints serves the same purpose as the indexing of the A in the original Trowbridge-Bayo idea.

B. *The 1975 Advisory Council Report*

Ultimately this improved version of the decoupling mechanics was recommended by the panel of actuaries and economists to the Advisory Council by whom they were engaged. The 1975 Advisory Council itself endorsed both the decoupling principle and the indexing mechanics by which it could be accomplished. Within the Advisory Council the vote was unanimous, although early in the council deliberations there had been doubts among the three council members representing the labor movement. These members came to accept the decoupling recommendation only after they realized that the mechanics proposed would keep replacement ratios from falling (as well as prevent their rise).

Perhaps at this point it is appropriate to summarize the decoupling proposal of the Advisory Council. The proposal provides for the following:

1. No change in the mechanics for adjusting benefits for those who are already beneficiaries.
2. No change in the determination of the average period n.
3. Replacement of AMW by AIME, where the indexing of the earnings record is based on the change in average covered earnings.
4. Replacement of the PIA calculation formula by a formula of the same mathematical form, except that
   a) AIME replaces the AMW.
   b) The breakpoints are wage-indexed (and the Z_i would not change).
   c) The number of steps is reduced (and would not increase).
   d) Z_i and W_i are carefully set to reproduce closely the results under the old procedure as of the date of change.
5. To provide a smooth transition, any new beneficiary is to get the greater of (1) the PIA calculated by the new formula and (2) the PIA calculated from the table in the law as of the date of change. The latter would *not* be updated for future CPI increases prior to the date of claim, therefore effectively being decoupled from the benefits actually being paid.

The rationale behind the Advisory Council's decoupling proposal is that of preserving replacement ratios with the passage of time. For the worker whose position in the distribution of all covered earnings remains fixed (i.e., his individual covered earnings rise as fast as, but no faster than, the average of all covered earnings), it can be shown easily that the PIA, as a percentage of current covered earnings, is stabilized. This is true in all parts of the covered earnings scale, and hence the progressivity of the scale is preserved. It cannot be said, however, that replace-

ment ratios are exactly stable for workers who move up or down in the covered earnings distribution. Workers whose earnings records have a flatter slope than the slope of average covered earnings (i.e., workers who are losing ground relative to the average) will have replacement ratios that slowly increase as time passes, while workers with steep upward earnings patterns will find that their replacement ratios slowly decrease.

For a full understanding of the Advisory Council's wage-indexing proposal, attention now must be given to the disability and survivor benefits. It is a well-known fact that the current OASDI benefit formula results in replacement ratios that are considerably higher (than for the retirement situation) if a worker dies or becomes disabled at a young age. Rapidly escalating wage levels, the increasing taxable earnings base, and the short averaging period (essentially from age 26) combine to produce this unintended effect. Comparisons between two generations of workers, at the same current wage level, tend to show higher disability (and survivor) benefits for the younger worker than for the older, despite the fact that the older worker has paid more in social security taxes.

The Advisory Council's decoupling suggestion has the important characteristic that replacement ratios for death, disability, and retirement situations are gradually brought together, at the level set for age retirement. The shorter averaging period for young death and disability cases is preserved, but the effect thereof is neutralized by the wage-indexing mechanics. (For a period of time disability and survivor benefits are held up by the transition arrangements, since these young-age benefits will be the last for which the old law benefits that have not been updated will be the larger.) At the same time, the differences in benefits among various classes of workers with short periods of covered employment are eliminated by the Advisory Council proposal.

C. *The First Hsiao Panel*

The *1974 Report of the Board of Trustees of the OASDI Trust Funds* startled Congress by painting a vastly different picture of the long-range outlook than had been given in the 1973 report just twelve months earlier. The 1973 report had said: "The estimates currently show an actuarial imbalance of minus 0.32 percent of taxable payroll, a deficit of about 3 percent of the long-range cost of the program" (p. 32). But the 1974 report said: "The long-range actuarial cost estimates . . . show an actuarial balance [*sic*] of minus 2.98 percent of taxable payroll over the valuation period of 75 years, which substantially exceeds the acceptable limit" (p. 28). Congressional distress about the sudden appearance of this ominous forecast caused the Senate Finance Committee to appoint the

Hsiao panel, previously mentioned in Section I of this paper, to give that committee "an expert, independent analysis of the actuarial status of the social security system."

