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Historical Redistribution Under the Social Security Disability Insurance Program

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Abstract

This study uses Social Security administrative data on historical taxes and benefits by year, age, gender, and race for an *ex post* analysis of redistribution under the Disability Insurance program. The relationship between the taxes paid and benefits received to date under the program is described for successive cohorts as a whole and for specific race and gender groups both within cohorts and across time.

I. Introduction

Relatively few studies have focused on redistribution under the Social Security Disability Insurance (DI) program.[1] The studies that have addressed the issue generally have adopted a "hypothetical" worker approach. For example, Bakija and Steuerle [1993] estimate results under the DI program for hypothetical workers of different gender, earnings level, and family composition groups in the 1965 birth cohort. As with most other hypothetical worker analyses, the generality of these results is fairly limited, because critical inputs to the analysis, such as the earnings profiles, ages of labor force entry, mortality rates, and disability incidence rates of persons in the various gender, earnings level, and family composition groups, are not realistically differentiated by the same characteristics as the estimated results.[2]

In contrast, the present study uses Social Security administrative data on actual historical taxes and benefits by year, age, gender, and race for an *ex post* analysis of redistribution under the DI program. To the extent that the data allow, the treatment to date of specific birth cohorts under the DI program is described, as is the relationship between the taxes paid and benefits received by members of specific race and gender groups both within cohorts and across time. Because the analysis uses administrative data based on actual program outcomes, the results are not subject to many of the limitations of the hypothetical worker approach — differences across race and gender groups, for example, in earnings profiles and levels, ages of labor force entry,

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[1] Other government programs that provide support for the disabled, such as the Supplemental Security Income program, are not considered in this analysis.

[2] Given adequate data and analysis, it is possible to construct tax and benefit streams using synthetic data that are actually representative of particular groups of workers. The more detailed the worker categorizations, however, the more deficient available data sources and the more difficult the attendant analyses become. See Leimer [1995] for a more thorough critique of the hypothetical worker approach, along with a discussion of the major assumptions, key analytical methods, and measures used in Social Security money's worth analyses.

labor force participation patterns, unemployment spells, mortality experience, and disability incidence and termination rates are implicitly incorporated into the analysis results. On the other hand, there is still a lack of sufficient years of historical data to analyze the full lifetime effects of the DI program on successive birth cohorts, and *ex post* results are not necessarily indicative of future outcomes under the program. Moreover, limitations of the administrative tax and benefit data used in this analysis prevent the present study from isolating the differential treatment of the race and gender groups while controlling for associated differences in other characteristics of interest, such as earnings levels; *i.e.*, while the present analysis describes the differential historical treatment of these race and gender groups, the analysis is unable to identify the extent to which this differential treatment would persist in the absence of certain other differences observed historically between the groups.

Among the results presented below, this paper finds that the pattern of redistribution across cohorts under the DI program differs from that found in previous studies for the Old-Age and Survivors Insurance (OASI) program, particularly for the earliest cohorts. Within cohorts, this paper finds that the overall distributional results across race and gender groups are generally consistent with results found in *ex post* analyses of the OASI program. In particular, benefits have generally been smaller relative to taxes for whites than for nonwhites, as defined in this analysis, and, in most cohorts, for males than for females. There is some evidence, however, that relative outcomes for current and future female participants may be less favorable under DI than for earlier cohorts.

In the remainder of this paper, Section II describes the methods used to develop the redistributional estimates that are presented in Sections III and IV. Section III adopts a cohort

perspective and presents results to date under the DI program for cohorts as a whole and for specific race and gender groups within each cohort. Section IV adopts an intertemporal perspective and presents estimates of current and cumulative redistribution over time across members of specific race and gender groups without regard to their cohort affiliation. Section V draws together the results from both perspectives and summarizes the main findings of the analysis.

II. Method

Social Security administrative data were used to develop estimates of the DI taxes paid and benefits received by persons of each race, gender, and single year of age for the years 1957-1995, where 1957 was the first year of the DI program and 1995 was the last available data year. The nature of the administrative data imposed a number of constraints on the analysis. The first concerns the allocation of auxiliary benefits[3] to specific age, race, and gender groups. One approach, referred to here as the "individual-specific" approach, would allocate such benefits to the age, race, and gender group of the auxiliary beneficiary. An alternative approach, referred to here as the "worker-account" approach, would allocate such benefits to the age, race, and gender group of the insured worker on whose account the benefits are paid. These two alternative approaches offer different perspectives on the redistributional effects of the program — each has advantages and disadvantages, depending on the specific question being addressed. As a practical matter, however, the data sources used in the present analysis permitted the use of the

[3] Monthly benefits payable to a spouse or child of a disabled worker are referred to as "auxiliary" benefits, while benefits payable to the insured worker on whose account the benefits were earned are referred to as "primary" benefits.

individual-specific approach but not the worker-account approach. As such, the present analysis assigns benefits received by dependents to the cohort, race, and gender groups to which the dependents belong, not to the groups to which the worker on whose account the benefits are paid belongs.[4]

The second constraint imposed by the use of Social Security administrative data relates to the race variable, which has a number of problems that cloud its interpretation. The administrative race variable is collected when an individual completes a form "SS-5" to apply for a Social Security card or request a replacement card. One potential problem arises because the race category is selected by the Social Security card applicant; if attitudes affecting the selection of race change over time, the racial composition of each administrative race category may also change over time. A second problem arises because response to the race question is voluntary. The proportion of records with unknown race has been increasing over time, gradually eroding the quality of the race variable; although this problem does not appear to be serious for the

[4] The administrative benefit data underlying this analysis assume, however, that the race of a dependent receiving benefits is the same as that of the worker on whose account the benefits are paid.

present analysis, it is likely to become so for future analyses.[5] A third problem with the race variable arises because the SS-5 form has changed over time. Prior to November 1980, the form allowed only three responses to the race question, corresponding to "White," "Black," and "Other." The administrative race information for most present beneficiaries is based on this three-way classification. Beginning in November 1980, the race question was expanded to allow five race/ethnic responses: "White (not Hispanic)," "Black (not Hispanic)," "Hispanic," "Asian or Pacific Islander," and "American Indian or Alaskan Native."

