

THE SOCIAL SECURITY NOTCH: AN ECONOMIC ANALYSIS

Submitted to

TREA Senior Citizens League

by

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Executive Summary

The Notch refers to the one-time, precipitous and unprecedented drop in Social Security benefits paid to people born in 1917 and the years immediately thereafter. This drop in benefits resulted from the 1977 amendments to the Social Security Act.

The Notch clearly exists. Every serious study of the effects of the 1977 Amendments admits that they caused a precipitous drop in benefits for a category of retirees often referred to as “Notch babies.”

The drop in benefits was especially precipitous because a 5-year transition formula in the 1977 legislation provided almost no cushion. The meager help it did provide was extended to relatively few retirees. The fact that so few people received so little money from the transition formula has been well known for most of the intervening quarter century. The major issues now are:

- What result did Congress intend to achieve with the transition formula?
- Why did the transition formula fail to provide much help?
and
- Was the result fundamentally unfair and deserving of remedial legislation?

Clear indications of Congressional intent for the transition formula do not exist. Nonetheless, the Senate Finance Committee described the purpose of the transition formula as being “*to protect the benefit rights of people who are now approaching retirement and whose retirement plans have taken Social Security benefits into account.*”¹ (emphasis added) The GAO and the Commission on the Social Security “Notch” Issue generally infer that the transition rules “were expected to smooth the transition from the old (pre-1977) to the new (post-1977) formula, *gradually reducing*

¹ Cited in the Social Security Commission Final Report Appendix, p. 34. This reference and many others appear in the *Social Security Notch Source Book*, a collection of legal and historical authorities on the Notch assembled by William J. Olson, Esq. Even more material is available on a CD-ROM, which is a companion to the Source Book. Both resources are available from TREA Senior Citizens League.

the levels of unanticipated overcompensation for succeeding retirees."² (emphasis added) To the extent that these statements represent correct inferences, the transition formula can be judged an almost complete failure. Congressional intent is reviewed in Section 4.

The transition formula contains several different features that were designed to prevent inflation from being recognized and protect future solvency of the Social Security system. The result was to shift the burden of inflation onto retirees. When the inflation forecast relied on by Congress turned out to be dreadfully wrong – more like wishful thinking – Congress' transition formula provided virtually no protection. The different features combined to act like loaded dice against most retirees. To help readers comprehend what went wrong, Section 5 presents a new graphic way to illustrate the problem.

Unfortunately, problems with the 1977 Amendments are not limited to the transition formula. For those work past age 62, the basic benefit scheme shortchanges the recognition of earnings and reduces benefits. This deepened the Notch effect for those who were born in 1917-1921 and continued working to age 65 or beyond. In addition, when inflation increases rapidly and average earnings fail to keep up, features in the 1977 law can result in what appear to be anomalous benefit awards that appear arbitrary and smack of unfairness. These features adversely affected many Notch babies. It also should be recognized that, should economic conditions like those of 1978-82 recur, disparities in Social Security benefits similar to those that affected the Notch babies also could recur. These problems are discussed in Section 6.

Until the new law was enacted, any expectations about future Social Security benefits could have been based only on the 1972 law. For those who were within a few years of retirement in 1977, the basic formula dashed those expectations almost totally, and most retirees received no relief from the transition formula. The drop in benefits was unexpectedly steep (see Section 7) In retrospect, the 1977 Amendments appear to have been unduly harsh on those who retired within a few years after 1977; *i.e.*, the Notch babies who were born in 1917 and immediately succeeding years, and who have had little choice but to adjust to lower benefits and live with the inflation that occurred.

The 1977 law did not result in the level of fairness that should have been anticipated. This result is due as much to the formulas contained in the law as to prior economic conditions. Unfortunately, some reviews of the Notch seem predisposed to dismiss the problem, rather than to remedy it. The Notch and the factors that gave rise to it should be reconsidered, as discussed in Section 8.

² GAO Notch Report, p. 15.

1. Introduction

For years, certain seniors groups have petitioned Congress to correct the “Social Security Notch.” At this time more than 100 members of Congress have agreed and are co-sponsors of corrective legislation. Yet other members of Congress have denied even the existence of any Notch and attacked those who have complained about it. As a result, the legislation has stalled.

The purpose of this study is to provide an independent economic assessment of the Social Security Notch. It starts by defining the Notch, then reviews the continuing existence of the Notch issue, and the apparent intent of Congress regarding creation of the Notch. The various factors and conditions that contributed to the Notch, and fairness issues that inescapably arise with respect to the Notch take up the remaining sections.

Originally enacted in 1935, the Social Security law has been amended a number of times. In 1972, Congress for the first time provided for a number of annual changes, including automatic cost of living adjustments (COLAs) to benefit levels. The subsequent inflation of the 1970s caused benefit levels to increase rather significantly. By 1977 a fear arose – not for the first time, and certainly not for the last – that the Social Security system might become unable to meet all commitments to pay benefits.³

Responding to a growing concern about insolvency, Congress in 1977 amended the law yet again. The 1977 Amendments changed the way benefits were calculated for all retirees who were born in 1917 and thereafter and became eligible for retirement beginning in 1979. It also gave rise to what has come to be known as the “Notch.” The changes were major and, as explained in some detail in Section 5 of this study, the transition from the old to the new method of calculating benefits failed to work as might reasonably have been anticipated.

The Notch was identified as a problem many years ago; it is not new. A significant body of literature already exists regarding the Notch (including on a great deal of pertinent information on the Social Security Administration’s web site).⁴

This report does not address how the Notch might be fixed. Specifically, it does not address the various proposed legislative remedies, nor does it address the issue of how any such remedy might be funded.

³ Appendix A contains a brief review of the Social Security system.

⁴ Appendix B contains succinct reviews of selected studies.

2. What is the Social Security “Notch”?

The Notch refers to the one-time, precipitous and unprecedented drop in Social Security benefits paid to people born in 1917 and the several years immediately thereafter. This drop in benefits resulted from the amendments to the Social Security law enacted in 1977. That law applied to everyone born after 1916, while all those born in 1916 or earlier had their benefits grandfathered under a prior amendment enacted in 1972.

The term “Notch” describes a graphic comparison of benefits paid to people who retired at the same age (*e.g.*, 62 or 65) and had similar earnings profiles (the earnings profiles usually presented are either average or maximum earnings), but were born in different years. The bar chart in Figure 1 is one such comparison. It shows benefits for persons who retired at age 65 and had earnings equal to the maximum reported for Social Security purposes.

From Figure 1 it can be seen that benefits rise for each birth year through 1916, and then drop precipitously for those born in 1917. Benefits decline further for those born during the next three years, 1918-20, and the profile of benefits is seen to form a “V” Notch. Clearly those most seriously affected are persons born in 1917-21, but significant reductions exist as well for those born in 1922 to 1926.

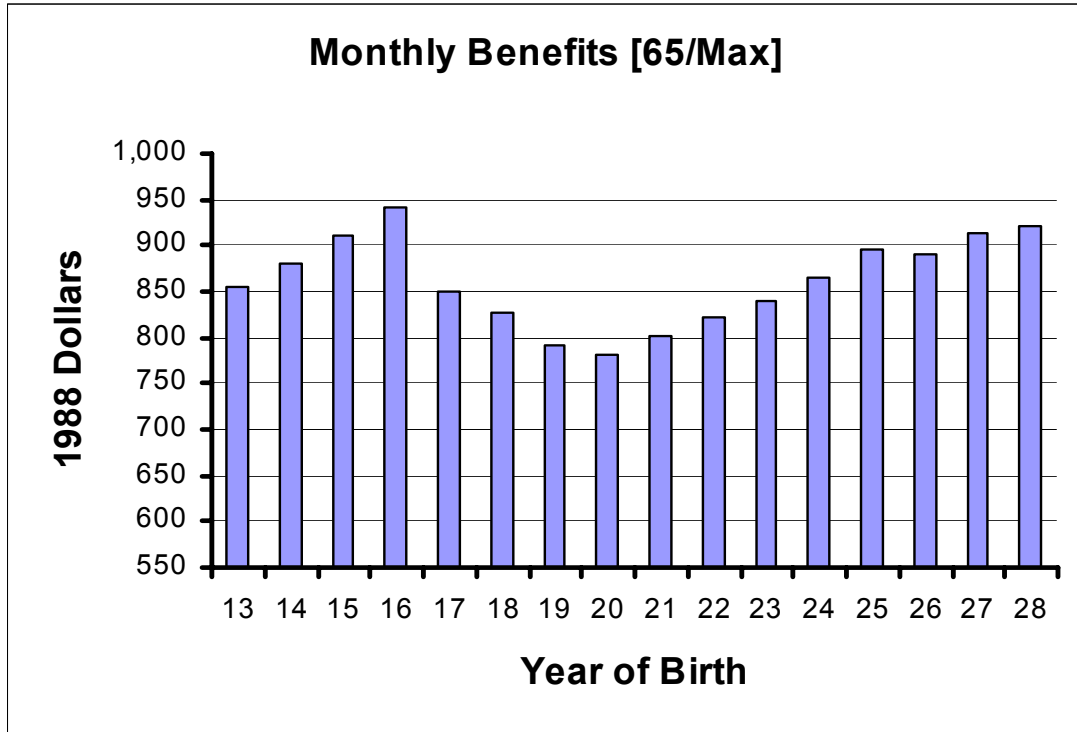
By way of illustration, as to benefits received in 1988, Figure 1 demonstrates that among people with similar earnings histories, those born in 1916 received about \$941 per month, while those born in 1920 received approximately \$781 per month, which is \$160, or 17 percent, less.⁵

The decline in average benefit payments over four consecutive years, for those born in 1917-20, is highly unusual (although this cannot be seen fully from the limited span of years covered by Figure 1). As explained in Section 5, this further decline, which deepened and extended the Notch, appears to have resulted from certain provisions in the law coupled with economic conditions that prevailed between 1978 and 1982.

⁵ Bar charts for those who (i) retired at a different age (*e.g.*, 62), or (ii) who had less than maximum earnings, all show a similar Notch.

Figure 1

**Monthly Social Security Benefits Received in 1988
By People Who Retired at Age 65
With Maximum Earnings**



3. The Notch Exists

As demonstrated here, and in the appendices, the Social Security Notch clearly exists. It is an undisputed fact that the 1977 Amendments resulted in a precipitous drop in benefits for those born after 1916 – a fact that no serious study concerning the effect of the 1977 Amendments denies. For example, the Social Security Commission Final Report on the “Notch” Issue “confirms” its existence and speaks of benefits “far” less generous than under the old law. The Commission’s Report also acknowledges that the benefits “do, in fact, drop swiftly, [and] then move upward again.”⁶

Similarly, a study by the National Academy of Social Insurance agrees that the benefit differences “were larger than had been expected” and provides tables illustrating the magnitude of the disparities created by the 1977 law.⁷

Hearings before the House Select Committee on Aging (May 15, 1986) contain an anecdotal example that illustrates clearly the sort of disparities that arose directly as a result of the 1977 Amendments:⁸

Two sisters, Edith and Audrey, started work at the same book bindery in southern California on the same day in October 1957. Audrey was slightly older, having been born in March 1916, than Edith who was born in June 1917. The two worked together at similar pay for twenty five years and in the summer of 1982, with Edith turning 65, both went to the Social Security office to claim their benefits. They were told that since the older Audrey had worked about 18 months after her 65th birthday, there would be a slight difference in the benefit each received. The total lifetime earnings of the pair was almost identical, differing only by about 4 percent (in favor of the younger Edith). To their surprise, when they received notification of their benefit award, the difference was not slight. Instead, Edith (born in 1917) received a \$512.60 monthly award or \$111.80 per month less than Audrey (born in 1916), who received a higher benefit of \$624.40 per month. The difference was almost eighteen percent.

⁶ Social Security Commission Final Report, pp. 2, 4 and 15.

⁷ See the NASI Study, pp. 1, 7, and 36-37.

⁸ Cited in the GAO Notch Report, p. 14.

The existence of the Notch gives rise to a number of important issues that, although addressed in varying degrees by prior studies, are examined in the succeeding sections of this analysis:

- **Congressional intent:** What was the intent of Congress when it amended the law in 1977? (Section 4)
- **Ineffective transition:** In light of the fact that the 1977 law contained a 5-year transition formula that supposedly was intended to provide a gradual adjustment to the new benefit regime, why was the immediate drop in benefits so precipitous?⁹ (Section 5)
- **Anomalies:** Were the seemingly anomalous effects on benefits intended by Congress? (Section 6)
- **Benefit disparities:** Was the drop in benefits more than Congress anticipated or intended, and was it substantial? (Section 7)
- **Fairness:** Was the 1977 law fair to those who were within 2 to 9 years of retirement, especially those whom the transition formula singled out for special consideration? (Section 8)

⁹ The transition formula provides for an alternative benefit computation for eligible retirees. Benefits are computed using both the basic formula and the transition formula, and the retiree automatically receives the larger of the two amounts. Some early versions of the bill contained different transition provisions and anticipated a transition period of up to 10 years.

4. The Intent of Congress

The issue of Congressional intent behind the 1977 Amendments has been researched extensively by others. That research demonstrates that no clear statement of explicit intent on the part of Congress exists as regards the effects on those who were within 10 years of retirement in 1977. In what is likely the most definitive study on this particular issue, the Social Security Commission Final Report Appendix states (p. 6) that:

Congressional intent is sometimes clearly delineated in the legislation itself or in the Committee reports and floor debates accompanying the consideration of a measure. *This is not the case with respect to the Notch issue.* (Emphasis added)

It of course is not possible to discern the explicit intent of Congress when it was not made clear. Some interesting authoritative sources are worth citing, however.

The Social Security Commission Final Report Appendix cites the Senate Finance Committee statement describing “the purpose of the transition clause as being *to protect the benefit rights of people who are now approaching retirement and whose retirement plans have taken Social Security benefits into account.*”¹⁰ (emphasis added) Finally, it says that “[t]he design of the transition clause appears from the legislative history to have been aimed at the question of preserving individual expectations rather than at avoiding differentials.”¹¹

The GAO Notch Report, issued in 1988, notes that the transition rules “were expected to smooth the transition from the old (pre-1977) to the new (post-1977) formula, *gradually reducing the levels of unanticipated overcompensation for succeeding retirees.*” (emphasis added) It further states that “[d]uring the debate on the 1977 Amendment, it was generally anticipated that *the phase-in would prevent a significant drop in the benefit levels of retirees in the transition period.*”¹² (emphasis added)

¹⁰ Social Security Commission Final Report Appendix, p. 34. The retirement age for the vast majority of people born in the decades before 1925 was 62 to 65 (those who retired before age 65 received a reduced benefit amount). Thus, when the law was changed in 1977, most people aged 56 or older were within two to nine years of their retirement.

¹¹ Op. cit., p. 39.

¹² GAO Notch Report, pp. 15 and 37.

Congress clearly gave considerable attention to benefit reductions under the new law, and it seems eminently reasonable to infer – as other responsible parties have done – that the intent was to provide for a smooth transition over 5 years to the new regime specified in the 1977 Amendments. This the transition formula clearly failed to do.

It appears likely that in 1977 Congress sought one (or a combination) of three objectives: (a) small benefit reductions, (b) unchanged benefits instead of growth, or (c) slowing the growth rate. Had any of these three objectives been obtained, the Notch never would have become a problem. Understanding why the transition formula failed, and the extent to which it failed, are therefore viewed as a critical foundation for any discussion of fairness issues associated with the Notch.

5. The Near-Total Failure of the Transition Formula

The Notch was shown in the bar chart in Figure 1. A new, alternative way to depict the Notch is shown in Figure 2. This new figure provides a useful framework for understanding the various contributing factors. To facilitate analysis, it shows monthly benefits calculated in isolation under each of the three separate formulas involved:

- the formula contained in the Social Security law of 1972;
- the transition formula in the 1977 Amendments; and
- the basic formula in the 1977 Amendments.

For persons born in the years shown on the horizontal axis, Figure 2 shows monthly benefits for people who retired at age 65 and whose earnings equaled or exceeded the maximum recognized for purpose of Social Security taxation. Restricting the comparison to people who retired at the same age and who had similar earnings histories facilitates analysis of differences in basic provisions of the 1972 and 1977 laws.¹³

The **top line**, denoted by **triangles**, shows the monthly benefits under the 1972 law, assuming its application in all years. In actuality, of course, the 1972 law applied only to those born in 1916 or before. Until the law was changed in 1977, however, it also was the basis for expectations by those who were approaching retirement age and anticipated retiring in the near future. Changing the rules abruptly, as the 1977 law did, gave people close to retirement almost no time to save for the shortfalls in benefits.

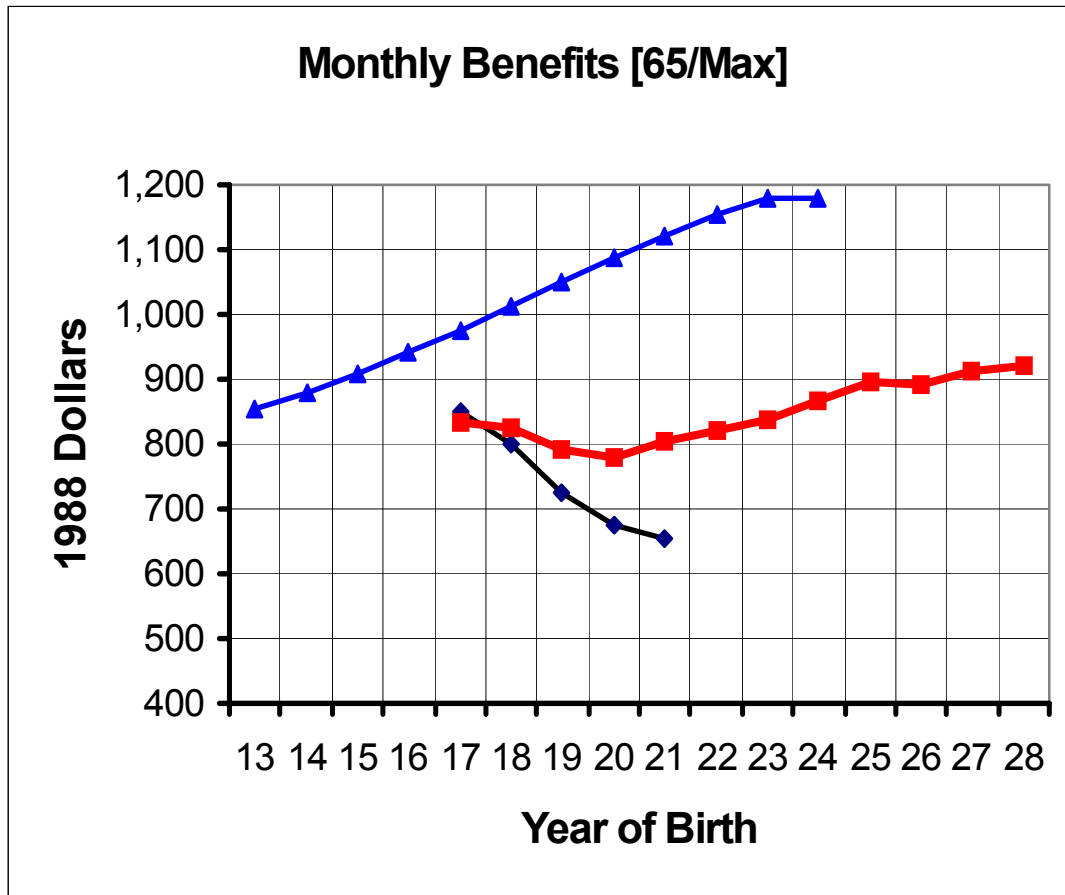
The **short line**, denoted by **diamonds**, shows benefits computed using the transition formula that Congress included, ostensibly for the purpose of easing the transition from the 1972 law to the 1977 law.

The **middle line**, denoted by **squares**, shows benefits computed under the basic formula in the 1977 law.

¹³ Neither Figure 1 nor Figure 2 shows benefits for all beneficiaries born in, say, 1916, regardless of the age at which they retired and regardless of their earnings. For other retirement ages and earnings histories, charts similar to Figure 2 can be constructed readily.

Figure 2

**Computation of Monthly Social Security Benefits Amounts in 1988
By People Who Retired at Age 65
With Maximum Earnings
Under Three Different Formulas**



- ▲ = Formula in 1972 law
- = Basic formula in 1977 law
- ◆ = Transition formula in 1977 law

The bar chart shown previously in Figure 1 is an amalgam of the three lines shown in Figure 2. The bars in Figure 1 consist of (i) the triangles through 1916, (ii) the diamond for 1917 (that being the only year when the transition formula provided a higher benefit than the basic 1977 law), and (iii) the squares from 1918 on.

Figure 2 shows how little tempering was provided by the transitional formula (the diamonds) in the 1977 law. In this particular example, it increased the benefit only for those born in 1917, and only by about \$14 per month.¹⁴ For those born in subsequent years, the benefit of the basic 1977 actually law turned out to be higher than the benefit provided by the transition formula. For those born in 1917, the loss from the basic 1977 law over the 1972 law is \$142 per month. Against this loss, \$14 constitutes precious little tempering. One would be hard pressed to conclude that the transition formula functioned as a meaningful remedy, as must have been intended.

To appreciate why the transition formula failed to provide meaningful relief requires some understanding of the technical details contained in the formula selected by Congress.¹⁵ Succinctly, the formula was largely ineffective for a number of reasons, some of which may have been understood by Congress, but others of which could not have been known.

1. **Earnings exclusion:** the computation of average earnings excluded the retiree's earnings after reaching age 62;
2. **Backward averaging:** to allow for the above exclusion, the formula failed to reduce the number of years used to compute average earnings, which forced retirees to reach backwards and include years with lower earnings, thereby creating a Double Whammy effect;
3. **COLA elimination:** from June 1978 until age 62 COLAs were eliminated, and this constraint, in conjunction with the two preceding constraints, helped assure that the transition formula would be largely ineffective; and

¹⁴ In comparisons using a different retirement age or earnings history, the transition formula sometimes has a modest effect on the monthly benefit of those born in 1918, but it appears to be almost totally ineffective for those born in 1919-21.

¹⁵ The transition formula itself is somewhat complex. It is not altogether clear why Congress opted for such a complex approach. An example of a much simpler approach to a smooth 5-year transition would have been to (i) compute each retiree's benefit under the 1972 law (the line denoted by triangles in Figure 2) and the 1977 law (the line denoted by squares in Figure 2), (ii) calculate the difference in the benefit provided by each of the two formulas, and then (iii) give those born in 1917 the basic formula in the new 1977 law plus 5/6 of the difference, those born in 1918 the basic 1977 formula plus 4/6 of the difference, etc.

4. **High inflation:** the inflation that followed passage of the 1977 Amendments exceeded the forecast substantially, which further undermined the benefit.

The pernicious aggregate effect of the above four factors is described briefly below, and in more detail in Appendix C.

1. **After-62 Earnings Disallowed**

The transition formula disallowed a retiree's earnings for any year after reaching the age of 62, even though Social Security taxes may have been paid on those earnings. This excluded not only the effect of wage inflation in those years, but also any inflation-free version of those wages. Consequently, for anyone who worked until age 65 (or later), the average earnings used to determine the monthly benefit did not reflect 3 (or more) years of the usually highest earnings experienced in the years immediately prior to retirement. Thus the transition formula unfairly disassociated benefits from even an inflation-free version of the retiree's earnings, which was made even worse by the fact that the level of inflation at the time was unusually high.

2. **The Double Whammy: Backward Reaching to Incorporate Low-Earnings Years**

The Social Security law mandates the number of years over which a retiree's earnings are to be averaged. A person who was born in 1917 reached age 65 in 1982. If that person then elected to retire, the formula required that earnings be averaged over 23 years. By itself, this provision is seemingly innocuous.

When the transition formula disallows the 3 most recent years, however, the requirement to average over 23 years forces the retiree to substitute an equal number of early-career years in their place. Since the highest 20 previous years automatically have been selected for inclusion in the average, the 3 early years that must be added are always at a lower nominal earnings level. In fact, given the cumulative effect of inflation over time, these now-historic earnings are usually substantially lower than the 3 current years that are excluded. Including these 3 prior years necessarily pulls down the average earnings figure, and the associated benefit along with it.

Separately, Factors 1 and 2 are adverse, but together they are extremely adverse. The effect of including these 3 years with low earnings, *coupled with* the exclusion of what likely were the three years of high earnings, is like a Double Whammy against the retiree. Fairness to the retiree should have dictated that the number of computation years be reduced by the number of recent years required to be excluded. Not providing such a reduction seems a pernicious characteristic of the

legislation. (Interestingly, we have not found the adverse effect of Factor 2 on Notch retirees discussed, or even mentioned, in any other analysis of the Notch.)

3. The Triple Whammy: Elimination of COLAs

The transition formula specified that (i) the benefit table of June 1978 be used to translate the average earnings level into a specific benefit, and (ii) the benefit thus developed **not be eligible for COLAs** from June 1978 until the retiree reached the age of 62.

When viewed solely in terms of reducing the likelihood that inflation not be over-indexed, this provision might be understandable. In combination with Factors 1 and 2 just described, however, and especially when inflation is high, for affected retirees the result is an unmitigated Triple Whammy. It virtually guarantees that the transition formula will not give rise to any meaningful supplement over the basic formula.

The higher the cumulative rate of inflation, the more Draconian this restriction becomes. This is especially true for people born in the later years specified for the transition formula. To illustrate this, consider people born in 1921, the last year in which anyone could qualify for the transition formula. These people would not reach age 62 until some time in 1983. This restriction means that all those born in 1921 would be ineligible for the very large COLAs that were effective in 1979-82 and enjoyed by most Social Security recipients (see below, Table 3, column 3).

4. Victims of Inflation

Factor 3 of the transition formula negated the intended benefit to retirees in the event of further inflation after 1977. By historic standards, inflation was rather high during 1979-82, with double-digit COLAs in 1980-81. This factor, plus the other restrictions in the transition formula, coupled with the inflation that occurred, explain the sharp downward slope of the benefits computed using the transition formula (the line denoted by diamonds in Figure 2).

The transition formula applied only to people born during the years 1917-21. This group, sometimes referred to as the “Notch babies,” reached the general retirement age of 62-65 in the years 1979-86. The rate of inflation in average wages and the cost of living during those years is shown in the table in Figure 3.

As a result of inflation and the restrictions just discussed, the transition formula grew increasingly ineffective with each passing year, up to 1921, after which the transition formula no longer applied. This can be seen readily from Figure 2, by

comparing the deviation between the lines marked by diamonds (the transition formula) and squares (the basic formula).

Figure 3

Inflation in Average Wages and Cost of Living
(Index, 1978 = 100)

Year	(1)	(2)	(3)	(4)
	AVERAGE EARNINGS		COST OF LIVING	
	Annual Increase (%)	Index (1978 = 100)	Annual Increase (%)	Index (1978 = 100)
1978	--	100.0	--	100.0
1979	8.8	108.8	9.9	109.9
1980	9.0	118.4	14.3	125.6
1981	10.1	130.4	11.2	139.7
1982	5.5	137.5	7.4	150.0
1983	4.9	144.2	0.0	150.0
1984	5.9	152.7	3.5	155.3
1985	4.3	159.2	3.5	160.7
1986	3.0	163.9	3.1	165.7

Source: Appendix E, Exhibit E-1.