This first Hsiao panel reported in February, 1975, with three findings, as follows:

1. The actuarial status of the OASDI system is unsatisfactory.
2. The present formula for determining benefit awards at retirement responds irrationally to changes in the rate of inflation.
3. Present methodology for forecasting and analysis purposes is inadequate considering the system's magnitude and complexity.

This panel had not been instructed to propose specific means for removing or narrowing the expected financial gap. However, on page 18 of its report, the panel entered upon a discussion of alternative decoupling processes, expressing itself as follows:

This Panel has tentatively developed a preference for the Real Wage Approach [i.e., over the Relative Wage Approach, the former being price-indexing, the latter wage-indexing]. We wish that there had been available to us more information about typical wage patterns and replacement ratios than we have been given; we think it important not to forget that there is a material difference between the pattern of earnings for an individual and that for the economy as a whole, and we believe that a study of typical replacement ratios would be revealing and helpful.

Elsewhere in the report (p. 15) the panel also had expressed partiality for something less than a fully automatic benefit system. It expressed the view that retention by Congress of some measure of control over the emerging pattern of benefits is one of three basic tests of a satisfactory benefit formula.

D. *The Second Hsiao Panel*

In 1975 the Congressional Research Service, at the joint behest of the Senate Finance Committee and the House Ways and Means Committee, appointed a second panel, again with William Hsiao in charge. The task of its four members was "to examine the various ways in which the benefit structure could be revised to correct the problem of any overreaction to changes in price levels."

The resulting report, dated August, 1976, but issued in preliminary draft form six months earlier, recommended the price-indexing procedure and devoted much attention to the contrasts between it and the wage-indexing alternative. The panel did not do this lightly; the Advisory Council's recommendation for the use of wage indexing had been received

with widespread enthusiasm, and the prospect of causing damaging confusion by a division of opinion among actuaries was not overlooked.

The next section of this paper explores the differences between these approaches, as the authors see them.

V. ANALYSIS OF DIFFERENCES BETWEEN THE TWO LEADING SOLUTIONS

A. *Technical Differences*

The Hsiao panel report recommended a system for calculation of OASDI benefits that structurally was like that recommended by the Advisory Council, but with one important difference. Price indexing was to replace wage indexing in (1) the indexing of the wage record (in the calculation of the AIME) and (2) the indexing of the breakpoints (in the calculation of the PIA).

It could well be noted that under the OASDI system in effect since 1972, *both* wage indexing and price indexing are employed. The former is used to adjust the taxable wage base and the exempt amount under the earnings test, the latter to adjust the benefits for those who are already beneficiaries. The Advisory Council would employ wage indexing in two new ways, both ways as a part of the calculation of benefits for those not yet beneficiaries. The Hsiao panel would employ price indexing for the same two purposes.

Use of price indexing instead of wage indexing produces (at least initially) a smaller AIME under the Hsiao panel's formula than under the Advisory Council proposal, because historically wages have increased faster than prices. The Hsiao panel, while it expresses the PIA in the Advisory Council's mathematical form, would use slightly larger Z_i's to offset the lower AIME's, and would produce, as of the date of the new legislation, approximately the same results.