As discussed in appendix A, this five-way race/ethnic classification does not map cleanly into the prior three-way race classification, and additional problems are created by the grouping of race categories in the benefit data underlying this analysis. These benefit data collectively support only two race categories over the full analysis period, 1957-95; these two categories are referred to in this study as White and Nonwhite. The White category consists of persons coded as White under the old SS-5 code, persons coded as White (not Hispanic) under the new SS-5

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[5] In addition to applicants who choose not to respond to the race question, a specific problem arose during the years 1962-1965, when a special IRS registration of taxpayers without Social Security numbers employed an application form that did not require race information. Buckler and Smith [1978] report that the proportion of persons failing to provide race information when applying for a Social Security number rose as high as 34 percent in 1963 before falling back to 5 percent in 1965 and between 2 and 3 percent in subsequent years. A corresponding local peak can be observed in the proportion of unknown race records by birth cohort in the administrative file used to develop the tax data used in this analysis. The share of unknown race records in the 1993 version of this file was typically less than 1 percent through about the 1940 cohort for males and the 1943 cohort for females, then rose rapidly to local peaks of 7.1 percent for the 1948 male cohort and 4.2 percent for the 1950 female cohort, fell again to local troughs of 2.8 percent (males) and 2.4 percent (females) for the 1964 cohort, then resumed a general upward trend for later cohorts, reaching over 4 percent for both males and females by the cohorts born in the mid- to late-1970s, who were approaching labor force participation age by the end of the analysis period used in this paper. Overall, 2.3 percent of male records and 2.1 percent of female records on this file were coded as unknown race. The problem of unknown race is likely to become more severe in the future as a result of the "enumeration at birth" program; this program, which began in 1987, provides a procedure for issuing Social Security cards to newborns without information on race becoming available to the Social Security Administration.

code, and persons coded as Unknown under either the old or new SS-5 codes.[6] The Nonwhite category consists of persons coded as Black or Other under the old SS-5 code and persons coded as Black (not Hispanic), Hispanic, Asian or Pacific Islander, or American Indian or Alaskan Native under the new SS-5 code. As discussed in appendix A, most Hispanics in this analysis are probably represented in the White race category, despite the inclusion of new SS-5 Hispanics with Nonwhites, since the new SS-5 codes were not introduced until late 1980.[7]

While most of the results in this paper reflect the White/Nonwhite race categorization, some results are presented that cover only the years 1968-95, for which the benefit data underlying this analysis support three race categories. These three categories are referred to in this paper as White, Black, and Other. The definition of the White category is identical to that given in the previous paragraph for the White/Nonwhite categorization. The Black category consists of persons coded as Black under the old SS-5 code and persons coded as Black (not Hispanic) under

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[6] While the inclusion of Unknowns with Whites was imposed by the administrative benefit data used in this analysis, there is some evidence that the vast majority of Unknowns would be categorized as white in survey data. An examination of the 1973 Exact Match File, which links the 1973 Current Population Survey (CPS) with Social Security administrative data, indicates that 95 percent of those with any Social Security covered earnings and whose Social Security Summary Earnings Record race was unknown were coded as whites in the CPS portion of the file. (See Kilss and Scheuren [1978] for an overview of the 1973 Exact Match File.)

[7] Because the most appropriate grouping of new SS-5 Hispanics in the tax data is not clear (as discussed in appendix A), estimates were also developed under an alternative grouping that included new SS-5 Hispanics with Whites (rather than with Nonwhites) in the tax data; fortunately, none of the main conclusions of the analysis were sensitive to this alternative grouping.

the new SS-5 code, while the Other category consists of all other Nonwhites as defined in the previous paragraph.[8]

The allocation of taxes in this analysis assumes full backward shifting of the employer portion of the payroll tax to workers in the form of lower wages. Although there is disagreement among economists about the incidence of the payroll tax, full backward shifting is by far the most common tax incidence assumption in analyses of the redistributional effects of the Social Security program.[9]

The aggregate DI taxes paid by persons of each race, gender, and age in each year from 1957 through 1995 were derived from the Social Security Administration's 1% Continuous Work History Sample (CWHS) data file.[10] This file contains information on annual Social Security taxable earnings, beginning in 1951, for a 1.0 percent sample of all Social Security numbers. The general approach involved identifying the DI taxable wages or self-employment income for each valid record in each year and computing the associated DI tax payment using the DI tax rates and rules for that year, accounting for potential complications such as multiple employers

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[8] One other problem associated with the race variable is that the benefit data underlying this analysis incorporated an inconsistent change in the race categorization in 1992. Specifically, some of those erroneously coded as other or unknown were recategorized to specific race groups in the benefit tables for 1992 and later years. While the number of beneficiaries involved was relatively small, this recategorization created an inconsistency in the pre- and post-1992 race categories. The apparent net effect of this recategorization was to increase somewhat the share of benefits allocated to the White race category relative to the Nonwhite category beginning in 1992. As expected, the relatively small Other category in the three-way White/Black/Other grouping appears to be disproportionately affected by the recategorization, rendering estimated results for that group as suspect, particularly in the latter portion of the analysis period.

[9] While different studies have reached different conclusions, the assumption that the employer share of the tax is shifted directly or indirectly to workers is supported by a number of theoretical and empirical analyses. Based on a theoretical analysis, for example, Feldstein [1974] concludes that in the long run labor will bear at least 100 percent of the net burden of a tax on labor income. See Dye [1984] for a summary of a number of empirical analyses of payroll tax incidence.

[10] See Smith [1989] for a description of the CWHS.

and the mix between taxable wages and self-employment income in each year. Aggregate tax payments by race, gender, and age in each year were calculated from the sample and then adjusted proportionally to sum to the actual aggregate DI tax liability for that year.[11] In effect, then, the sample data were used to define the proportional distribution of aggregate DI tax liability by race, gender, and age in each year.[12]

A similar approach was adopted for identifying historical benefit payments, except that summary tables on actual DI monthly benefit payments as of year-end by beneficiary type, race, age, and year from the *Annual Statistical Supplement* to the *Social Security Bulletin* were used in place of individual sample data.[13] The use of summary tables was necessitated because individual sample data files derived from administrative records do not contain complete historical benefit records.

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[11] The aggregate DI tax liability for each year was derived by applying historical DI tax rates to taxable wage and salary earnings and self-employment earnings (tables 2.A3 and 4.B2 in the 1997 *Annual Statistical Supplement* to the *Social Security Bulletin*). Sample taxes were adjusted to aggregate controls because of evidence that individual wage records tend to underestimate actual taxable earnings each year based on employer reports. The specific adjustment adopted effectively assumes that the proportional underestimate in a given year is the same for each race, gender, and age group.

[12] This estimate of tax liability does not adjust for the income tax offsets accorded under the program to workers in all periods and to the self-employed after 1983. For example, the assumption that payroll taxes are backward shifted (in the form of lower wages) implies that workers' true earnings are higher than actually observed, and this unobserved portion of true earnings avoids the personal income taxation applied to observed earnings. Explicit preferential income tax treatment has been accorded to self-employment earnings since 1984.

[13] Although the format and specific detail in these tables have varied over time, all of the summary tables report monthly benefits in current payment status by benefit type, age, and race as of year-end. As examples, see Table 40 in the 1957 *Annual Statistical Supplement* and Table 5.A1 in the 1996 *Annual Statistical Supplement*.

