INFLATION AND BENEFITS UNDER THE U.S. OLD AGE, SURVIVORS AND DISABILITY INSURANCE

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It is a commonplace assertion in the literature that old age pensioners suffer from inflation.

Almost all old age pensioners in the United States now receive benefits from Old Age, Survivors and Disability/Insurance (OASDI)[1], and for the great majority of those it is the only pension.[2] The question of whether pensioners suffer from inflation is thus _primarily_ a question of whether OASDI pensions are eroded by inflation.

The aim of this paper is to estimate upper limits on the loss from inflation for a typical OASDI beneficiary and thus to show that for the majority of old-age pensioners in the United States protection against inflation is quite good. Moreover, the protection is not fortuitous, but a necessary consequence of the way benefits are set.

The argument proceeds as follows. We begin by spelling out for comparison purposes how pension benefits in a simple scheme run on conventional actuarial principles would be eroded by inflation. Benefits under a scheme run this way will be referred to as "private pension benefits". Then, after looking briefly at the history of the OASDI scheme, we argue that despite the original intensions of the founders, the OASDI scheme is not, and for many years has not been, run even approximately on conventional actuarial principles. The fact that private

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[1]Disability insurance was a relatively late addition to the scheme, so that we ought, before the introduction of disability insurance, to refer to "OASI". Later Health insurance was added, and then we should refer to OASDHI. We shall refer to any or all of these as OASDI for simplicity.

[2]About 20% receive private pensions in addition (usually) to OASDI.

pension benefits are badly eroded by inflation[3] therefore does not

show that OASDI benefits are so eroded. A theoretical section follows,

which looks at what does determine the extent of benefit erosion. This

leads us to examine, on the basis of Congressional debates, what

criteria, rather than conventional actuarial ones, are in fact used in

determining and adjusting OASDI benefits. Finally we argue that these

criteria are such as to ensure for these benefits a surprisingly high

degree of protection against inflation.

I. Erosion of Private Pension Benefits by Inflation

The Model

Consider a highly simplified model with the following characteristics.
Each pensioner pays a fraction k of his money income during a working

lifetime of n_w years, to provide a pension for a retirement lifetime of

n_r years. Let the rate of interest be r, the rate of inflation be m,

and the rate of real per caput income growth be g. The values of r, m

and g are taken as independent of each other, and are supposed to persist

indefinitely.

Denoting money income at time t as $Y(t)$, the fund accumulated

to a pensioner's credit at the time of retirement by F, we have

$$(1) \quad F = \int_0^{n_w} kY(t)e^{r(n_w-t)} dt$$

We also have

$$(2) \quad Y(t) = Y(0)e^{(m+g)t}$$

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[3]Except under unrealistic assumptions, such as interest rates
that adjust perfectly to inflation, or nearly so.

Combining (1) and (2) and integrating we find

$$(3) \quad F = \frac{kY(0)e^{n_w r}}{m+g-r} \left(e^{n_w(m+g-r)} - 1\right)$$

Let the fund provide a constant money income during retirement of P. Since the scheme is run on conventional actuarial lines, P must be set at a level which is sufficient to exhaust the fund, F, after the retirement lifetime of n_r years, and allowing for interest credited during retirement to the (diminishing) fund balance. Hence P must satisfy

$$(4) \quad \int_0^{n_r} Pe^{-r\theta} \, d\theta = F$$

i.e.

$$(5) \quad P = \frac{Fr}{1 - e^{-n_r r}}$$

P is in money terms. We can convert it to real terms using prices of any year: we choose prices of the first year of contributions as base year.

When the pensioner has been retired for a time z the real value of his pension in base year prices is

$$P \, e^{-(n_w+z)m}$$

Consequently the average real value over retirement of the money pension P, denoted P*, is given by

$$P* = \frac{1}{n_r} \int_0^{n_r} Pe^{-(n_w+z)m} \, dz$$

i.e.

$$P* = Pe^{-n_w m} \left(\frac{1 - e^{-n_r m}}{n_r m}\right)$$

Using (3) and (5) we have from this

$$(6) \quad P^* = \left(\frac{r}{1-e^{-n_r r}}\right)\left(\frac{kY(0)e^{n_w r}}{m+g-r}\right)(e^{n_w(m+g-r)}-1)(e^{-n_w m})\left(\frac{1-e^{-n_r m}}{n_r m}\right)$$

If there is no inflation the real value of P, again in prices of the first contribution year, is found by inserting m = 0 in equation (6). We refer to this value as P**.

The ratio, P*/P** is the ratio of achieved average real pension to the zero inflation achieved average real pension, and is therefore a measure of the degree of loss from inflation. This ratio is readily found to be, (writing $g - r = q$)

$$(7) \quad P^*/P^{**} = \frac{q}{q+m}e^{-n_w m}\frac{e^{n_w(q+m)}-1}{e^{n_w q}-1}\frac{1-e^{-n_r m}}{n_r m}$$

Behaviour of the Average Money Pension Through Time

Before examining the values of P*/P** we wish to examine the behaviour through time of the average money pension of all pensioners in a private scheme.

At time t there exist pensioners who are at various stages of their retirement. For those who have just begun retirement we have, denoting the pension at the beginning of retirement in year t by P(t,0)

$$P(t,0) = \frac{r}{1-e^{-n_r r}}\frac{kY(t-n_w)}{m+g-r}e^{n_w r}(e^{n_w(m+g-r)}-1)$$

$$= AY(t-n_w) \text{ where A is a constant with respect to time}$$

Denoting the pension of those who have already been retired

for θ years at time t by $P(t,\theta)$, we have

$$P(t,\theta) = AY(t-n_w - \theta)$$

Assuming that coverage is not changing, so that equal numbers

of pensioners at all stages of retirement exist, and denoting the average

money pension of all pensioners at time t by $\bar{P}(t)$, we have

$$\bar{P}(t) = \frac{1}{n_r} \int_0^{n_r} AY(t-n_w - \theta)\, d\theta$$

Now $Y(t-n_w - \theta) = Y(0)e^{(m+g)\,(t-n_w - \theta)}$, since money incomes grow at rate

$m + g$. Hence

$$\bar{P}(t) = \frac{AY(0)}{n_r} \int_0^{n_r} e^{(m+g)\,(t-n_w - \theta)}\, d\theta$$

$$= B\, e^{(m+g)t}, \text{ where B is independent of t.}$$

Consequently

$$\frac{d\bar{P}(t)/dt}{\bar{P}(t)} = m + g$$

This last equation tells us that when coverage is not changing

the average money pension grows at the same rate as money incomes in general.