The differences between the two approaches would be minimal, therefore, until some time had passed. In both cases the new formula would be chosen to fit as closely as possible the results of the old formula as of the effective date of the new legislation; but, as time passed, the results would diverge. Under the Advisory Council's wage-indexing approach, benefits for the newly entitled would increase at approximately the same rate as average covered earnings, and replacement ratios would hold steady. Under the Hsiao panel's price-indexing approach, benefits for the newly entitled would increase at a rate somewhere between the rate of increase in prices and the rate of increase in average covered earnings. Benefits would more than keep up with the CPI, but typically would not keep up with earnings. In the special case where prices and earnings increase at the same rate, the two approaches are essentially equivalent, but in

the more likely situation where earnings increase faster than the CPI (i.e., changes in real earnings are positive), the Hsiao panel approach would provide slowly decreasing replacement ratios and thus smaller eventual benefits.

Although the important technical differences between the two approaches lie in their different approaches to indexing, it may be noted that the Hsiao panel had its own suggestion for transition arrangements. As stated earlier, the council recommended a "greater of" approach; the new formula gradually would take over because the old formula would never be updated. The Hsiao panel preferred a progressive blending of the new formula into the old retirement benefit, with the weighting for the new formula moving from 0 to 100 percent over a five-year period.

B. *Philosophical Differences*

The philosophical differences between the two approaches are closely related to the technical differences. Perhaps these philosophical points can best be indicated by outlining the rationale behind the Advisory Council's approach, and then modifying the rationale to conform to the views of the Hsiao panel.

The 1975 Advisory Council accepts the basic premise behind the "automatic" provisions recommended by the 1971 council and adopted by Congress in 1972. If the system can be designed so that it automatically adjusts to forces of price and wage inflation in a rational way, then (and only then) it has a prospect of long survival. In the Advisory Council's view, a system with stable replacement-ratio characteristics, and with purchasing power protection after the working career is over, meets this rationality test. The sensitivity of the resulting system to wage and price inflation would be minimized, although not really eliminated, and the long-range actuarial deficit would be reduced.[8] Although Congress always will have the right to make changes in the system, and can be expected to do so in less important ways, it is hoped that the decoupled approach the Advisory Council recommends will minimize the frequency and extent of ad hoc adjustments so common in the past.

The Hsiao panel is not confident that any fully automatic system can long survive. The panel doubts the wisdom of assuring the public that present replacement ratios will be maintained, unless the payroll tax rates believed necessary to do so are prominently displayed and found to be acceptable to the taxpaying public.

The Hsiao panel also doubts that social, political, and economic condi-

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[8] The 1977 report of the trustees of the OASDI system indicates that, on the basis of the intermediate assumptions outlined in the report, the substantial long-range deficit would be approximately halved.

tions of the future can be forecast sufficiently accurately to keep an in-
sufficiently flexible system out of serious future trouble. It therefore pre-
fers a partly automatic system, one that is expected to result in slowly
decreasing replacement ratios until from time to time Congress arrests
the fall. If such legislative actions were to be similar to the general-
increase procedures used in the past, those actions could be expected to
benefit those who were already beneficiaries as well as those still active.[9]

Some supporters of the Advisory Council wage-indexing procedure
doubt that the panel's price-indexing system could be enacted in view
of the inevitable opposition from the political left. The Hsiao panel mem-
bers recognize this potential pitfall, but they feel that the public is en-
titled to a look at an alternative that appears to them to have superior
characteristics.

<h3 style="text-align:center">VI. DEVELOPMENTS SINCE THE EMERGENCE OF
THE TWO LEADING SOLUTIONS</h3>

A. *Endorsements of the Decoupling Principle*

Shortly after the decoupling principle surfaced upon release of the
Advisory Council report in early 1975, endorsements of that principle
began to appear. Among those who publicly supported the concept were
the American Council of Life Insurance and the American Academy of
Actuaries. These early endorsements did not attempt to distinguish be-
tween the specific proposals of the Advisory Council and the second Hsiao
panel, since the report of the latter was not yet in the public domain.
No significant opposition to the decoupling principle seemed to be
forthcoming.

B. *Endorsements of One or the Other of the Two Leading Solutions*

There were three hearings before the social security subcommittee of
the House Ways and Means Committee during 1976. The first of these
was in February, at which time a preliminary report of the Hsiao panel
was presented.