Monthly cash benefit payments under the DI program fall within three major beneficiary categories: disabled workers, spouses of disabled workers, and children of disabled workers.[14] Within each of these monthly beneficiary categories, the proportional distribution by race, gender, and age of the corresponding type of benefits from the summary benefit table for that year was used to allocate aggregate benefits paid from the DI trust fund for that beneficiary category in that year across race, gender, and age groups;[15] for example, the proportional distribution by race, gender, and age of disabled worker benefits in current-payment status at the end of 1988, as derived from the summary benefit table for that year, was used to allocate aggregate disabled worker benefit payments during 1988, as reported for the DI trust fund, across those race, gender, and age groups.[16]

These estimates of historical DI benefits were adjusted to reflect the income taxation of Social Security benefits that was initiated in 1984. Accurately identifying the incidence of benefit income taxation across the race, gender, and age groups in each year would require much more information than was available in the source data used in this analysis. Consequently, the effective rate of benefit income taxation was assumed to be constant across the race, gender, and age categories in any given year. In each year from 1984 on, the effective benefit income taxation rate was identified from Department of the Treasury estimates of the aggregate income

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[14] Benefits to disabled widows, disabled widowers, and disabled children of retired or deceased workers are paid under the OASI program.

[15] Total annual benefits paid from the DI trust fund by beneficiary category were taken from table 92 in the 1963 *Annual Statistical Supplement* for the years 1957-63 and from table 4.A6 in the 1997 *Annual Statistical Supplement* for the years 1964-95. A summary table of benefits by beneficiary type, race, and age for 1981 was not published in the *Annual Statistical Supplement*, so the proportional distribution of benefits by race, gender, and age in that year was derived by interpolating between the 1980 and 1982 estimates.

[16] Additional details of the historical benefit estimation are provided in appendix A.

tax liability in that year accruing from DI benefits.[17] The assumption of identical effective benefit taxation rates across the race, gender, and age categories introduces potential biases into the analysis. These biases are likely to be small, however, since the estimated average effective benefit taxation rate is itself quite small, rising from about 0.5 percent in 1984-86 to slightly more than 1.3 percent of DI benefits in 1995.[18]

Three alternative interest rate series are used in the analysis to accumulate taxes and benefits over time; these three series correspond to a nominal rate equal to the rate of inflation (a zero real interest rate), the rate of return earned on DI trust fund assets, and the total rate of return to an index of large company stocks.[19] Estimates using these three rates are presented in appendices to accommodate readers with different preferences regarding the appropriate interest rate to use in analyzing the DI program. The appropriate interest rate, of course, depends on the particular question being addressed.[20] The discussion, figures, and tables in the text of this paper are based on the interest rate earned historically on DI trust fund assets. Using the historical interest rates at which the program was actually able to transform funds over time is appropriate for identifying *ex post* redistribution from a program perspective.

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[17] For example, U.S. Department of the Treasury [1997] reports estimates for calendar year 1992 based on an analysis of 1992 tax returns. Unpublished Treasury estimates were used for the calendar years 1993-95, with the estimate for 1995 being preliminary. No attempt was made to identify the additional state income tax liability associated with DI benefits.

[18] The estimated average effective taxation rate on DI benefits jumped from less than 0.8 percent in 1993 to about 1.2 percent in 1994, as provisions exposing a greater proportion of benefits to income taxation went into effect.

[19] The inflation rate series and the large company stock index series can be found in Ibbotson [1996] and correspond respectively to the Consumer Price Index for all urban consumers (not seasonally adjusted) and the S&P 500 Composite index with dividends reinvested. The estimated effective annual interest rate earned by the DI trust fund is taken from Kunkel [1997].

[20] A discussion of this issue is beyond the scope of this paper; Leimer [1994], especially pp. 18-19 and 27-28, and Leimer [1995], pp. 7-8, provide more complete discussions.

As a final note, the redistributional measures presented in this paper should not be interpreted as money's worth measures, *per se*, since they simply contrast the taxes paid with the benefits received by various groups of participants. Some of the taxes collected have been used to cover the expenses of administering the program, necessarily creating an imbalance between taxes and benefits.[21] Analogous, and likely higher, expenses would be borne by private companies attempting to provide insurance equivalent to that provided under the DI program.[22] Reported benefit/tax ratios less than one, or benefit-tax differences less than zero in this paper, then, do not by themselves suggest that the corresponding program participants failed to receive their money's worth in insurance coverage under the program, since these measures do not adjust for the administrative costs of providing the disability insurance. Differences between these measures across groups of workers with different characteristics of interest, such as race and gender, can be used, however, to suggest the net effects of redistribution under the program.[23]

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[21] A deficiency of nearly all "money's worth" analyses is that they ignore the administrative costs of the alternative to which the Social Security program implicitly is being compared, biasing the comparison against the Social Security program. The bias is larger as a percentage of benefits for the DI program than for the OASI program, since the cost of administering the DI program is relatively higher. Conceptually, the administrative costs of specific alternatives to the Social Security retirement or disability programs could be incorporated into money's worth analyses to the extent that the costs can be identified.

[22] Administrative expenses under the DI program, reported as 2.6 percent of benefit payments and 2.0 percent of net contributions in 1997, are relatively small by private insurance industry standards, although these reported administrative expenses for the DI program exclude some associated costs incurred by employers, the self-employed, and other government agencies in their transactions with the DI program. Nevertheless, administrative costs and operating expenses in the private insurance industry are generally much higher, reflecting marketing costs, adverse selection, and the inability to exploit the economies of scale enjoyed by a compulsory, nearly universal, public program. See Leimer [1991] for additional discussion.

[23] This inference, of course, requires the assumption that the cost of administering the program does not differ much across the groups of interest or, if it does, that these cost differences should be borne equally across all groups.

III. Cohort Analysis

This section focuses on redistribution under the DI program across and within specific birth cohorts; *i.e.*, results are first presented for cohorts as a whole and then for specific race and gender groups within each cohort. Although the historical treatment of each cohort under the DI program is identified in this analysis through 1995, the DI program has not been in existence sufficiently long for any cohort to have participated in the program over its entire lifetime. Nevertheless, a sense of typical patterns of treatment under the program over the life cycles of individual cohorts can be garnered by piecing together the treatment of different cohorts who have experienced the program at different points in their life cycles. Figure 1 displays the aggregate real net transfer flows experienced by selected decennial year birth cohorts at various points in their life cycles; *i.e.*, for a given cohort, this figure plots aggregate DI benefits less taxes, adjusted for inflation, across all cohort members at each age.[24] For example, data for the cohort born in 1950 are shown for ages 7 through 45, corresponding to the calendar years 1957-1995 during which the DI program has been in existence and for which data are available.