It is therefore perfectly possible to observe that average

pensions are keeping up with inflation and real growth, consistent with,

as we shall see below, substantial damage from inflation. We make use

of this result later.

Damage from Inflation Under a Private Scheme

We take illustrative values for the parameters in equation (7)

and evaluate P*/P** for various rates of inflation.

Let the rate of interest be 3%, the rate of per caput real growth be 2%, the working lifetime be 40 years, and the retirement lifetime be 10 years. Values of P*/P** on these assumptions are shown in table I below.

TABLE I: LOSS FROM INFLATION UNDER A PRIVATE PENSION SCHEME

Annual rate of inflation (%)	Ratio of Actual Real Pension to Zero Inflation Real Pension
(100m)	(P*/P**)
Zero	1.000
$^1/2$	0.879
1	0.775
2	0.608
3	0.484
5	0.319
10	0.139

Table I illustrates just how rapidly sustained inflation can reduce the real value of pensions (if r is not sensitive to m). One half of one per cent steady inflation cuts the average real value of the pension by just over a tenth, 1 per cent inflation cuts it by nearly a quarter, 2 per cent by over one third, 3 per cent by over a half, and 10 per cent suffices to bring the pension to about a seventh of its zero inflation value.

We would certainly have to conclude, if OASDI benefits were determined on conventional actuarial lines, that they had been very substantially reduced in real value by the war/ and post war inflation. In what follows a very important part of the argument is therefore that the OASDI scheme is not run even approximately, like a private pension

scheme: specifically benefits are not determined at retirement on the basis of past inpayments plus accumulated interest, nor are they, once having been set at retirement, fixed throughout the retirement lifetime. The argument begins with a brief look at the history of the OASDI scheme.

II. History of the OASDI Scheme

The Old Age and Survivors Insurance scheme was set up by the Social Security Act of 1935. Limited then to employees in industry and commerce it was intended as a self financing scheme, run just like a private pension scheme with contributions from employees and employers (proportional to earnings up to a ceiling) going into a fund from which future benefits were to be paid. Benefits were to be determined by the amount paid in during the working lifetime, according to somewhat detailed formulae which need not be described here. Payments were to go into a trust fund, which would purchase government bonds with the receipts, and which was to be administered separately from other government activities.

Since 1935 the Act has been amended many times, with the major amendments coming in 1950, 1952, 1954, 1958, 1965, and 1967. The major changes have been in the benefits payable, the joint employee/employer tax (contribution) rate, the maximum earnings taxable, and the groups covered by the scheme.

Benefits payable were roughly doubled in 1950, increased 15% in 1952, 15% in 1954, 7% in 1959[4], 7% in 1965 and 13% in 1968[4].

Each of these major amendments, as well as others in years when no blanket increase was given, has extended coverage, with the result

[4] Amendments of previous year, not effective until early in the year stated.

that the number receiving benefits has steadily increased. Perhaps the
best single indicator of coverage is not the number contributing, but
the number of beneficiaries over 65, expressed as a percentage of the
total population over 65. Using this measure we find that payments
covered less than half the population over 65 as late as 1956 (47.1%).
In 1940 about 2% were covered, in 1950 about 20%, in 1955 43%, in 1960
65%, in 1965 about 80%, currently about 90%. As these figures indicate,
only in recent years has coverage become anything like comprehensive.

Next, let us look at the impact of the initial scheme plus
all the changes Congress has made through the years on the average benefit
payment (see Table 2). We include beneficiaries of all ages because of
the difficulties of getting information on old people only. Old people
are between two thirds and three quarters of all beneficiaries; the others
are widowed mothers and their children, disabled workers, etc. Table 2
shows total beneficiaries, average benefit payment, and the real value
of the average benefit payment.

As can be seen from the table, real benefits per head declined
through the 40's to 1948, but from 1949 onwards they increased. The 1940
level was reached again in about 1953, and since then real per capita
payments have risen at an average rate of about 4% per annum.

The average payment in money terms never declines after 1945,
and after 1948 declines in real terms in only four years out of eighteen
and then only slightly. Since benefits for someone already on the rolls
change only intermittently this is clearly a partial consequence of new
pensioners with high pensions continuously replacing old pensioners with
lower pensions who die. In addition the new pensioners are also numerically
greater than those who die (the number covered is steadily increasing). For

TABLE 2: HISTORY OF BENEFITS UNDER OASDI

Year	Beneficiaries (millions)	Average Payment (current dollars per annum)	Average Payment (dollars of 1957/9 per annum)
1940	0.2	248	508
1945	1.3	213	340
6	1.6	230	338
7	2.0	234	309
8	2.3	238	284
9	2.7	242	292
50	3.5	276	329
1	4.4	431	476
2	5.0	437	473
3	6.0	503	540
4	6.9	533	570
5	8.0	624	669
6	9.1	626	661
7	11.1	660	674
8	12.4	686	681
9	13.7	745	734
60	14.8	750	727
1	16.5	764	733
2	18.1	790	750
3	19.0	800	750
4	19.8	808	748
5	20.9	866	788
6	22.8	921	814

Source: [5] , various issues

both reasons the average payment rises even in years when no benefit
increases are legislated.