Only one particular set of circumstances is illustrated in Figure 2, of course. How the transition benefit deviated from the basic benefit for people born in 1921 under four different conditions is shown in the table in Figure 4. The benefit from the transition formula ranged from 15.0 to 18.8 percent less than the benefit from the basic formula, as shown in column 6.

It is not possible to replicate every conceivable pattern of lifetime earnings among those born in 1920 or 1921. It would appear, however, that very few of them, if any, saw any increase in their retirement benefit from the transition formula.

Figure 4

Basic Benefit vs. Transition Benefit
Persons Born in 1921
(1988 dollars)

(1)	(2)	(3)	(4)	(5)	(6)
Retirement Age	Earnings	Basic Benefit	Transition Benefit	---- Difference ---- Amount	---- Percent
62	Average	\$481	\$404	\$ 77	16.0%
62	Maximum	614	522	92	15.0
65	Average	609	505	104	17.1
65	Maximum	803	652	151	18.8

Source: Appendix E.

6. Seemingly Anomalous Effects on Benefits

The discussion above relative to Figure 1 observed that after the precipitous drop in benefits for those born in 1917, the average benefit level continued to decline for 3 more consecutive years, through 1920. This was a highly unusual phenomenon, because benefits normally would be expected to increase slightly from one year to the next for people similarly situated.

As discussed in Section 5, the transition formula was largely ineffective. What little effect it had was limited mostly to those born in 1917. Although that formula failed to provide much of a transition, its shortcomings do not explain the successive decline in benefits that occurred through 1920. This decline can be seen most readily from Figure 2, by observing the line indicated by squares. That line shows application of the basic scheme laid out in the 1977 law, and clearly indicates that this concoction alone resulted in the year-to-year decline in benefits through 1920.

Another effect, not shown in Figure 1 or Figure 2, is that the Notch is larger for persons retiring at age 65 than for those retiring at age 62. This phenomenon can be seen by comparing graphs like Figure 2 for age 65 and age 62 retirees; see Appendix C for further discussion.

The 1977 law contains an array of features that acted in a disjointed manner to help bring about the declining pattern of benefits for birth years 1917 to 1920. Those features may be separated into three categories. The first category, which is somewhat complex, involves misalignments within the benefit scheme that led to disparities in benefits among people who retired at the same age but were born in different years. The second category concerns the diminution in rewards for working beyond age 62. The third category is less complex but contributes to all Notch comparisons; it involves lengthening of the averaging period. (These features are discussed briefly here, and more fully in Appendix C.)

A Potentially Troublesome Gap Arises from Misalignments in the Benefit Scheme

The notion underlying the Social Security system is reasonably simple. An average earnings figure is developed for each retiree. Based on this average, an initial benefit is determined. From then until the retiree dies, the benefit is adjusted for price level changes through annual COLAs.

Equity of the Social Security system depends critically on calculation of each retiree's average earnings and the formula through which this average is transformed into the initial benefit. Then as the COLAs are applied, the benefit level will keep up with inflation and maintain its real value.

Computation of retirees' average earnings needs to track prices and real wages, otherwise the result will not be fair initial benefits. Viewed in the negative, when the calculation of retirees' average earnings is out of sync with changes in prices or real wages, as shown by the events that occurred during the retirement years for those born in the Notch period, the procedure can short-change retirees' initial benefits.¹⁶

The process for carrying out the actual calculations is unfortunately not as simple as the concept. It involves a number of steps with complex interrelationships and, most importantly, certain "slippages," or gaps that make retirees' benefits vulnerable to economic fluctuations for which they bear no responsibility and over which they have no control. Here are the steps.

1. **Indexing on the Year of Age 60.** Earnings of the retiree for years prior to the age of 60 are indexed to the level of the average reported Social Security earnings in the Nation, in the year that the retiree reached age 60. This indexing process increases prior-year earnings to reflect current price and wage levels. Earnings for years past age 60 are then included at their nominal (unindexed) levels, and an average then is taken of the entire series. The resulting average recognizes changes in the level of prices and real wages through the year the retiree reaches age 60, but not for subsequent years.
2. **Using a Benefit Formula for Year of Age 62.** Based on the average earnings computed in step 1, a benefit formula for the year the retiree reaches the age of 62 is used to provide an indicated "age-62" benefit.¹⁷ It should be noted that developing an age-62 benefit from age-60 average earnings results in a potentially troublesome two-year gap, discussed below.
3. **Applying Pre-Retirement COLAs.** After calculating the indicated age-62 benefit, if the retiree is older than age 62, it then is adjusted to the year of actual retirement through application of COLAs. The post-62 COLAs adjust for changes in the price level, but do not recognize

¹⁶ On a year-to-year basis, changes in the price level and average wages can be somewhat out of sync, as illustrated by the table in Figure 3. A lack of fairness in the way Social Security initial benefits are determined can create undesirable disparities.

¹⁷ This benefit formula is adjusted once each year to reflect the most recent data on average reported Social Security earnings in the Nation.

changes in productivity and real earnings. This step provides the initial benefit actually paid to the retiree.

4. **Applying Post-Retirement COLAs.** After retirement, the benefit is adjusted each year for inflation through the further application of COLAs. In this way, the benefit maintains its real value, but does not reflect any further increase in real wages that may accrue over ensuing years.

The retiree's average earnings calculated in step 1 will reflect increases in prices and real wages to the year the retiree reached age 60 to the extent that the average reported earnings for the Nation reflect prices and real wages. During 1979-82, when many born during the Notch years were retiring, the increases in the average reported wages for the Nation were in many cases substantially lower than inflation (see Figure 3). Average earnings thus failed to reflect the extent of inflation, much less increases in national productivity.¹⁸

When the retiree's average earnings from step 1, based on the year of age 60, is moved to the formula in step 2, based on the year when the retiree reached age 62, no adjustment is made to the average earnings figure. Consequently, any price or real wage increases between the two years are not recognized. The result is a potentially troublesome gap in the recognition of inflation and real wages.¹⁹

When in step 3 the benefit from step 2 is adjusted to the year of actual retirement, through the application of COLAs, the procedure does not recognize any increase in real wages. Thus, for those who work beyond age 62, this step alone means that the initial benefit paid upon retirement is likely behind in reflecting the level of real wages.

In step 4, the application of annual COLAs begins. No problems arise with this step. The notion underlying Social Security does not call for the benefit amount to be adjusted for anything but inflation.

¹⁸ In 1983-85, the increase in average earnings exceeded the increase in the cost of living. By 1985, the cumulative increase in average earnings had almost caught up with the cumulative increase in the cost of living; see Figure 3, columns 2 and 4.

¹⁹ With steady inflation, this gap is of no consequence whatsoever. It can create inequities, however, when the cost of living and average earnings exhibit significant but varying year-to-year changes (as in Figure 3).

In short, in the year of retirement a retiree's initial benefit (i) may not reflect the level of prices and real wages in the year of age 60, if average wages are lagging behind inflation, (ii) does not reflect price level increases or real wage increases in the gap years between the year of age 60 and the year of age 62, and (iii) does not reflect any increases in real wages for the years from the year of age 62 to the year of actual retirement. These "failures-to-reflect" can result in a benefit level that is lower than it would otherwise be.

One could argue that the basic formula has been adjusted upward to make up for the various omissions just outlined. The fundamental problem, however, is that during the years when those born in the Notch period were retiring the levels of these various omissions varied substantially due to wide fluctuations in the relative levels of inflation and real wages.²⁰ When this occurs, some retirees suffer large omissions and some suffer small omissions.

The reason the benefits declined further after birth-year 1917 is that the retirees of birth-year 1918 experienced larger omissions, or failures-to-reflect, than the retirees of birth-year 1917. Similarly, the retirees of birth-year 1919 experienced larger omissions than the retirees of birth-year 1918, and the retirees of birth-year 1920 experienced larger omissions than the retirees of birth-year 1919. This problem is not limited to retirees of a certain age or with a certain earnings pattern; it applies to all retirees during this period. The declines in benefits caused by this omission effect influenced the depth and the shape of the Notch.

The question raised is whether it was fair for Congress to establish a structure of formulas and procedures that made retirees vulnerable to fluctuations in the economy, in such a way that benefits appeared to be determined irrationally. It is certainly true that no individual retiree has done anything through his or her earnings levels that should bring about such variations. And it is also true that retirees have had to adjust their standard of living to the inflation that has occurred, despite the level of benefits received.

Misalignments Also Stack the Deck Against Extra Work

Workers are first eligible to receive Social Security benefits at the age of 62. For those who elect to retire at 62, an actuarial reduction factor of 0.8 is applied to the

²⁰ Should the changes in inflation and real wages exhibit a similar pattern of disparate fluctuations, the result well can be disparities in benefits. Such stability as has existed in benefit patterns reflects of the relative stability of prices and real wages; it is not a direct result of the benefit formula.

initial benefit. The retirement age for receiving 100 percent of the initial benefit traditionally has been 65 (under recent amendments, the age at which retirees receive full benefits will be increased gradually to 67). One might think that the system would be designed to treat fairly those who continue to work past age 62. It turns out, however, that the system diminishes the reward for extra work. Consider what happens when retirement occurs at age 65 instead of age 62.

1. **Average Still Based on Year of Reaching 60.** For the retirement at age 65, just as for the retirement at age 62, the year of age 60 is used to index the retiree's earnings. Earnings from work past the age of 60 are included in the indexed series, but at their nominal (unindexed) value. As before, an average is taken. By its nature, this process dilutes any tendency of earnings from work past age 60, including earnings from work past age 62, to increase the retiree's average. As a result, the average gives almost no recognition to increases in prices and real wages in the years worked past age of 60.
2. **Age 62 Benefit Formula Still Used and Marginal Benefit Rate Dominates.** Based on the average earnings figure of step 1, a corresponding age-62 benefit is still calculated using the same age-62 formula as for those who actually retire at age 62. Therefore, even if the retiree's average earnings figure should turn out to be somewhat higher, the additional benefit comes only from application of the marginal benefit rate, which for many applicants is only 15 percent. That is, for each increase of \$10 in the average earnings figure, the retiree's benefit increases by an additional \$1.50.
3. **Longer COLA Process with Associated Increased Omissions.** COLAs are applied to move the age-62 benefit to the year of actual retirement, *which is now further away*. For age-65 retirees, COLAs for age 63, age 64, and age 65 would be applied. These COLAs recognize changes in the price level only; they do not take into account any increases in real wages. Consequently, the resulting benefit is out of sync with earnings of the retiree, who at this point has worked several extra years. In cases of working past age 65, which are not uncommon, this misalignment grows even more.

The preceding description is designed to help understand why the deck is stacked against benefit improvements from additional work. The longer one works, the more the initial benefit fails to recognize increases in real wages. One can argue that this is why the benefit-enhancement factor applied for work beyond the age of 65 was increased to 3 percent per year in the 1977 Amendments. But even if this is the reason, and the reason is not actuarial, it does nothing to help the person retiring at age 65.

This deck-stacking effect is one reason why the Notch is larger for persons retiring at age 65 than for person retiring at age 62. Were it not for this effect, the benefit reduction associated with the change to the 1977 law would be smaller for many retirees.

Lengthening of the Averaging Period

Before, during and after the Notch years, the number of years in the averaging period was growing.²¹ While this was occurring, the earnings of an additional year worked were included in the earnings series, but the earnings of an earlier, lower-income year were not dropped. The net effect was to dilute the recognition of additional years worked. At a time when a new, reduced benefit formula was being introduced, and prices and earnings were growing rapidly to boot, this effect exacerbated a bad situation. The question that arises is whether, given that this lengthening process was occurring, especially under difficult economic circumstances, some additional tempering of the effect of the new benefit formula should have been arranged.

²¹ The number of years averaged reached 35 for persons born in 1929, and did not grow further for persons born in subsequent years.

7. The Unexpectedly Steep Drop in Benefits for the Notch

An interesting study by the Office of the Actuary of the Social Security Administration analyzed how the Notch would have looked if the “economic assumptions that the Congress used in crafting the 1977 amendments” had turned out to be correct.²² A table from that study is reproduced in Exhibit B-4, Section 4 of Appendix B, of this report. It is for workers with average earnings, who retired at age 65. It shows that for a person born in 1919, the transition formula coupled with prevailing economic assumptions would have caused a benefit decrease of 14 percent, but actual economic conditions caused the benefit to decrease by 26 percent.

The benefit reduction obviously exceeded all expectations, and clearly by a substantial amount. It is not possible to view the drop for those born shortly after 1916 as small. Even the Commission on the Social Security “Notch” agreed that the benefits are “far” less generous than under the old 1972 law. No one planning retirement on the basis of the formula that generated the benefits for those born in 1916 could view the drop as anything less than substantial. And, as was previously shown in Figure 2, comparing the actual benefits with those that could have been expected under the 1972 law shows the reduction to be even more substantial.²³

All comparisons show that the benefits accorded the last retirees under the 1972 law were relatively generous, particularly due to high inflation at the time, and thus that a high reference point existed for comparison purposes. But reviewers generally fail to point out that a portion of the rise under the old law was natural and equitable, since a fundamental characteristic of the Social Security system, under all formulas, is that benefits tend to rise with increases in earnings, whether due to increases in real wages or increases in prices.

²² Social Security Commission Final Report Appendix.

²³ Figures for persons with profiles other than the one shown in Figure 2 were examined. All show similar effects, although the percentage difference is smaller for some, depending on the profile selected. The fact that some effects might be smaller does not reduce in importance the fact that many were substantial.

8. Was the 1977 Amendment Fair to Notch Babies?

As discussed in Section 2, the term Notch describes a standard bar chart like that in Figure 1 to depict the benefits received by those who were born in 1916 (or earlier) and retired under the 1972 law and those who retired within a few years after the 1977 law became effective.

Discussions of the Notch often state that the benefits paid to those born immediately prior to 1917 are rather generous when measured against every standard that has existed since 1977. That is not disputed here. But it is of no avail to say that Congress should have avoided the Notch problem by reducing the generous benefits of those who were about to retire under the 1972 law.²⁴ The fact is, Congress did not do so. Instead, it made certain that (i) those who had already retired were fully protected from any reduction in benefits, and (ii) those who had yet to retire would not have their actual benefits fall short of expectations upon retirement. In other words, (i) those born prior to 1917 were not required to make any financial sacrifice to help maintain solvency of the Social Security system, and (ii) Congress did not consider the financial condition of the Social Security fund to be so dire as to require any such sacrifice.

At the same time, Congress doubtless intended that the 1977 Amendments gradually should phase in reduced benefit levels out of fairness to those who were nearing the end of their income earning years. It is a total non-sequitur, however, to deduce from this simple observation that retirees born during the Notch years have been treated fairly, or that they have received all they deserved or that Congress intended.

Exactly what Congress intended is not altogether clear, as discussed in Section 4. The existence of the transition formula, including the attention it received as the legislation moved through Congress, does appear to be a strong indication that Congress was concerned about (i) smoothing the transition to the new, lower benefit level established by the basic 1977 Amendments, and (ii) preserving the expectations of those who were planning retirement within a few years – some within 2 years – and who had little time to adjust their plans to the new law. Such concern would not be out of line with the Congressional concern for those who were born in 1916 and were within one year of retirement in 1977.

For reasons discussed in Section 5, the transition formula was ill-suited to deal with the inflation that occurred. On top of that, when Congress crafted the 1977 Amendments, the economic assumptions that it used appear, admittedly with the aid of

²⁴ In 1977, people born in 1916 were within one year of being eligible to retire, and those born prior to 1916 were already eligible, with many already retired.

hindsight, to have been an exercise more of wishful thinking than economic forecasting. In any event, the transition formula was predicated on assumptions which clearly deviated substantially from the subsequent reality. In short, Congress's assumptions clearly were in error, the transition formula was almost totally ineffective, and the Notch babies became its unintended victims. The new, substantially lower level of benefits came quickly, and others have already documented that the drop in benefits was far greater than anticipated.²⁵ Whatever the exact intent of Congress might have been, failure of the transition formula gave rise to a substantial disparity between reasonable expectations and actual benefits

Many economic formulas cannot handle all future scenarios, and when written into laws that are not regularly reassessed, they risk achieving unintended results.²⁶ Viewed in historical context, those procedures have generated an instability and benefit comparisons that scarcely can be considered fair. The result of their formula should have been re-examined years ago to see if it achieved a basic level of fairness, but all prior reviews seem to have been designed to minimize and dismiss the problem, rather than recognize and remedy it. The factors that led to the Notch set out herein need to be reviewed again. A better path to a more fair system could be charted easily, if the will exists in Congress to do so.

²⁵ See Appendix B-4.

²⁶ The formulas used to compute Social Security benefits can be rather complex. With the ready availability of powerful computers, however, one now would expect to see sensitivity analyses that demonstrate how any proposed transition formula would perform under widely varying circumstances. The extent to which any such sensitivity analyses were prepared and made available to Congress in 1977 appears to have been limited.

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Appendix A

The Social Security System

1 Introduction

The purpose of this appendix is to introduce those aspects of the Social Security system that are important to an analysis of the Notch issue. Along the way, some general perspective is provided.

Social Security is a pay-as-you-go system. Accordingly, the amount coming in from taxes each year must compare favorably to the amount going out in benefits. If the income is less than the outgo, the system is viewed as out of balance. In order to assure that the system is functioning soundly and is not at risk, comparisons must include future years as well as current years. On the income side, this requires projections of the size of the labor force, the unemployment rate, earnings levels, and taxes associated with those earnings. On the outgo side, projections are required of the various benefit payments, such as those for ordinary retirements, dependents, survivors, and the disabled. When the system is out of balance or is headed for trouble, changes must be made in either the tax rates or the benefits.

Initial benefits for retirees are based on an average of the retiree's covered taxable earnings, over most or all of their working careers. The covered taxable earnings are the actual earnings, except that if earnings are above the maximum taxable level for the year, then the maximum is reported. The maximums are shown in Exhibit E-1 of Appendix E. In 1950, for example, the maximum was \$3,000. Before the 1977 Amendments to the Social Security Act, generally referred to herein as the 1977 law, the average was taken of the earnings as reported, with no adjustments. Since the 1977 law, except for a special transition arrangement, the average has been taken of indexed earnings, according to procedures described more fully below.

Particular rules and particular definitions exist for the earnings that are to be averaged. For retirements in and around the Notch years, and since, the "base" years are defined as those years after 1950 up through the year before retirement. The "elapsed" years are defined as the years after 1950 (or after the year of age 21, whichever is later) through the year before the retiree reaches the age of 62. Then the number of "computation" years is defined as 5 less than the number of elapsed years. Taking the number of computation years as n , the n base years of highest earnings, after indexing if appropriate, are averaged.

As an example of the application of these definitions, consider a person born in 1920 who decides to retire at age 65, in 1985. The base years are 1951 through 1984, numbering 34. Since this person becomes 62 in 1982, and became 21 before 1951, the

elapsed years are 1951 through 1981, numbering 31. Taking n again as the number of computation years, $n = 31 - 5 = 26$. In this case, the earnings average is calculated using the 26 base years of highest earnings, after indexing if appropriate. The purpose of subtracting 5 is to allow the retiree to leave 5 lower-income years out of his or her average. The average is therefore higher than it would otherwise be. Given the constraints that years after 1950 or after the age of 21 are used, and that retirement eligibility begins at age 62, these relationships imply that persons born in or after 1929 have 35 computation years and those born before 1929 have 1 fewer computation years for each year before 1929.¹

Under the 1972 law, and before, as indicated above, the earnings in the base years are placed without modification into a series, and the highest n are averaged. The years that are not included in the average, due for example to the 5 dropout years, tend to be early-career years, since, due to secular increases in prices and real wages, later ones are usually higher.² *Under the indexing procedure of the 1977 law*, the series from which the highest n are drawn is constructed of two parts. The first part is the earnings since the year of age 60, unmodified. The second part is the earnings for the year of age 60 back to the first of the base years, all indexed on the year of age 60. In this case, the base years that are not included in the average are more likely to be scattered. The indexing scheme will be discussed further below. Note that the value of n increased each year until it reached a maximum of 35.³ That happened in 1991 for persons retiring at the age of 62.

Using whatever years are required by the above rules, the average is calculated as a monthly figure. That is, the average of the annual earnings (after indexing if required) is calculated and divided by 12. Before the 1977 law, this average earnings figure was referred as the AME, Average Monthly Earnings. Since the 1977 law, because the earnings are indexed before being averaged, the average has been referred to as the AIME, Average Indexed Monthly Earnings.

Once either the AME or the AIME is calculated, the initial benefit level is determined from either a table or a formula. More particularly, a table is used for retirements under the 1972 law (or any of its close forerunners) and a formula is used for

¹ The minimum number of computation years depends on the application of Social Security laws earlier than the period covered by this study.

² Cases exist, of course, where the earnings in early-career years are higher. Examples might include baseball players and persons dropping out of the labor force, such as to rear children.

³ For n to be 35, the number of elapsed years must be 40. The latter will be the case for persons born in or after 1929. For persons born in 1929, the elapsed years are those years after 1950 through the year before age 62, which is 1990. For persons born after 1929, the elapsed years are those after reaching the age of 21 (after 1951) through the year before age 62 (after 1991). Deciding to retire after the age of 62 does not increase the value of n , since the elapsed years always end in the year before reaching the age of 62.

retirements under the 1977 law (or any of its successors), except for a special 77-law transition arrangement. The tables place the AME figures in narrow ranges and then give a monthly benefit amount. For instance, the table might say that if the AME is at least \$706 but not more than \$710, the monthly benefit is \$444.10.⁴ The tables are available on the Social Security web site. If the retiree is age 62, an actuarial reduction factor of 0.8 is applied to the benefit. Lesser reductions are applied, on a month-by-month basis, for retirements between the age of 62 and full retirement age (65 during the period covered by this study). No reduction is applied for retirements *at* full retirement age. A delayed retirement credit is applied for retirements after full retirement age, within limits.

Before the 1972 law, changes in the initial-benefit tables and in the benefit levels of those already retired were made directly by Congress. It needed to take specific action to make the changes. Congress was influenced (but not constrained) by any inflation that occurred, and it did not make changes every year. If finances allowed and it felt so inclined, it could (and did) make changes that were greater than the rise in prices.

The original Social Security Act was passed in 1935. The first payments were made in January of 1940, according to a formula adopted in 1939. In 1950, Congress increased the benefit levels by 77 percent, an amount almost exactly equal to the increase in prices since the first payments in 1940. The next increases were in 1952 (12.5 percent), 1954 (13 percent), and 1958 (7 percent), each of which were larger than the attendant inflation. The years and the increases are shown in Exhibit E-1 of Appendix E. In the early years, changes were simply referred to as increases or adjustments; since the 1972 law they have been referred to as Cost Of Living Adjustments (COLAs).

The initial-benefit formula applicable for January of 1970 was:⁵

81.83% of the first \$110 of AME
29.76% of AME between \$111 and \$400
27.81% of AME between \$401 and \$550
32.69% of AME between \$551 and \$650

For example, an AME of \$400 yielded a monthly benefit of \$176.32 ($0.8183 \times 110 + 0.2976 \times 290$). The \$650 figure is the monthly equivalent of the maximum taxable earnings level for 1970 of \$7,800 per year.

Each time Congress made a certain proportionate increase in the benefit levels of those already retired, it made the same proportionate increase in the initial-benefit formula

⁴ In this study, equivalent formulas are used instead of tables. The results obtained from the formulas approximate closely those from the tables.

⁵ GAO Notch Report, p. 20.

and the associated tables. For example, in January of 1971, a 10 percent increase was enacted and the percentage figures in the above formula were all increased by 10 percent, to 90.01%, 32.73%, 30.59%, and 35.96%, respectively. This being done, the formula gives an initial benefit that is 10 percent higher, for the same AME, thus providing a benefit that is inflation corrected. But if the AME is higher, due to the effects of inflation on earnings, which tends to occur, the person receives double recognition for the inflation.

2 The 1972 law

Congress has many priorities and was sometimes slow to legislate benefit increases that were needed. In response, concern existed that inflation should be recognized more regularly and more systematically. The 1972 law (which later was characterized as instituting double indexing) did nothing more than automate what Congress had already been doing. Specifically, the law said that the AME would be calculated as before, and that both the benefit table and the benefit for those already retired would be increased automatically, annually, based on a COLA that was to be announced by the Social Security Administration. The law specified how the COLAs would be calculated. The first automatic increase was to be in June of 1975, and turned out to be 8 percent. This COLA was to be equal to the arithmetic mean of the CPI-W for April, May, and June of 1974 divided by the arithmetic mean of the CPI-W for July, August, and September of 1972. Subsequently, the basis for the COLAs was to be from year to year. A COLA would be announced only if the rise in prices was equal to or greater than 3 percent, after rounding. If the rise were less than 3 percent, the calculation for the next year would span both years, and so on.⁶ The COLAs were applicable in June of each year. In the Amendments of 1983, the June 1983 COLA was delayed until January of 1984, and subsequent COLAs were implemented each January.

The formula behind the initial-benefit table for new retirees effective June 1976 consisted of 8 brackets as follows:⁷

137.77% of the first \$110 of AME
+50.10% of the next \$290 of AME
+46.82% of the next \$150 of AME
+55.05% of the next \$100 of AME
+30.61% of the next \$100 of AME
+25.51% of the next \$250 of AME
+22.98% of the next \$175 of AME
+21.28% of the next \$100 of AME

⁶ The 3-percent constraint was dropped in the Amendments of 1986.

⁷ NASI Study, p. 30.

The expectation at the time was that earnings would grow more rapidly than inflation (increasing the taxes collected) and that unemployment would be low (so that many people would work and pay taxes). Under these conditions, with the understanding that the number of computation years in the AME figures was increasing each year (so that the effect of earnings increases on AME and therefore on benefits was diluted), it was expected that the Social Security system would be financially secure. But this did not happen. The taxes collected were anemic due both to higher-than-expected unemployment and to the fact that the earnings growth, though strong, was in many years lower than inflation. On the outflow side, the inflation rate was very high and this was increasing the benefits for existing retirees (through COLAs) as well as for new retirees (through increased AMEs and adjustments in the benefit tables). The system was in financial trouble.

3 The 1977 Law

Reviewers of the situation at the time concluded that the benefit/COLA arrangement in the 1972 law involved what was commonly called double indexing, and that the scheme was flawed. Inflation was causing the outgo to increase much more rapidly than the income. A number of proposals were made on how the system should be changed, involving two Presidential administrations and a great deal of activity in Congress. In the end, it was decided to average an indexed version of the retiree's earnings, introduced above as the AIME (Average Indexed Monthly Earnings), and to calculate the initial benefits with a formula whose basic level would not change when the COLAs were announced. Specifically, the initial monthly benefit, before any adjustment for retiring before or after full retirement age (65), would be calculated according to the following formula:⁸

90% of AIME up to \$180, plus
32% of AIME over \$180 and up to \$1,085, plus
15% of AIME over \$1,085.