At a June hearing the Ford administration presented its proposals in
the form of H.R. 14430—"a bill to amend the Social Security Act to
reduce the effect of wage and price fluctuation on OASDI benefits."
H.R. 14430 was essentially the Advisory Council approach to decoupling,

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[9] Because the Hsiao panel recommendations contemplate future legislative action
of an undeterminable nature, their effects on the prospective actuarial deficit are in-
determinate. The deficit would be larger or smaller than under the Advisory Council
approach, depending upon how Congress reacted as replacement ratios declined. The
deficit would be smaller if the Hsiao panel approach were to operate automatically over
the long-term future, but this is *not* what the Hsiao panel proposes.

but with minor changes. The transition arrangements were to terminate after ten years. The minimum PIA was not to be phased out as the Advisory Council had recommended.

By the time of the July continuance of the 1976 hearings, interested groups outside government had had time to study the two competing decoupling proposals and to develop a position with respect to them.

The life insurance industry, through the American Council of Life Insurance, testified in support of the Advisory Council's wage-indexing approach, but with one important modification. The industry recommended a modification of the formula connecting the PIA and the AIME such that the results would not match those of the old formula as of the date of change but instead would come out about 10 percent lower. Because of the transition arrangements based on the "greater of" principle, there would be no immediate cut for new claimants, but replacement ratios would stabilize at a lower level once the new formula became fully effective. The rationale was simply that the delay in enacting decoupling legislation, combined with the general increases that were enacted during 1971 and 1972, had resulted in replacement ratios about 10 percent too high. Hence the ACLI proposal would stabilize replacement ratios, not at the current level under the present law but at the level under the law as it existed before 1972.

Other interested groups testified at the July, 1976, hearings. Among the business-oriented groups were the National Association of Life Underwriters, the National Association of Manufacturers, the Chamber of Commerce of the United States, and the New York Chamber of Commerce and Industry. Retired persons' groups that testified were the National Council of Senior Citizens and the National Retired Teachers Association–American Association of Retired Persons. The labor group was the American Federation of Labor–Congress of Industrial Organizations. Few of these groups took firm positions as to the decoupling alternatives; the business-oriented groups tended to follow the life insurance industry, and the labor group indicated support of decoupling provided that the replacement ratios for future retirees were to be no lower than for current retirees.

In May, 1977, the secretary of health, education, and welfare of the Carter administration testified before the Subcommittee on Social Security. Although much of Secretary Califano's testimony had to do with the short-range OASDI financing problem, he endorsed the 1975 Advisory Council's decoupling proposal much as the Ford administration had done a year earlier. The only new suggestion was with respect to the transition arrangements. The Carter administration proposals follow

those of the 1975 Advisory Council in that they guarantee the old formula benefits (frozen as of the date of change) for initial retirement claims, but they do not offer a similar guarantee for survivor or disability benefits. The correction of what some consider overgenerous benefits in case of death or disability at the younger ages would happen faster under the Carter administration version than under the original proposals.

VII. THE OUTLOOK

The authors of this paper expect debate on solutions to OASDI financing problems to continue at least into 1978, although there remains a possibility that decoupling legislation might be enacted during 1977. Further hearings before congressional committees are scheduled for the summer of 1977, and a new Advisory Council is soon to be appointed. The authors believe it to be important that solutions to the long-range as well as the short-range problems of the system be enacted before the end of the term of the Ninety-fifth Congress.

Actuaries can render an important public service in educating the public, clarifying the issues, and expressing the urgency of solving the problems. The American Academy of Actuaries has issued a speaker's kit to assist actuaries willing to devote their efforts to this activity.

It does not seem likely that the actuarial profession will express a preference as to the best of the various decoupling proposals, although the profession is solidly behind the basic principle.