From the table it can be calculated that real per capita
benefits rose 71% from 1951 to 1966 and 179% from 1949, just before
the big increases in 1950 were introduced. On the face of it, and even
conceding that the 1950 increases were needed to rectify the damage done
by inflation during the war and post war years, the data do not support
the contention that pensioners have suffered from inflation since 1951.
On the contrary, they appear to have fared considerably better than the
population as a whole, for G.N.P. per capita rose in real terms only
about 40% from 1950 to 1966. Thus some writers have been led to conclude that
OASDI beneficiaries have not in the past, and are not likely in the future
to suffer from inflation, [4] though others, despite this evidence, have
reached opposite conclusions [1], [3].

The latter might well be correct, since the simple observation
that average benefits have risen along with money incomes in general is
not a sufficient condition for concluding that no loss from inflation has
occurred.[5] Given that coverage is steadily increasing, even rises that
exceed the general rise in money incomes are not a sufficient condition.
The problem is that the general <u>level</u> of pensions can be lower because of
inflation, even though the level itself is growing at at least the general
rate of growth of money incomes.

Even if we accepted without further investigation that benefits
had been inflation protected after 1951 it would be necessary to find out
why this was so, in order to assess whether it was likely that they would
remain protected in any future inflation. This is especially important in

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[5] See section I

view of the fact that there was inflation damage prior to 1950.[6]

The first step in this is to establish that since 1950, there has been no resemblance between a private pension scheme and the OASDI scheme in the methods used to finance the benefits.

III. Financing Methods Used by OASDI

When the OASDI scheme was first set up it was the intention to run it very like a private scheme, with benefits mostly financed from, and based upon, past contributions plus accumulated interest. Examination of Congressional debates shows, however, that in practice OASDI benefits from the 1950 amendments on, and to some extent before then, have been determined virtually without regard to the total amount pre-paid by beneficiaries.

Two items of evidence among many that might be cited will serve to establish this point. In the debate on the 1950 amendments evidence was quoted that if the benefit levels then being debated were passed (as they were), a person retiring in 1956 would receive, in return for a total inpayment of $660, some $10,800 in benefits, a ratio of 6.1% ([2], V.96, Pt.7, p.8821). Such a ratio is far below what would have to obtain under a privately run pension scheme.[7] The situation was not different in 1965, fifteen years later. In the debates of that year, Senator Curtis presented evidence from the chief government actuary, Mr. Myers, that only 10% of the program at that date was pre-paid. ([2], V.111, Pt.12, p.15871)

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[6]While the observation that average pensions rise as fast as prices is not sufficient for concluding no damage occurred, the observation that average money pensions failed to rise when prices did is almost certainly a condition for concluding that some damage did occur.

[7]Of the order of 50%

Evidence of this kind, which could be multiplied many times, establishes that the only function of the wage related character of benefits under the scheme is to determine the <u>distribution</u> of total OASDI benefits among individual beneficiaries, while the total itself is determined by criteria quite different from past earnings, and is much larger, very much larger, than it would be on the basis of contributions from past earnings.

Consequently the analogy with a private pension scheme is not just a little misleading -- this is likely to be suspected already by most readers -- but is in fact almost totally false. One therefore cannot argue from the fact that under a private pension scheme inflation will reduce the real value of payments below what they otherwise would have been that inflation will have this effect on the OASDI scheme.

Since benefits are not financed from past inpayments we next inquire just how they are financed.

Examination of Congressional debates leads to the conclusion that Congress requires that the scheme should be "self-financing". What this means is not that past inpayments by current recipients be sufficient to pay their current pensions, but that over the foreseeable <u>future</u> the scheme should be able to meet <u>current</u> payments out of <u>current</u> receipts. Congress requires, in this regard, not only that the fund should not fall to zero, -- so that the obligations would have to be met from general revenues -- but also that it should not rise too much either, which would imply that current general government revenues were being supplemented by the OASDI taxes. (Congress is well aware that the holding of fund revenues in government bonds implies that any increase in the fund is equivalent to supplementing current government revenue from OASDI contribution taxes). This self-financing requirement is extremely

important: it means that the OASDI system is in fact a pay-as-you-go
scheme, in contradistinction to a scheme run on private actuarial lines.
Three examples are given below from Congressional debates to illustrate
these points.

As early as 1950 we have Senator Taft of the Senate Finance
committee saying,

> "In other words, we are recognizing in this bill that we
>
> have an obligation to pay old age pensions to people who
>
> are old, simply because they are old and not because they
>
> paid money into the fund ...
>
> However, as I see it, the bill destroys the whole theory
>
> of insurance. It recognizes an obligation ... All I
>
> regret is that we still use the name "insurance" when as a
>
> matter of fact there is no insurance about it."([2], v.96,
>
> pt.7, p.8627)

Republican administrations feel also that the scheme has to
be pay-as-you-go. In 1954, Congressman Reed, Chairman of the Ways and
Means committee, explains that

> "the concept of actuarial soundness as applied to the
>
> OASI program differs to a considerable extent from this
>
> concept as applied to private insurance... Accordingly it
>
> may be said that the OASI system is actuarially sound
>
> if it is in actuarial balance, or in other words, if the
>
> future contribution income plus the future interest receipts
>
> from the trust fund ... will exactly support the outgo for
>
> benefits and administrative expenses over the long distant
>
> future." ([2], v.100, pt.6, p.7430)

A third example: in 1967 Congressman Curtis discussed the difference between private schemes and OASDI and asserted that "The Social Security system, on the other hand, is a pay-as-you-go system which does not contemplate paying benefits out of the earnings of the trust fund. The social security trusts consist of only $22 billion and is called a contingent fund -- to protect the system against unanticipated contingencies such as serious recession. It barely equals the benefits paid out in one year... If the Social Security system were funded in the same sense that corporate and other private pension plans are required to be funded ... the fund would have to have $350 billion in it." ([2], v.113, no.131, p.H10682)

Despite the pay-as-you-go nature of the scheme Congress is concerned that those who pay more in to the scheme get more out. Although the overall level of benefits is determined without reference to the overall inpayments of those receiving them, the distribution of benefits should, approximately, be proportional for individuals to what they paid in. It is from this principle that the scheme retains some resemblance to a private scheme, and it may account for the prevailing impression that his scheme as a whole is operated largely on a pay-as-you-go basis.