This new formula was specified to apply to persons born after 1916, regardless of the age at which they choose to retire. These people began to reach the initial retirement age of 62 in 1979. The 3 marginal benefit rates (90%, 32%, and 15%) do not change over time. The range figures, like the \$180 and the \$1,085, are called "bend points" and are adjusted each year in proportion to the increase in average covered earnings per employee in the Nation. The first increase was 7.9 percent; at which time the bend points were increased to \$194 and \$1,171. A person retiring under this formula applies the COLA increase for 1979, either initially or in June.

⁸ GAO Notch Report, p. 31.

The behavior of the above formula is important. Suppose a person retiring in year one has an AIME of \$1,000 and applies the formula with bend points of \$180 and \$1,085. The initial benefit will be $0.90 (180) + 0.32 (1,000 - 180) = \424.40 . In year two, due to inflation and increases in real wages, suppose the average earnings level in the Nation is up 10 percent so that the bend points become \$198 and \$1,193.50. If a person retiring in year two has an AIME of \$1,100, which is 10 percent higher than the person who retired in year one, the initial benefit will be $0.90 (198) + 0.32 (1,100 - 189) = \466.84 , which is 10 percent higher than \$424.40. The year-two retiree has a higher benefit because inflation and increases in real wages caused his or her AIME to be higher, not because the formula was adjusted for inflation. If the 10-percent increase in average National earnings was composed of 6 percent inflation and a 4 percent increase in real wages, then the person who retired in year one would get a COLA of 6 percent, and after the COLA would be 4 percent behind the person retiring in year two. If the person in year two had had an AIME of \$1,200 (up 20 percent) instead, the initial benefit would have been $0.90 (198) + 0.32 (1,193.50 - 198) + 0.15 (1,200 - 1,193.50) = \497.74 , an increase of 17.3 percent. The higher benefit is due to the higher AIME, but since the marginal benefit rate is between 15 percent and 32 percent, the benefit is not up a full 20 percent. Specifically, the increase in AIME of \$100 (\$1,200 - \$1,100) yielded an increase in benefit of \$30.09 (\$497.74 - \$466.84).

The number of computation years in the AIME was defined in the same way as it was in the AME – there was no change. The way in which the indexed earnings are to be developed, however, is unique and is different from what one might expect. First, a decision was made, after much discussion and disagreement, to index the earnings with an index of the average level of Social Security earnings for the Nation. This is notably different from indexing with a price index, such as the CPI-W. Each year, an average is created of all the earnings for the year on which Social Security taxes are paid. If a person makes over the maximum taxable amount, only the maximum is reported, and the average is of the reported amounts. In 1979, for example, the average earnings figure was \$11,496.46; see Exhibit E-1 of Appendix E. An index is prepared of the average amounts and this index is used, as though it were a price index, to adjust the retiree's earnings. If earnings for 1970 were to be indexed to the 1979 level, for example, the earnings for 1970 would be multiplied by \$11,496.46 over \$6,186.24, the latter number being the average earnings in 1970. Some sentiment existed in Congress for using a price index for the indexing, instead of an average earnings index, but that is not what was decided.

The average earnings figure (AIME) and its associated indexing scheme has important characteristics, some of which might not be obvious. First, it should be noted that if wages tend to increase with inflation, which they do, then the average earnings figures would tend to increase *pari passu*. Plus, the level of average earnings tends to increase as well with increases in national productivity, since such increases normally translate themselves into wage increases. Further, the maximum earnings level for Social Security taxation, which is keyed itself to the level of average earnings in the Nation, will

affect the average earnings figures. On balance, we can say that the average earnings figures tend to increase with prices and real wages, and that this characteristic of the Social Security system is relied on by workers and is an understood part of the system's acceptability.

Second, the indexing scheme differs from what one might expect in that, regardless of the age of retirement, the earnings in the base years are indexed on the average earnings *of the year in which the retiree reaches the age of 60*. More specifically, the earnings in all base years prior to the year of age 60 are adjusted upward according to the index of the average earnings in the Nation, and the earnings in all base years after the age of 59 remain at their reported level.⁹ In short, the earnings in the years before age 60 are indexed and the subsequent earnings are not. Then after the AIME is calculated, the *benefit formula for the year in which the retiree reaches the age of 62 is applied*. Once the benefit is calculated, it is moved to the year of actual retirement by applying COLAs.

At the risk of repeating what has already been explained, certain overarching characteristics of the Social Security system warrant emphasis. Once a person retires, his or her benefit payments grow only with COLAs, which are related to the CPI-W. Thus, no *real* growth occurs. But when calculating the level of the *initial* benefit, which thereafter has COLAs applied, an average earnings figure is used (either an AME or an AIME) and this average is affected by a number of things, including importantly both the level of prices and the level of real wages. Predominantly, the level of the initial benefit increases with inflation and real wages, but once the level of the initial benefit is established, it increases only with COLAs. Assuming real wages increase over time, this means that the Social Security benefits of each cohort of retirees will tend to be larger than the benefits of the cohort retiring the year before. If one stands in, say, 1988 and looks at the benefits being received by persons that retired in various past years, the persons retiring longer ago will tend to be receiving lower benefits than the more recent retirees. Such is the nature of the system that is in place. These characteristics are understood and are relied on by workers anticipating retirement.

Another set of decisions in the 1977 law concerned who would use the new formula and who would use the old one. This might appear to involve no more than the selection of an implementation date, but it is more complex than that. After a great deal of discussion and testimony, it was decided that the new 1977 law would apply to the retirements of all persons born after 1916 (except that in the Social Security system persons born on January 1 of any year are viewed as having been born in the previous year). Accordingly, persons born before January 2, 1917 remain under the provisions of the 1972 law, regardless of the year in which they decide to retire. That is, a person born in 1916 could retire at age 62 in 1978, at age 65 in 1981, or at some other age, and the

⁹ Since 1940, the only year in which average earnings decreased was 1946, when it declined 6.41 percent.

1972 law would still apply. These people are generally viewed as having been grandfathered. Persons born on or after January 2, 1917, however, retire under the 1977 law, anytime after reaching the age of 62, which began happening in 1979.

The Transition Formula At the time the 1977 law was enacted, it was generally recognized that benefit reductions would occur. Congress wanted, however, to smooth the transition to these lower benefit levels, and to temper the associated effects on the persons involved. It was understood that these persons had been planning their retirements under the old law. How best to arrange this tempering process was discussed at great length. The conclusion was that a transition formula would be offered and any person born in the years 1917 through 1921 would be accorded benefits equal to the higher of either the transition formula or the basic provisions of the new law.

The transition formula adopted was to continue to calculate the AME, as done under the 1972 law, with one exception. The exception is that *no earnings can be recognized for any years after the year of age 61*. This has important implications. For a person retiring at age 65, for example, 3 years of likely higher earnings must be left out of the earnings average. Furthermore, since the number of computation years was not changed, this person must include 3 years of lower earnings, which are likely to be earnings in early-career years.

Then, after this restricted AME is calculated, the retiree must use the benefit table (or formula) of June 1978 to determine benefits, and no COLAs can be applied to this benefit until the year in which age 62 is reached. A person born in 1921 and retiring at the age of 62 in 1983 would have the transition formula available, and would use it if it yielded a higher benefit. But since the age of 62 is reached in 1983, no COLA increases would be applied for 1979, 1980, 1981, or 1982. Under these conditions, the likelihood that the transition formula would yield a higher benefit (than the basic 77-law formula) is obviously low. The transition formula is discussed in more detail in section 2 of Appendix C.

Replacement Rates In developing the basic formula for initial benefits, given the level of AIME, attention was focused on the replacement rate that would result. The replacement rate is the initial benefit level for a retiree expressed as a proportion of his or her earnings in the year before retirement. In the words of the Commission on the Social Security Notch Issue,

[t]he objective of the 1977 amendments was to stabilize replacement rates for all future workers with similar earnings patterns, with the goal of replacing 42 percent of an average worker's wages upon retirement at 65, and 35 percent upon retirement at 62, as always, replacing a higher proportion of wages for workers with below average earnings, and a lower

portion of wages for those with above-average earnings. (Social Security Commission Final Report, pp. 10-11)

Appendix B

A Review of Other Studies

1 The GAO Notch Report

GAO was asked by the Chairman of the House Subcommittee on Social Security, Committee on Ways and Means “to conduct a comprehensive study of the [Notch] issue.” (GOA Notch Report, p. 16)¹⁰ The focus was to be on (a) “how the notch arose,” (b) “how beneficiaries are affected,” (c) “alternatives for financing legislation to address the issue,” and (d) “socioeconomic characteristics of those affected.” (p. 2) The study was begun in the summer of 1986 and was completed in the fall of 1987. Issues “c” and “d” are not within the scope of the present study.

The GAO study reviews the history of the problem, outlines its dimensions, discusses various issues, and provides a great deal of data. With the exception of the material on the socioeconomic characteristics of those affected, the analysis it presents is similar to that contained in other studies. Its section entitled “Results in Brief” simply says the size of the Notch was affected by the economic conditions at the time, that the Notch is larger for those retiring after the age of 62, that the replacement rate for Notch cohorts is lower than the rate for some born before them and higher than the rate for some born after them, and that making changes could be costly and administratively difficult. (p. 3) To a considerable degree, the GAO study does not make specific recommendations.

GAO did offer some “guidelines for any further congressional consideration.” (p. 3) These are that Congress “consider keeping the effect of notch legislation on the . . . trust fund balances as neutral as possible, evaluating the resources and time required for implementing the legislation, and retaining the current transition period.” (p. 6) The authors of the present study do not take a position on funding questions but do believe that a reasonable case can be made for extending the transition period. It is common for governments and regulatory bodies to take specific steps to temper the effects of major changes on affected parties, and it is clear that a more reasonable outcome could be arranged in this case.

One factor pointed out clearly in the GAO study is that the number of computation years, *i.e.*, the number of years of earnings included in the earnings averages, was increasing year by year, throughout the Notch period. As discussed further in section 1 of Appendix A, the Social Security system was moving toward the number of computation years being 35, under a constraint that, with some exceptions, earnings from years before 1951 would not be considered. A person retiring in 1981 would have 30 years of earnings

¹⁰ Page numbers unmodified by further reference in sections of this appendix are to the study being reviewed.

available, 1951 through 1980, some of which could be zero. To get the number of computation years, the figure of 30 is reduced by 5 (to allow omission of low-income years) and by the number of years the retiree is older than 62. Assuming the retirement in this case is at age 62, the number of computation years is 25, and the years averaged would likely be 1956 through 1980. Then if attention were to be given to another age-62 person who retired in 1982, the number of computation years would be 26. This process continued until the number reached 35, which, for age-62 retirements, did not occur until 1991. When comparing benefits of persons retiring in different years, it needs to be remembered that the number of computation years is different. If the earnings for one person were averaged over 1956 through 1980 and for a second person over 1956 through 1981, the effect on the average of the earnings in 1981 would be diluted by the increase in the number of years included in the average.

On the issue of the transition formula itself, and on the associated question of whether the impact of the 1977 Amendments was cushioned, GAO includes several observations. In reference to an interchange between a Congressman and the Social Security Commissioner, GAO says: “This excerpt indicates that a main purpose of the transition provisions was to ‘put people on notice’ that a change in the benefit formula was in effect, *avoiding a serious impact on those who were close to making retirement plans.*” (p. 37, emphasis added) GAO indicates that “[d]uring the debate on the 1977 Amendments, *it was generally anticipated that the phase-in would prevent a significant drop in the benefit levels of retirees in the transition period.*” (p. 39, emphasis added)

The figures in GAO’s tables show that the transition provision provided very little help. GAO indicates simply “[t]he transition phased out more abruptly than anticipated.” Then it refers to a special study done by the Social Security Administration that found “that the transitional guarantee yielded a higher benefit only to those attaining age 62 in 1979, average and maximum earners attaining age 62 in 1980 and retiring at age 62, and maximum earners attaining age 62 in 1980 and retiring at age 63.” (p. 39) This finding is consistent with the results found in the present study.

As close as GAO gets to telling us its own views is on page 90 where it says:

In our view, with the benefit of at least 9 years’ hindsight it appears that it might have been better to have allowed the inclusion of post-age 61 earnings in the transitional guarantee computation. Data from SSA show that this would have permitted a smoother phase-out for later age retirees.

2 The National Academy of Social Insurance Study

Two Senators asked the National Academy of Social Insurance to do a study of the Notch issue. They requested that the study “include a background examination of the legislation and economic conditions that created the disparity in benefit levels between

beneficiaries born before 1917 and those born later.” They further requested that the study identify “all options and analyze the impact of each on Social Security beneficiaries and taxpayers and the old-age and survivors insurance trust fund.” (NASI Study, p. 23) The Academy appointed a panel to do the study. The final report was completed in November of 1988 and stands as one of the best studies available. Its explanations of key issues were found invaluable and the data in it were used extensively to verify our own calculations.

The panel’s report may be considered to have three parts. First, it has an introduction, a summary, and a recommendation. Second, it presents seven findings. Third, it contains seven appendices. After a general review of its introduction, summary, and recommendation, the 7 findings will be discussed.

In its summary, the panel first agreed that the benefit differences between persons born before 1917 and those after 1916 “were larger than had been expected” and that “sharp differences” could arise. (p. 1) Then, except as overridden in favor of the retiree by the transition formula, it points out that the basic 77-law formula applied to those born in 1917 through 1921 is no different from the formula applied to those born after 1921. The reason the panel points this out is that some persons have suggested that there is a difference in treatment between the 1917-1921 group and the after-1921 group. However, focusing on the question of differences in treatment between these two groups misses the point of whether there was a substantial drop in benefits and of whether Congress succeeded in smoothing the transition to the new formula.

The panel’s principal conclusion is that the Notch problem is “largely attributable to the fact that those born in the several years before 1917 who worked well beyond age 62 (after 1978) received benefits which are too large and that it would be unwise to extend this over-generous treatment to additional persons.” (p. 1) The recommendation is that no changes be made. The primary basis for this recommendation is that it “would not be fiscally responsible” to do otherwise. (p. 4)

We have no difficulty agreeing that those retiring just before the Notch were compensated relatively generously, beyond what might have been expected, due to the adverse economic conditions at the time. It needs to be remembered, however, that those retiring during the Notch years faced those same adverse economic conditions and that they were planning their retirement in the same adverse economic environment, against the backdrop of the 1972 law. And it needs to be remembered as well, which few analysts seem to do, that some benefit movement in the upward direction should have been expected in any case, since a basic characteristic of all Social Security formulas is understood to be that benefits rise with prices and real wages. Certainly there was inflation at the time and the relation of benefits to inflation is not a feature that the 1977 law set out to change.

The panel made it clear that issues of administrative feasibility and what it describes as “fiscal responsibility” played a role in its evaluation. As discussed further below, however, the panel does not appear to have focused specifically on the diminutive role played by the transition formula or on the meager extent to which it mitigated the impact of the new law. It did emphasize the replacement rate patterns.

Finding No. 1

In this finding, the panel agrees that the Notch exists and provides a table showing its magnitude. The table is for persons retiring at age 65 in various years, and provides benefits in 1988 dollars both for persons with average earnings and for persons with maximum earnings. The table makes it clear that the benefits reach a peak for those born in 1916 and decline substantially for those born in the several years thereafter. The table does not, however, show the benefits that would have been generated by the 1972 law, had it been applied to those born after 1916. Yet when these after-1916 persons were planning their retirement, their only guide was the 1972 law. Also, the table does not provide any information on the benefit pattern of the transition formula – it just shows the net results.

Finding No. 2

Here the panel shows that persons born in 1917 to 1921 are not disadvantaged relative to those born in 1922 and after. In that the same formulas are used for each group, we do not disagree.¹¹ When the point is made, however, that those born in 1917 to 1921 might actually be better off, because they had a transition-formula option and the others did not, we believe more should have been said.

Two examples are given on the transitional provision. Both are persons retiring at age 62 with maximum earnings. The first was born in 1917 and the second in 1918. For the person born in 1917, the 1977 law gives a benefit of about \$634 and the transition formula gives about \$680. The example does not explain that the \$680 figure is also the one given by the 1972 law and that the transition formula was designed to equal the 1972 law under those conditions. Obviously the transition provision helped – it fully prevented a reduction. For the person born in 1918, the 1977 law gives a benefit of about \$627 and the transition formula gives about \$641, a difference, as noted by the panel, of about \$14. No mention is made, however, that the 1972 law would have provided about \$705 or that no one born after 1918 is helped at all by the transition formula. Also, perhaps more important, no mention is made of the fact that the Notch problem is relatively small for the age-62 retirees. It would have been better to focus on an example involving persons

¹¹ A table is provided showing benefits for persons born in late 1921 and early 1922, retiring in various years. The difference in benefits is small. No case was really made for expecting them to be large.

retiring at the age of 65, the full retirement age at the time. This would have shown a much larger Notch and would have highlighted more clearly the minor role of the transition formula.

Finding No. 3

In this section, the panel focuses on replacement rates and shows that the rates for those born in the Notch years are healthy relative to long-term trends and that the rates for those born in 1916 are elevated. These observations are correct. It should be noted, however, that the replacement rate itself can be somewhat unstable. To wit, the numerator is the result of applying a formula to an average of many years, and the denominator is earnings for just one year, which can vary. A measure of this kind leaves something to be desired, at least in regard to year-to-year comparisons. Also, the replacement rate chart provided by the panel, Chart A on page 10, is not drawn to scale – the rate for those born in 1916 should be 51.1 percent and it is shown as 54 percent. That particular point is the peak on the chart.

Finding No. 4

At this point the panel discusses the characteristics of the 1972 law and the need for change. In particular, the panel explains that the replacement rates were rising under the 1972 law and that the system was moving toward a situation in which the outflow would greatly exceed the inflow.¹² It then introduces the 1977 law and its characteristics, with emphasis on the desire for stable replacement rates. Again, the point is made that the benefits for those persons born in 1916 and retiring at age 65 were relatively high.

Note should be made that even though emphasis is placed on the fact that the earnings average in the 1977 formula is an average of indexed earnings, the indexing itself does not help solve the problem of the 1972 law. The 1972 law could have been fixed by focusing properly on an average of nominal wages just as well as it could have been fixed by focusing properly on an average of indexed wages, the latter being done. The decision to focus on indexed earnings was an equity consideration that changed the treatment of people with unusual earnings patterns, particularly those with high earnings early in their careers and low (or zero) earnings later.

¹² One point made is that the replacement rates under the 1972 law could pass 100 percent. We note that nothing is magical about 100 percent. What is important is that the revenues were not large enough to support the benefits. The replacement rate at which this occurs depends on the design of the system and the situation faced. If millions of people were working and only a half-dozen were retired, for example, the replacement rate could exceed 500 percent and cause no difficulty.

Finding No. 5

Three observations on the behavior of the 1972 law and the 1977 law formulas are provided. The first is that the difference in benefits between the two formulas grows as the age of retirement grows. For example, the Notch is larger for those retiring at age 65 than for those retiring at age 62. The second is to point out that this difference is expanded by the fact that the 1972 law allows a more influential role for wages after the age of 62 (which can increase benefits) than does the 1977 law. This is true, as discussed more fully in other places in this study, but it may be more a weakness in the 1977 law than an overgenerous characteristic of the 1972 law. Specifically, the indexing procedure in the 1977 law dilutes the effect of earnings after the age of 62, especially when the wage increases are greater than average. It is difficult to find a reason for such a scheme. The third observation is that the economic conditions at the time affected all of the measures in an unexpected way, which is clearly the case. An important aspect of the conditions was that wage increases were often lower than price increases.

Finding No. 6

Attention is focused on the high benefits received by persons born in 1916, in part by showing how much lower they would have been if Congress had adopted some reasonable constraints in the 1977 law. Of course, Congress did not do that.

Finding No. 7

Two possibilities are discussed. The first is that of reducing benefits for those born in the pre-Notch years. This may be logical on some grounds but it is always rejected. The second is that fixing the Notch that exists now might create new notches, depending on what comparisons are made. Something like this could occur, particularly on a small scale. Generically, however, it is difficult to accept that a simple process of tempering the transition to a new benefit scheme could reasonably be viewed as making things worse instead of better. It is well understood in situations such as this that one cannot let the perfect be the enemy of the good.

3 The Social Security Commission Final Report

A bipartisan Commission was established by Congress in 1992 to study the Notch issue. As explained in the preface to its Final Report, the Commission was charged “with examining the question of whether those born in the ‘Notch’ years had been treated unfairly and recommending, if necessary, remedial legislation and the means to pay for it.” (p. 1) The Commission was composed of an administrative staff and twelve highly-qualified appointees – four appointed by the President, four by the Senate, and four by the House. Needless to say, this Commission received support from numerous experts and was in a position to request and fund special analyses. The work of this Commission

stands as one of the most important inquiries made into the Notch issue. Dated December 31, 1994, the Commission's Final Report is widely quoted and is frequently cited as the primary basis for positions taken.¹³

The responsibility given to the Commission is made clear in the following paragraph from the preface:

At the outset of its work, the Commission arrived at two basic understandings. First, it realized that, despite the current size of its reserve fund, the Social Security system faces serious long-range fiscal issues. Second, it was keenly aware of the size of the Federal budget deficit. The Commission, therefore, approached its mandate with an explicit understanding that, if it were to recommend remedial action regarding the "Notch" issue, it would not recommend financing it through an invasion of the Social Security trust funds or any use of general revenues. The Commission concluded that it would have to recommend financing any changes with an increase in Social Security taxes or a reduction in some benefits, and it was fully prepared to do so if a remedy was justified. (p. 1, footnote omitted)

The Commission's "central finding" is that the benefits paid to those born in the Notch years are "equitable."¹⁴ It further states "[t]his opinion is based entirely on the Commission's conclusions in relation to issues of fairness." (p. 18) And, despite the fact that the Report contains no evidence that any specific remedies were considered, and thus that any cost estimates for such remedies were available, the report indicates that the Commission's finding "is not based on any concerns as to the substantial fiscal consequences of any possible remediation." (p. 18)

¹³ AARP, for example, as discussed in section 6 of Appendix B, seems to base its entire position against Notch legislation on the Report of the Commission.

¹⁴ On page 3 of its Report, the Commission indicates that its "principal conclusion . . . is that the 'Notch' is a necessary and appropriate result of the 1977 legislation . . ." One would presume that a "result" of a piece of legislation would be viewed as "*necessary and appropriate*" if and only if the legislation was implemented precisely as written and if no disagreements existed over how to interpret the legislation. Except for some questions we raise in this report about how the computation years should be selected under the transition formula, we are unaware that questions have been raised about how the written language of the 1977 Amendments have been implemented or interpreted. Therefore, the Commission's *principal conclusion* does not go to any issue relating to "*fairness*," which was its basic charge, or to any questions that have been raised by other parties about the Notch. Accordingly, this statement is irrelevant and should be given no weight.

The statements just outlined indicate that the focus of any review of the Commission's work should be on what is fair and equitable. Nevertheless, as described above, it is apparent that the Commission viewed its assignment as much broader than just a question of equity. Specifically, the Commission viewed itself as under the burden of deciding how any changes should be funded, which would require as well that the nature of any specific remedy be specified. Despite its statement that "it was fully prepared to do so," it should be obvious on its face that a commission taking on such a burden would be reluctant to conclude that a problem in need of correction exists. It is the view of the present study that issues relating to funding and to the design of any fix should be subjects of separate Congressional inquiry, after questions of equity are addressed.

At the outset, it should be noted that the Commission fully agrees that a Notch exists. In referring on page 2 to those arguing that persons born between 1917 and 1921 have lower benefits, the Commission says they refer

to the fact that, after taking inflation into account, their benefits are lower than those for persons born both before and after them. Indeed, when displayed on a vertical bar graph, those benefit levels form a kind of v-shaped 'notch,' dropping sharply from the left then rising again to the right

.....

Also on page 2, in referring to the 1977 legislation, it indicates that "[a]s a result, those born after January 1, 1917 would, by design, receive benefits that were, in many cases, far less generous." On page 3, it says "some of those in the 'Notch' years (particularly those who continued to work well beyond age 62) received benefits that were significantly lower than they would have been if calculated under the old law." On page 4, it indicates that "when those benefit levels are displayed on a vertical bar graph, they do, in fact, drop swiftly, then move upward again"

The next step is to look at the analysis that led the Commission to its conclusions. It is here that serious weaknesses are found, adequate to undermine the Commission's conclusions. If these weaknesses are corrected, or placed into proper perspective, reasonable people might conclude that the same analysis leads to sharply different conclusions. Since these weaknesses are numerous and occur throughout the Report, it might be most productive to list them as they occur.

1. **Bland acceptance of "far less generous" benefits.** As noted above, the Commission indicates on page 2 that the benefits for those born after January 1, 1917 are "by design . . . far less generous" than the benefits for those born earlier. Nowhere in the Report is any evidence provided that

benefits “far” less generous are fair, or that benefits “far” less generous were part of Congressional intent or Congressional expectation. In fact, the simple fact that Congress provided a transitional formula would seem to suggest that Congress expected to avoid the benefits being “far” less generous, at least in the first five years under the new law.

2. Failure to acknowledge the dismal performance of the transition formula. A complete paragraph in its Executive Summary says: “In an attempt to ease the transition to the new, lower benefit levels, Congress designed a special ‘transitional computation method’ for use by beneficiaries born between 1917 and 1921.” In effect, this paragraph is provided as a complete thought to the reader who wants to understand but who focuses only on the Executive Summary. One has to ask why no mention is made of the fact that the role of the transition arrangement turned out to be extremely limited. Specifically, the transition formula helped no more than one or two years in most cases and the degree of tempering that it provided was extremely small.

3. Highlights special cases; refers to the help provided by the transition formula as though it were meaningful. In the next section of the Executive Summary, entitled “The ‘Notch’ Issue Appears,” the lead sentence says: “Some born in the ‘Notch’ years received benefits that were equal to or higher than those paid to beneficiaries born before them, while others received benefits that were higher than those generated by the new (1977) method.”¹⁵ (p. 3) This sentence paints a Pollyanna-like picture of two camps for Notch retirees, neither sounding bad. But the camps are smaller and less well favored than intimated. At a point where the real problem should be introduced, the writers choose instead to mislead.

The first camp, those who were born in the Notch years and who received benefits larger than those born in earlier years, are a small, special-case group with the unusual characteristic that their early-career earnings were high and their near-retirement earnings were low (*e.g.*, professional athletes). These people benefitted because of the new indexing procedure

¹⁵ The Commission provides a footnote at this point to clarify that the reference to persons receiving “benefits that were higher than those generated by the new (1977) method” is meant to refer to those for whom the transition formula provided higher benefits than the basic 77-law formula.

used to create the average earnings figure, not because of any formula that operates on the average.¹⁶

The second camp, those receiving “benefits that were higher than those generated by the new (1977) method,” refers to those for whom the transition formula yielded larger benefits than the basic 77-law scheme. It is true that the transition formula helped some retirees, but the number helped and the amount of help was limited.