DISCUSSION OF PRECEDING PAPER

BARNET N. BERIN:

The authors write clearly on a difficult, technical subject with profound implications for our society and of great interest to the actuarial profession. Evidently, something went wrong in 1972, and the effects on the social security system were so severe that corrective action had to be taken. It would be helpful if the authors would discuss the respective roles of Congress, the Advisory Council on Social Security, and the Office of the Actuary in these 1972 changes. Of particular interest are the following decisions.

First, the low- and high-cost estimates, used effectively by the prior actuary and reinstated by the current actuary, were replaced in 1972 by a "best estimate." Would the decoupling problem have been revealed by the low- and high-cost technique? Did the "sensitivity" testing that supported the 1972 amendments disclose the decoupling problem?

Second, the economic forecast supporting the 1972 amendments assumed that salaries would move faster than the cost of living, so that, among other things, it would be feasible to grant the full cost-of-living increase to retired participants. Why was it necessary to give the full cost-of-living increase, subject to the 3 percent rule, rather than some controlled increase within defined limits? Was this a political decision rather than an actuarial decision? Were a variety of other economic forecasts considered that also might have disclosed the decoupling problem?

Section III of the paper contains a doubtful concept: implied responsibility of the public for not uncovering the unfortunate characteristic of the coupled mechanics. Clearly, neither the general public nor the informed public (actuaries) should be held accountable for the consequences of this type of specific action.

ROBERT J. MYERS:

Messrs. Moorhead and Trowbridge are to be congratulated on writing this paper. It is a clear, impartial presentation of the decoupling issue under the OASDI program, especially the choice of whether to use wage indexing or price indexing. I could not have written such a dispassionate paper on the merits of these two approaches. As I will bring out later,

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I am thoroughly convinced that all the merit lies on the side of the wage-indexing approach, and that the price-indexing approach is undesirable and inequitable; the arguments favoring it tend to "walk on both sides of the street at the same time."

In preparing this discussion I realize, of course, that I have the advantages of being a Monday-morning quarterback. The game is now over, and the issue is no longer "unresolved." Both the House of Representatives and the Senate have passed bills that include the wage-indexing approach, and it is a certainty that the compromise bill to be developed by the two bodies will include this provision and will be enacted into law soon. The important role that the paper can play is to serve as part of the history of the development of the new benefit computation procedures. I believe that the wage-indexing procedure not only is logical and sound, but also will be durable. My views on this matter are held so deeply that I am willing to predict without any reservations that the wage-indexing approach will be maintained indefinitely into the future. In my view, it has the great merit of producing stable replacement rates for all future years (only slight variations being possible, for certain technical reasons). This element of relativity is what is essential for proper retirement income planning. After all, it is a basic fact that people function in "real" terms. They should have initial benefits that will approximate a given proportion of recent earnings, and these benefits should maintain their real purchasing power during the benefit-receipt years.

I realize fully that many workers do not have steady earnings histories, as those who support the price-indexing approach often point out. I do not believe that this is relevant to the development of a benefit structure, which should be designed to be appropriate for the steady worker.

I believe that the price-indexing approach is unacceptable because it is likely to result in declining replacement rates over the years. This does not seem equitable to younger workers, who would pay relatively higher taxes as a percentage of pay than present older workers and yet would receive relatively lower benefits. The social adequacy principle of OASDI, which is necessary and desirable, certainly would support the same relative benefit levels for different generations regardless of the different tax burdens. However, it would be inequitable to have lower benefit levels for persons who have paid longer and at higher relative tax rates.

Some arguments in support of price indexing are to the effect that

the situation just described never will occur, and that Congress will and should prevent its occurrence. This contradicts the argument that price indexing is preferable to wage indexing because it eliminates so much more of the existing long-range actuarial deficit. Moreover, it would seem to be poor pension design and legislative planning to institute a basis that is known to be so faulty that it inevitably will need changing.

The authors might have treated in somewhat more detail the question of how the indexing is to be done. In one respect this is purely a technical matter, but actually it does have a very significant effect. Theoretically, the indexing of the earnings record should be to the year immediately preceding the event being considered (death, disability, retirement, or eligibility for retirement). In practice, however, an additional year of lag is necessary in order that the indexing data be available. For example, for death or disability at the beginning of year x, the indexing data for year $x - 1$ could not be available in a timely manner.