Since benefits do not depend, as far as their general level is concerned, on what was paid in by the recipients, we need to find out what they do depend on. In section V we shall look at the criteria Congress uses in determining benefit levels, but before doing so we examine, in a theoretical way, how loss from inflation might occur under OASDI, even though it is not run along private lines. This theoretical treatment, developed in the next section, coupled with the evidence in section V on the criteria Congress uses, will enable us in section VI to

evaluate the loss caused by inflation.

IV. Theory of Loss from Inflation Under OASDI

Suppose Congress, using criteria to be examined later, sets
the benefit at $A, to remain at this level until the next amendment
to the Social Security Act. If there are n years to the next amendment,
and the rate of inflation is on average 100m% per annum during the
intervening period, then denoting the achieved average annual real value
of the benefit by A_r, we have

$$(8) \quad A_r = \frac{\int_0^n Ae^{-mt}dt}{\int_0^n dt} = \frac{A}{mn}(1 - e^{-mn})$$

If, for example, m = 0.04 and n = 5 (4% inflation and benefits not
adjusted for five years) we have

$A_r = 0.91A$, i.e. benefits average 91% of their zero inflation
real value.[8]

A_r can lie below the zero inflation value by more than equation
(8) indicates if the value of A, at the time it is set, is below what
it would have been without past inflation. This could happen if A was
determined as a dollar amount which Congress thought would buy more
than it actually would buy, due to Congress implicitly valuing the dollar
at the prices ruling some time ago. If, say, Congress set A at $80,
but in deciding that this was an appropriate value of A they took account
not of present price levels, but of price levels 4 years ago, and if since

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[8]Note that all pensioners are given any increase that is
legislated under OASDI.

then inflation had been 3% per annum, then $80 would be below what
Congress really wanted to give, i.e. the zero inflation pension would
have been not $80 but $89.60. We shall refer to this phenomenon as
"money illusion" in Congress. Money illusion could well arise in a
quite mechanical way. Suppose for example that Congress used the
following criterion in setting the money benefit level: "money
benefits shall be half the average money income that a plumber has
earned during the last three years". Such a criterion leads to money
illusion as we have defined it, for the figure derived from it will be
lower in real terms the more inflation there has been in the last
three years. If, on the other hand, the criterion were: "money benefits
shall be half the average money income that a plumber currently earns",
there would be no money illusion as we have defined it.

If it were true that in deciding on the value of A, the
legislature operated as if a dollar were worth now what it was actually
worth N years ago, then the desired real value of the benefit at the
time it is set would differ from its actual real value. Denoting the
desired real value by A_r^d, we have, assuming a steady rate of inflation
of 100m%

$$A_r^d = Ae^{mN}$$

"N" is a measure of "money illusion in years". (In the example above of
using half a plumber's income for the last three years the value of N
would be very nearly 1.5.)

Combining this last relationship with the preceding one we
find that

$$\frac{A_r}{A_r^d} = \frac{1 - e^{-mn}}{mne^{mN}}$$

The left hand side is the ratio of achieved real value to desired real value, and one sees that it is unity at zero inflation (m=0). In the following table we give various values of $100(1-A_r/A_r^d)$, the percentage loss due to inflation, on various assumptions about m, n, and N. It will be noted that the loss is larger the larger the rate of inflation, the longer the gap between benefit adjustments (n), and the more out of date Congress is in assessing the true real value of the dollar (measured by N.) For example, with an average gap of three years between benefit adjustments, money illusion of two years, and 5% per annum inflation, pensions are, on average through time, 16% below what they would be without inflation.

The problem of estimating the past and likely future impact of inflation then reduces to establishing what criteria Congress uses in determining A, the money value of a pension at the time it is set (or changed for existing pensioners), whether any money illusion is implied by those criteria, and finally determining what decides the frequency of benefit adjustments.

V. Criteria for Determining Benefits

The criteria used for determing benefits described below come from examining Congressional debates on all amendments to the Social Security Act since 1950.

A detailed documentation of the debates and how they lead to our summary of the criteria Congress uses would necessarily be rather

TABLE 3: POSSIBLE PERCENTAGE LOSSES UNDER OASDI

Rate of Inflation

Number of years between adjustments (n)	Two percent per annum Money illusion, years (N)			Five percent per annum Money Illusion, years (N)		
	0	1	2	0	1	2
0	0.0	2.0	3.9	0.0	4.9	9.5
1	1.0	3.0	4.9	2.0	6.8	11.3
2	2.0	4.0	5.8	5.0	9.7	14.0
3	3.0	4.9	6.8	7.3	11.8	16.1
4	3.9	5.8	7.6	9.5	13.9	18.1

lengthy, and will not be given here. Instead, only a few key quotations,
which should convey the general flavor of Congressional debates on
OASDI amendments, are given. The quotations chosen are from Congressional
"specialists" in social security: either members of the Ways and Means
and Finance Committees or critics of the OASDI scheme. Examination of
the debates since 1950 reveals three criteria that Congress requires
the OASDI scheme to meet.[9]

First: pensions are to be set somewhat above basic needs.
This is not a wholly static criterion: it is simply "basic needs" or
"floor of protection" in 1950 and 1952; in 1954 it is a "floor of
protection more realistic in terms of prevailing standards"; and in
1967 it has become a level such as to enable "senior citizens to
participate in the growing economic well-being of our society".