What should have been highlighted is not the existence of special cases or of marginal gains, but rather that, even after application of the transition formula, many benefits not only were substantially lower than those under the old law, but also quite possibly lower than Congress expected or would have viewed as fair. Only after setting this Pollyanna-ish tone, a following paragraph proceeds to refer to some benefits being “significantly” lower than those under the old law.¹⁷

4. Difficult to interpret references to payout rates; may miss point on replacement rates. In a subsequent paragraph in the same section, the Commission brings up two more considerations. First it points to benefits received relative to what people paid in, and compares those born in the Notch years to future generations. It is true that the number of years taken to recover the amount paid in is low and is increasing, but no evidence exists that Congress focused attention on the length of this payout period or on what its level should be. In fact, drawing on figures provided by the Congressional Research Service, it is difficult to interpret findings such that the payout period has increased from 1.4 years to 2.8 years. If anything, this sounds like too large a change to actually occur, yet these are exactly the figures reported for birth-years 1915 and 1920 respectively.¹⁸

Second, the Commission discusses the replacement rates of those born in the Notch years and indicates that their levels are in line both with the levels that Congress intended to achieve and with the replacement rates of

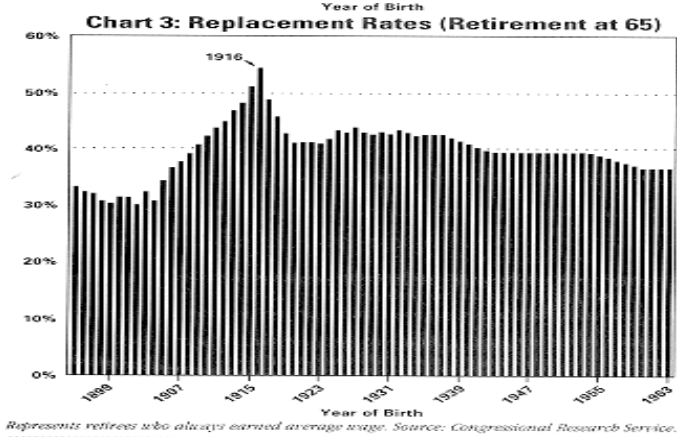
¹⁶ For further discussion of the indexing procedure in the 1977 law, see section 2 of Appendix D.

¹⁷ The term “significantly” is generally taken as relating to statistical properties and not to size. We interpret the Commission’s use of the word significantly to mean substantially.

¹⁸ See CRS Report on Notch Debate, p. 9.

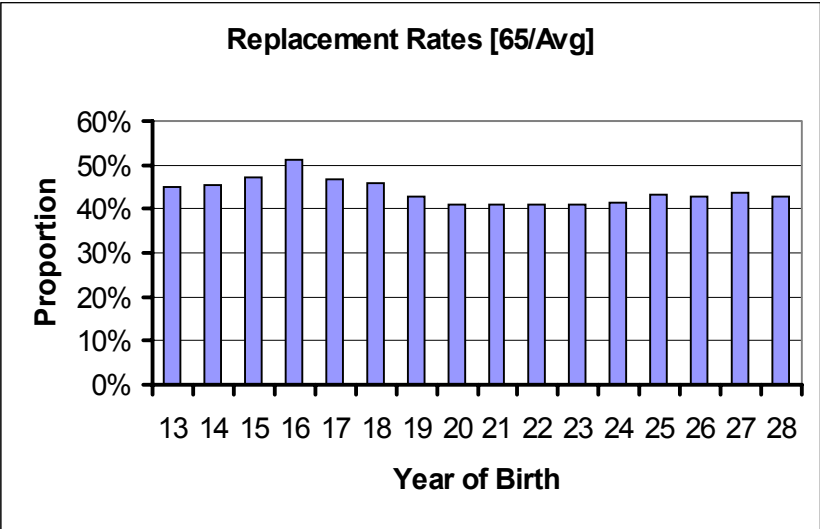
those retiring in subsequent years. (pp. 3, 11-12) For persons with average earnings retiring at age 65, the Commission’s replacement rate chart is shown as Exhibit B-1 and ours is shown as Exhibit B-2. Both of the charts are correct, although the picture painted is somewhat different. By making statements about

Exhibit B-1 Replacement Rate Chart from The Commission on the Social Security “Notch” Issue



Source: Computer files of Commission, available at www.ssa.gov.

Exhibit B-2 Replacement Rates for Persons with Average Earnings, Retiring at Age 65

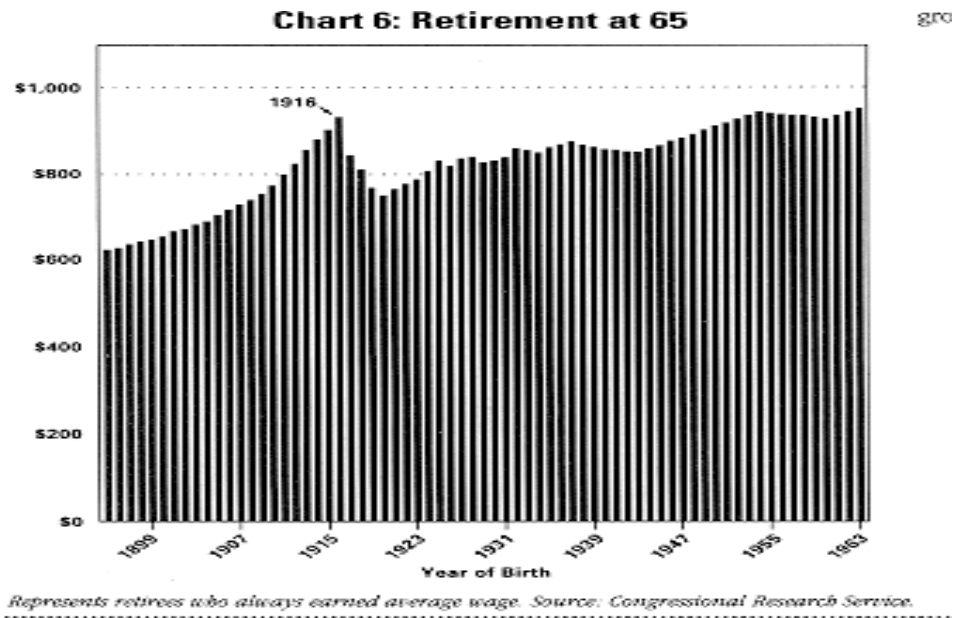


the intended level of the replacement rates that would result from the new law, the Commission diverts attention from the acuteness of the decline beginning just after in birth-year 1916. No evidence is really presented that this acuteness is in line with Congressional intent.

5. Misleading suggestion that indexing was a key part of the solution. After a discussion of the problems caused by the 1972 law (which were fixed by the 1977 law, which in turn caused the Notch), the Commission has a section entitled: “The Solution: Wage Indexing.” In this section, the Commission discusses the fact that the new law calculates benefits on an average of earnings that have been indexed “to reflect economy-wide changes in wages over his or her lifetime” whereas the old law uses an average of nominal earnings, *i.e.*, of earnings as reported, without adjustments. (p. 8) It is true that the decision to use indexed wages had some effects and that it might have been a good decision. But that decision (to switch to an average of *indexed* wages) has nothing to do with the fixing of the problems caused by the 1972 law. It is what is done with the average that makes the difference, not the fact that the average is of indexed or not-indexed earnings. For example, the average or indexed earnings could be \$1,000 per month and the average of not-indexed average could be \$500 per month. The former is usually higher because the earnings of early-career years are inflated to late-career price levels, before they are averaged. But if the formula operating on the \$1,000-figure says to give 10 percent of it as a benefit, yielding a benefit of \$100 per month, and the formula operating on the \$500-figure says to give 20 percent of it as a benefit, yielding, again, \$100 per month, then one cannot say that the use of indexed earnings caused a benefit change or fixed a problem. It is clearly what is done with the average that matters. It is misleading to suggest that the “solution” was to index the wages.

6. Misleading reference to the role of the transition provision. The Commission provides the following chart (Exhibit B-3) of monthly benefits (in 1994 dollars) for retirees who had average earnings and who retired at age 65. This chart was imported directly from the computer file of the Commission, but may be somewhat difficult to read. The peak is for those born in 1916. The Commission then indicates that “[t]he drop in benefit levels for those retiring at 65 and born in 1917, coupled with the continuing drops over the next three years, reflect the impact of the new law *and the declining impact of the transitional provision.*” (p. 15, emphasis added) The facts are that for birth-year 1917, the transition provision added a near-negligible \$17 per month to the basic 77-law benefit, and nothing to the basic 77-law benefit for any birth years after 1917. The Commission should have focused on the fact that Congress provided a transitional arrangement for 5 years, probably expecting that it would make a difference, and that it made a small difference in only one year.

Exhibit B-3 Benefit Chart of The Commission on the Social Security “Notch” Issue for Persons with Average Earnings, Retiring at Age 65.



Source: Computer files of Commission, available at www.ssa.gov.

7. Incomplete perspective on birth-year 1916 benefits The Commission notes repeatedly that the benefits for birth years just before 1917 were elevated by the operation of a flawed 1972 law and that they are therefore unsuitable as a reference point for the fairness of the benefits under the new law. The Commission is correct that this elevation occurred. What should be addressed, however, is that people were planning their retirement under the provisions of the 1972 law and the economic realities at the time, and that Congress intended to temper the transition to new benefit levels. And when Congress did this, there were some for whom the benefit under the new law with its transition formula was the same as the benefit under the old law. For example, persons retiring at age 62 with average earnings received exactly the same benefit under the transition formula as they would have under the old law, if the old law had still been applied. Clearly Congress used the old law as a reference in designing the transition formula. What’s more, the Commission should have been addressed, or at least noted, that *some* increase in the benefits for birth years just before 1917 should have been expected due to the inflation and increases in real wages that occurred.

Together, these factors make it clear that the Commission failed in many cases to focus squarely on the issue of importance, namely, whether the impact on the Notch beneficiaries was large relative to Congressional expectations, and whether the transition formula provided the degree of relief that Congress expected, and whether the results for most Notch beneficiaries were equitable.

4 Appendix to Commission Report–Congressional Intent

An Appendix to the report of the Commission is entitled “Congressional Intent Concerning the ‘Notch’ Issue: Legislative Background of the 1977 Social Security Amendments.” It is a valuable reference document on virtually all aspects of the Notch issue and is without equal when it comes to the background of the 1977 legislation. And, even though its purpose was not analytical in nature, it contains a good deal of insightful analysis.

The overview of the Appendix discusses the 1972 legislation, the economic conditions at the time, the change in 1977, the characteristics of the Social Security system after 1977, and then says:

The fact that Congressional intent was to implement a less generous benefit formula is, in a general way, consistent with the result that those in the notch years receive lower benefits than those in the prenotch years. However, there is no evidence that Congress directly focused on the question of comparative benefits for the two groups. The legislation did include a transition clause for individuals reaching age 62 in the first five years after implementation, but *this provision was aimed at protecting the benefit expectations of those individuals* rather than at providing any type of parity with those born in other years. (p. 3, emphasis added)

As to why Congress did not focus on comparative benefits, the Appendix only guesses. It does say that “examples could have been constructed” and that “[h]ad . . . examples been constructed, they would have shown much smaller differentials than those which actually materialized because the assumptions underlying the 1977 Amendments did not foresee the unprecedented inflation of the following several years.” (p. 4) On the question of the transition provision, its constraints are discussed on page 5 and the conclusion is: “Consequently, the transition formula often did little or nothing to lessen the differential between benefit levels for those born in and after 1917 compared with those born earlier.” This observation is consistent with a principal finding of the present study, that the transition formula did not do an acceptable job of “protecting the benefit expectations” of Notch individuals.

The observation of the Appendix that benefit differences projected at the time of the 1977 law would have been quite different from those that actually occurred is supported by a special table developed in 1994, on request, by the Social Security Administration. That table is shown below as Exhibit B-4. Since the table is somewhat difficult to interpret, the following explanation is provided. As indicated by the heading, the table focuses on persons with average earnings records who retired at age 65. The rows are for the year in which the person was born. The first row, then, is for a person born in 1917 who retired at age 65. This means that the person retired in 1982. Beyond the column of the year of birth, the table has two halves, a left half and a right half. The left half is developed for a future that would have evolved if 1977 expectations about future wage levels and price levels had been correct. The right half of the table is developed based on the future as it actually occurred. Since all of the figures in a given row are of the same vintage, no COLA adjustments need be made.

Now we need to talk about the columns in each half. The first column in each half is the initial benefit levels under the provisions of the 1972 law, applying that law to retirees of each birth year, even though the 1977 law did not actually apply to persons born after 1916. The second column in each half is the initial benefit levels under the 1977 law. Although neither the table nor the text addresses the role played by the transition formula, it is the case that the benefits generated by the transition formula are shown if they are higher. For example, on the right side of the table, the figure of \$535 for birth-year 1917 is from the transition formula. The corresponding figure from the basic 1977 formula would have been \$525. None of the other figures in subject column are from the transition formula. We have not found it possible to develop any information on the role of the transition formula in developing the figures in the second column of the left side of the table.

Because, as noted above, the table makes no adjustments for price level changes, benefits on one line can be compared only with other benefits on the same line. However, ratios of benefits on one line, such as those in the percentage difference columns, can be compared with those on other lines. The left side of the table shows that if the future had unfolded as was expected in 1977, the benefits under the 1977 law would have been in the range of 10 percent to 14 percent lower than the benefits under the 1972 law, had the 1972 law continued to be applied. On the right side of the table, we see that actually unfolded, the benefits under the 1977 law were from 13 percent to 30 percent below those implied by the 1972 law. For persons born in 1919, the middle year of the transition period, the reduction would have been expected to be 14 percent and it was actually 26 percent. These percentages (but not the absolute values underlying the percentages) would be roughly the same for persons with maximum earnings. They would be smaller for persons retiring at age 62 and substantially larger for persons working until the age of 70. In short, the benefit disparities between the 1972 law and the 1977 law were

substantially larger than anything Congress would have projected at the time the law was passed.

Exhibit B-4 Comparison from Special Commission study

Old vs New Law -- Benefit Differentials for Worker with Average Earnings Retiring at Age 65								
Birth Year								
	<u>Under 1977 projections</u>				<u>Under actual conditions</u>			
	Old Law	New Law	Diff. in %	Diff. in \$	Old Law	New Law	Diff. in %	Diff. in \$
1917	492	443	-10%	-50	614	535	-13%	-79
1918	530	460	-13%	-70	682	553	-19%	-129
1919	569	489	-14%	-79	733	542	-26%	-191
1920	605	522	-14%	-83	775	548	-29%	-227
1921	642	554	-14%	-88	816	576	-29%	-240
1922	681	587	-14%	-94	841	593	-29%	-248
1923	721	620	-14%	-101	894	626	-30%	-268
1924	763	655	-14%	-108	943	668	-29%	-275
1925	807	693	-14%	-114	1004	720	-28%	-284
1926	853	733	-14%	-121	1075	751	-30%	-324

Source: Computer files of the Commission, available at www.ssa.gov.

5 CRS Report on the Notch Debate

The Congressional Research Service of the Library of Congress has prepared Issue Briefs on the Notch issue. The most comprehensive we found is an update of February 24, 1995, entitled “Social Security Notch Debate,” prepared by David Koitz and Geoffrey Kollmann. In addition to references, this Brief contains four sections: (1) Summary, (2) Most Recent Developments, (3) Background and Analysis, and (4) Congressional Hearings, Reports, and Documents. For the most part, the included material is a valuable summary of events that have transpired and of positions that have been taken by various parties. The amount of analysis is limited. Certain observations are made below.

Background and Analysis Section, How the Notch Issue Arose

After reviewing a good deal of the history that led up to the Notch, this Brief says: “Although there has been little challenge to the long-term goal of the 1977 benefit rule changes, the early-year [apparently meaning the benefit reductions in 1982 and 1983 for persons retiring at age 65] benefit disparities resulting from [the benefit rule changes] have given rise to charges that the transition to the new system was unfair. Three factors are responsible for the disparities; two resulting directly from the rule changes themselves and a third from unanticipated economic conditions.” (p. 3)

The first factor discussed as responsible for the disparities is that the transition arrangement was “designed to put the new system in place quickly to stem the rapid rise in replacement rates.” The Brief then points out that even under a House version of the bill that had a 10-year transition period, a projection existed that most beneficiaries would be off the transition formula and on the new basic formula in a short number of years. More specifically, it was projected that 92 percent of beneficiaries would be off the transition formula in 5 years. It should be noted, however, that stemming the rapid rise of transition rates did not require substantial benefit reductions and that a desire to take a step quickly does not imply that the step will be a big one. Furthermore, weaning retirees quickly from a transition formula does not imply that their final resting place will be substantially lower than where they started. No evidence is provided in this section to show that Congress understood or intended that the benefit differences be as large as they were. Viewed in this way, “quickness” is not really a factor that explains the disparities of concern, and neither is a desire to stem a rise in replacement rates. In fact, in a subsequent paragraph, the Brief points out that “[n]o examples of the benefit levels or replacement rates for the 1980-1984 period were included in any of the reports or background committee documents leading up to the amendments.”

The second factor discussed as responsible for the disparities is that (a) the average earnings figure under the 1977 law is an average of indexed earnings while (b) the average earnings figure under the 1972 law was an average of nominal earnings. It then discusses that using an average of indexed earnings would increase the average earnings (relative to using an average of nominal earnings) for a person who had high earnings in his or her early years of work and lower earnings in the later years. However, it should be noted that the fact that one kind of average is used instead of another has nothing to do with whether any resulting disparity is substantial. What is important is how one translates an earnings average into a benefit level, not whether one uses one kind of average or another. The nature of the average is not responsible for the disparities of interest. This issue is discussed further in the second section of Appendix D.

The third factor discussed is the high and unanticipated level of inflation that occurred in the years after the passage of the 1977 amendments. As discussed in detail in this study, inflation and the accompanying rise in the levels of wages had a substantial

effect on the benefits received by retirees and on the differences among those benefits. This is the only factor identified in the CRS Brief that contributes to the substantiality of the disparities.

Background and Analysis Section, Arguments for and against Notch Legislation

This section of the Brief provides a reasonably thorough summary of the positions of those in favor of legislation to fix the Notch and of those who believe that no fix is needed. The Brief does not comment on whether any of the positions have merit.

6 AARP Position

The position of AARP on the Notch issue is spelled out in a short note available on its web site, entitled: “Social Security ‘Notch’: Facts Behind the Controversy.”

The note indicates that a Congressional error in 1972 allowed “extra” benefits for those born in 1912 through 1916, and that the correction in 1977 “gradually” adjusted benefit levels for those born after 1916. It says: “In order to avoid an abrupt change for those about to retire, Congress phased-in a new benefit formula . . .” (p. 1) Later on page 3, it indicates that the purpose of the “five-year” transition was “to ‘cushion’ the impact of the new benefit formula.” Nowhere does it discuss the extra benefits with any perspective, and nowhere does it point out or acknowledge that implementation of the new law was anything but gradual, that it did not avoid abruptness, that it helped for a very limited number of years, usually one or two, or that its cushioning role was *de minimus*.

Also on page 3, the note responds to the question: “Is my social Security benefit based only on my year of birth?” The answer given is: “No. Many factors are considered” including birth year, age at retirement, level of earnings, pattern of working, and level of inflation. In other words, complexity is thrown at the question, in hopes that it will go away. AARP could just as well have pointed to a dichotomy between birth-years 1916 and 1917. Then it could have said that once a birth year and a retirement year are established (which nails down a contained level of inflation), the benefit depends on an earnings average (which reflects any pattern of earnings that occurred). It does mention that separate attention is paid to situations involving disabilities, children, and survivors.

Beyond this, AARP repeats certain findings of the special Commission and says it supports the Commission’s report. It also points to financial difficulties being associated with any fix and threatens that the benefits of Baby Boomers would be affected. AARP’s note may contain *some* “Facts Behind the Controversy,” but it does not contain all of them. More important, it does not provide much perspective.

Appendix C

Technical Analysis

1.0 Introduction

The purpose of this appendix is to provide an independent economic assessment of the situation surrounding the Social Security Notch. Attention will be focused on the existence of the Notch, the conditions that led to the Notch, the factors that contributed to the size of the Notch, to the transition formula, to fairness issues surrounding the Notch, and to the apparent intent of Congress concerning the Notch. The purpose also is to provide documentation and support for the Report.

The focus is on traditional retirements beginning at age 62. No attention is given to special arrangements concerning federal employees, members of the military, or other groups. Neither is attention given to benefits for spouses, dependents, survivors, or the disabled. Further, the investigation does not cover the financial well being of the Social Security system or the various proposals that have been made to deal with the Notch. We believe that the task of deciding on a remedy and how it should be funded comes after the dimensions of the problem are understood.

A large body of literature already exists on the Notch and a great deal of information is available from the Social Security Administration, specifically on its web site. Also, the laws guiding the Social Security system are publicly available. Basically, that literature and those laws are adequate to allow an analysis of relevant issues and an understanding of them. With few exceptions, the figures, graphs, and charts shown in this study were developed in this study from formulas and basic data. The work of other researchers was used for confirmation purposes.

This study makes it clear that the Notch exists, that it is substantial, that the transition arrangement failed to provide a cushion, and that any reasonable process of tempering the movement to a new benefit structure would involve modifications in what was done.

2.0 Analysis of the Notch Issue

According to the GAO report, Congressional attention to the Notch issue began as early as September 1979, just 9 months after the 1977 law became effective. (GAO Notch Report, p. 42) Since then, it has received considerable attention. In hearings before the House Select Committee on Aging, May 15, 1986, as reported by GAO, the following example was given:

Two sisters, Edith and Audrey, started work at the same book bindery in southern California on the same day in October 1957. Audrey was slightly older, having been born in March 1916, than Edith who was born in June 1917. The two worked together at similar pay for twenty five years and in the summer of 1982, with Edith turning 65, both went to the Social Security office to claim their benefits. They were told that since the older Audrey had worked about eighteen months after her 65th birthday, there would be a slight difference in the benefit each received. The total lifetime earnings of the pair was almost identical differing only by about four per cent (in favor of the younger Edith). To their surprise, when they received notification of their benefit award, the difference was not slight. Instead, Edith (born in 1917) received a \$512.60 monthly award or \$111.80 per month less than Audrey (born in 1916) who received a higher benefit of \$624.40 per month. The difference was almost eighteen percent! (GAO Notch Report, p.14)

In all depictions of the Notch, whether verbal or graphic, it is common to select similar situations and compare them. No ideal way exists, however, to select similar situations. If two people reach the age of 62 in different years, then different years (and often different numbers of years) of earnings will be used to calculate their earnings averages, and these years will involve different price levels. Also, the earnings averages will go into different benefit formulas, and different COLAs will be applied after the benefits begin. To make matters worse, few people have the steady earnings histories that often are assumed. Actual earnings fluctuate and it is not uncommon for people to withdraw from the workforce for lengthy periods. Then too, other situations involve disabilities, survivors, dependants, and spousal benefits.

Nevertheless, indicators of what is happening can be constructed and meaningful comparisons can be made. Four principal situations are commonly examined. All four involve people with a steady stream of increasing earnings, with no gaps. The first two retire at age 62. One of these has earnings each year equal to the average earnings reported nationwide for Social Security purposes and the other has earnings each year equal to or greater than the maximum that is taxable for Social Security purposes. The second two retire at age 65, again, one having average earnings and the other having maximum earnings.¹⁹ According to the CRS Issue Brief, 60 percent of recipients retire at age 62. (CRS Report on the Notch, p. 8) This proportion, however, is somewhat uncertain. The report of the National Academy of Social Insurance gives the proportion

¹⁹ Other situations can be created. People can retire *after* age 65 and receive a boost in benefits. Also, minimum wage situations can be created and it is easy to create a wage series for people earning, say, 35 percent or 170 percent of the average. We have found that the picture painted depends heavily on the age of retirement but not on the earnings level.

at 33 percent in one place and 50 percent in another. (NASI Study, pp. 10 and 14) In any case, the proportion retiring by the age of 65 is undoubtedly quite high.

Once retirement ages and earnings levels are selected, retirements can be allowed in various years. All comparisons in this appendix assume that subject persons are born on January 2 of the year of birth²⁰ and retire in January of the year of attainment of age 62 or 65. In this way, situations are avoided in which one retiree is given credit for extra months of work and the other is not. For any year of retirement, the year of birth determines the benefit formula. Those born before 1917 use the formula of the 1972 law. Those born after 1916 use either the transition formula or the basic formula of the 1977 law, whichever is higher, except that those born after 1921 may use only the latter.

Given these decisions, the benefits for retirees with average earnings born in 1916 and retiring at age 62 in 1978 (calculated using the 1972 formula) can be compared with the benefits for retirees with average earnings born in 1917 and retiring at age 62 in 1979 (calculated using the relevant formula from the 1977 law). Two unwanted differences remain between these two cohorts. The first is that, according to a requirement that existed during the period covered, the retiree born in 1916 has 22 years of earnings averaged and the retiree born in 1917 has 23 years of earnings averaged. This effect tends to reduce slightly the benefit of the person born in the most recent year, and must be kept in mind.²¹ The second unwanted difference is that the benefits of the two retirees are in dollars of different vintages. With inflation, which was high in some years, this can make a meaningful difference. In order to eliminate differences due to inflation, all benefits in this study are expressed in 1988 dollars, correcting for price level changes with the Social Security COLA increases.²² We can then say that in 1988, at 1988 price levels, one retiree would be receiving \$X and the other retiree would be receiving \$Y.

Exhibit C-1 is a bar chart showing the benefits received by persons retiring at age 62 with average earnings and Exhibit C-2 shows similar benefits for persons retiring at age 65 with maximum earnings. In both cases, years of birth are shown on the horizontal axis. It is clear that the Notch is much bigger and more pronounced for persons retiring at age

²⁰ Births on January 1 are avoided because, for Social Security purposes, such people are considered to have been born in the previous year.

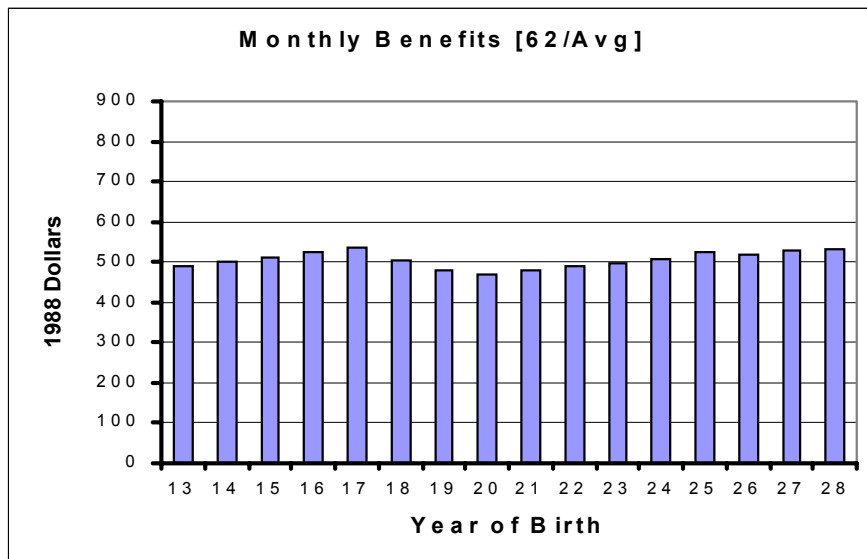
²¹ See section 2 of Appendix D for elaboration on this point.