Much more important is whether for retirement cases the indexing is to be done to the actual date of retirement or to the earliest age when eligible for retirement—with the necessary lag in either case. The uninformed might decide readily that it is most logical to use the actual date of retirement, and that this even could have the desirable result of encouraging delayed retirement. However, it actually is much more equitable and desirable to use the eligibility approach, because the entitlement basis frequently involves matters of choice and change.

Under the entitlement basis, an uninformed or unfortunate individual might file claim for retirement benefits at the wrong time and thus be penalized significantly as compared with a knowledgeable or fortunate person who did otherwise. In fact, it is frequently impossible to know in advance of the future developing work history the optimum time for filing. Such a situation also would place the staff of the Social Security Administration in an untenable position, because it would not be able to offer advice that would be certain to be in the best interests of the claimant.

On the other hand, using the eligibility approach for retirement benefit claims provides consistent and uniform treatment for all. The indexing base year is determined by the year of birth and thus is fixed for each individual. The indexing is based on age 62, which means using the year in which age 60 is attained as the indexing base year.

The entitlement basis was contained in both the Ford administration and the Carter administration bills, although it is my understanding that

the technical staff of the Social Security Administration thought that the eligibility basis was preferable. (I testified in favor of the eligibility basis before Congressional committees.) Interestingly, both the House and the Senate bills adopted the eligibility basis, and so this matter also is resolved.

CECIL J. NESBITT:

In the face of so many recent studies representing many hours of intensive consideration of social security problems, one hesitates to jump into the discussion with suggestions arising from intermittent and much less detailed study. However, as OASDI taxes reach substantial levels, it is important that public understanding and confidence in social security be nourished by any means available. I shall weave together a few strands of thought that eventually may assist in enhancing public acceptance and trust in social security.

One of these strands appeared in my discussion of Mr. Trowbridge's paper "Social Security Amendments—1969–72."

One device that occurs to me is borrowed from the theory of mutual funds and variable annuities, namely, that all calculations should be made in terms of units rather than dollars. Congress might set up a system of social security units which would parallel roughly the CPI [consumer price index] but also might include some allowance for improvements (if any) in the standard of living. Under this system a covered employee would receive adjustment of his benefits not from time zero but only over the period of his covered employment and benefit status. [TSA, XXV, 671.]

The second strand occurs in Mr. Brian R. Newton's article "Pensions in a Moneyless Society" in the October, 1977, issue of *The Actuary* (p. 1). He points out: "We can no longer assume that currency, the medium of exchange we use for day to day trade, is identical to money, defined as the basis generally accepted as a long term store of value." He also indicates that "intangibles such as variants of a consumer price index are increasingly promoted as effective replacements for a monetary standard," and notes the problem of credibility due to the lack of effective investments in terms of the price index. However, for an essentially pay-as-you-go system of social security supported by the taxing power of the federal government, it may be possible to operate in terms of index-related units.

The use of such units would bring out the elements of stability in the system. In particular, the bend points in the benefit formula and the formula itself could remain fixed, benefit illustrations and benefit tables

in terms of units could remain the same from year to year, and administrative records and reports and actuarial processes could be simplified.

If their year-by-year covered wages were reported to covered workers in dollars and in units, the workers would have some chance to estimate future benefits. They also might comprehend benefit awards if the calculations were initially in terms of units and the units then were converted to dollars at the current rate. Without the use of units, a worker has little chance to comprehend the indexing of prior wages and the application of benefit formulas or tables that change confusingly from year to year. There is appalling ignorance of how social security benefits are determined, and it is essential to take any step that might simplify and improve the process of determining benefits and instill confidence in the system. It may be noted that the Canada Pension Plan gets along without units but the benefits are much simpler than under OASDI.