Support for this first criterion is bi-partisan, and is the
accepted policy of both the Ways and Means and Finance Committees. Some
examples: in 1950 Senator Kerr asserted that,

> "the committee took into consideration not only the fact
> that the fund had certain amounts of reserves but that
> the compelling reason for the liberalization .. was not
> on the basis of the amount of money in the reserves, but
> on the basis of ... need." ([2], v.96, pt.7, p.8747)

In 1954 the Republicans were in office, but the philosophy was the same.
The Republican Chairman of the Ways and Means Committee said, of the
benefits then being legislated, that

> "... a benefit level thus established will represent a
> more realistic floor of protection for our aged citizens .."
> ([2], v.100, pt.6, p.7427)

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[9]Other than the two already dealt with: that the scheme be
pay-as-you-go, and that those who pay more in get more out.

In 1965 Mills, then Chairman of the Ways and Means Committee, describes

the bill to adjust benefit levels as taking

> "a great step forward in providing them with a
>
> greater share in the increased wealth of this
>
> great nation". ([2], v.113, no.131, p.H10664)

Second: save in exceptional circumstances, pensions are

to be raised by at least the change in the price level since the last

change. The actual figures bear out that Congress has behaved fairly

closely according to this criterion:-

Amendment of	Price change since last amendment	Average benefit increase
1950	75%	100% (approx.)
1952	10%	15%
1954	1%	15%
1958	8%	7%
1965	9%	7%
1967	7%	13%

In 1958 the criterion was violated intentionally, to the extent of one

percentage point; the increase in 1965 was inadequate due to a lag

between the proposal of legislation and its actual implementation,

during which lag prices rose.

> In 1950, for example, we have Senator Cain stating:
>
> "I think we are all in agreement that we are only willing
>
> to double ... the benefits ... because in the past
>
> fifteen years we have cut the value of the American
>
> dollar just about in two." ([2], v.96, pt.7, p.8747)

In 1954, Congressman Kean, in summarising the views of the Republican

Ways and Means Committee asserts that,

"the goal of providing reasonable protection through

the benefits paid under the old age and survivors

insurance system further requires that the level of

benefits be kept reasonably current with changes

in economic conditions. Benefits need to be adjusted

when wages and prices rise ..." ([2],v.100, pt.6, p.7492)

1958 is the only year when the increase in benefits was

intentionally less than the rise in the price index (they rose 7%

when the price index had risen 8%). Congressman Mills was well aware

that this was a break with accepted practice, and was concerned to

justify the Committee's proposals. He did so by claiming that financing

difficulties necessitated the slight failure to match inflation,

claiming that

"the Committee felt ... that for several reasons the

estimates given to us by the actuaries in 1954 and 1956

that the fund was close to being in balance no longer held

and that today the fund is 0.57% out of balance. We

recognized that there has been a cost of living increase

since 1954 of around 8% and that there has been an increase

in wages of 12%. The Congress has meticulously seen to it

that with respect to those over whom we have anything to

do, many others have been protected by action of the

Congress this year against a decrease in their standard

of living because of these rises in the cost of living (sic).

Now we could not justify, Mr. Chairman, on the basis of

our consideration of social security, going any higher than

the 7% increase ... even though that amount does not fully

compensate for the increase in the cost of living of
8 per cent ... because to have gone to 8 per cent or
to have gone to 10 per cent ... would not have allowed us
some of the additional income to the fund ... (to bring)
... it nearer into actuarial balance. As I said, that
was the primary thing that the Committee was concerned
about." ([2], v.104, pt.12, p.15733)

Subsequent debates indicate that in order to match past inflation,
a large proportion of Congressmen would have favoured a 10 per cent
increase despite the financing difficulties, and every Congressman
that spoke referred to the cost of living change, and almost all to
the necessity for matching it now and in the future. They backed
up their views by putting forward 500 separate bills proposing
adjustments to social security in the light of changes in the cost
of living and other defects of the system.

Third: the level of pensions and the degree of coverage
under OASDI is to be continually adjusted so as to cause Old Age
Assistance payments (OAA) to wither away. Some examples follow.

In 1952, Congressman Rodino, speaking on behalf of the Ways
and Means Committee said that,

"a major objective of the amendments we adopted in
1950 was to ... cut down the need for public assistance ...
if we want to maintain this position to prevent more and
more people from having to turn to the assistance program,
we will have to increase benefits under the old age and
survivors insurance now." ([2], v.98, pt.4, p.7307)

The criterion is less mentioned, for obvious reasons, in later years,

but even as late as 1967 it is still present. Senator Long, Finance

Committee Chairman, gives as one advantage of the increase being

proposed that year that

> " .... 1.6 million aged people would be moved out of
>
> poverty and about 200,000 of the aged would be taken off
>
> the public assistance rolls ..." ([2], v.113, no.186,
>
> p.S16946)

To sum up: benefits should --

> (i)   be adequate to meet basic needs
>
> (ii)   when amended, be raised by at least the rise in the
>
>   price index since the last amendment
>
> (iii)   be high enough to cause OAA to wither away

VI.   The Degree of Inflation Protection under OASDI

Implications of the Criteria used in Setting Benefits

The above three criteria -- meeting basic needs, matching

price index rises at adjustment times, and making OAA redundant --

both separately and together imply a considerable degree of protection

against inflation. It is clear that a pension adequate to meet basic

needs will cease to do so as prices rise, and so will have to be adjusted.

The second criterion is a direct acceptance of the obligation to match

price increases, though it will not protect fully unless adjustments

to benefits are made frequently. Even if the first two criteria failed,

the desire to keep Old Age Assistance payments in aggregate as low as

possible means -- unless OASDI benefits were well above the latter in

real terms, which they are not -- that OASDI benefits would have to rise during inflation to keep them sufficiently above OAA payments to prevent the latter from growing in aggregate. If OASDI payments did not grow, then as inflation proceeded more and more old people would be forced into OAA.