²² Note that correcting for price differences with COLAs is slightly different from correcting directly with the CPI-W. The COLAs are derived from the CPI-W, with a lag, according to specific rules in the law. Prior to the 1986 Amendments, COLAs were not applied if they were less than 3 percent. COLAs are announced each year by the Social Security Administration, along with their effective date.

65 with maximum earnings, and this would be the case as well for persons retiring at age 65 with average earnings.²³

Another way of looking at the Notch is to look at replacement rates. The replacement rate is equal to the benefit received at the time of initial retirement divided by the earnings level in the year before retirement. Since these rates are ratios of dollars of the same vintage, no price level adjustments are needed. A replacement rate chart is shown in Exhibit C-3 for persons retiring at age 65 with average earnings. A chart for a person with average earnings was selected in this case because the denominator for a

Exhibit C-1 Monthly Benefits in 1988 Dollars for Persons Born in Various Years, Who Retired at Age 62 and had Average Earnings.



²³ For persons retiring at a certain age, the benefit comparisons for persons having average earnings are similar to, but somewhat lower than, those for persons having maximum earnings. For persons retiring at different ages, however, the benefit comparisons are quite different. In order to keep things simple, the comparisons shown in the exhibits are for age 62 with average earnings, and age 65 with maximum earnings.

Exhibit C-2 Monthly Benefits in 1988 Dollars for Persons Born in Various Years, Who Retired at Age 65 and had Maximum Earnings.

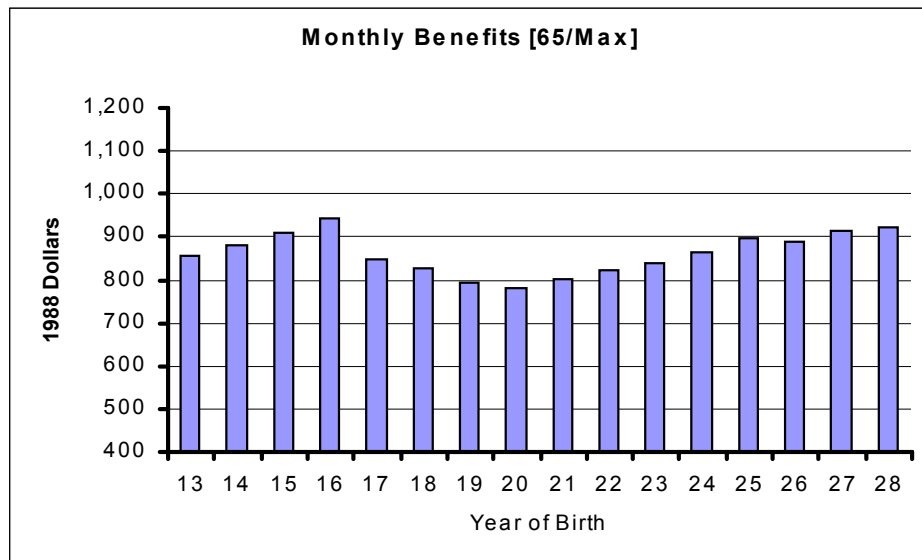


Exhibit C-3 Replacement Rates for Persons Born in Various Years Who Retired at Age 65 and had Average Earnings.

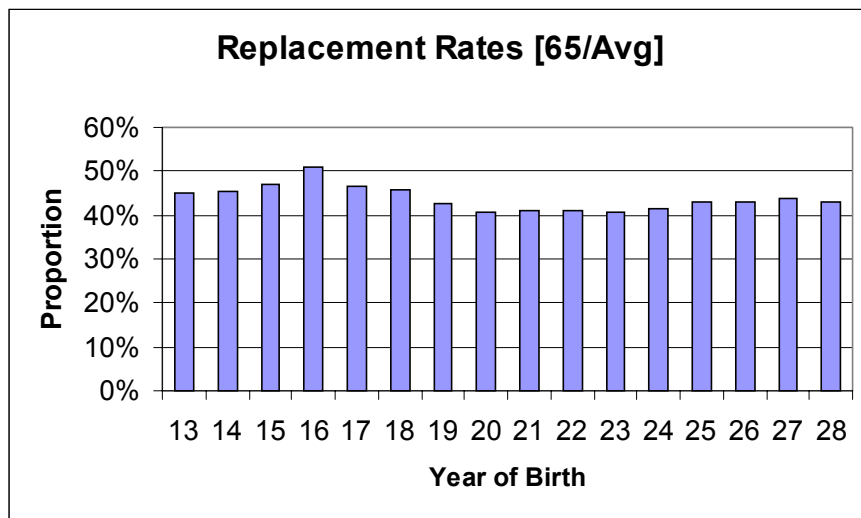
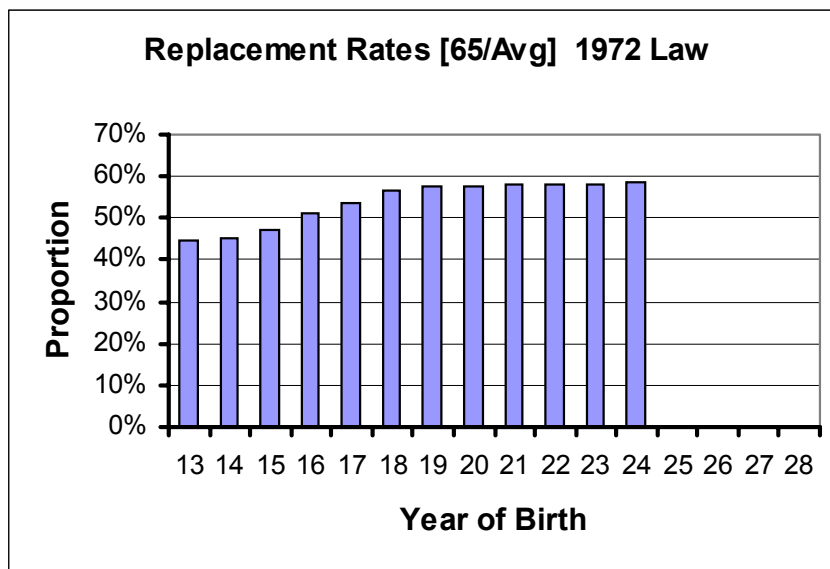


Exhibit C-4 Replacement Rates for Persons Born in Various Years Who Retired at Age 65 with Average Earnings, All Under the 1972 Law.



maximum-earnings ratio is an administered figure that can change abruptly. It can be seen that the rate was rising through birth-year 1916 and then declined to a lower level. The goal of the Social Security system has been to achieve a replacement rate of 42 percent for this situation. When the level was rising, as shown for birth years through 1916, it was a matter of great concern. This is one of the concerns that led to the 1977 Amendments. More specifically, the amount of money being paid out in benefits exceeded the amount coming in, which ultimately could lead to a deficit situation. A rising replacement rate was one cause of the problem. Exhibit C-4 shows what the replacement rates would have been if the 1972 law had continued to be applied. It can be seen that the rapid growth would have stopped and become stable at about 58 percent, at least for a few years. In any case, the level under the 1972 law was above the desired level of 42 percent.

The benefit charts and the replacement-rate charts tell similar stories. Our preference is to limit review to the benefit charts. We note that the replacement rate, being a ratio of two numbers, each of which has its own influences, is not the unmixed blessing that its definition suggests. For present purposes, the benefit levels are more meaningful, focusing, as they do, directly on the amount of money that beneficiaries actually receive. Looking at replacement rates may be more meaningful for longer-term evaluations than for the consideration of year-to-year changes. They might also be useful for establishing the level of the benefit formula itself.

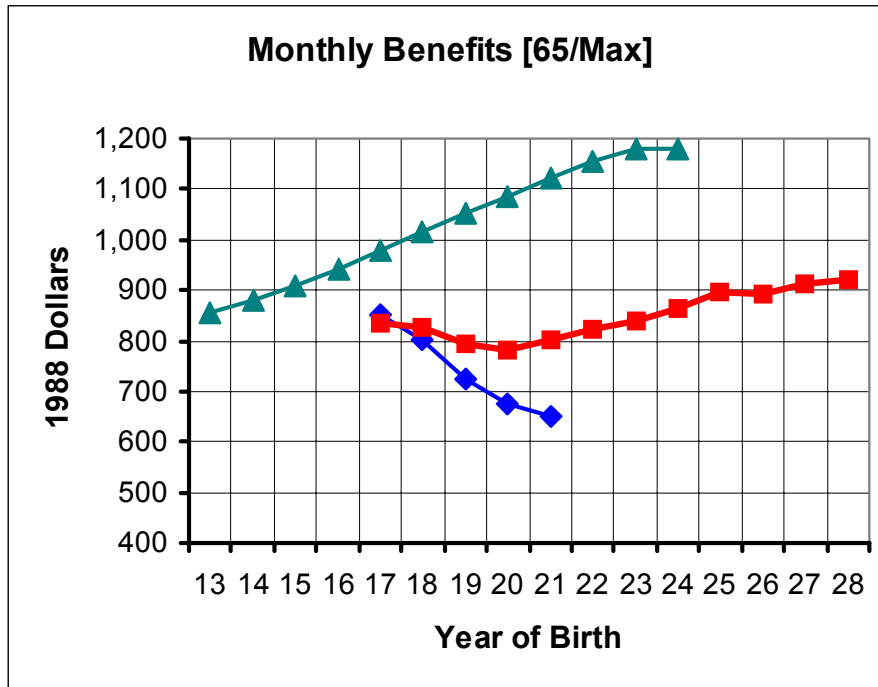
The benefits shown in Exhibits C-1 and C-2 are the net result of the application of three different formulas. The first is the formula of the 1972 law, used for birth-years

through 1916. The second and the third are from the 1977 law. The transition formula is used for birth-years 1927 through 1921, but only if it yields a higher benefit than the basic 1977 formula. Otherwise, the basic 1977 formula is used for birth-years after 1916.

2.1 Retirements at Age 65

We have found that the relative roles of the three formulas can be seen much more clearly if a different representation is used. Accordingly, Exhibit C-5 is a graph of the benefits under all three formulas for persons having maximum earnings and retiring at age 65. A corresponding graph could be shown for persons having average earnings. It turns out that the two graphs are similar in shape; there is nothing to be gained from displaying both of them. The actual numbers behind all charts and graphs displayed in this study are provided in Exhibits E-2 to E-4 of Appendix E. All figures were developed from the formulas behind the benefits, rather than from tables, and are unrounded.

Exhibit C-5 Graph of Benefits for Persons Born in Various Years Who Retired at Age 65 with Maximum Earnings, Showing Three Formulas.



In Exhibit C-5, the top line, of **triangles**, shows the benefits provided by the 1972 law for all birth years, even though it is applicable only to birth years before 1917. The short line, of **diamonds**, shows the application of the transition formula. It is applicable only to birth years 1917 through 1921, and is shown only for those years. The middle line, of **squares**, shows the application of the basic 1977 formula

Several observations can be made immediately.

1. Making “vertical” comparisons between the lines, as in birth-year 1917, is perhaps the cleanest and most informative comparison available. It is somewhat different from the more common, “horizontal,” comparison between the benefit levels of cohorts born in adjacent years. The vertical comparison focuses attention on differences in formulas under identical conditions and compares what would in fact have happened if the old law had been used, which is exactly what people were expecting. It also avoids both dollars of different vintages and differences in periods covered by earnings averages.
2. The benefit levels under the 1972 law rise through birth-year 1916 and continue to rise thereafter. Although this is the rise that the 1977 law was intended to fix, it should be noted that the rise is not all troublesome. A basic characteristic of the Social Security system, under both the 1972 law and the 1977 law, is that benefits tend to rise with prices and real wages.
3. The drop in 1917 from the 1972 law (the triangles) to the basic 1977 law (the squares) is substantial. For the situation shown, the drop is from \$977 per month to \$835 per month, a reduction of 14.5 percent. For those born in 1920, the drop is even more substantial, a reduction of \$306, or 28.2 percent.
4. The transition formula (the diamonds) provides higher benefits in only one birth-year, 1917. In the other years, even though the transition option was available, the benefit provided by it is lower, in several years much lower, than that provided by the basic 1977 formula itself. In the legislative history leading up to the 1977 law, there is ample evidence that the attractiveness of the transition arrangement was expected to taper off, but none that it was expected to be this precipitous.
5. In the birth year when the transition formula does provide higher benefits, the extent of its helpfulness is almost negligible. The drop in 1917 without the transition provision is \$142 per month, and the drop with the transition provision is \$127 per month.
6. The benefit line under the basic 1977 law (the squares) begins in birth-year 1917 and declines before it rises. One might think that once the shift was made to the formula of the 1977 law, the line would be at a low point and would begin a

secular rise. Such behavior would be in line with the general idea behind the design of the Social Security system that initial benefits tend to rise with prices and real wages. Instead, the benefits declined further, making the Notch worse.

The reasons for the further declines in 1918, 1919, and 1920 reflect the effects of the computational procedures used, combined with the unusual economic circumstances at the time. For purposes of tracking the various factors involved, let's consider the difference between the birth-year 1918 retirement (which occurred in January of 1983) and the birth-year 1919 retirement (which occurred in January of 1984).²⁴

First, the earnings behind the 1983 benefit are averaged over 24 years and the earnings behind the 1984 benefit are averaged over 25 years. This means that the boost in the earnings average that might be expected for a higher-inflation, higher-real-wage block of working years, shifted forward one year for the 1984 retirement, and certainly from the 10.19 percent increase in earnings for 1983 (the last year counted in the 1984 retirement), is diluted somewhat by the increase in the number of computation years. This dilution is explained further in sections 2.2 and 2.3 of Appendix D.

Second, consider the indexing scheme. The earnings behind the 1983 benefit are indexed on the average nationwide earnings in 1978 and those behind the 1984 benefit are indexed on the average nationwide earnings in 1979. These are the years the respective retirees reached age 60. In effect, one is in 1978 dollars and one is in 1979 dollars. The level of average nationwide earnings increased 8.75 percent in 1979. The level of maximum reported earnings increased 29.38 percent in 1979. Recognizing the lengthening of the averaging period and applying the 77-law indexing scheme to the two earnings series, the AIME for the 1984 retirement turns out to be 10.6 percent higher than that for the 1983 retirement. This is a healthy increase, not one that would be expected to lead to lower benefits.

Now, the 1983 retirement uses the 1980 benefit formula and the 1984 retirement uses the 1981 formula. The difference between these two formulas is that the bend points in the 1981 formula have been adjusted upward by 8.8 percent to account for the increase in average nationwide earnings. This adjustment allows the formula to recognize an increase in the AIME without inflating it.²⁵ Applying the

²⁴ Both of these retirements are at age 65. The fact that January was used simply means that the benefit formulas used are not adjusted for the subsequent June COLAs. Once the benefits are calculated, however, eligible COLAs are applied.

²⁵ In making a year-to-year comparison between two retirees and focusing on proportionate increases, the increase in the benefit will equal the increase in the AIME only if the increase in the AIME is equal to the increase in the average nationwide earnings (which are used to adjust the bend points). If

(continued...)

formulas to the respective AIME figures gives a benefit for the 1983 retirement of \$520 and for the 1984 retirement of \$569, the latter being 9.4 percent higher. Just on their face, these results appear to make some sense: the 1984 retiree worked through the year 1983, which had a 10.19 percent increase in maximum earnings. Accordingly, the AIME of the 1984 retiree was higher (reflecting inflation, increases in real wages, and any other earnings increases in 1983), and his or her benefit was higher. But a problem exists and an additional step needs to be taken. The *problem* is that the AIME for the 1984 retirement does not reflect the inflation and real wage increases that occurred between the indexing year and the formula year. Rather, its level hinges in substantial degree on the level of average nationwide earnings in 1979. Said another way, the 1983 retiree puts an AIME in 1978 dollars into a 1980 formula and the 1984 retiree puts an AIME in 1979 dollars into a 1981 formula. There is a gap between the vintage of the AIME and the vintage of the formula. The *additional step* needed is that these benefit figures (\$520 and \$569) have not had their COLAs applied.

Thus, as a third factor, consider the COLA process. In accordance with Social Security rules, COLAs are applied to move the formula-year benefit level to the level of prices at the time of retirement. This would move the benefit for the 1983 retirement from 1980 to 1983 and the benefit for the 1984 retirement from 1981 to 1984. In order to allow comparisons, however, it is helpful to move both benefits from the time of their formulas to January of 1984. The 1983 retirement receives a COLA of 14.3 percent for June 1980, 11.2 percent for June 1981, 7.4 percent for June 1982, and 3.5 percent for January of 1984, for a total COLA of 36.4 percent. There was no COLA in 1983 due to an adjustment in dates. The 1984 retirement receives, similarly, COLAs of 11.2 percent, 7.4 percent, and 3.5 percent, or 22.1 percent. The result is a benefit for the 1983 retirement of \$734 and for the 1984 retirement of \$704, the latter being 4.1 percent *lower*. (These figures are in 1984 dollars; the figures shown in Exhibit C-5 are in 1988 dollars.)

The reason for the 1984 retiree having a *lower* benefit than the 1983 retiree, then, is that the 1983 retiree received a direct application of the 14.3-percent COLA in 1980, and the 1984 retiree did not. Nothing in the AIME of the 1984 retiree made up for this COLA. His or her AIME was in 1979 dollars and the benefit formula (which was not adjusted for inflation) was for 1981. By implication, since the COLA was based on the inflation at the time, we can say that nothing in the AIME

²⁵(...continued)

the increase in the AIME is larger than the increase in the average nationwide earnings, the benefit will be influenced by the marginal benefit rate in the formula, which is 15 percent in the case being considered. For example, suppose the AIME in for person A is \$600. There is a benefit associated with this AIME. Now suppose the average nationwide earnings figure increases 7 percent. If the AIME for person B, in the next year, is \$642 (7 percent higher than the AIME of person A), then person B's benefit will be 7 percent higher. But if person B's AIME is \$652, then person B's benefit will be up 7 percent *plus* \$1.50 (\$1.50 being 15 percent of \$10).

of the 1984 retiree accounted for the inflation in 1980. It appears that the AIME let the retiree down. Further examination is needed.

In the Social Security system, the benefit formulas depend on the AIMEs to yield appropriate benefits. The concept is that the AIME will tend to reflect prices and real wages. When such an AIME is entered into a benefit formula, the benefit will also reflect prices and real wages. Then, after the retiree begins receiving the benefit, it is corrected each year for inflation. In short, the benefits are expected to reflect prices and real wages at the time of retirement, and inflation only thereafter.²⁶

Now consider what is really happening. The levels of the AIMEs tend to reflect prices and real wages in the years of indexing, 1978 and 1979 in the examples being considered, with some recognition of the nominal earnings in the years subsequent to these years. Then two further steps are taken. First the AIMEs are put into 1980 and 1981 benefit formulas. Second, COLAs are applied to move the benefits from these years to the years of actual retirement. Laid out in this way, it becomes apparent that, except in a minor way, neither inflation nor real wage increases in the years between the indexing years and the formula years are recognized anywhere. Furthermore, since the COLAs are based on prices and not on real wages, the real wage increases between the year of the formula and the year of actual retirement are similarly not recognized anywhere. Since retirements at age 62 do not experience this latter failure-to-recognize, one of the things this means is that the gain from working past age 62 is smaller than under either the 1972 law or the system concept outlined above.²⁷

Under steady state conditions, the failure to recognize inflation and real wage increases in the years between the indexing year and the formula year could be viewed as a simple lag in the AIME level. Then if the benefit formula applied to the AIME were designed to correct for this lag, one could argue that the resulting benefit level is appropriate. But when the rates of increase in the levels of prices and real wages fluctuate, as they did in particular during the Notch years, these failures-to-recognize can cause differential treatment of persons retiring in different years. Dealing only with inflation increases, as represented by the COLAs, and

²⁶ For this concept to apply strictly requires that inflation and national productivity work their way into reported earnings levels. For the most part, competition in the economy tends to bring this about. In most years, the earnings increases are somewhat larger than inflation. Exhibit E-1 of Appendix E shows the figures for all years.

²⁷ Some of these effects have been highlighted by other investigators. The GAO report, for example, says “under the new system, benefits do not rise as rapidly after age 62 as a result of additional work. This is due to indexing of the earnings’ record under the wage-indexed computation” (p. 42) The fact that the earnings are indexed on the year of age 60 instead of the year of age 62 (the year of the formula) does not contribute to a smaller benefit enhancement for working past age 62. The failure to recognize real wage increases after the year of age 62, however, does, as explained in the text.

neglecting compounding, Exhibit C-6 shows for retirements at age 65 the cumulative inflation increases that are largely unrecognized because of the gap between the year of indexing and the year of the formula.

Exhibit C-6 Unrecognized Inflation, Retirements at age 65

Birth year	Gap Years	Unrecognized Inflation
1915	1975-76	14.4 percent
1916	1976-77	12.3 percent
1917	1977-78	12.4 percent
1918	1978-79	16.4 percent
1919	1979-80	24.4 percent
1920	1980-81	25.5 percent
1921	1981-82	18.6 percent
1922	1982-83	7.4 percent

It now becomes clear why birth-year 1917 retirees have higher benefits than birth-year 1918 retirees. Specifically, birth-year 1918 retirees experienced unrecognized inflation of 16.4 percent and birth-year 1917 retirees experienced unrecognized inflation of “only” 12.4 percent. For similar reasons, birth-year 1919 and 1920 retirees had even lower benefits.

In all cases, a combination of factors is weighed together to determine relative benefit levels, including the characteristics of the indexing scheme, the year of the benefit formula, the way earnings are recognized in the formulas, the relative roles of inflation and changes in average national earnings, and the way COLAs are applied. In considerable degree, however, the reason for the continued decline in the 77-law benefits after the initial reduction was the failure of the AIMEs to keep up with prices and real wages, and the failure of the COLAs to correct for it. And, *a fortiori*, this failure causes benefit disparities when prices and real wages rise at disparate and uneven rates. The biggest part of the problem is the 2-year gap between the year of indexing and the year of the benefit formula. A contributing part of the problem is the gap between the year of the benefit formula and the year of retirement.

As indicated above, these observations have been discussed with reference to the graph for persons retiring at age 65 with maximum earnings, but they apply as well to persons with *average* earnings, retiring at the same age. Though not shown, the graph for the persons with average earnings is a virtual mirror image of the one for maximum earnings, shown above. Some differences in absolute magnitudes exist, but not in shape or relative values.

2.2 The Transition Formula's Ineffectiveness

Shown more clearly in Exhibit C-5 than in other methods of display, the failure of the transition formula to provide relief is an important development. In order to understand why this occurred, it is necessary to review the details of the transition formula and the way in which it was applied. In order to allow attention to something concrete, consider the transition formula as applied to a particular situation, a person born in 1917 and retiring at age 65 in 1982. Twenty-three computation years are required. Assuming earnings levels increased steadily over time, this means that the earnings in the years 1959 through 1981 will be averaged and divided by the number of months (276), to get the AME. Whether this person had average earnings or maximum earnings does not matter.

If the 72-law formula were to be used to calculate the benefits, the formula would be applied to the AME just developed, or the benefit would be looked up in a table. If the retirement is occurring before June of 1982, it is the June 1981 table that would be used. Keep in mind that under the 1972 law, these tables were updated each year for inflation. Applying the June 1981 table yields, therefore, a larger benefit than would using the June 1980 table, which in turn would give a larger benefit than would using the June 1979 table, and so on. Because inflation was high in these years, substantial differences exist from table to table.

Now consider the transition formula. For the person being considered, who retires at age 65 in 1982, the transition formula specifies that earnings in the years beyond the year of the age of 61 cannot be used in the AME figure. So, a 72-law person would use the years 1959 through 1981, but the transition person cannot use 1979, 1980, or 1981. Excluding these higher-earnings years pulls the average down. This would be true even if the earnings in these years were no higher than the earnings in 1978. But, to make the outcome worse, the earnings in these years did increase, much more so than anyone anticipated at the time. The *average* earnings increased 8.75 percent in 1979, 9.01 percent in 1980, and 10.07 percent in 1981. The *maximum* earnings increased 29.38 percent, 13.10 percent, and 14.67 percent in these same years, respectively. Under the concern that inflation was being double counted, it may be that Congress wanted to exclude the effects of inflation on earnings, but it excluded more than just the effects of inflation, it excluded the earnings in *toto*.

However, the story does not end here. The Social Security rules still require the number of years in the average to be 23. In order to have 23 years in the average, the person being considered must go back and pick up the early years of 1956, 1957, and 1958, which most surely will be lower-income years. For example, the *maximum* earnings in 1980 was \$25,900 while the maximum in 1957 was only \$4,200. Similarly, the *average* earnings in 1980 was \$12,513.46 while the average in 1957 was only \$3,641.72. Thus, relative to the continued application of the 1972 law, the averaging process for the average wage earner under the transition formula requires dropping three years in the \$12,500 range and picking up three years in the \$3,600 range. The end result is that under

the transition formula, the years averaged are 1956 through 1978, which yield a substantially lower AME.

We believe that this averaging process raises a serious question. In order to keep inflation from having such a strong effect on benefits, 3 recent years were purposefully excluded from being included in the earnings average. But the exclusion process not only kept inflation from having an effect, it also kept any inflation-free version of the earnings from being recognized. And beyond this, it seems unreasonable on its face to require as well that three earlier years of earnings be included in the averages instead. One can't help but wonder if anyone at the time understood that this was going to be the effect of the definitions guiding the calculations. We have not found this issue discussed in the literature.

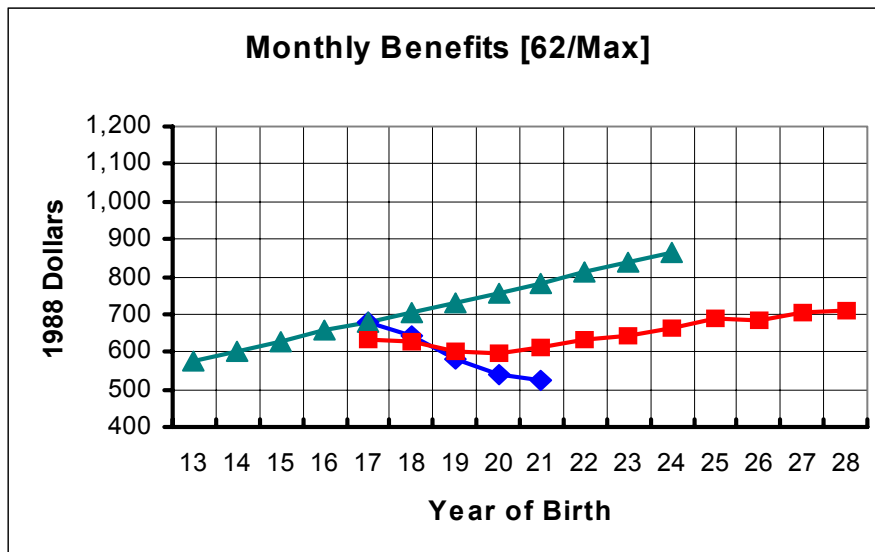
The transition formula contains one more difference. Once the AME is calculated for a person using the transition formula, the 1977 law specifies that the benefit will be looked up in the June 1978 table, which is at a lower inflation level, and that this retiree not receive any COLA increases until the year in which the age of 62 is reached. Since the person in our example reaches age 62 in 1979, this constraint is ineffective. But for persons retiring at age 65 after 1982, who still have to use the June 1978 table, this constraint has a further limiting effect on the transition formula.