Having extolled the virtue of units, let me now point out the wide choice that exists as to the type of units. In my discussion of Mr. Trowbridge's paper, I seem to have had in mind a single unit to be used during both employment and benefit periods, with the unit related to the consumer price index. As a sidelight, it may be noted that a single unit related to a wage index would produce a kind of coupling similar to that in effect under some pension plans for uniformed employees. Current decoupling solutions contemplate wage or price indexing for the employment period and utilizing the current mechanism for benefit adjustment during the benefit period. For the employment period, one might consider a weighted average unit of the form

$$a_1 u_1(t) + a_2 u_2(t) \qquad (a_1 + a_2 = 1),$$

where $u_1(t)$ is a unit related to a wage index and $u_2(t)$ is a unit related to a price index. The choice of $a_1 = 1$, $a_2 = 0$ would yield wage indexing, while the other extreme case, $a_1 = 0$, $a_2 = 1$, would give price indexing. Whether an intermediate composite unit having both wage and price components would be better than an "extreme" unit is a question. A composite unit might be harder to understand but might yield more stable results than a unit related only to either wages or prices. Also, by periodic adjustments of the weights a_1 and a_2, it might be possible to satisfy the Hsiao panel criterion that there should be some measure of control over the emerging pattern of benefits. It also could be a lever for maintaining actuarial balance. In any case, if social security benefits were calculated on the basis of average monthly earnings units from covered employment, the determination of the unit value (in dollars) from quar-

ter to quarter, or year to year, would be of great public importance, since all initial benefits would depend upon it.

The following observations relate to how a unit system might work. Suppose that a worker's benefit is to be based on years of coverage 1, 2, ..., n, and that in those years the worker's earnings in dollars were $w_1, w_2, \ldots, w_n$. Suppose further that unit values for those years were $u_1, u_2, \ldots, u_n$ so that the worker was credited with $w_1/u_1, w_2/u_2, \ldots, w_n/u_n$ units in the respective years. For simplicity we shall assume that n is the final year of employment, although this might not always be the case. The worker's replacement ratio then might be calculated as

$$r_n = \frac{\text{PIA in dollars}}{w_n}$$

or, on division of numerator and denominator by u_n, as

$$r_n = \frac{\text{PIA in units}}{w_n/u_n}.$$

In words, r_n can be expressed as the ratio of the PIA in units to the final wage in units. Further, if the worker's wages kept in step exactly with the unit values, that is, if w_h/u_h is constant for $h = 1, 2, \ldots, n$, then r_n would have some *fixed* value, say L, if the PIA were calculated by new formulas of the type indicated in the paper. If the worker's wages increased geometrically relative to the unit values, that is, if $w_h/u_h = (w_1/u_1)(1 + j)^{h-1}$ for $h = 1, 2, \ldots, n$, then the replacement ratio r_n would have a value less than L. Similarly, if the worker's wages decreased geometrically relative to the unit values, that is, if $w_h/u_h = (w_1/u_1)(1 + j)^{-(h-1)}$ for $h = 1, 2, \ldots, n$, then r_n would be greater than L.

The foregoing remarks and the authors' comment that "the whole design had the basic fault that the important replacement ratio varied with price and earnings changes over which the system had no control" lead me to refer to the description by Dr. George Andrews and me of a continuous model of the current type of social security benefits (see *Record, Society of Actuaries*, I, 777–80). The model incorporates two growth rates: δ, the annual rate at which the taxable earnings base is growing, and δ_1, the annual rate at which the benefits are increasing. It should be noted that the model applies to the case of a worker whose covered earnings are growing at rate δ. Such a worker might be one who earns as much as or more than the taxable earnings base, but the model also would apply to lower-income workers whose earnings grow at rate δ. The model indicates that replacement ratios for the present social

security system are stable if the ratio $\delta_1/\delta = k$, where k is slightly more than 0.5. The replacement ratios r_t drift downward if $\delta_1/\delta < k$, and drift upward if $\delta > \delta_1 > k\delta$. Decoupling should control such drift.