There remain three reasons why loss might be incurred from inflation despite the use of these three criteria in setting benefits. First: if the criteria are applied each time benefits are adjusted, but such adjustments are relatively infrequent, then benefits will be below the desired real value, even though rising at at least the rate of inflation. In terms of the analysis above,[10] "n" might be fairly large. Second: Congress might err in estimating the correct money equivalent of basic needs during inflation. In terms of the analysis above "N" might be greater than zero.[11] Third: the desire to set benefits according to the above three criteria might, specifically as a result of inflation, conflict with the ability to do so, given the criterion that the system be self financing. We deal below first with the frequency of benefit adjustments, and second with what turn out to be the interrelated questions of money illusion and financing.

Frequency of Benefit Adjustments

Congress is well aware that as time passes OASDI benefits that used to meet its criteria may well cease to do so. As a result the custom has been adopted of reviewing, though not necessarily changing, the benefits at least every two years. The accepted policy was most

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[10] See Section IV

[11] Below we include in N the lag between proposal and implementation of increases.

clearly explained in the 1967 debates,[12] when reasons were being

given for rejecting amendments designed to escalate the benefits auto-

matically with the cost of living. Senator Long, at the time Chairman

of the Senate Finance Committee, opposed escalation for various reasons,

a most significant one being his belief that

>"We are doing a responsible job by looking at the progarm
>
>every two years, and that is the precedent that has
>
>been set. Every two years we take another look at
>
>the program and see how much of a benefit increase is
>
>required to offset the cost of living and to consider
>
>the problems of the people covered by social
>
>security.
>
>In view of the fact that these matters are reviewed by
>
>Congress periodically, I do not believe the pending
>
>amendment is necessary." ([2],v.113, p.33572)

He adds, in response to the comment that benefits were not in the

past revised every two years, in that there was a seven year gap from

1958 to 1965 --

>"Mr. President, if Senators will look at the chart in the
>
>rear of the chamber, they will see why there was no
>
>increase in 1961 and 1962. In 1958, Congress enacted a
>
>large increase in social security benefits. During the
>
>period to which the Senator has referred, the cost of
>
>living rose only about as much as it did this year.
>
>That is why Congress did not enact a major increase
>
>during that period. But Congress did consider the problem,

---

[12]Though it was adopted much earlier.

and in due course, when there was an increase in the

cost of living Congress increased the benefits."

Consideration of evidence such as that in the preceding

quotation, and of actual practice, shows that an increase will be

considered virtually mandatory if prices have risen 8% or more since the

last increase. This applies from 1950 on; we do not wish to maintain,

for reasons given below, that the practice applied before then. Since

then, however, we may sum up the policy on benefit changes as: first,

reconsider benefits biennially at least; second, if the price index

has risen 8% or more, regard this as a sufficient, though not necessary,

condition for matching the price increase or better, if financing

considerations permit.

This policy is not an accident: it has come about apparently

because there is continuous pressure from constitutents, and hence from

individual Congressmen, to adjust the benefits. A rise in the price

index invariably increases this pressure, and simultaneously provides

an acceptable justification for yielding to it.

The strength of the pressure to keep up with the price index

is indicated by the attempts to introduce automatic escalation, which,

though unsuccessful, have been supported by substantial numbers of both

parties. Republican Congressman Fino pointed out in 1967 by that date

over 110 Republicans had, at one time or another, sponsored attempts to

legislate escalation.

Money Illusion and the Question of Financing

It is important here to paraphrase, inevitably rather crudely,

the process that the Ways and Means Committee goes through in deciding

on the adjustments to benefits to be presented in bill form to the
House and later the Senate.

The Committee works out, for various possible benefit levels,
the implications for the future in terms of payroll taxes required to
keep the scheme self-financing. We recall that this means in effect
that almost all the benefits shall be able to be paid out of current
payroll taxes. Total benefits are therefore limited over the immediate
future by how much payroll tax Congress thinks the public will accept.
Since payroll taxes are almost proportional to earnings,[13] benefits
are limited by the rate of payroll tax thought acceptable. Whatever the
determinants of the acceptability of any given rate of payroll tax are,
it does not seem that the price level or its rate of change could be
among them.

Consequently the first point to be made is that once benefits
that are thought to meet the basic needs criterion are worked out,
inflation will not affect the financing of them in such a way as to
inhibit the ability to pay for those benefits. On the contrary, the
method of financing is such that inflation that raises the money benefits
required to meet a given basic needs standard will itself generate the
necessary finance to pay for them. The fact has repeatedly been
recognized and pointed out by individual Congressmen and Senators
themselves. Congressman Boggs, for instance, in 1968 explained that

> "still another point that must be considered in any
>
> analysis of the protection provided by the porgram --
>
> and one which the critics usually ignore -- is that

---

[13]Not fully proportional, since there is a ceiling, which is
periodically revised upwards, on earnings subject to the social security tax.

social security protection grows with the economy.
We know that we are going to increase benefits in
the future as warnings continue to rise, as we
have done throughout the history of the program.
We know that we can do this because the
financing of the system, and the cost estimates
on which the financing is based, allow for improve-
ments in benefits as earnings rise, <u>even though the
scheduled contribution rates remain unchanged</u>."
([2],v.113, no.131, p.H10689)

It is of course possible that the level of basic needs may
be revised so far upwards at the time benefits are adjusted that
politically unacceptable payroll tax rates are implied. If so, basic
needs as Congress sees them will fail to be met, but this is in no
way connected with inflation.

While financing is not a problem, past inflation might
generate money illusion in setting the money equivalent of basic needs
in another way.

Suppose, for example, that the amount needed to meet basic
needs is worked out on some formal criterion, e.g. 50% of average
covered earnings of a typical covered worker during the five years
previous to the present. The level of benefits arrived at by such a
formula is clearly lower in real value now if there has been inflation
during the past five years than if no inflation has occurred. With a
smooth rate of 4% inflation over the five years, for example, benefits
would be lower by 10% in real terms than without such an inflation. If

the payroll tax implications of benefit amount calculated in this way are worked out, there are three possibilities: they may be below, at, or above what is thought politically acceptable.