The low level of the transition benefit in birth-year 1917 in Exhibit C-5 is due to excluding 3 current earnings years and picking up 3 historic earnings years. The rapid decline in the transition provision after birth-year 1917 is due to the prohibition on COLAs between 1978 and the year of reaching age 62, which were sizable.

2.3 Retirements at Age 62

Exhibit C-5 was for persons retiring at age 65 with maximum earnings. Exhibit C-7, shown below, is for persons retiring at age 62, also with maximum earnings. This will allow further insight on the Notch issue. The meaning of the lines is the same as in Exhibit C-5. Again, a graph could be shown for persons retiring at age 62 with *average* earnings, but nothing would be gained.

Exhibit C-7 Graph of Benefits for Persons Born in Various Years Who Retired at Age 62 with Maximum Earnings, Showing Three Formulas.



The following can be said, in part by comparing Exhibit C-7 with Exhibit C-5.

1. For persons retiring at age 62, the transition formula kept the benefits for those born in 1917 at exactly the same level as they would have been if they had been permitted to continue using the 72-law formula. This was part of the design of the 1977 law. Therefore, the transition formula tempered 100 percent of the impact for these cohorts.
2. If the benefit level for those born in 1917 (\$680, under the transition formula) were to be compared to the corresponding benefit for those born in 1916 (\$660, under the 72-law formula), which is a typical kind of Notch comparison, it would show that the effect of the transition formula was to allow an *increase* in benefits of \$20. This observation lends support to advantages of focusing for a give birth year on the differences between the various formulas.
3. Even if the transition formula did not exist, the immediate benefit reduction for those born in 1917, the first year under the new law, would have been relatively moderate. In the above graph, the 1972 law gives benefits of \$680 and the basic 1977 law gives \$634, a 6.8 percent reduction.
4. The transition formula in this case has an effect for only 2 years. It is apparent that it would take only a slight modification of the transition formula to lift the benefit and allow an intersection with the 1977 law in birth-year 1921, which would give 5 years of smoothing.

5. When comparing Exhibit C-7 with Exhibit C-5, an obvious question becomes: For any specific birth year, why is the drop in benefits from the 1972 law to the 1977 law so much greater for those retiring at age 65 than for those retiring at age 62? After all, age 65 does happen to be the standard age of retirement.²⁸ Additional perspective on this question is developed in sections 2 and 3 of Appendix D.

Consider persons born in 1917. In going from the 72-law formula to the basic 77-law formula (without considering any role for the transition formula), persons retiring at age 65 go from a benefit of \$977 to one of \$835, a drop of \$142, or 14.5 percent. On the other hand, persons retiring at age 62 go from a benefit of \$680 to one of \$634, a drop of \$46, or 6.8 percent. Both comparisons are for persons with maximum earnings.

Consider first a person retiring at age 62 (Exhibit C-7). Assuming steady increases in earnings, the earnings to be recognized under both laws are for the years 1956 through 1978. *Under the 1972 law*, an average of nominal earnings is calculated and benefits are looked up in a retirement-year table. When such an average is calculated, the earnings of all years receive the same weight. *Under the 1977 law*, the first step is to index the earnings on 1977. The earnings, then, can be viewed as expressed in 1977 dollars. Next, an average is calculated, including the earnings for 1978 at their nominal (unindexed) value, and a benefit is derived from the 1979 formula. No COLAs are needed since the year of the formula and the year of retirement are the same. When this is done, price and real wage increases are fully recognized through 1977, with some influence from the nominal earnings in 1978. There is no recognition of the increases in prices and real wages between the indexing year (1977) and the formula year (1979). If the benefit is at the intended level, then, or at the intended replacement rate, it must be the case that the benefit formula has been adjusted upward to account for the two missing years. This may be the process that led to the \$46 difference noted above. The reason for selecting these indexing and formula years appears to have been administrative convenience. (GAO Notch Report, p. 32 fn.7).

Now consider the same person retiring at age 65 (Exhibit C-5). The years averaged this time are 1959 through 1981, a period of equal length but 3 years more recent. *Under the 1972 law*, as before, an average of nominal earnings is calculated. All of the years receive the same weight. Then, based on this average, the benefits are looked up in a retirement-year table. *Under the 1977 law*, the earnings, though for a period 3 years more recent, are indexed on the same year-

²⁸ Persons retiring at age 62 instead of at the full retirement age (65 during the period of this study) have their benefits multiplied by an actuarial factor of 0.8. Persons retiring after full retirement age have their benefits multiplied by an actuarial factor greater than one, to account equitably for the delay.

1977 used for the age-62 retirement. Therefore, the earnings average reflects prices and real wages only through 1977, and its increase may be small, as shown in section 3 of Appendix D. Then the benefit is calculated with the same 1979 formula. To the limited extent to which the earnings average does increase, the benefit will increase only according to the marginal benefit rate in the formula, which may be 15 percent. The result is a small benefit increase, to which COLAs will be applied. And since COLAs do not account for increases in real wages through the year of retirement, the final benefit is depressed relative to the recognition of prices and real wages that occurs in the 72-law procedure.

The question being addressed is: Why is the Notch larger for age-65 retirees than for age-62 retirees? The reason is found in the way inflation and real wage increases are recognized. Specifically, three factors keep down the final benefit for the age-65 retiree. (1) The earnings are indexed on the year of age 60 and do not recognize the level of prices and real wages over the entire period worked. (2) The earnings average goes into the same formula as for the age-62 retirement, which has a low marginal benefit rate. (3) The COLAs applied do not recognize increases in real wages. Because these factors hold down the relative benefit for the age-65 retiree, the benefit is lower and the Notch is bigger. It has been pointed out that these factors may be the reason the 1977 law increased the benefit credit for working past the age of 65.²⁹ This, however, does not solve the problem.

2.4 Congressional Intent

GAO says the “transition rules were expected to smooth the transition from the old (pre-1977) to the new (post-1977) formula, gradually reducing the levels of unanticipated overcompensation for succeeding retirees.” (GAO Notch Report, p. 15) It further says “[d]uring the debate on the 1977 Amendments, it was generally anticipated that the phase-in would prevent a significant drop in the benefit levels of retirees in the transition period.” (*Ibid.* p. 39) In the end, GAO expresses the “view” that “with the benefit of at least 9 years’ hindsight it appears that it might have been better to have allowed the inclusion of post-age 61 earnings in the transitional guarantee computation.” (*Ibid.* p. 90)

The CRS Issue Brief is relatively silent on the question of intent, except that it does refer to “various reports” cited by the National Committee to Preserve Social Security and Medicare to the effect “that Congress probably expected benefit levels to rise (albeit more slowly) from one cohort to the next.” (CRS Report on Notch Debate, p. 5) In the same place, it says the National Committee argues “that the ‘true’ intent of Congress was to have benefits rise from one cohort to the next, but not as fast as under

²⁹ Persons reaching the age of 62 prior to 1979 received a 1 percent (1/12 of 1 percent per month) boost in benefits for each year worked past the age of 65. Those reaching age 62 in 1979 through 1986 received a 3 percent (1/4 of 1 percent per month) benefit boost. The size of the boost increased further for those reaching age 62 after 1986. No benefit increase is available for working past the age of 70. (OADSI Digest, p. 24)

the old law.” We have not found papers to support this position. It may be noted, however, that a process of substantial declines in benefits would not be the normal way of tempering the effect of changes. What would be more normal would be any one of: (a) small benefit declines, (b) unchanged benefits instead of growth, or (c) slowing the growth rate.

The one place that summary statements on intent might have been expected would be in the Final Report of The Commission on the Social Security “Notch” Issue. It chose instead to argue on its own that the Notch was “appropriate” and that the benefits before the Notch were too high. This is particularly strange because the Commission sponsored preparation of a detailed Appendix entitled “Congressional Intent Concerning the ‘Notch’ Issue: Legislative Background of the 1977 Social Security Amendments.” That Appendix says “Congressional intent is sometimes clearly delineated in the legislation itself or in the Committee reports and floor debates accompanying the consideration of a measure. This is not the case with respect to the notch issue.” It then says “[i]n the absence of any clear statements of intent, this paper attempts to provide an indirect analysis of Congressional intent by examining the context surrounding the 1977 Amendments in addition to the official legislative history.” (Social Security Commission Final Report Appendix, p. 6) Accordingly, 43 pages of step-by-step review and analysis are provided.

On page 3, the Appendix says “there is no evidence that Congress directly focused on the question of comparative benefits for the two groups,” those born during the Notch years and those born before the Notch years. Then it says, however, that “[t]he legislation did include a transition clause for individuals reaching age 62 in the first five years after implementation, but this provision was aimed at protecting the benefit expectations of those individuals rather than at providing any type of parity with those born in other years.” This contrast plays out through the entire Appendix. The feeling of the authors seems to be that the Notch question focuses on the difference in benefits between different people, subject to the pre- and post-1977 formula, and that this is somehow fundamentally different from focusing on the difference in benefits for the same person provided by two different formulas. We view this separation between two ways of looking at the matter as somewhat artificial and not particularly meaningful. Much of the analysis presented above focuses on the difference between two curves for a particular birth year. This comparison is arguably more meaningful because it focuses directly on what people would have “expected” under the old law and compares it with what actually happened under the new law. In general, assuming an upward trend in the benefits under any one formula, focusing on horizontal differences presents a biased estimate of the effect of any new formula, relative to what should have been expected under the old one.

The Appendix also cites the recommendations of two advisory councils (Hsiao I and Hsiao II, named after the person who headed the panels) and the Senate Finance Committee. The Hsiao I council said:

The consultants have no intention of reducing benefits when the new formula produces a lower result than the old one. It is clearly important

that the new beneficiary of year y actually receive the greater of the new-formula PIA [Principal Insurance Amount] and the old-system PIA. For those becoming beneficiaries after year y the same comparison is to be made and the greater benefit granted; with the understanding, however, that the old-system benefit table will not be updated for CPI changes after year y . (Social Security Commission Final Report Appendix, p. 20)

This scheme would have been kinder to the Notch beneficiaries because it has fewer constraints than the law as it was finally enacted. In particular, this scheme does not prevent recent-year earnings from being used.

The Hsiao II panel recommended “the payment of a blended benefit comprised of an increasing percentage (20, 40, 60, and 80 percent) of the new law benefit and a decreasing percentage of the old-law benefit.” (*Ibid.*, p. 22) This also would have provided much more cushion than the law that was actually enacted, although the authors of the Appendix insist on pointing out that a scheme such as this would not focus on comparisons between cohorts born in adjacent years.

At a later point, the Appendix summarizes the Senate Finance Committee report as describing “the purpose of the transition clause as being ‘to protect the benefit rights of people who are now approaching retirement and whose retirement plans have taken Social Security benefits into account.’” The writers again indicate that this is not directed at comparing adjacent cohorts but “appears designed to address the expectations issue.” (*Ibid.*, p. 34) Precisely, and the expectations issue is at the heart of all questions about the Notch issue, going as it does to what people would be entitled to expect and to what they actually received. Then on page 39, the Appendix says again: “The design of the transition clause appears from the legislative history to have been aimed at the question of preserving individual expectations rather than at avoiding differentials.” Again and again, the Appendix tries hard to avoid what may be the purest form of the real issue.

Clear quotes on Congressional intent have not been found. Congress did give attention to the benefit reductions under the new law, however, and it seems apparent that the intent was to provide a smooth transition. This the transition formula did not do.

3.0 Conclusion

The review of the Notch in this report has examined the evidence that the Notch exists and that its size is not negligible. This was done by reviewing work done by others and by displaying the dimensions of the Notch graphically. Basically, nearly all reviewers agree that a Notch exists. The Commission on the Social Security “Notch” Issue “confirms” its existence and speaks of benefits “far” less generous than under the old law. It also acknowledged that the benefits “do, in fact, drop swiftly, [and] then move upward again.” (Social Security Commission Final Report, pp. 15, 2, and 4) Similarly, the National Academy of Social Insurance agrees that the benefit differences “were larger than had been expected” and provided tables showing its magnitude. (Academy, pp. 1, 7, 36-7)

The place where some of these prior studies differ from the present one is in their conclusion regarding whether the Notch is fair and equitable and justifiable.

The charts and graphs presented in this study show as well that the Notch exists. Exhibits C-1, C-2, C-3, and C-4 show the Notch in terms of relative benefit levels and replacement rates. Then Exhibits C-5 and C-7 show the magnitude again and allow comparisons not only between adjacent cohorts, but also directly between the benefit levels actually received and those that would have been received under the old law. These latter comparisons, which are absent from other analyses, allow the relative roles of all three formulas (1972 law, transition, and basic 1977 law) to be viewed separately and allow a clearer picture of what near-retirees should have been anticipating under the 1972 law.

All of the comparisons show, and this report agrees, that the benefits accorded the last retirees under the 1972 law were comparatively generous, particularly due to high inflation at the time, and thus that a high reference point existed for comparison purposes. But reviewers of this evolution generally fail to point out that part of the rise under the old law should be viewed as natural and equitable since a fundamental characteristic of the Social Security system, under all formulas, is that benefits tend to rise with real wages and inflation. Also, the inflation that caused the 72-law benefits to rise was part of the reality of the economic environment within which retirement decisions were being made at the time.

This report identifies a number of additional factors associated with the Notch. Primary among them are the following:

1. The ineffectiveness of the transition formula. The transitional formula, provided by Congress to smooth the transition to the new benefit levels, failed almost completely to provide a cushion. The transition formula helped in one or sometimes two years, and the amount was strictly limited. Exhibit C-5 shows, for example, that for maximum-earnings persons born in 1917 and retiring at age 65, the benefit drop without the transition formula would have been \$142 per month, and with the transition was \$127 per month. Persons born in subsequent years and retiring under the same conditions, received no help at all.

- **Disallowance of after-62 earnings.** One reason for the transition formula's ineffectiveness was its basic construction. It disallowed earnings averages from including years after the age of 62, thus not only excluded the effect of wage inflation in those years, but also excluded any inflation-free version of those wages. Therefore, for those retiring at the age of 65 or later, the retiree's average earnings figure was removed by several years from the earnings levels being experienced by the retiree (and others) at the time of actual retirement. This disassociated benefits from the reality at the time.

Such an arrangement can be viewed as unfair, particularly since the level of inflation at the time was unusually high.

- **Backward reaching for earnings years.** Another reason the transition formula failed to provide relief concerns strictures in the Social Security laws on the number of years over which the retiree's earnings are to be averaged. Consider, for example, a person retiring in 1982 at the age of 65. This person's earnings are required to be averaged over 23 years. But when several recent years are disallowed by the transition formula, the retiree is forced to substitute several early-career years in their place. Given the cumulative effect of inflation over time, these early-career years are almost always at a much lower nominal earnings level. Including the earnings of these years in the average pulls down the earnings average figure, and the associated benefit along with it. We have not found this effect discussed in other analyses of the Notch.

2. Elimination of COLAs from June 1978 until age 62. In addition to the constraints in the transition formula just outlined, the formula also specified that the benefit table of June 1978 be used to translate the earnings average into a specific benefit, and that the benefit thus developed be ineligible for COLAs from June 1978 until the retiree reaches the age of 62. In terms of reducing the likelihood that inflation is over indexed, this might be understandable, but when it is combined with the other constraints listed here, and especially when inflation is high, the result is an unmitigated Double Whammy for the affected retiree.

3. Lengthening of the averaging period. An effect which existed before, during, and after the Notch years, but which nevertheless contributed to all that was happening at the time, was that the number of years in the averaging period was increasing. When a new year of earnings occurred, the contribution of any increase in that earnings level toward increasing the earnings average was diluted by the increase in the number of years in the average. This effect took on increased importance during a period when inflation was high and earnings were increasing rapidly.

4. Misalignments and lags in the benefit scheme. The scheme surrounding benefit development under the 1977 law contributed to a downward benefit spiral, even after the new benefit formula was in place. Basically, initial benefit levels were developed in three steps. First, the indexing procedure required that the earnings be indexed on the year in which the retiree reached age 60. When an average was taken of the resulting indexed earnings, the average tended to reflect inflation and increases in real wages through that year. Second, the benefit formula of the year in which the retiree reached age 60 was applied. Using the

(indexed) earnings average as an input, this formula provided a benefit amount. Third, COLAs were applied to this benefit amount to adjust it to the year of actual retirement, which in many cases was the age of 65. Three different periods are involved in this sequence, the year of indexing, the year of the benefit formula, and the years from the formula to the time of retirement.

In concept, the Social Security system develops an earnings average that reflects inflation and real wages, and applies a benefit formula designed to yield an appropriate benefit. In the three-step sequence just outlined, the (indexed) earnings average reflects inflation and real wages only up to the year of age 60. Then the application of the COLAs recognizes only inflation, with no recognition of increases in real wages, from the year of age 62 to the year of age, say, 65. The result is that the retiree receives no recognition for inflation or increases in real wages from the year of age 60 to the year of age 62, and no recognition for increases in real wages from the age or 62 to the age of 65. Of course, for a retirement at age 62, this second effect does not exist. Under stable economic times, this failure-to-recognize could be viewed as resulting in no more than a simple downward shift in the benefit levels, and it is even possible to argue that the benefit formula corrects for this shift. But in unstable economic times, such as those in the years surrounding the Notch, a scheme of this kind can result in benefit disparities and strange benefit behavior. In effect, it puts beneficiaries at risk.

During the Notch period, inflation was much higher in some years than in others, and the behavior of real wage increases was erratic. Depend on the year of birth and the year of retirement, the benefits of each retiree failed to recognize inflation and real wage increases in a specific set of years. If inflation and real wage increases in this specific set of years was higher for some retirees than for others, which it was, the associated set of benefits would be lower for these retirees. Just looking at inflation from the year of age 60 to the year of age 62, the level of unrecognized inflation was higher for those born in 1918 than in 1917, higher for those born in 1919 than in 1918, and higher for those born in 1920 than in 1919. Neglecting the transition formula, this means that the benefits were lower for the 1918 cohorts than the 1917 cohorts, lower for the 1919 cohorts than for the 1918 cohorts, and lower for the 1920 cohorts than for the 1919 cohorts. Without this effect, the shape of the Notch would have been quite different.

The fact that the benefit scheme can result in a failure to recognize increases in prices and in real wages, and especially the fact that economic fluctuations can cause benefit reductions and disparities among retiree groups, raises questions about the propriety of creating such a system. One needs to ask whether it is fair for Congress, by concocting such a

scheme, to place Social Security beneficiaries in the position of having to face what amounts to a risky future. The Social Security participant needs to say to him or her self: “Regardless of my own earnings and regardless of when I retire, the economy could misbehave and my benefits could be reduced.” It is possible to design systems that do not have these characteristics.

In support of the Commission on the Social Security “Notch” Issue, a special study was done by the Office of the Actuary of the Social Security Administration to analyze what the Notch would have looked like if the “economic assumptions that the Congress used in crafting the 1977 amendments” had turned out to be the correct ones. (Social Security Commission Final Report Appendix, p. 43) A table from that special study is shown in section 4 of Appendix B of this report, and is for workers with average earnings, who retired at age 65. It shows that for a person born in 1919, prevailing economic assumptions would have caused a benefit decrease of 14 percent, while actual economic outcomes caused one of 26 percent.

The table of the Commission’s Appendix clearly shows that the unusual economic conditions at the time were the cause of much of the Notch. But many of the quirks identified above also contributed in a negative way, and it is altogether possible that a normal economic outcome without the quirks would have brought about a transition that is more in line with what many would view as smooth. No one knows, of course, what Congress expected or intended, but it is not uncommon in regulatory and administrative considerations to aim for one (or a combination) of three things: (a) small benefit declines, (b) unchanged benefits instead of growth, or (c) slowing the growth rate. Had any one of these occurred, the Notch would never have become a problem.

Issues of what Congress expected or intended are difficult at best. As cited in section C.2.4 above, GAO indicated that the transition rules “were expected to smooth the transition” to the new formula and that the “phase-in would prevent a significant drop” in benefits. The Commission’s Appendix on Congressional intent grapples with the issue for more than 40 pages, with no clear result. In the end, it cites the Senate Finance Committee as describing “the purpose of the transition clause as being ‘to protect the benefit rights of people who are now approaching retirement and whose retirement plans have taken Social Security benefits into account.’” (Social Security Commission Final Report Appendix, p. 34). Finally, it says: “The design of the transition clause appears from the legislative history to have been aimed at the question of preserving individual expectations rather than at avoiding differentials.” (*Ibid.*, p. 39)

In the end, the question revolves around the intent of Congress. Did Congress intend that the benefit reductions be as large as they were, and did Congress expect the benefit adjustments to occur as quickly as they did? Is there a chance that Congress wanted to avoid significant reductions and let nature catch up with reality? Congress certainly should have had an interest in protecting labor force retirees from hardship. Congress should have understood that the computation procedures being placed into the

law were risky in the sense that if they were asked to function in unusual economic times, they could generate a kind of instability that would be considered unfair when viewed in historical context. Some of these factors that contributed to the Notch need to be reviewed again. A better path to a new world can easily be designed.

Appendix D

Special Observations

1 The Payback Period

In regard to the Notch issue, some analysts have noted that the length of the payback period for persons born in the Notch years compares favorably to the length for persons born in later years.³⁰ The question that arises is whether such arguments logically can be used as evidence that persons born in the Notch years are treated in a way that is fair and in line with Congressional intent.

In any retirement or annuity system, it is common to focus on a single person, as opposed to focusing on the entire system, and to compare the amount paid out with the amount paid in. In cases where some or all of the people receiving benefits might receive back more than they paid in, which usually depends on their longevity, part of this comparison can involve the calculation of a payback period. If a payback period were 4.2 years, for example, it would be said that after receiving benefits for 4.2 years, the person would have received back an amount equal to the amount he or she paid in. A person could say: “If I live for more than 4.2 years, I will get back all that I paid in and then some.” A payback period of 4.2 years might sound like a good deal. Alternatively, if the payback period were 90 years, a person would probably feel that the chances of getting back what they paid in are essentially zero. Except for rough estimates, which may be meaningless, actual calculations on payback periods require that the time value of money be considered and are thus reasonably complex.

The CSR Report on the Notch Debate provides estimates for several birth years of the payback periods for persons retiring at age 65, who had average earnings. (p. 10) These relate only to the employee’s contribution and are reproduced in Exhibit D-1.³¹ It can be seen that in the early years, the payback periods were extremely low. For persons born in 1915, all of whom have now retired, the payback period was just 1.4 years. On its face, even recognizing that there is an employer contribution as well, it is difficult to see how any system could survive if it paid beneficiaries back in just 1.4 years. Certainly it would be expected that, on average, people would live after they retire much longer than

³⁰ For example, the Social Security Commission Final Report says in its Executive Summary: “In face, considering the value of their benefits relative to the Social Security taxes which they paid, those born in the ‘Notch’ years are, in general, receiving a greater return from Social Security than will subsequent generations of beneficiaries.” (p. 3) See also page 11 of the CRS Report on the Notch.

³¹ Except for self-employed persons, tax contributions to the Social Security system are made by both the employee and the employer.

**Exhibit D-1 Payback Time vs. Birth Year for Persons
with Average Earnings, Retiring at age 65**

Birth Year	Payback Time
1915	1.4 years
1920	2.8 years
1925	4.0 years
1935	7.3 years
1950	9.5 years

1.4 years. The problem is apparent. The Social Security System is not designed around payback periods. No evidence exists that any decision about the level of benefits has been made in view of payback periods. No guidelines exist saying what the payback period should be. Similarly, no basis exists for saying that a particular payback period is too high or too low, and it is difficult to interpret a finding that payback periods are rising.

As described in Appendix A, the Social Security system focuses strongly on the money arriving in particular years and on the money departing in those same years, and tries to design taxes and benefits so that the inflow is a little larger than the outflow. Thus, it often has been described as a pay-as-you-go system. The only guideline given any emphasis at all is the replacement rate.

Therefore, it is difficult to understand why any weight should be given to arguments that the payback rate for Notch cohorts compares in one way or another with the payback rate for other cohorts. Such arguments just don't go to the basics of any Social Security design parameters or to any notions of either fairness or Congressional intent.

2.0 Averaging Schemes

The Social Security Administration keeps track of covered earnings for all working persons, according to their Social Security numbers. When a person retires, an average of his or her earnings, or of some function of those earnings, is prepared and the level of this average becomes a determinant of the benefit received. This is true under all Social Security laws, regardless of the formula.

In reviewing the literature on the Notch and on the financial crisis faced by the Social Security system in the 1970s, we found a number of suggestions to the effect that the change in the averaging scheme was an important element in solving the problems. *The question becomes whether the old 72-law method (which averaged nominal, or as-reported, earnings) was really part of the problem and whether the adoption of the new 77-law method (which averages indexed earnings) is really part of the solution.* This question is the focus of the next section. In subsequent sections, other issues relating to averaging will be explored.

2.1 Did Indexing *Per Se* Help Solve Social Security's Financial Problems?

In order to investigate whether indexing *per se* has important characteristics that can help solve financial problems, we investigated two *generic* averaging schemes, one with indexing and one without. These schemes are generic in the sense that they are designed in the way one would normally expect averaging schemes to be designed. Accordingly, they will have behavioral and mathematical properties that are in line with what one might expect. As explained further below, the scheme in the 1972 law is like the first scheme, largely because the 72-law scheme has no unusual characteristics, but the scheme in the 1977 law is quite unlike the second scheme, because the 77-law scheme has unique nuances. The schemes of the 1972 and the 1977 laws will be considered in section 2.3 below.

Over the period covered by the Social Security system, reported earnings per person have risen. This rise has occurred for at least two reasons. First, increases in prices have occurred, and earnings usually rise with prices. Second, advances in national productivity have occurred, and such advances generally translate into increased earnings. Of course, earnings for specific individuals vary for other reasons as well. In particular, some people improve their skills, some people are more fortunate in some years than in others, some people work more hours in some years than in others, and some people make conscious decisions to leave the labor force at various points (such as to rear a child or care for a sick relative).

As a baseline, consider Mr. B, with the following characteristics:

Mr. B

Born in 1929

Began work in 1951

Worked for 41 years

Retired in 1992, at the age of 63

Computation years, 35

Earnings averaged, 1957-1991

Suppose Mr. B earned \$3,000 in 1951 and experienced earnings increases of 5 percent each year. At this rate, his earnings in 1991 would be \$21,120, as shown in column 1, row 41, of Exhibit D-2. The assumption of 35 computation years for Mr. B is in line with Social Security rules.³² Exhibit D-2 contains a great deal of information not used in this example, but which will be discussed later. For now, we are just interested in Mr. B.

The *first generic averaging scheme* is to take an average of the highest 35 years of earnings, 1957 through 1991, which is \$10,375, shown on row 45 of column 1,

³²

See section 1 of Appendix A for further discussion of computation years.