While it is difficult to pick out the specific graph associated with any particular decennial year birth cohort in figure 1, that is not the point of including the figure. The primary purpose of this figure is to illustrate the typical life cycle pattern of net transfers under the DI program, as defined in this paper, for any given cohort. At the earliest ages, prior to entry into the labor force, the cohort typically experiences positive net transfers as children of disabled worker beneficiaries. As the cohort attains typical labor force entry ages, the DI taxes paid by working

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[24] The irregular patterns displayed in figure 1 for some of the graphs, including the sharp downward plunge in net transfers for some cohorts in the next-to-last year, generally reflect *ad hoc* benefit and tax changes that occurred in particular years. The "Zero" label in the figure legend refers to the reference line indicating zero real net transfers.

cohort members begin to offset and eventually outweigh these child benefits, and net transfers under the DI program become negative, on balance. Over the early portion of the working life, when disability incidence rates are relatively low, the DI taxes paid by working cohort members continue to outweigh DI benefits. As the cohort ages, however, disability incidence rates eventually rise to levels sufficient for DI benefits to outweigh the DI taxes paid by working, nondisabled, cohort members; this switchover back to positive net transfers for the cohort typically occurs around age 50. Net transfers for the cohort typically rise sharply and remain positive until age 65, when disabled worker benefits are automatically converted to old-age benefits paid out of the OASI trust fund rather than out of the DI trust fund. For the cohorts shown in figure 1, the early part of the remainder of the life cycle is primarily characterized by negative, but relatively small, net transfers for the cohort, as the DI taxes paid by working cohort members outweigh the DI benefits paid to aged dependents of disabled workers; although not as obvious in the figure, the latter part of the cohort's life cycle may also be characterized by small positive aggregate net transfers, as labor force participation and, therefore, DI taxes diminish even further among cohort members.

These typical life cycle patterns are also important in interpreting figure 2, which displays the ratio of aggregate accumulated benefits to accumulated taxes from the inception of the DI program in 1957 through 1995 for cohorts born from 1875 through 1975. As in all of the figures displaying accumulated values, DI benefits and taxes are accumulated using the trust fund

interest rate; the data underlying this figure are provided in Appendix C.[25] The accumulated benefit/tax ratio in figure 2 is less than one for the earliest cohorts, through the cohort born in 1894, since net transfers under the DI program for these cohorts center on the last portion of the life cycle, mostly beyond age 64, where net transfers are mostly negative, but small. As shown in figure 2, accumulated benefits from the start of the program through 1995 exceed accumulated taxes over the corresponding period for the cohorts born from 1895 through 1933; net transfers under the DI program for these cohorts generally center more heavily on the latter portion of the working life, when higher disability rates typically generate positive net transfers. Within this cohort range, the benefit/tax ratio remains relatively stable, with accumulated benefits more than twice accumulated taxes, for cohorts born from 1900 through 1920. The accumulated benefit/tax ratio in figure 2 then declines to less than one for cohorts born from 1934 through 1968. Again, experience under the DI program to date for these cohorts has generally centered more heavily on the early working life, where lower disability rates typically translate into negative net transfers; as these cohorts complete their life cycle and move into the last portion of the working life with higher disability rates, the accumulated benefit/tax ratio will tend to become more favorable. Finally, the figure 2 benefit/tax ratio becomes greater than one again for cohorts born after 1968, for whom experience under the DI program to date has centered most heavily on the early life

[25] Appendices B and D, respectively, provide the corresponding data with benefits and taxes accumulated using a nominal rate equal to the rate of inflation (a zero real interest rate) and the rate of return to large company stocks. Care should be taken in using the individual cell estimates displayed in these and following appendices for some of the cohort, race, and gender groups; sample cell counts are likely to be relatively small for some of these groups, particularly the Nonwhite groups in the earliest cohorts shown. Aggregates and general patterns across groups of cohorts should be more reliable.

cycle, where child and young adult benefits under the DI program typically outweigh any taxes paid by working, nondisabled, cohort members.

While the accumulated benefit/tax ratio in figure 2 indicates the relative sizes of accumulated DI benefits and taxes for each cohort, it does not reveal the absolute size of the lifetime net transfer. The aggregate lifetime net transfer to each cohort is illustrated in figure 3, which displays the difference between accumulated benefits and accumulated taxes from the inception of the DI program in 1957 through 1995 across all cohort members for cohorts born from 1875 through 1975. Again, DI benefits and taxes in this figure are accumulated using the trust fund interest rate, and the underlying data are provided in Appendix F.[26] It is clear from this figure that while accumulated benefits fall short of accumulated taxes for the earliest cohorts, the negative lifetime net transfer to these cohorts is relatively small in absolute size. The aggregate lifetime net transfer to date rises sharply across subsequent cohorts, peaking at about $19 billion for the 1920 cohort. The aggregate lifetime net transfer to date falls sharply for subsequent cohorts, but remains positive for cohorts who attained at least age 62 by the end of the analysis period, *i.e.*, for cohorts whose lifetimes have spanned, for the most part, the ages of most intense interaction with the DI program. For many of the remaining cohorts in figure 3, whose experience under the DI program thus far excludes the ages of most intense positive net transfers, the aggregate lifetime net transfer to date is negative, bottoming out at almost -$25 billion for the 1947 cohort.

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[26] Appendices E and G, respectively, provide the corresponding data with benefits and taxes accumulated using a nominal rate equal to the rate of inflation (a zero real interest rate) and the rate of return to large company stocks.

Figure 4 is intended to provide a rough feel for the level of expected lifetime net transfers per cohort member for a subset of birth cohorts, those born from 1909 through 1975. This figure displays the aggregate DI lifetime net transfer through 1995 for these cohorts divided by a series intended to represent the initial population of the cohorts.[27] While these per initial cohort member estimates are only illustrative,[28] they exhibit a pattern across cohorts similar to that for the aggregate lifetime net transfers, peaking at over $6800 for the 1919 cohort, remaining positive for cohorts who attained at least age 62 by the end of the analysis period, and bottoming out at less than -$6500 for the 1947 cohort, which had only attained age 48 by the end of the analysis period in 1995. Again, the lifetime net transfer will tend to become more favorable for these latter cohorts as they move into the last portion of the working life characterized by higher disability rates and positive net transfers.

Since the bulk of net transfers under the DI program occur prior to age 65 (as illustrated in figure 1), the lifetime taxes and benefits represented in figures 2 through 4 are largely complete for cohorts born through 1931.[29] Except for the relatively small negative lifetime net transfers to the earliest cohorts (those born through 1894), all of these cohorts received positive lifetime net transfers under the DI program. Because the DI program did not begin until 1957, however,

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[27] Data (provided by the Social Security Administration Office of the Chief Actuary) on the Social Security area population aged 0 in each year from 1941-1995 was merged with data (from table 1-B in *Vital Statistics of the United States, 1960, Volume I—Natality*) on the number of live births in the United States for the years 1909-1959 to form a series intended to roughly represent the relevant population aged 0 in each year from 1909-1995.

[28] Aside from the rough adjustments used to develop the initial population estimates, the data displayed in figure 4 are not equivalent to expected lifetime transfers per initial cohort member because of net immigration over the cohort's life cycle. Even if these problems did not exist, the estimates would represent expected lifetime transfers per initial cohort member, not per program participant.

[29] Members of the 1931 birth cohort were aged 64 in 1995, the last year of taxes and benefits included in this analysis.

none of these cohorts paid DI taxes over their entire working lives; the 1931 cohort, for example, first paid taxes (and received benefits) under the DI program at age 26.