If taxes are at or above what is acceptable then financing considerations dominate the basic needs criterion even when that criterion is incorrectly estimated (too low) because of inflation. In such a case they would a fortiori have dominated a correct estimate of basic needs, so that inflation would not be responsible for the failure to meet basic needs, despite its having led to a wrong estimate of them.

On the other hand, if the payroll tax is below what is thought acceptable, Congress could well pass the bill as it stood, believing incorrectly that it had met the basic needs criterion. This is because a tax rate below what is acceptable might well also be acceptable. In this case "N" is non zero because of inflation. While this is a possibility, it seems likely that N is not large for several reasons.

One reason is that if benefits are to be adequate to reduce the need for public assistance a direct comparison of proposed benefits with assistance payments has to be made. The latter, of necessity, are based on estimating the cost at <u>current</u> price levels of a subsistence basket. This continuing comparison therefore serves as a real subsistence floor, above which OASDI benefits have to be kept.

Second: detailed investigation of Congressional debates fails to disclose any evidence that a mechanical technique which looks backwards to past earnings is used in estimating the required benefit level. Such techniques are used, but only in deciding the degree of variation of individual beneficiaries around the average level.

Third: the debates show a continuing and detailed awareness
by Congress of inflation and its implications. It seems likely that
any significant money illusion in the setting of benefits would have
been detected, had it existed, and pointed out. An interesting example
of awareness of the implications of inflation is that in recent years
Congress has begun to recognize explicitly the need to anticipate future
inflation. For example, Congressman Byrnes, the ranking republican on
the 1967 Ways and Means Committee, explained that that committee
considered that,

> "the 12 1/2% increase in benefits provided for in the
>
> bill will fully compensate social security beneficiaries
>
> for any loss of purchasing power that they have
>
> sustained since the last benefit increase, or will
>
> sustain during this Congress." ([2],v.113, no.131, p.H10676)

For these reasons we do not consider that benefit levels at the
time they come before Congress for the first time are subject to much
money illusion. Nevertheless we shall be deliberately conservative, and
allow for the possibility of money illusion of one year. In addition there
is a lag of about a year between the beginning of debate on the proposals
and their legislative implementation, so that, unless made retroactive,
benefits when received will be a further year out of line with current
price levels. These considerations suggest an upper limit for N of
about 2 years.

Quantitative Estimates of the Loss of OASDI Benefits from Inflation

Earlier we showed that under inflation at an average rate of
100m% per annum, with benefits adjusted every n years, and with N
denoting the years of money illusion Congress is subject to when it

sets benefits, the ratio of actual real benefits to zero inflation
real benefits would be

$$\frac{A_r}{A_r^d} = \frac{1 - e^{-mn}}{mne^{mN}}$$

As explained above, we take an upper limit of 2 for N. The value of
n is subject to a somewhat complicated set of restrictions, which may be
summed up by saying that the program is considered for amendment at
least every two years, and a sufficient but not necessary condition
for amendment to occur is that prices have risen 8% or more since
the last amendment. What this rule does in mathematical terms is to
place a well defined upper bound on the possible value of n, an upper
bound which is a function of the rate of inflation itself. To see this
more clearly, consider the situations of 1%, 2% and 3% inflation.

At 1% inflation obligatory benefit adjustments would occur
every eight years, since after eight years inflation since the last
adjustment would be 8%. At 2%, obligatory adjustments would occur every
four years. At 3% adjustments would also be obligatory every four years,
since after two years the price rise is only 6%, not enough to trigger
an adjustment, and it is then acceptable practice not to re-consider the
benefits for a further two years (although they could be considered after
three years, there is no convention to this effect).

Referring to the upper bound on n as n_m (for "maximum n"),
we may express the accepted practice mathematically as follows.

If $m \geqslant .04$, $n_m \leqslant 2$

if $.08/2k < m \leqslant .08/(2k-2)$, $n_m \leqslant 2k$, where k is any integer
greater than 1.

The accepted practice might, of course, change if rates of inflation rather higher than those of recent years become established, since for some years now considerable pressure has existed in Congress to tie OASDI benefits to the price index. It is also clear that the pressure has been greater the greater the rate of inflation.

Mention has already been made of bills proposed for this purpose, and evidence given that even at recent rates of inflation they have commanded fairly wide and bi-partisan support. So far bills of this kind have been rejected, but the grounds for rejection have been heavily dependent on the argument that the present system accomplishes all that automatic escalation would. While this is not true, it is nearly enough true, for low rates of inflation (below about 5%) to be a reasonable argument.

If, however, inflation speeded up, this argument would lose its force. There seems little doubt that opinion in Congress would then shift more in favor of automatic escalation. The exact rate of inflation at which automatic escalation would gain enough support to be voted in is uncertain. It seems almost certain that 10% would do it; and it seems very likely that a maintained rate as low as 5% would do it.

The argument is strengthened by the fact that automatic escalation is not a novel idea to Congress: civil service and military pensions already have escalation, and civil service salaries are tied by formulae to comparable salaries in private industry.

The formula most commonly proposed is that once prices had risen 3% a similar rise in OASDI benefits would be automatic. We shall assume somewhat conservatively perhaps, that this would definitely happen

if maintained rates of inflation of twice this were experienced.
Mathematically this means that

If $m \geq .06$ then $mn = .03$

With this modification we can now calculate the values of
A_r/A_r^d , and thus measure the upper limit to the loss of OASDI benefits
from inflation, for various values of m. The relationship is shown in
Table 4 and also shown graphically in Chart 2. For contrast we have also
plotted in Chart 2 the degree of loss experienced by beneficiaries under
a private pension scheme, using the assumptions made earlier about the nature
of such a scheme.

It will be seen from Chart 2 that OASDI benefits are surprisingly
well protected[14] against inflation, especially when compared with benefits
under private pension plans. For rates of inflation averaging around
3%, OASDI benefits are 11% below their zero inflation real value on
average, versus 52% below for private pensions. At 5% inflation the relative
protection of OASDI benefits is even more marked: they lose 14% compared
with 68% for private pensions. There is loss, but quantitatively it is
quite moderate.