		Exhibit D-2 Hypothetical Earnings Calculations								
		Using Generic Averaging Schemes								
		Actual	Price	Earnings	Earnings	Earnings	See Headings Below			
Row	Year	(Nominal)	Index	Indexed	Indexed	Indexed				
		Earnings	Index	on 1990	on 1991	on 1992	Col 6	Col 7	Col 8	
		Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	
1	1951	3,000	1.000	13,849	14,403	14,979				
2	1952	3,150	1.040	13,982	14,542	15,123				
3	1953	3,308	1.082	14,117	14,681	15,269				
4	1954	3,473	1.125	14,252	14,823	15,415				
5	1955	3,647	1.170	14,389	14,965	15,564				
6	1956	3,829	1.217	14,528	15,109	15,713				
7	1957	4,020	1.265	14,668	15,254	15,864				
8	1958	4,221	1.316	14,809	15,401	16,017				
9	1959	4,432	1.369	14,951	15,549	16,171				
10	1960	4,654	1.423	15,095	15,699	16,326				
11	1961	4,887	1.480	15,240	15,849	16,483				
12	1962	5,131	1.539	15,386	16,002	16,642				
13	1963	5,388	1.601	15,534	16,156	16,802				
14	1964	5,657	1.665	15,684	16,311	16,964				
15	1965	5,940	1.732	15,835	16,468	17,127				
16	1966	6,237	1.801	15,987	16,626	17,291				
17	1967	6,549	1.873	16,140	16,786	17,458				
18	1968	6,876	1.948	16,296	16,948	17,625				
19	1969	7,220	2.026	16,452	17,110	17,795				
20	1970	7,581	2.107	16,611	17,275	17,966				
21	1971	7,960	2.191	16,770	17,441	18,139				
22	1972	8,358	2.279	16,932	17,609	18,313				
23	1973	8,776	2.370	17,094	17,778	18,489				
24	1974	9,215	2.465	17,259	17,949	18,667				
25	1975	9,675	2.563	17,425	18,122	18,847				
26	1976	10,159	2.666	17,592	18,296	19,028				
27	1977	10,667	2.772	17,761	18,472	19,211				
28	1978	11,200	2.883	17,932	18,649	19,395				
29	1979	11,760	2.999	18,105	18,829	19,582				
30	1980	12,348	3.119	18,279	19,010	19,770				
31	1981	12,966	3.243	18,454	19,193	19,960				
32	1982	13,614	3.373	18,632	19,377	20,152				
33	1983	14,295	3.508	18,811	19,563	20,346			Additional	
34	1984	15,010	3.648	18,992	19,752	20,542			COLAs	
35	1985	15,760	3.794	19,175	19,941	20,739		COLAs	to	
36	1986	16,548	3.946	19,359	20,133	20,939		to	move	
37	1987	17,375	4.104	19,545	20,327	21,140		Move	to	
38	1988	18,244	4.268	19,733	20,522	21,343		to	1993	
39	1989	19,156	4.439	19,923	20,720	21,548	Year	Year	for	
40	1990	20,114	4.616	20,114	20,919	21,756	of	of	Comparison	
41	1991	21,120	4.801	20,308	21,120	21,965	Benefit	Retirement	Purposes	
42	1992	22,176	4.993	20,503	21,323	22,176	Formula	Below	Below	
43							Below	Below	Below	
44	Mr. B, Averaging years 1957-1991, Row 45									
45		10,375			18,033		1992	none	1993	
46	Mr. C, Averaging years 1958-1992, Row 47									
47		10,893				18,935	1993	none		
48	Mr. B*, Averaging years 1958-1992, Row 49									
49		10,893				18,935	1993	none		
50	Mr. A, Averaging years 1957-1990, Row 51									
51		10,059		17,252			1991	none	1992, 1993	
52										
53	Mr. C relative to Mr. B					Nominal	Indexed			
54	Mr. B* relative to Mr. B					5.00%	5.00%			
55	Mr. B relative to Mr. A					3.14%	4.53%			

Exhibit D-2.³³ This is an average of some years of relatively low earnings (e.g., \$4,221 in 1958) and some years of relatively high earnings (e.g., \$16,548 in 1986).

The *second generic averaging scheme* is to take an average of the highest 35 years of *real* earnings, indexed on the year before retirement. That is, the earnings are adjusted for inflation and are stated in dollars of the year before retirement. Part of the definition of this generic scheme is that the earnings are always indexed on the year before retirement and *all* of the years are indexed. Suppose the price index was 1.0 in 1951, and increased at the rate of 4 percent per year after that. This index would have a value of 4.801 in 1991, as shown in column 2 of Exhibit D-2. To obtain real earnings, in 1991 dollars, the earnings for 1990 are multiplied by 4.801/4.616, and thus increase from \$20,114 to \$20,919. Earnings for the earlier years are increased as well, according to the ratios of the price index. The result is shown in column 4. The average of this new series (of indexed earnings) for 1957 through 1991 will obviously be much more than \$10,375. It is in fact \$18,033, as shown in row 45 of column 4.

According to the two schemes being considered, two averages have now been prepared. The first is an average of nominal earnings, \$10,375. The second is an average of indexed earnings, \$18,033. The question becomes: if the earnings average is known, what should the benefit be? Since all discussions of the Social Security system state that benefits are developed to achieve a target replacement rate (for average wage earners), let's assume that target rate is 45 percent; that is, the benefit should equal 45 percent of the earnings in the year before retirement. The earnings for 1991 (the year before retirement) are \$21,120, and 45 percent of that amount is \$9,504. The benefit, then, should be \$9,504.

This desired benefit figure of \$9,504 can be obtained from the earnings averages in either of two ways. The first is to take 91.6 percent of the average of nominal earnings, which is 91.6 percent of \$10,375.³⁴ The second is to take 52.7 percent of the average of indexed earnings, which is 52.7 percent of \$18,033.^{35 36}

³³ Assuming *y* computation years are required, the Social Security system always takes the *y highest* of the earnings years in the series, after any required indexing. Because the earnings and the prices in all of the examples in Appendix D increase secularly, and because the earnings rise more rapidly than the prices, the highest entries are the most recent. And, as in the Social Security system, the earnings in the year of retirement are not included in the averages.

³⁴ Although, as explained in sections 1 and 2 of Appendix A, the actual benefit formula is not this simple, this is essentially what happens in the 1972 law.

³⁵ Although the 1977 law contains nuances that will be explored further below, setting benefits equal to some function of an average of indexed earnings is the *kind* of thing that the law does.

³⁶ In the actual Social Security system, all averages are expressed on a monthly basis, but using annual figures is easier to follow, and no generality is lost

The question becomes: for the purpose of keeping the Social Security system from going bankrupt, why is one averaging scheme any better than the other averaging scheme? The answer at this point is clear: no one scheme is any better or any worse than any other. It is all in how the *formula is constructed*, not in how the *earnings are averaged*. It is, of course, important to understand the average being used and to design the formula accordingly, but one averaging scheme is not more likely to lead to financial solvency than another.

In discussions of the Notch, then, why is so much attention given to the fact that the 1977 law changed to an average of indexed earnings? Indeed, no less an authority than the Commission on the Social Security “Notch” has a major section entitled “The Solution: Wage Indexing.”³⁷ There appears to be no reason, and excessive attention to the averaging scheme simply diverts attention from more important issues.

We do not take the position that the change to indexed earnings is unimportant. It is arguably a giant leap forward in fairness, but not in fairness as it relates to the Notch. Certainly a person working for 20 years at a time of relatively low prices, and then staying out of the labor force for 15 years to rear a family, would find his or her earnings average (based on 35 years of earnings) under the 1972 law to be quite low, and the associated benefit also to be low. Similarly, a person who reared a family first and then worked for 20 years would find his or her earnings average (focused on the same 35 years) to be relatively high, and the associated benefit to be relatively high as well. The 1977 law would index the earnings of both persons and arrive at comparable earnings averages. Then, of course, the benefit levels would be comparable as well.³⁸

At this point, two generic averaging schemes have been introduced, as has a baseline involving Mr. B. It is now a relatively simple matter to introduce other people, and to analyze, under these two schemes, how the earnings averages for these other people compare with the earnings averages of Mr. B. The basic concern is: Do we understand how the earnings averages of other people, who differ in some important way from Mr. B, compare with the earnings averages of Mr. B? These people are introduced in section 2.2. Then in section 2.3, the behavior of the earnings averages of the same people will be analyzed under the averaging schemes of the 1972 and the 1977 laws.

Moving Average Principle. Much of what follows can be understood by thinking in terms of what we call for purposes of this study the “Moving Average Principle.” It applies to averaging parts of a series that grows at a constant rate. Consider a series E that grows at the rate of x per year. This means that $E(y) / E(y - 1) = 1 + x$, for all y , where $E(y)$ refers to the value of the series in year y . Suppose n years of the series are to

³⁷ Social Security Commission Final Report, p. 8.

³⁸ Earnings are recorded as zero for years in which no work is performed. Having zeros in an earnings series, of course, tends to pull the average down.

be averaged starting with year y . The average would be $[E(y) + E(y + 1) + E(y + 2) + \dots + E(y + n - 1)] / n = \text{AVG}(y, n)$. The Principle says that $\text{AVG}(y + 1, n) / \text{AVG}(y, n) = x$. In words, suppose we have a series expressed in dollars that grows at 5 percent per year. We can take a simple average of 25 consecutive years of the series. Then suppose we take another average of 25 years with the second block of years shifted forward one year in time. The second average in dollars will be 5 percent greater than the first average. Applying this principle at various places in the next two sections will make the discussion go more smoothly. The Moving Average Principle also applies: (a) if the series E has been indexed on another series that grows at a constant rate and (b) between series that are derived from series E by indexing E on different years with another series that grows at a constant rate. These various applications will be seen more clearly as the examples are reviewed.

2.2 Under the Generic Averaging Schemes, Comparing Mr. B to Other People

Mr. B is suitable as a baseline. He was born in 1929, worked a full career, and retired at the age of 63. The only thing the least bit unusual about him is that he has just reached the threshold level of 35 computation years. All persons born in and after 1929 have 35 computation years. Persons born in 1928 and 1927 have 34 and 33 computation years, respectively, and so on back to some point earlier than 1913.

Three new persons are now introduced. All have earnings that are part of the same series used for Mr. B, in column 1 of Exhibit D-2. The same price index (column 2) also applies to each. Each began work in 1951, which plays no real part in the analysis. Mr. C is similar in every respect to Person B except that he was born one year later and retired one year later, also at age 63. Mr. B* is actually the same person as Mr. B, he just decided to retire one year later, at the age of 64 instead of 63. Finally, Mr. A was born in 1928 and retired at the age of 63. Mr. A is to Mr. B as Mr. B is to Mr. C, except that Mr. A has only 34 computation years. This will affect the averages obtained. Repeating Mr. B for ease of reference, the four people are as follows:

Mr. B

Born in 1929
 Began work in 1951
 Worked for 41 years
 Retired in 1992, at the age of 63
 Computation years, 35
 Earnings averaged, 1957-1991

Mr. C

Born in 1930
 Began work in 1951
 Worked for 42 years
 Retired in 1993, at the age of 63
 Computation years, 35
 Earnings averaged, 1958-1992

Mr. B*
Born in 1929
Began work in 1951
Worked for 42 years
Retired in 1993, at the age of 64
Computation years, 35
Earnings averaged, 1958-1992

Mr. A
Born in 1928
Began work in 1951
Worked for 40 years
Retired in 1991, at the age of 63
Computation years, 34
Earnings averaged, 1957-1990

Information for all four persons is contained in Exhibit D-2. The earnings series for each draws from the years in column 1, the specific years averaged being shown on lines 44, 46, 48, and 50. For the first generic averaging scheme, of *nominal* earnings, the earnings averages for each person are shown on rows 45, 47, 49, and 51, in column 1. For the second generic averaging scheme, of *indexed* earnings, the earnings appropriately indexed are shown in column 3 for Mr. A (indexed on 1990), column 4 for Mr. B (indexed on 1991), and column 5 for Messrs. C and B* (indexed on 1992). The averages for the indexed earnings are shown on rows 45, 47, 49, and 51, below the respective columns.

Column 6 shows the year of the benefit formula that logically would be applied to the earnings averages, under either averaging scheme, for each person. Because the formulas are for the year of retirement, column 7 shows that no COLAs are applied to obtain any initial benefits. Column 8 shows the years of the COLAs that would need to be applied if the benefits were to be moved to 1993, a convenient (benign) year for comparing the benefits of each person. Rows 53 to 55 are used to compare the earnings averages of the various persons, as will be discussed shortly.

Comparing earnings averages for adjacent, identical cohorts, with the same number of computation years. The only difference between Mr. B and Mr. C is that Mr. C was born one year later, and retired one year later. They both retired at age 62. They both have the same number of computation years. Their earnings are parts of the same series. Essentially, Mr. C is shifted one year through time, with earnings increasing 5 percent per year, in an economic environment in which prices are increasing 4 percent per year.

Under the generic average of *nominal* earnings, the earnings averages of Messrs. B and C are respectively \$10,375 and \$10,893 (row 45, column 1 and row 47, column 1). The earnings average of Mr. C is 5 percent higher than that of Mr. B (row 53, column 4). This outcome would be expected according to the Moving Average Principle, introduced above. The averaged earnings of Mr. C are a 35-year block from the series moved one year forward from the block of Mr. B.

According to the generic average of *indexed* earnings, the earnings average of Messrs. B and C in order are \$18,033 and \$18,935 (row 45, column 4 and row 47, column 5). The earnings average of Mr. C is again 5 percent higher than that of Mr. B (row 53, column 5). Since the series in columns 4 and 5 are derived from column 1 by

indexing (on different years) with a series that grows at a constant rate (the price index), the Moving Average Principle applies.

Conclusion 1: Born one year later, same comp years.

In a steady state environment where the number of computation years does not change, under a generic average of either nominal earnings or indexed earnings, an identical person born one year later and retiring one year later will tend to have an earnings average that is proportionately higher, according to the growth in the earnings series.

Before going on to the next example, it is worthwhile to pay some attention to how these earnings averages would be converted into benefits. For Messrs. B and C, the earnings averages of nominal earnings or of indexed earnings would go into an appropriate formula, a 1992 formula for Mr. B and a 1993 formula for Mr. C. The formulas used for nominal earnings would be different from those used for indexed earnings. Whether the resulting benefit of Mr. C will be 5 percent higher than that of Mr. B depends on the characteristics of the formulas used, how they are adjusted over time, and the size of those adjustments relative to the 5 percent difference in the averages. If the resulting benefits of the two men are to be compared in the same year, say, 1993, Mr. B will have to be given a 1993 COLA (row 45, column 8). If the 5-percent earnings advantage of Mr. C results in a 4.8 percent benefit advantage and the 1993 COLA is 3 percent, Mr. C's benefit in 1993 will be 1.8 percent higher than that of Mr. B, attributable the higher real wages in Mr. C's earnings average.

Evaluating the change in earnings average for a person who decides to retire one year later. The only difference between Mr. B and Mr. B* is that Mr. B* decided to retire one year later. They were both born on the same date. Mr. B retired at the age of 63 and Mr. B* retired at the age of 64. Since the number of computation years is determined by the date of birth, they both have the same number. The earnings of Mr. B* are a simple steady state extension of those of Mr. B. Essentially, Mr. B* is Mr. B, deciding to retire one year later, with earnings increasing 5 percent per year, in an economic environment where prices are increasing 4 percent per year.

Under the generic average of *nominal* earnings, the earnings averages of Messrs. B and B* respectively are \$10,375 and \$10,893 (row 45, column 1 and row 49, column 1). The earnings average of Mr. B* is 5 percent higher than that of Mr. B (row 54, column 4), an illustration again of the Moving Average Principle.

Under the generic average of *indexed* earnings, the earnings average of Messrs. B and B* in order are \$18,033 and \$18,935 (row 45, column 4 and row 49, column 5). The earnings average of Mr. B* is 5 percent higher than that of Mr. B (row 54, column 5). The Moving Average Principle applies here as well.

Conclusion 2: Retire one year later, same comp years.

In a steady state environment, when a person decides to work one additional year, under a generic average of either nominal earnings or indexed earnings, the person's earnings average will tend to have a value that is proportionately higher, according to the growth in the earnings series.

Now suppose benefits are calculated on these earnings averages. The benefits of Mr. B would be calculated with a 1992 formula and the benefits of Mr. B* would be calculated with a 1993 formula, with different formulas in each case for the nominal average and the indexed average. The benefit of Mr. B* would be expected to be higher than those of Mr. B, possibly 5 percent higher, depending on the relation of the formulas and the increases in the averages. The vintage of the benefit of Mr. B is 1992 and of Mr. B* is 1993. If both are compared in 1993, Mr. B will have to be given a 1993 COLA (row 45, column 8). If 5-percent earnings advantage of Mr. B* translates through the formula into, say, a 4.6 percent benefit advantage, and if the 1993 COLA is 3 percent, the 1993 of Mr. B* will be 1.6 percent larger than that of Mr. B, attributable to higher real wages. In the form of another adjustment, however, Mr. B* will receive the boost of an actuarial adjustment factor because he worked an additional year.

Comparing earnings averages for adjacent, identical cohorts, when the number of computation years changes. The difference between Mr. A and Mr. B is that Mr. B was born one year later, and retired one year later. They both retired at age 63. Their earnings are parts of the same series. Given that Mr. A's birth year is before 1929, however, Mr. A has fewer computation years by one than Mr. B; Mr. A has 34 and Mr. B has 35.³⁹ Essentially, Mr. B is shifted through time one year, with earnings increasing 5 percent per year, in an economic environment in which prices are increasing 4 percent per year, but has one more computation year.

Under the generic average of *nominal* earnings, the earnings averages of Messrs. A and B are \$10,059 (row 51, column 1) and \$10,375 (row 45, column 1). The earnings average of Mr. B is 3.41 percent higher than that of Mr. A (row 55, column 4). Thus, in a steady state environment where earnings are rising 5 percent per year, and the number of computation years changes from 34 to 35, an identical person retiring one year later will have an earnings average that is only 3.41 percent higher. Because the number of years in the average changed, the Moving Average Principle does not apply. The first year in the average remains the same and one additional year is included for Mr. B. The recognition of the additional earnings of Mr. B has been diluted by an increase in the number of computation years.

Under the generic average of *indexed* earnings, the earnings averages of Messrs. A

³⁹ See section 1 of Appendix A for a discussion of computation years.

and B are \$17,252 (row 51, column 3) and \$18,033 (row 45, column 4). The earnings average of Mr. B is 4.53 percent higher than that of Mr. A (row 55, column 5). Again, the Moving Average Principle does not apply. The number of years in the average is changing. The first year in the average remains the same and one additional year is included for Mr. B. In this steady state environment where earnings are rising 5 percent per year and prices are rising 4 percent per year, and the number of computation years changes from 34 to 35, an identical person retiring one year will have an earnings average that is 4.53 percent higher. Dilution occurs, just as for the average of nominal earnings. In this case, however, the dilution is not as great. This is because all of the earnings are indexed and stated in real terms. The indexed series rises over time much more slowly than the unindexed series, so that when another term is added, the average level is not affected as much.

In thinking about the effect of increasing the number of computation years, one other effect needs to be remembered. That is, the lower the number of computation years, the larger the dilution effect. The number of computation years in this example increased from 34 to 35. The number of computation years for persons born in 1916 and 1917, which are key years in the Notch period, are 22 and 23, respectively.

Conclusion 3: Born one year later, increased comp years.

In a steady state environment where the number of computation years changes, under a generic average of either nominal earnings or indexed earnings, an identical person born one year later and retiring one year later will tend to have an earnings average that is diluted relative to the growth in the earnings series. The degree of dilution is smaller for the average of indexed earnings than for the average of nominal earnings.

Now suppose benefits are calculated on these averages. The benefits of Mr. A would be calculated with a 1991 formula and the benefits of Mr. B would be calculated with a 1992 formula. Separate formulas would be used for the nominal averages and the indexed averages. The benefit of Mr. B would be expected to be higher than that of Mr. A, depending on the relation of the two formulas, but biased in a downward direction because Mr. B's earnings average has been diluted by an increase in computation years. The vintage of the benefit of Mr. A is 1991 and of Mr. B is 1992. If both are compared in 1993, Mr. A will have to be given a 1992 and a 1993 COLA (row 51, column 8) and Mr. B will have to be given a 1993 COLA (row 45, column 8). If the COLAs (based on inflation) are smaller than the growth in earnings (based at least on inflation and the growth in national productivity), then the benefit of Mr. B will tend to be larger. Note, however, that if the benefit formula does not pass through fully the 3.14 percent higher earnings average of Mr. B, the relative advantage of Mr. B will suffer.

A general statement of findings thus far. When the number of computation years remains the same, the Moving Average Principle applies, and the earnings averages tend to move up in the same proportion as the series, whether it is an average of nominal earnings or an average of indexed earnings. This holds for averages of nominal earnings and averages of indexed earnings, according to our generic schemes, and applies, for example, to people deciding to retire one year later and to people born in adjacent years who decide to retire (at the same ages) in adjacent years. However, when the number of computation years changes, the increases in the earnings averages for the more current period are diluted. The degree of dilution appears to be less under the average of indexed earnings than under the average of nominal earnings.

2.3 Averaging Schemes--Nuances of the Actual 1977 Law

The examples thus far were constructed to highlight certain characteristics of the kinds of averaging schemes that one would normally expect. The AME scheme of the 1972 law is the same as the generic average of nominal earnings used above.⁴⁰ But the AIME scheme of the 1977 law is notably different from the generic average of indexed earnings used above.⁴¹ The AIME scheme has an unusual structure and its behavior is neither simple nor straightforward. Also, the 1977 law specifies the use of the benefit formula of the year in which the retiree reaches the age of 62, regardless of the age of actual retirement. This affects the calculation of benefits, after the averages are calculated.

In order to clarify the relative behavior of the AME scheme under the 1972 law and the AIME scheme under the 1977 law, we will analyze the same people introduced in the previous section. For ease of reference, their characteristics are repeated below:

Mr. B

Born in 1929
Began work in 1951
Worked for 41 years
Retired in 1992, at the age of 63
Computation years, 35
Earnings averaged, 1957-1991

Mr. C

Born in 1930
Began work in 1951
Worked for 42 years
Retired in 1993, at the age of 63
Computation years, 35
Earnings averaged, 1958-1992

⁴⁰ As explained further in section 1 of Appendix A, the 1972 law referred to the average earnings figure of the retiree as the AME (Average Monthly Earnings). We are using AME-type figures but expressing them on an annual basis.

⁴¹ As explained further in section 1 of Appendix A, the 1977 law referred to the average indexed earnings figure of the retiree as the AIME (Average Indexed Monthly Earnings). We are using AIME-type figures but expressing them on an annual basis.

Mr. B*

Born in 1929
 Began work in 1951
 Worked for 42 years
 Retired in 1993, at the age of 64
 Computation years, 35
 Earnings averaged, 1958-1992

Mr. A

Born in 1928
 Began work in 1951
 Worked for 40 years
 Retired in 1991, at the age of 63
 Computation years, 34
 Earnings averaged, 1957-1990

The data for these people, under the AME scheme and the AIME scheme are contained in Exhibit D-3. The difference between this exhibit and Exhibit D-2 is that all of the development in Exhibit D-3, where different, complies with the 1977 law. Specifically, there are five differences.

1. The indexed earnings series from the year of age 60 back are indexed on the year in which the retiree reaches the age of 60, regardless of the age at retirement.
2. The earnings for years after the year of age of 60 are included in the indexed series but *at their nominal values* – they are not indexed.
3. The index used to index the earnings is an index of the average earnings reported nationally for Social Security purposes.
4. The benefit formulas shown in column 6 are for indexed earnings only, under the 1977 law, and are for the year in which the retiree reaches the age of 62, regardless of the year of retirement.
5. COLAs are shown in column 7 to move the benefit from the year of age 62 to the year of retirement, under 77-law calculations.

As before, any COLAs needed to move the benefit from the year of retirement to 1993, to allow comparisons in dollars of the same vintage, are shown in column 8. The specific years over which the earnings of each person are averaged is the same as those in section 2.2, shown on lines 44, 46, 48, and 50.

The fact that the index used to inflate/deflate the earnings is an index of the average earnings reported nationally each year may be just one of several important differences, but it is unusual in nature and requires further comment. As discussed in connection with Exhibit D-2 and the associated examples, it is relatively common to inflate or deflate with a *price* index, in which case one might refer to the earnings as being expressed in, for example, 1980 dollars. In the discussion (and disagreement) leading up to the 1977 law, Congress gave some thought to indexing earnings with a price index – the use of CPI-W being the obvious possibility. But Congress did not do that. It

Exhibit D-3 Hypothetical Earnings Calculations										
Using 1972 law and 1977 law Averaging Schemes										
Row	Year	Actual	Earnings	Earnings	Earnings	See Headings Below				
		(Nominal)	Index	Indexed	Indexed	Indexed				
		Earnings	Index	on 1988	on 1989	on 1990	Col 6	Col 7	Col 8	
		Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	
1	1951	3,000	1.000	12,804	13,316	13,849				
2	1952	3,150	1.040	12,927	13,444	13,982				
3	1953	3,308	1.082	13,052	13,574	14,117				
4	1954	3,473	1.125	13,177	13,704	14,252				
5	1955	3,647	1.170	13,304	13,836	14,389				
6	1956	3,829	1.217	13,432	13,969	14,528				
7	1957	4,020	1.265	13,561	14,103	14,668				
8	1958	4,221	1.316	13,691	14,239	14,809				
9	1959	4,432	1.369	13,823	14,376	14,951				
10	1960	4,654	1.423	13,956	14,514	15,095				
11	1961	4,887	1.480	14,090	14,654	15,240				
12	1962	5,131	1.539	14,226	14,795	15,386				
13	1963	5,388	1.601	14,362	14,937	15,534				
14	1964	5,657	1.665	14,500	15,080	15,684				
15	1965	5,940	1.732	14,640	15,226	15,835				
16	1966	6,237	1.801	14,781	15,372	15,987				
17	1967	6,549	1.873	14,923	15,520	16,140				
18	1968	6,876	1.948	15,066	15,669	16,296				
19	1969	7,220	2.026	15,211	15,820	16,452				
20	1970	7,581	2.107	15,357	15,972	16,611				
21	1971	7,960	2.191	15,505	16,125	16,770				
22	1972	8,358	2.279	15,654	16,280	16,932				
23	1973	8,776	2.370	15,805	16,437	17,094				
24	1974	9,215	2.465	15,957	16,595	17,259				
25	1975	9,675	2.563	16,110	16,754	17,425				
26	1976	10,159	2.666	16,265	16,916	17,592				
27	1977	10,667	2.772	16,421	17,078	17,761				
28	1978	11,200	2.883	16,579	17,242	17,932				
29	1979	11,760	2.999	16,739	17,408	18,105				
30	1980	12,348	3.119	16,900	17,576	18,279				
31	1981	12,966	3.243	17,062	17,745	18,454				
32	1982	13,614	3.373	17,226	17,915	18,632				
33	1983	14,295	3.508	17,392	18,088	18,811				
34	1984	15,010	3.648	17,559	18,261	18,992		1977 law Only	Additional COLAs	
35	1985	15,760	3.794	17,728	18,437	19,175		COLAs	to	
36	1986	16,548	3.946	17,898	18,614	19,359	1977 law Only	to	move	
37	1987	17,375	4.104	18,070	18,793	19,545	Year	Move	to	
38	1988	18,244	4.268	18,244	18,974	19,733	of	Year	1993	
39	1989	19,156	4.439	19,156	19,156	19,923	Benefit	of	for	
40	1990	20,114	4.616	20,114	20,114	20,114	Formula	Retirement	Comparison	
41	1991	21,120	4.801	21,120	21,120	21,120	Below	Below	Purposes	
42	1992	22,176	4.993	22,176	22,176	22,176			Below	
43										
44	Mr. B, Averaging years 1957-1991, Row 45									
45		10,375			16,740		1991	1992	1993	
46	Mr. C, Averaging years 1958-1992, Row 47									
47		10,893				17,577	1992	1993	none	
48	Mr. B*, Averaging years 1958-1992, Row 49									
49		10,893			16,971		1991	1992, 1993	none	
50	Mr. A, Averaging years 1957-1990, Row 51									
51		10,059		16,017			1990	1991	1992, 1993	
52										
53	Mr. C relative to Mr. B					Nominal	Indexed			
54	Mr. B* relative to Mr. B					5.00%	5.00%			
55	Mr. B relative to Mr. A					3.14%	4.52%			

made a decision instead to index on an index of the average earnings in the Nation reported for Social Security purposes. Average national earnings, along with their percentage changes, are shown in Exhibit E-1 of Appendix E.