The patterns of DI accumulated benefit/tax ratios and lifetime net transfers across cohorts displayed in figures 2 through 4 differ from those typically found for the OASI program. Under the OASI program, estimated benefit/tax ratios are generally highest for the earliest cohorts and decline fairly rapidly across subsequent cohorts, typical of the startup of a pay-as-you-go retirement program. Similarly, estimated lifetime net transfers under the OASI program for the earliest cohorts, while relatively small because of these cohorts' limited exposure to the program, are nonetheless positive.[30] In contrast, estimated lifetime net transfers, while small absolutely, are negative for the earliest cohorts under the DI program before becoming positive for cohorts born after about 1895. Again, negative lifetime net transfers to the earliest cohorts are possible under the DI program because tax payments in the last portion of the life cycle, although relatively small, may still outweigh benefits paid to aged dependents of disabled workers. Estimated outcomes under the DI program are most favorable in terms of the lifetime net transfer measure for cohorts born roughly around 1920.[31] Rather than declining rapidly across the early cohorts, as under the OASI program, benefit/tax ratios under the DI program are less than one for the earliest cohorts through the cohort born in 1894, but then increase rapidly, becoming greater than one and remaining relatively stable for cohorts born around the turn of the century through

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[30] See Leimer [1994] for a comprehensive analysis of intercohort redistribution under the OASI program for past, present, and future cohorts.

[31] It is interesting to note that the cohorts treated most favorably to date by the DI program include the so-called notch cohorts born between 1917 and 1921, whose members have sometimes argued that their treatment by the OASI program under the 1977 Social Security Amendments was unfair.

cohorts born around 1920. The series of relatively large *ad hoc* DI benefit increases in the late 1960s and early 1970s increased the benefit/tax ratio for many of these cohorts, especially those born around 1920, whose ages at that time fell in the portion of the life cycle characterized by relatively high disability rates.

These accumulated benefit/tax ratio and aggregate lifetime net transfer patterns across cohorts generally hold up for the race and gender subgroups within each cohort, but some differences do emerge, as shown in figures 5 through 7. Figure 5 displays accumulated benefit/tax ratios under the DI program through 1995 for the White and Nonwhite race groups in each of the 1875-1975 birth cohorts.[32] As shown in figure 5, the accumulated benefit/tax ratio for Nonwhite cohort members generally exceeds that for White cohort members. This suggests that Nonwhites, as defined in this analysis, have been treated more favorably as a group under the program than Whites as the net outcome of systematic historical differences between the groups in such areas as earnings levels, disability rates, dependent beneficiary relationships, and survival probabilities.

In particular, the historically lower earnings, higher disabled beneficiary to taxpayer ratios, and higher auxiliary beneficiary to disabled worker beneficiary ratios generally experienced by

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[32] The "Unit Ratio" label in the legend of this figure and following figures refers to the reference line indicating a benefit/tax ratio of one.

nonwhites contribute to this outcome.[33] In general, lower earnings result in more favorable treatment under the DI program, *ceteribus paribus*, because of the progressive benefit formula that provides higher replacement rates for workers with lower average lifetime earnings. Groups with higher disability rates, of course, also experience more favorable treatment, *ceteribus paribus*, as do groups with more potential dependent beneficiaries.

Over the period of analysis, nonwhites have also generally experienced higher mortality rates than whites at ages under about 65-70.[34] In the present analysis, mortality differentials beyond age 64 are much less important than mortality differentials earlier in the life cycle because of the concentration of DI benefits and taxes at the earlier ages. The effect of mortality differentials at earlier ages is more complex, however, because of the cycles of positive and negative DI net transfer flows typically experienced over the life cycle of each cohort and because of the correlation between disability and mortality at the earlier ages. In the absence of a positive correlation between disability and mortality, the higher mortality of nonwhites prior to age 65 probably works to lower the benefit/tax ratios for that group relative to whites under the DI program, since workers are less likely to attain the older working ages characterized by the

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[33] These characterizations of lower earnings, higher disabled beneficiary to taxpayer ratios, and higher auxiliary beneficiary to disabled worker beneficiary ratios for Nonwhites relative to Whites, as defined in this analysis, are supported by the data underlying this analysis. OASDI taxable earnings and number of taxpayers for each race and gender group were estimated from the CWHS, while the number of DI disabled and auxiliary beneficiaries for each race and gender group was estimated from the year-end summary benefit tables used to derive DI benefits. Based on these data, the average OASDI taxable earnings of Nonwhite workers were below those of White workers in each analysis year. The estimated ratio of DI disabled worker beneficiaries to OASDI taxpayers, a measure closely related to the DI disability rate, was higher for Nonwhites than Whites in each analysis year except the first, 1957. Similarly, the estimated ratio of auxiliary beneficiaries to disabled worker beneficiaries under the DI program was higher for Nonwhites than Whites in each analysis year that auxiliary benefits were paid except the first, 1958.

[34] For example, see Table 6-4 in Public Health Service [1996]. A number of studies (*e.g.*, Behrman *et.al.* [1991], Rogers [1992], and Menchik [1993]) suggest that most of the differential mortality observed by race can be explained by differences in socioeconomic factors.

highest disability rates and net transfer flows — survivor benefits are paid under the OASI program. This effect may be reduced or even reversed, however, to the extent that differential mortality at the earlier ages is associated with preceding periods of disability. On balance, then, differences in such factors as earnings levels, disability rates, and dependent beneficiary relationships appear to work in favor of Nonwhites relative to Whites under the DI program and also appear to collectively outweigh any opposing effect associated with differences in survival probabilities.

Figure 6 displays accumulated benefit/tax ratios separately for male and female members of each of the 1875-1975 birth cohorts. As shown, the benefit/tax ratio through 1995 for females exceeds that for males for the 1875-1893 cohorts, is less than for males for the 1894-1906 and 1909 cohorts, and exceeds that for males again for the 1907-1908 and 1910-1975 cohorts. There are a number of factors working in opposite directions that combine to produce these net changes in gender outcomes over time. For example, the historically higher earnings of males would tend to be associated with less favorable treatment under the DI program, *ceteribus paribus*, although the relationship between male and female earnings has generally been narrowing over time.[35] On the other hand, males have generally experienced higher disability incidence rates within specific age groups than females, although the relationship within each age group has narrowed and

[35] In the administrative data underlying this analysis, the ratio of average OASDI taxable earnings for males and females generally fell over the analysis period, although the movement was quite erratic at points. For example, years with *ad hoc* increases in the OASDI maximum taxable earnings were frequently associated with increases in the male/female OASDI taxable earnings ratio, as might be expected.

expanded over time.[36] The overall ratio of male to female disability worker award rates has also changed over time, generally increasing, for example, over the 1975-1985 period, but then decreasing in each subsequent year.[37] The more continuous labor force attachment of males historically would tend to be associated with higher insured rates and more favorable treatment under the DI program, *ceteris paribus*, but this relationship has also changed over time. The historically higher mortality rates of males for all but the oldest age groups[38] may be associated with less favorable treatment for males under the DI program, but the net effect of these mortality differentials is complicated by the cycles of positive and negative net transfer flows over the life cycle of each cohort and the correlation between disability and mortality.