The authors have given a lucid presentation of the OASDI decoupling issue and the related studies. Beyond the necessity of determining a solution, there are the problems of explaining the solution to the covered workers and of performing the daily administration and reporting procedures. These latter problems may be almost as important as the original issue, so I hope that serious consideration will be given to the simplifying potential of units and that the social security amendments will be written in language that will permit the incorporation of units into the administration of OASDI. I do not know of any discussion of this idea, and it may be that further studies will be needed before Congress commits social security to a new course and all its ramifications. In any case, I hope the authors have succeeded in stimulating some actuaries to contribute their views on the decoupling issue. Their paper has added greatly to my understanding of social security developments.

<center>(AUTHORS' REVIEW OF DISCUSSION)</center>

ERNEST J. MOORHEAD AND CHARLES L. TROWBRIDGE:

In one sense it is unfortunate that because of publication deadlines these discussions had to be written before discussion of the paper at a Society meeting. In another sense the timing is good because the authors can now comment on the social security amendments of 1977. One of the results of these amendments is that the decoupling issue is no longer "unresolved."

Mr. Berin is concerned about the various roles of Congress, the 1971 Advisory Council, and the Office of the Actuary in enacting the ill-fated 1972 amendments. All played a part, as did many other groups in and out of government. The "automatic" features then introduced have since been found to be unstable under conditions of severe inflation. This instability gave rise to the decoupling problem. We all share with Mr. Berin the wish that analyses of the possible relationships between wage and price increases had focused attention on this instability before the 1972 amendments were adopted. Doubtless an important lesson has been learned.

Mr. Myers devotes much of his discussion to asserting the superiority of the wage-indexing approach advocated by the 1975 Advisory Council (and eventually adopted) over the price-indexing system recommended by the Hsiao panel. The authors intentionally did not take sides on this

question, and in the interests of a balanced presentation they would welcome a discussion from an equally persuasive advocate of the price-indexing approach. Perhaps such a discussion will be presented at the Society's April, 1978, New York meeting, at which time this paper is to be discussed.

Mr. Nesbitt suggests that public understanding of how indexing works would be aided if benefits were to be expressed in terms of units whose values would vary with prices or wages or some composite of these. This approach would be akin to that employed in determining dollar values under variable annuities. Mr. Nesbitt's suggestion might stand a better chance if all the OASDI indexing were with respect to the same base. Otherwise, more than one unit becomes necessary—for example, one unit moving with the consumer price index and another moving with average wages. It is perhaps moot whether people would find the unit concept easier to grasp than the indexing system employed since 1972 for those already beneficiaries, and the new extension of indexing to wage records and formula breakpoints.

In Mr. Myers' discussion the reader gets a glimpse of the new legislation as it was proposed in early December, 1977. The final resolution of the entire decoupling issue can be described as follows:

1. Congress chose the wage-indexing approach. In computing the newly defined average indexed monthly earnings, wage records are indexed to the year $y - 2$, where y is the year of disability, death, or attainment of age 62. In other respects, the AIME calculation is as Mr. Myers describes it.
2. The PIA formula to become effective on January 1, 1979, is

    PIA = 90 percent of the first $180* of AIME

    + 32 percent of the next $905* of AIME

    + 15 percent of any excess of AIME over $1,085*.

    The asterisks indicate that the $180 and $1,085 breakpoints are to increase in step with average covered wages.
3. The formula in item 2 produces benefits somewhat lower than the old formula would have produced for death, disability, or retirement in 1979. The recommendation of the life insurance industry outlined in Section VI, B, of the paper therefore was accepted, although the cut in ultimate benefits generally is not as large as the recommended 10 percent. The reduction varies with the circumstances, being more pronounced for death or disability at the younger ages than at the older ages and more pronounced for retirement at age 65 than at age 62. For retirements within the next few years, but not for death or disability, there is a transition arrangement that eases the impact of the benefit reduction.

The authors thank the three contributors for their fine discussions.