When earnings are indexed with a national earnings average, they are not *real* in the ordinary sense of the word. Rather, they are real in a special Social Security sense. Specifically, assuming that the average earnings in the Nation tend to increase with both prices and real wages, we can say that the earnings have been corrected not only for inflation, but also for increases in real wages. This is another way of saying that the effect of inflation and real wage increases have been removed from the series, and the trend line of the series, if plotted on a graph, will likely be much closer to horizontal. To a considerable degree, we will still refer to the indexed series as being stated in dollars of the year of age 60, but it needs to be remembered that these are dollars that have been corrected for increases in both prices and real wages. If an earnings figure, after indexing, increases 3 percent, it would be said that the earnings outpaced the increases in prices and real wages by 3 percent.

In the examples being considered, it is relatively easy to accommodate the shift to an index of average earnings, without increasing the difficulty of making comparisons. All that is needed is to state that column 2 in Exhibit D-3 is an index of *earnings*, even though its numerical values are the same as those in column 2 of Exhibit D-2. Since the earnings for the 4 persons shown in column 1 of Exhibit D-3 are increasing at 5 percent per year, and the national earnings index shown in column 2 is increasing at 4 percent per year, it needs to be remembered that the people with whom we are dealing all have earnings that are outpacing by 1 percentage point per year the growth in prices and real wages. It is necessary to make the 4-percent figure and the 5-percent figures different from each other, in order to avoid a special case that would hide the characteristics of the 77-law averaging scheme.

With this introduction, it is possible to proceed to make the same comparisons made in the previous section. When there are differences in behavior between the two sections, it is due to the unusual characteristics of the schemes in the 1977 law. All references are to Exhibit D-3. Column 4 has earnings indexed on 1988, according to the 77-law procedure, and is used for Mr. A. Columns 4 and 5 are indexed in the same way on 1988 and 1990, respectively. Column 4 is used for Mr. B and Mr. B*. Column 5 is used for Mr. C.

Comparing earnings averages for adjacent, identical cohorts, with the same number of computation years. As explained in section 2.2, the only difference between Mr. B and Mr. C is that Mr. C was born one year later, and retired one year later. They both retired at age 62. They both have the same number of computation years. Their earnings are parts of the same series. Essentially, Mr. C is shifted through time one year.

Under the AME scheme of the 1972 law, which focuses on *nominal* earnings, the results are no different from the results for the generic scheme in the corresponding

comparison of section 2.2 above. The Moving Average Principle applies and the earnings average of Mr. C (\$10,893, row 47, column 1) is 5 percent higher than the earnings average of Mr. B (\$10,375, row 45, column 1). The 5-percent figure is shown in row 53, column 4.

Under the AIME scheme of the 1977 law, which averages *indexed* earnings, the earnings average of Messrs. B and C respectively are \$16,740 and \$17,577 (row 45, column 4 and row 47, column 5). The earnings average of Mr. C is 5 percent higher than that of Mr. B (row 53, column 5). This is not, however, a clear application of the Moving Average Principle. Each of the series averaged has two years that are not indexed. For example, the \$16,740 average of Mr. B is the average of column 4 for 1957 to 1991. The construction of column 4 is that it is indexed on 1989 and that the years after 1989 (those being 1990 and 1991) are included at their nominal value. That is, the column 4 figures for 1990 and 1991 are equal to the corresponding column 1 figures; they are not indexed. Nevertheless, the 5-percent result obtains.

Conclusion 4: Born one year later, same comp years.

In a steady state environment where the number of computation years does not change, under an AME scheme or an AIME scheme, an identical person born one year later and retiring one year later will tend to have an earnings average that is proportionately higher, according to the growth in the earnings series.

Except that the specific guidelines of the 1972 and the 1977 laws are being applied, instead of generic guidelines, this conclusion is the same as conclusion 1. Despite the unusual nature of the averaging scheme for indexed earnings in the 1977 law, the relationships have not changed.

Suppose benefits are calculated on the AME averages, using 72-law procedures. The benefits of Mr. B would be calculated with a 1992 formula and the benefits of Mr. C would be calculated with a 1993 formula. Since the formulas under the 1972 law were adjusted each year for inflation, the benefit of Mr. C would be much more than 5 percent higher than that of Mr. B. Let's assume it is 9 percent higher. If the benefits of both persons are compared in 1993, Mr. B will have to be given a 1993 COLA (row 45, column 8). If the COLA (based on inflation) is 3 percent, the benefit of Mr. C in 1993 will be 6 percent higher than the benefit of Mr. B, neglecting compounding. This clarifies the problem with the 1972 legislation. The benefits for subsequent waves of retirees were growing rapidly.

If benefits were to be calculated on the AIME averages, the benefits of Mr. B would be calculated with a 1991 formula (row 45, column 6) and the benefits of Mr. C would be calculated with a 1992 formula (row 47, column 6). Under the 1977 law, the

1992 formula is a version of the 1991 formula, with the bend points adjusted for the increase in average national earnings.⁴² Since the average national earnings increased 4 percent and Mr. C's earnings increased 5 percent, Mr. C's formula benefit will be between 4 percent and 5 percent higher than the benefit of Mr. B.⁴³ After being calculated, the formula benefit of Mr. B will be given a COLA for 1992 (row 45, column 7), to move it from the year of the formula to the year of retirement. Similarly, the formula benefit of Mr. C will be given a 1993 COLA (row 47, column 7). If comparisons are to be made in 1993 dollars, Mr. B must be given a 1993 COLA (row 45, column 8). Abstracting from actuarial adjustments to allow for the extra year worked by Mr. C, the 1993 benefit of Mr. B is the 1991 formula benefit, with COLAS for 1992 and 1993. The benefit of Mr. C is the 1992 formula benefit (which is between 4 percent and 5 percent higher than the formula benefit of Mr. B), with a COLA for 1993. If the 1992 COLA is 3 percent and Mr. C's formula benefit was 4.3 percent higher, Mr. C's benefit in 1993 would be 1.3 percent higher than that of Mr. B, neglecting compounding. Mr. C is ahead because his AIME reflects higher real wages, not because of any increase in AIME due to inflation. These observations are added to help the reader; the purpose of the section remains to focus on the averaging schemes.

Evaluating the change in earnings average for a person who decides to retire one year later. Repeating the corresponding introduction from section 2.2, the only difference between Mr. B and Mr. B* is that Mr. B* decided to retire one year later. They were both born on the same date. Mr. B retired at the age of 63 and Mr. B* retired at the age of 64. The number of computation years is the same. The earnings of Mr. B* are a simple steady state extension of those of Mr. B. Essentially, Mr. B* is Mr. B, deciding to retire one year later.

Under the AME scheme, which averages *nominal* earnings, the results are no different from the corresponding results for the generic scheme in section 2.2 above. The Moving Average Principle applies again and the earnings average of Mr. B* (\$10,893, row 49, column 1) is 5 percent higher than that of Mr. B (\$10,375, row 54, column 4). The 5-percent figure is shown in row 54, column 4.

Under the 77-law average of *indexed* earnings, referred to as the AIME, the earnings averages of Messrs. B and B* in order are \$16,740 and \$16,971 (row 45, column 4 and row 47, column 4). The earnings average of Mr. B* is only 1.38 percent higher than that of Mr. B (row 53, column 5). The Moving Average Principle clearly does not apply. The average for Mr. B is over 1957 to 1991, indexed on 1989, with earnings for 1990 and 1991 included at their nominal value. The average for Mr. B* is over 1958 to 1992 (a block shifted forward one year), *indexed on the same year 1989*, with earnings for

⁴² See section 3 of Appendix A for a discussion of bend points.

⁴³ See the discussion of the formula in section 3 of Appendix A. If Mr. C's earnings had been up 4 percent, his benefit would have been 4 percent.

1990, 1991, and 1992 (3 years instead of 2) included at their nominal value.

This finding is extremely important and requires additional comment. The earnings of Mr. B and Mr. B* are both indexed on the same year. Because of the indexing, the effects of increases and prices and real wages have been removed from the two series. Since earnings are growing 5 percent per year and the index of prices and real wages is growing 4 percent per year, it is the case that the earnings of Mr. B and Mr. B* are outpacing inflation and real wages by about 1 percent per year. Under the Moving Average Principle, the average of a 1-percent series shifted forward 1 year would grow 1 percent. The fact that the earnings average of Mr. B* is 1.38 percent higher instead of 1 percent higher is due to the influence of including the earnings for years past the year of age 60 at their nominal level instead of their indexed level.

Conclusion 5: Retire one year later, same comp years.

In a steady state environment, in which earnings are growing faster than the index of national earnings, when a person decides to work one additional year: (a) under a 72-law scheme, the AME will tend to increase with the earnings series; and (b) under a 77-law average of indexed earnings, the AIME will tend to have an increase that is proportionately much smaller than the growth in the earnings series.

Suppose benefits are calculated on the AME-type averages, using 72-law procedures. The benefits of Mr. B would be calculated with a 1992 formula and the benefits of Mr. B* would be calculated with a 1993 formula. Since formulas under the 1972 law were adjusted each year for inflation, the benefit of Mr. B* would be much more than 5 percent higher than that of Mr. B. Let's assume it is 9 percent higher. If both are compared in 1993, Mr. B will have to be given a 1993 COLA (row 45, column 8). If the COLA (based on inflation) is 3 percent, then the benefit of Mr. B* in 1993 will be 6 percent higher than the benefit of Mr. B, neglecting compounding. Again, this is indicative of the problems under the 1972 law.

Now suppose benefits are calculated on the AIME-type averages. The benefits of Mr. B would be calculated with a 1991 formula (row 45, column 6) and the benefits of Mr. B* would be calculated *with the same formula* (row 49, column 6). Since Mr. B*'s earnings are 1.38 percent higher than those of Mr. B, Mr. B*'s formula benefit will be between 0 percent and 1.38 percent higher than the formula benefit of Mr. B.⁴⁴ After being calculated, the formula benefit of Mr. B will be given a COLA for 1992 (row 45, column 7), to move it from the year of the formula to the year of retirement. Similarly, the

⁴⁴ See the discussion of the formula in section 3 of Appendix A. If Mr. C's earnings had been up 4 percent, his benefit would have been 4 percent.

formula benefit of Mr. B* will be given a 1992 and a 1993 COLA (row 49, column 7).

If comparisons are to be made between Messrs. B and B* in 1993 dollars, Mr. B must be given a 1993 COLA (row 45, column 8). Again, abstracting from actuarial adjustments to reflect the additional year worked by Mr. B*, the 1993 benefit of Mr. B is the 1991 formula benefit, with COLAS for 1992 and 1993. The benefit of Mr. B* is the 1991 formula benefit (which is between 0 percent and 1.38 percent higher than the formula benefit of Mr. B), with the same COLAs for 1992 and 1993. If Mr. B*'s formula benefit was, say, 0.6 percent higher than Mr. B's, then Mr. B*'s benefit in 1993 would be 0.6 percent higher than that of Mr. B, neglecting compounding. Again, these observations are added to help the reader; the purpose of the section remains to focus on the averaging schemes.

Comparing earnings averages for adjacent, identical cohorts, when the number of computation years changes. Renewing our introduction, the difference between Mr. A and Mr. B is that Mr. B was born one year later, and retired one year later. They both retired at age 63. Their earnings are part of the same series. Given that Mr. A's birth year is before 1929, however, Mr. A has fewer computation years by one than Mr. B – Mr. A has 34 and Mr. B has 35.⁴⁵ Otherwise, Mr. B is shifted through time one year from Mr. A.

Under the AME scheme, which averages *nominal* earnings, the results are no different from the corresponding results for the generic scheme in section 2.2 above – the earnings average of Mr. B is 3.14 percent higher than that of Mr. A (row 55, column 4). This figure is lower than 5 percent and thus reflects the dilution caused by increasing the number of computation years.

Under the 77-law average of *indexed* earnings, usually designated AIME, the earnings averages of Messrs. A and B are \$16,017 (row 51, column 3) and \$16,740 (row 45, column 4). The earnings average of Mr. B is 4.52 percent higher than that of Mr. A (row 55, column 5). This is a compound result. First, one series has 35 years (Mr. B) and the other has 34 years (Mr. C), yet both have 2 current years included at their nominal values. The proportion of nominal years is unbalanced. Second, since the earnings are averaged over a different number of years, the recognition of recent years in the longer series is diluted.

Conclusion 6: Born one year later, increased comp years.

In a steady state environment where the number of computation years changes, under either an AME-type average or an AIME-type average, an identical person born one year later and retiring one year later will tend to have an

⁴⁵

See section 1 of Appendix A for a discussion of computation years.

earnings average that is diluted relative to the growth in the earnings series. The degree of dilution is smaller for the average of indexed earnings than for the average of nominal earnings.

Suppose 72-law procedures are used to calculate benefits on the AME-type average of nominal earnings. The benefits of Mr. A would be calculated with a 1991 formula and the benefits of Mr. B would be calculated with a 1992 formula. Since the formulas under the 1972 law were adjusted each year for inflation, the benefit of Mr. B would be much more than 5 percent higher than that of Mr. A. Let's assume it is 9 percent higher. If both are compared in 1993, Mr. A will have to be given a 1992 and a 1993 COLA (row 51, column 8) and Mr. B will have to be given a 1993 COLA (row 45, column 8). If the 1992 COLA is 3 percent (based in inflation), the benefit of Mr. B will be 6 percent higher than that of Mr. A.

Now suppose benefits are calculated on the AIME earnings. The benefits of Mr. A would be calculated with a 1990 formula (row 51, column 6) and the benefits of Mr. B would be calculated with a 1991 formula (row 45, column 6). The formula benefit of Mr. B would be expected to be higher than that of Mr. A, but likely less than 4.52 percent higher. Mr. A's formula would be given a 1991 COLA to move it to the year of retirement, and then a 1992 and 1993 COLA if comparisons are to be made in 1993. Mr. B would be given a 1992 COLA to move his formula benefit to the year of retirement, and then a 1993 COLA to aid in comparisons. The net result is that if Mr. B's formula advantage (likely less than 4.52 percent) is greater than the 1990 COLA, his benefit will be larger than that of Mr. A.

A further general statement of findings. Now that an analysis of the effects of the averaging process in the 1977 law is complete, some results can be stated, and compared to the results under the generic averaging schemes.

1. Under all schemes analyzed, generic and not, an identical person born 1 year later and retiring 1 year later will tend to have a higher earnings average, according to the growth in the earnings series.
2. Under the 72-law procedure, the AME of a person deciding to work 1 more year will be higher, according to the growth in the earnings series.
3. Under the 77-law procedure, the AIME of a person deciding to work 1 more year will be up only slightly, relative to the growth of the earnings series.
4. Under all schemes, the earnings averages are diluted if the number of computation years is growing.

3 Notch Years Singled Out

One argument used in support of the persons born in the Notch years is that these persons have been in some sense “singled out” to pay the price of solving the financial problems of the Social Security system, as they worsened in the 1970s. In other words, the argument goes, the system needed to reduce its benefit payments, and it did so by reducing them for persons born in 1917 through 1921, or maybe through 1926, but did not reduce them for persons born after 1921, or maybe after 1926.

In the sense that all persons born in 1917 and after are paid according to the same formula (with the exception of the transition option), this study has not found support for the singled-out argument. It should be noted, however, that the behavior of the economy was unusual during the Notch period and that the economy did have an effect on the resulting benefits. In this latter sense, it does seem reasonable to say that the changes made had a more abrupt and more unexpected effect on those born in the Notch years than on those born later.

4 Dual Indexing

The problem with the 1972 law is generally described as one of dual indexing, or over indexing, although some observers argue that this description is misleading. Whatever it is called, the 1972 law did annually and automatically exactly what Congress had been doing on an *ad hoc* basis before the law, and that was to increase the initial-benefit amounts (shown in the benefit tables) with a COLA (which, before the 1972 law, was referred to simply as a benefit-level adjustment) and at the same time to increase already-being-paid benefits with the same COLA.

A benefit table might say that if the average earnings figure is \$600 per month, the corresponding initial benefit is \$200 per month. If inflation dictated (according to the 1972 law) a COLA of 20 percent, or if Congress decided (possibly based on inflation) to make an adjustment of 20 percent, the new table would say that if the average earnings figure is \$600 per month, the person should receive an initial benefit of \$240 per month. Similarly, persons already retired and receiving, say, \$300 per month would begin receiving \$360 per month. Under the COLA procedure of the 1972 law, the first COLAs were 8 percent in 1975, 6.4 percent in 1976, and 5.9 percent in 1976. Prior to the 1972 law, Congress made adjustments of 7 percent in 1964, 13 percent in 1967, 15 percent in 1969, 10 percent in 1971, 20 percent in 1972, and 11 percent (the last *ad hoc* adjustment) in 1973. Adjustments were not made every year, just when Congress got around to it.

The problem with this system (which was applied both before and after the 1972 law) is that when inflation occurs, *the average earnings figures are inflated as well*.⁴⁶ Then when the inflated average earnings figures are input into a table that has been inflated

⁴⁶ The average earnings could increase due to real earnings growth as well as to inflation. Inflation usually adds to what the earnings growth would otherwise have been.

to account for inflation, the initial benefits turn out to be inflated twice. The financial damage done by this procedure depended on the levels of inflation and the attendant growth in earnings, tempered somewhat by the fact that the number of years of earnings being used in the averages was increasing each year.

In the 1972 law, Congress essentially automated the adjustment process that had been going on for some time, and a COLA (which could not be below zero) would be announced every year. It is sometimes pointed out that if wage growth and inflation had unfolded in a different way, the 1972 procedure would not have caused a problem, especially during the period when the number of years in the average was increasing.⁴⁷ Analytically, however, it is difficult to avoid a conclusion about the flawed nature of a system that operates off earnings averages that increase with inflation and then inputs these inflated figures into a table that also has been increased to account for inflation.

⁴⁷ For persons retiring at age 62, the number of years in the average stopped increasing after 1991, the year in which it reached 35. At this point, even a 1972 law that had worked out acceptably would have begun presenting greater difficulties.

Appendix E

This appendix contains 5 tables. The first contains basic Social Security data. The next 4 contain calculated results.

**Exhibit E-1
Basic Social
Security Data**

Basic Social Security Data, Relevant to this Study					
Year	Average Earnings	Avg. Earn. Increase	Maximum Earnings	Max. Earn. Increase	COLA
1950	2,543.96	2.45%	3,000	0.00%	77.00%
1951	2,799.16	10.03%	3,600	20.00%	0.00%
1952	2,973.32	6.22%	3,600	0.00%	12.50%
1953	3,139.44	5.59%	3,600	0.00%	0.00%
1954	3,155.64	0.52%	3,600	0.00%	13.00%
1955	3,301.44	4.62%	4,200	16.67%	0.00%
1956	3,532.36	6.99%	4,200	0.00%	0.00%
1957	3,641.72	3.10%	4,200	0.00%	0.00%
1958	3,673.80	0.88%	4,200	0.00%	7.00%
1959	3,855.80	4.95%	4,800	14.29%	0.00%
1960	4,007.12	3.92%	4,800	0.00%	0.00%
1961	4,086.76	1.99%	4,800	0.00%	0.00%
1962	4,291.40	5.01%	4,800	0.00%	0.00%
1963	4,396.64	2.45%	4,800	0.00%	0.00%
1964	4,576.32	4.09%	4,800	0.00%	7.00%
1965	4,658.72	1.80%	4,800	0.00%	0.00%
1966	4,938.36	6.00%	6,600	37.50%	0.00%
1967	5,213.44	5.57%	6,600	0.00%	13.00%
1968	5,571.76	6.87%	7,800	18.18%	0.00%
1969	5,893.76	5.78%	7,800	0.00%	15.00%
1970	6,186.24	4.96%	7,800	0.00%	0.00%
1971	6,497.08	5.02%	7,800	0.00%	10.00%
1972	7,133.80	9.80%	9,000	15.38%	20.00%
1973	7,580.16	6.26%	10,800	20.00%	11.00%
1974	8,030.76	5.94%	13,200	22.22%	0.00%
1975	8,630.92	7.47%	14,100	6.82%	8.00%
1976	9,226.48	6.90%	15,300	8.51%	6.40%
1977	9,779.44	5.99%	16,500	7.84%	5.90%
1978	10,556.03	7.94%	17,700	7.27%	6.50%
1979	11,479.46	8.75%	22,900	29.38%	9.90%
1980	12,513.46	9.01%	25,900	13.10%	14.30%
1981	13,773.10	10.07%	29,700	14.67%	11.20%
1982	14,531.34	5.51%	32,400	9.09%	7.40%
1983	15,239.24	4.87%	35,700	10.19%	0.00%
1984	16,135.07	5.88%	37,800	5.88%	3.50%
1985	16,822.51	4.26%	39,600	4.76%	3.50%
1986	17,321.82	2.97%	42,000	6.06%	3.10%
1987	18,426.51	6.38%	43,800	4.29%	1.30%
1988	19,334.04	4.93%	45,000	2.74%	4.20%
1989	20,099.55	3.96%	48,000	6.67%	4.00%
1990	21,027.98	4.62%	51,300	6.88%	4.70%
1991	21,811.60	3.73%	53,400	4.09%	5.40%
1992	22,935.42	5.15%	55,500	3.93%	3.70%
1993	23,132.67	0.86%	57,600	3.78%	3.00%
1994	23,753.53	2.68%	60,600	5.21%	2.60%
1995	24,705.66	4.01%	61,200	0.99%	2.80%
1996	25,913.90	4.89%	62,700	2.45%	2.60%
1997	27,426.00	5.84%	65,400	4.31%	2.90%
1998	28,861.44	5.23%	68,400	4.59%	2.10%
1999	30,469.84	5.57%	72,600	6.14%	1.30%
2000	32,154.82	5.53%	76,200	4.96%	2.50%
2001	33,680.00	4.74%	80,400	5.51%	3.50%

**Exhibit E-2 Monthly Benefit Data for Persons Retiring at
Age 62, with Average Earnings, in 1988 Dollars.**

Retire at Age 62 Average Earnings Benefits Paid in 1988				
Retire Yr.	Birth Yr.	72 Law	Transition	77 law
1975	1913	489.68		513.87
1976	1914	500.41		504.05
1977	1915	511.87		508.99
1978	1916	523.83		513.67
1979	1917	536.82	536.82	512.20
1980	1918	551.11	501.46	502.92
1981	1919	566.80	451.21	478.50
1982	1920	585.15	418.90	469.15
1983	1921	606.19	404.07	480.63
1984	1922	627.56		489.32
1985	1923	649.70		495.90
1986	1924	669.39		509.31
1987	1925	681.65		524.19
1988	1926	694.53		518.28
1989	1927	708.99		529.79
1990	1928			530.93
1991	1929			523.70
1992	1930			528.21
1993	1931			531.93

Note: Benefits are shown for three formulas, even though that formula may not be applicable to that birth year.

**Exhibit E-3 Monthly Benefit Data for Persons Retiring at
Age 65, with Average Earnings, in 1988 Dollars.**

Retire at Age 65 Average Earnings Benefits Paid in 1988				
Retire Yr.	Birth Yr.	72 Law	Transition	77 law
1975	1910	612.10		716.74
1976	1911	632.76		630.04
1977	1912	655.38		619.10
1978	1913	680.11		657.92
1979	1914	697.53		645.37
1980	1915	716.67		651.07
1981	1916	740.09		657.60
1982	1917	767.62	671.03	657.34
1983	1918	795.70	626.83	644.83
1984	1919	824.11	564.02	611.65
1985	1920	844.20	523.63	597.18
1986	1921	860.58	505.09	608.71
1987	1922	876.70		618.82
1988	1923	894.72		626.74
1989	1924	907.35		642.91
1990	1925			661.87
1991	1926			654.94
1992	1927			668.19
1993	1928			669.27

Note: Benefits are shown for three formulas, even though that formula may not be applicable to that birth year.

Exhibit E-4 Monthly Benefit Data for Persons Retiring at Age 62, with Maximum Earnings, in 1988 Dollars.

Retire at Age 62				
Maximum Earnings				
Benefits Paid in 1988				
Retire Yr.	Birth Yr.	72 Law	Transition	77 law
1975	1913	573.40		613.69
1976	1914	599.86		608.45
1977	1915	628.87		620.94
1978	1916	659.19		632.93
1979	1917	679.75	679.75	634.03
1980	1918	704.50	641.04	627.39
1981	1919	729.16	580.47	601.57
1982	1920	755.30	540.72	594.31
1983	1921	782.86	521.83	613.75
1984	1922	812.40		630.23
1985	1923	839.63		643.58
1986	1924	866.61		665.65
1987	1925	893.03		689.99
1988	1926	917.76		686.22
1989	1927	941.43		705.36
1990	1928			711.18
1991	1929			705.45
1992	1930			717.14
1993	1931			728.04

Note: Benefits are shown for three formulas, even though that formula may not be applicable to that birth year.

**Exhibit E-5 Monthly Benefit Data for Persons Retiring at
Age 65, with Maximum Earnings, in 1988 Dollars.**

Retire at Age 65 Maximum Earnings Benefits Paid in 1988				
Retire Yr.	Birth Yr.	72 Law	Transition	77 law
1975	1910	716.75		853.03
1976	1911	762.61		761.90
1977	1912	815.48		757.51
1978	1913	855.66		810.97
1979	1914	879.42		798.13
1980	1915	909.97		812.91
1981	1916	941.41		828.53
1982	1917	977.05	849.69	835.14
1983	1918	1014.43	801.40	827.05
1984	1919	1050.83	725.59	792.53
1985	1920	1087.08	675.90	780.70
1986	1921	1121.31	652.29	802.63
1987	1922	1155.09		822.67
1988	1923	1178.76		838.68
1989	1924	1178.76		865.16
1990	1925			895.62
1991	1926			890.84
1992	1927			914.21
1993	1928			920.59

Note: Benefits are shown for three formulas, even though that formula may not be applicable to that birth year.