Separate outcomes for the four race and gender groups are displayed in figure 7. The relationship among the race and gender outcomes varies across cohorts. The accumulated benefit/tax ratio ranking (from highest to lowest) among the race and gender groups that covers the largest number of cohorts by far, including the contiguous birth cohort ranges 1916-1923 and 1925-1959, is Nonwhite males, followed by Nonwhite females, followed by White females,

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[36] For example, see Kelley and Lopez [1984]. The characterization of generally higher disability incidence rates for males is also supported by the data underlying the present analysis. The estimated ratio of DI disabled worker beneficiaries to OASDI taxpayers, a measure closely related to the DI disability rate, was substantially higher for males than females in each analysis year. The estimated ratio of DI disabled worker beneficiaries to OASDI taxpayers was also examined within generally 5-year age groups in the decennial years from 1960 through 1990; in each year examined, the ratio was higher for males than females within each age group.

[37] For example, see table III.A8 in Barrick and Zayatz [1996], which presents data on annual benefit awards to disabled workers relative to the disability insured population, by gender, age group, and year. Under the DI program, an award adds the individual to the benefit rolls, but does not necessarily result in the immediate payment of benefits; see the "Glossary of Program Terms" section in the *Annual Statistical Supplement* for additional detail. The data underlying the present analysis also provide information about changing patterns in disability incidence for males and females over time. The estimated ratio of male to female DI disabled worker beneficiary/taxpayer ratios, a measure closely related to the ratio of male to female disability rates, generally fell over the analysis period (from 2.1 in 1957 to 1.4 in 1995), but with multiple inflection points.

[38] Again, see Table 6-4 in Public Health Service [1996].

followed by White males. As suggested in the earlier figures, the benefit/tax ratios exhibit less difference between males and females than between Whites and Nonwhites, as defined in this analysis, for the vast majority of cohorts, including all of the cohorts born from 1894 through 1962.

IV. Intertemporal Analysis

This section presents measures of current and cumulative redistribution over time under the DI program across members of specific race and gender groups; *i.e.*, while the previous section focussed on measures of lifetime redistribution to date for members of specific birth cohorts, this section abandons the cohort perspective and focusses on measures of redistribution during each year and cumulatively across time for members of specific race and gender groups, without regard to cohort affiliation. The data underlying the figures in this section are provided in Appendix H.[39] Figure 8 focuses on a measure of annual redistribution by race, displaying the ratio of aggregate DI benefits to aggregate DI taxes for members of each race group in each year from the inception of the program in 1957 through 1995, the last available data year.[40] As shown, the annual aggregate benefit/tax ratio for Nonwhites exceeded that for Whites in every

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[39] Appendix H displays the annual aggregate DI benefit/tax ratio for each race and gender group from the start of the program in 1957 through 1995. Appendix I displays the corresponding annual aggregate DI net transfers for each race and gender group.

[40] Again, the irregular patterns displayed in figure 8 generally reflect *ad hoc* benefit and tax changes that occurred in particular years. Because the benefit data underlying this analysis allocate dependents' benefits to the same race as the worker on whose account the benefits are paid, tables showing outcome by race in each historical year would be the same under the "worker-account" approach as under the "individual-specific" approach.

year by generally substantial proportions.[41] Again, this suggests a clear redistribution from Whites to Nonwhites, as defined in this analysis, as the net result of systematic historical differences between the groups in such factors as earnings levels, disability rates, dependent beneficiary relationships, and survival probabilities.

The annual benefit/tax ratio for a given group can be decomposed into three multiplicative factors that might be referred to as the disability rate proxy (ratio of the number of DI primary beneficiaries to the number of DI taxpayers), the dependent benefits factor (ratio of total DI benefits to DI primary benefits), and the primary average benefit/tax factor (ratio of the average DI primary benefit to the average tax paid by DI taxpayers).[42] Estimates of each of these component factors of the annual benefit/tax ratio were generally lower for Whites than for Nonwhites over the analysis period; differentials between Whites and Nonwhites in disabled beneficiary to taxpayer ratios and in taxable earnings, coupled with the progressivity of the benefit formula, appear to be more important factors than differences in dependent beneficiary relationships in creating the annual aggregate benefit/tax ratio differentials displayed in figure 8.[43]

Figure 9 provides some additional information about the relative treatment of racial subgroups over the 1968-95 period, for which the benefit data used in this analysis support the

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[41] The Nonwhite benefit/tax ratio exceeded the White ratio by an average of 47 percent over the 1957-95 period.

[42] The primary average benefit/tax factor might also be termed the progressivity factor because the progressivity of the benefit formula tends to generate higher average primary benefit/tax ratios for groups with persistently lower taxable earnings and tax payments.

[43] The estimated ratio of White to Nonwhite values over the period averaged 0.81 for the disability rate proxy, 0.98 for the dependent benefits factor, and 0.86 for the primary average benefit/tax factor.

three-way race categorization of White, Black, and Other, as defined above. As shown, the annual aggregate benefit/tax ratio for Blacks exceeded that for Whites in every year by substantial proportions.[44] Moreover, Black annual benefit/tax ratios have been generally increasing relative to those for Whites over the 1968-95 period, rising from a low of 53 percent above the White ratio in 1973 to a high of 110 percent above the White ratio in 1994; the biggest factor in this increase appears to be the increase in Black disabled beneficiary to taxpayer ratios relative to those of Whites, although other factors, such as differential changes in dependent beneficiary relationships, also played a role.[45] Figure 9 also indicates that the annual aggregate benefit/tax ratio for Others was generally below that for Whites; although higher auxiliary benefits to primary benefits ratios and lower taxable earnings coupled with the progressivity of the benefit formula appear to work in favor of Others relative to Whites, Others also have disabled beneficiary to taxpayer ratios sufficiently below those of Whites to result in lower annual benefit/tax ratios in most years.[46]

Figure 10 focuses on a measure of annual redistribution by gender. As shown, the ratio of annual aggregate benefits to annual aggregate taxes for females exceeded that for males for most

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[44] The Black benefit/tax ratio exceeded the White ratio by an average of 77 percent over the 1968-95 period.

[45] Again, using the decomposition of the annual benefit/tax ratio into its three component factors, the total growth in these factors for Blacks relative to Whites over the 1968-95 period was estimated to be 18 percent for the disability rate proxy, 3 percent for the dependent benefits factor, and 5 percent for the primary average benefit/tax factor.