One final point before summing up: one might wonder why
OASDI beneficiaries suffered badly from inflation before 1950, but much
less so since then. The proximate reason is that 1950 marks the date of
abandonment of private actuarial principles in running OASDI, and the
acceptance of the "pay-as-you-go" principle. More fundamentally, it was
only after 1950 that the number covered under OASDI began to be large
enough, as a proportion of old people, for their votes, and hence inflation

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[14]Bearing in mind that the diagram shows the upper limit to
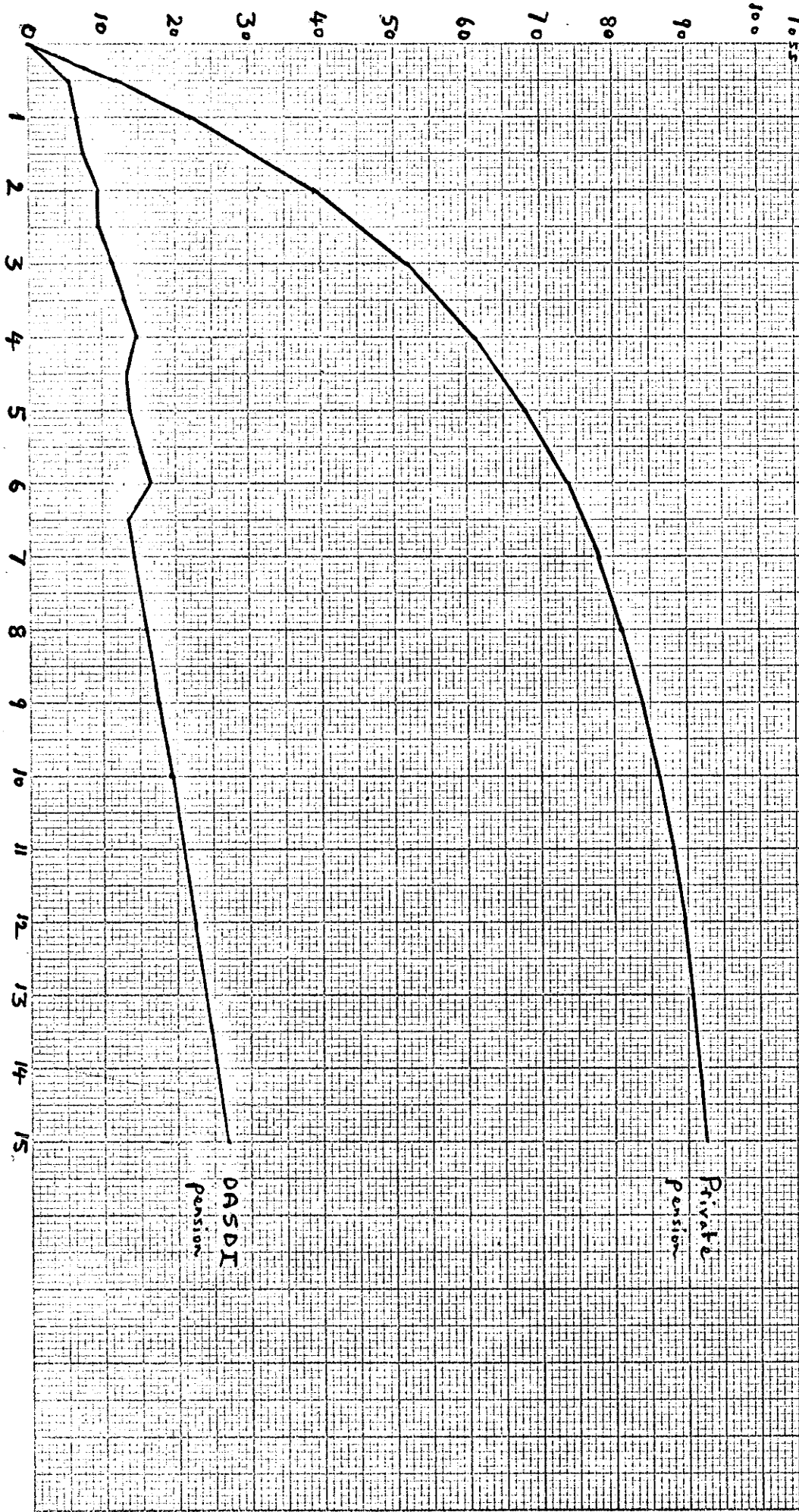the possible loss.

TABLE 4: MAXIMUM LOSS BY OASDI BENEFICIARIES UNDER INFLATION

Rate of inflation	Upper limit of loss
(percent per annum)	(percent below zero inflation real value on average)
1	6.7
1 1/2	7.2
2	9.5
2 1/2	9.5
3	11.3
3 1/2	13.0
4	14.7
5	13.9
6	16.4
7	14.4
8	16.0
10	19.3
15	27.0

CHART I   PENSION LOSSES FROM INFLATION

Percentage loss (vertical axis): 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Rate of inflation, percent per annum (horizontal axis): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

Curves labeled: OASDI Pension, Private Pension

protection for them, to matter. Putting it another way; one could not say that old people suffered during the 40's through having their OASDI benefits eroded by inflation because nearly all old people during the 40's did not in fact have OASDI benefits.

VII. Conclusions

Almost all old age pensioners in the United States now receive benefits from Old Age, Survivors and Disability Insurance, and for the great majority of these it is the only pension. The benefits under OASDI do appear to be less in real terms under inflation than they would be without inflation but the degree of loss is considerably smaller than might be thought. It is very considerably smaller than what one would estimate if OASDI were mistakenly thought to be run somewhat like a private pension scheme. The loss is loss in the sense that the rising time path of the pension is below what it would be in real terms without inflation.

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