[46] Using the decomposition of the annual benefit/tax ratio into its three component factors, the estimated ratio of Other to White values over the 1968-95 period averaged 0.58 for the disability rate proxy, 1.05 for the dependent benefits factor, and 1.12 for the primary average benefit/tax factor. Little confidence should be placed in estimates for the Other group in the latter portion of the analysis period, however, since this relatively small group was disproportionately affected by the recategorization of some Other and Unknown records to the White and Black groups, beginning with the 1992 benefit data. As indicated above, the predominant effect of the recategorization appears to be an increase in the share of benefits allocated to the White category beginning in 1992.

of the early years of the program, from 1959 through 1982, but fell below the ratio for males thereafter. This decline in relative outcomes for females over time is consistent with the generally narrowing relationship between male and female earnings, but runs counter to the rise in female disability award rates relative to males since 1985. In fact, the share of DI disabled worker benefits paid to females has generally been rising over time, increasing from an estimated low of about 17 percent in 1958 to more than 31 percent in 1995. This rise has been largely offset, however, by a generally falling share of DI auxiliary benefits paid to females and a general decline since the mid-1960s in the relative share of auxiliary benefits, most of which are paid to females.[47] On balance, the share of total DI benefits going to female beneficiaries has remained relatively stable since about 1965, fluctuating over that period from an estimated low of about 0.30 in 1986 to a high of about 0.34 in 1995. At the same time, however, the share of taxes paid by female workers has increased fairly steadily over time, ranging from an estimated low of about 0.23 in 1957 to a high of about 0.37 in 1995. Put another way, declines over time in the dependent beneficiary advantage of females and in the male/female taxable earnings differential, coupled with the progressivity of the benefit formula, appear to have more than offset declines in differential disabled beneficiary to taxpayer ratios between males and females.[48] To the extent that these trends continue, the favorable accumulated benefit/tax ratios

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[47] The estimated share of DI auxiliary benefits paid to females has fallen from about 73 percent in 1958 to about 55 percent in 1995. Estimated auxiliary benefits as a proportion of total DI benefits fell from about 22 percent in 1966 to less than 11 percent in the 1990s.

[48] In terms of the decomposition of the annual benefit/tax ratio into its three component factors, the total growth in these factors for males relative to females over the 1959-95 period was estimated to be 40 percent for the dependent benefits factor, 28 percent for the primary average benefit/tax factor, and -26 percent for the disability rate proxy. The 1959-95 period was chosen for comparison here instead of the 1957-95 period because 1959 was the first year of substantial auxiliary benefit payments under the DI program.

experienced to date by females relative to males in the more recent cohorts, as depicted in figure 6, may be significantly eroded over time for present and future cohorts as they complete their life cycles under the program.

Figure 11 displays annual aggregate benefit/tax ratio outcomes for the four race and gender groups over the 1957-95 period. Except for the first two years of the program, the annual aggregate benefit/tax ratios for Nonwhite males and females exceeded those for White males and females, but the rankings of males and females within each race category have changed over time. Annual aggregate benefit/tax ratios for Nonwhite males exceeded those for Nonwhite females in all years except 1965-1968; among Whites, annual aggregate benefit/tax ratios for females exceeded those for males during the 1959-1982 period, but fell below those for males after that period. The relationship between White males and White females largely parallels that between males and females in general; *i.e.*, declines over time in White male/White female taxable earnings differentials, coupled with the progressivity of the benefit formula, and in the dependent beneficiary advantage of White females relative to White males appear to have more than offset declines in differential disabled beneficiary to taxpayer ratios between White males and White females.[49] The relationship between males and females for Nonwhites differs from that for Whites in that, on average, the Nonwhite male/female taxable earnings differential has been relatively smaller, and the Nonwhite male/female disabled beneficiary to taxpayer ratio

[49] In terms of the decomposition of the annual benefit/tax ratio into its three component factors, the total growth in these factors for White males relative to White females over the 1959-95 period was estimated to be 26 percent for the primary average benefit/tax factor, 39 percent for the dependent benefits factor, and -22 percent for the disability rate proxy.

differential appears to have been relatively larger, than for Whites;[50] in addition, changes over time in the dependent beneficiary advantage of females, the male/female disabled beneficiary to taxpayer ratio differential, and the male/female taxable earnings differential, coupled with the progressivity of the benefit formula, appear to have been largely offsetting factors for Nonwhite males and females since 1959, when substantial dependent benefits were first paid.[51]

The effect of these annual net transfers on cumulative redistribution under the DI program across members of the race and gender groups is summarized in table 1, which uses the DI trust fund interest rate to accumulate annual taxes and benefits for the various race and gender groups from the inception of the program through 1995.[52] Using this interest rate, accumulated benefit payments since the inception of the DI program were about 93 percent of, or $97 billion less than, accumulated tax payments, reflecting the effects of other trust fund activities, primarily administrative expenses and the buildup of the trust fund itself. On balance, the accumulated benefit/tax ratio measures suggest that the net effect of cumulative transfers across the race and gender groups since the start of the program has been a net redistribution from males to females and a more pronounced net redistribution from Whites to Nonwhites, as defined in this analysis;

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[50] The estimated ratio of male to female average taxable earnings over the 1957-95 period averaged 1.45 for Nonwhites and 1.69 for Whites, while the estimated ratio of the male to female disability rate proxy component (of the annual benefit/tax ratio decomposition) averaged 1.87 for Nonwhites and 1.61 for Whites over that period.

[51] Again, using the decomposition of the annual benefit/tax ratio into its three component factors, the estimated decline in the disability rate proxy for Nonwhite males relative to Nonwhite females over the 1959-95 period largely offset the estimated increases in the primary average benefit/tax factor and the dependent benefits factor.

[52] Appendix J displays analogous tables using the inflation rate (a zero real interest rate) and the total return to large company stocks to accumulate taxes and benefits over time. These alternative tables lead to conclusions qualitatively similar to those discussed in the text, with the exception that the accumulated benefit/tax ratio for males is somewhat higher than that for females under the zero real interest rate assumption; the zero real interest rate assumption gives more relative weight to outcomes in the latter portion of the analysis period (where annual benefit/tax ratios were less favorable for females than for males) than does the trust fund interest rate or the total rate of return to large company stocks.

i.e., the accumulated benefit/tax ratio for males is 0.9 percent below, for females is 2.1 percent above, for Whites is 5.1 percent below, and for Nonwhites is 39.1 percent above the corresponding ratio for all persons. The ranking of outcomes among the race and gender subgroups, from most favorable to least favorable, is Nonwhite males, followed by Nonwhite females, followed by White females, followed by White males; specifically, the accumulated benefit/tax ratio for Nonwhite males is 49.5 percent above, for Nonwhite females is 22.2 percent above, for White females is 1.3 percent below, and for White males is 6.8 percent below the corresponding ratio for all persons. Thus, while there has been a net redistribution from males to females, Nonwhite males have, on average, experienced more favorable outcomes to date than any other race and gender subgroup, including Nonwhite females.

V. Conclusion

As indicated above, this analysis makes no attempt to determine the extent to which workers have gotten their money's worth in disability insurance coverage from the DI program; in particular, the benefit/tax ratio and net transfer measures used in this analysis do not adjust for the administrative costs of providing the disability insurance. These measures do provide evidence, however, of substantial redistribution under the DI program across cohorts and across race and gender groups within cohorts and over time.

The paper first analyzed *ex post* redistribution across cohorts. The earliest cohorts, born through 1894, experienced negative, but relatively small, lifetime net transfers. Cohorts born from 1895 through 1933 have received positive lifetime net transfers, peaking for cohorts born roughly around 1920 and remaining positive for cohorts who attained at least age 62 by the end

of the analysis period in 1995. Cohorts born from 1934 through 1968 have received negative accumulated net transfers through 1995, although outcomes should become more favorable for these cohorts as they move into the ages of most intense positive net transfers under the program. Finally, the youngest cohorts, born after 1968, have received positive accumulated net transfers through 1995, but these cohorts have many more years of negative and positive net transfers yet to experience during their remaining lifetimes. This pattern of redistribution across cohorts under the DI program differs from that found in previous studies for the OASI program, particularly for the earliest cohorts, who received positive net transfers and the highest benefit/tax ratios under the OASI program.

Across race and gender groups, the results differ somewhat within cohorts and across time. Benefit/tax ratios were generally higher for Nonwhites than for Whites, as defined in this analysis, both within cohorts and across time. Within cohorts, accumulated benefit/tax ratios through 1995 for females exceed those for males in the earliest cohorts, fall below those for males in a number of subsequent cohorts, and then exceed those for males again in cohorts born since about 1910. Across time, a different pattern emerges, with the annual benefit/tax ratio for females exceeding that for males for most of the early years of the program, but falling below that for males after 1982. This more recent trend in annual net transfers suggests that the favorable accumulated benefit/tax ratios experienced to date by females relative to males in the more recent cohorts may be eroded over time for present and future cohorts as they move through their working lives.

The distributional results across race and gender groups presented in this paper are consistent, for the most part, with studies of *ex post* redistribution under the OASI program.

Under the OASI program, whites have generally been found to have received lower rates of return than nonwhites and males lower rates of return than females,[53] results that are consistent with the overall results for the DI program described above. The distributional results in the present paper do differ somewhat from those typically found in OASI analyses, however, in their suggestion that outcomes for current and future female workers under the DI program may be less favorable relative to males than for earlier cohorts. The relative gender comparisons in this paper would also tend to be less favorable for females if a "worker-account" approach had been used instead of the "individual-specific" approach, *i.e.*, if all benefits paid on the account of an insured worker, including those to dependents, were contrasted with the taxes paid by that worker.

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[53] The most relevant empirical analyses suggest that whites have received lower rates of return than nonwhites under OASI, on average, due in part to the historically lower earnings of nonwhites coupled with the progressivity of the benefit formula; these factors appear to outweigh the generally lower survival probabilities observed for nonwhites when factors other than race are not held constant. Estimated rates of return and benefit/tax ratios have been more favorable for women than for men under OASI, in part because of the historically lower earnings of women and their lower mortality rates. See Leimer [1995] for a more extensive summary of analyses of lifetime redistribution under the OASI program.

Figure 1.
DI real net transfer flows over the period 1957-1995 for selected decennial birth cohorts, by age, in millions of 1957 dollars:

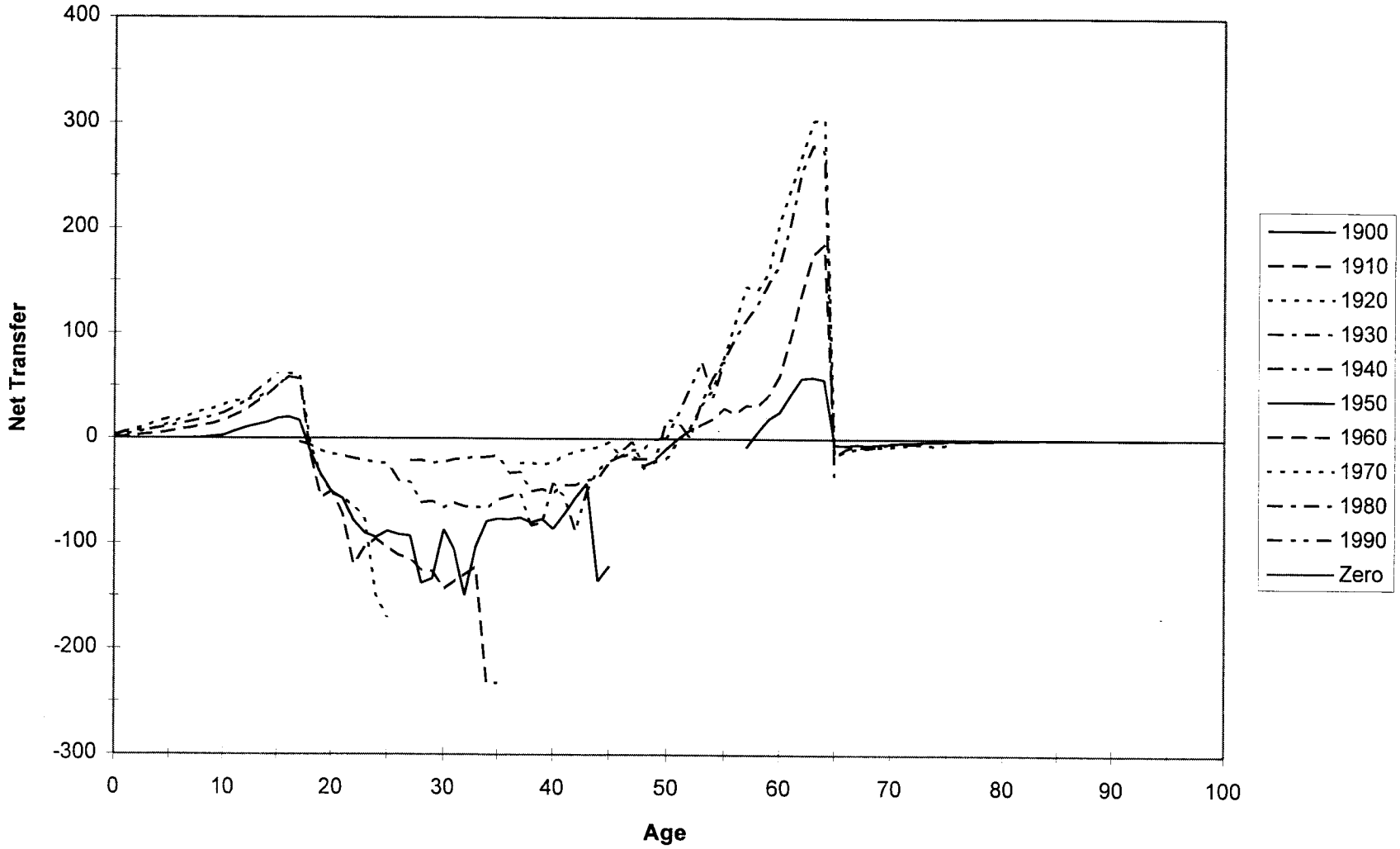

Figure 2.
DI accumulated benefit/tax ratio through 1995, accumulated at the trust fund interest rate, by cohort:

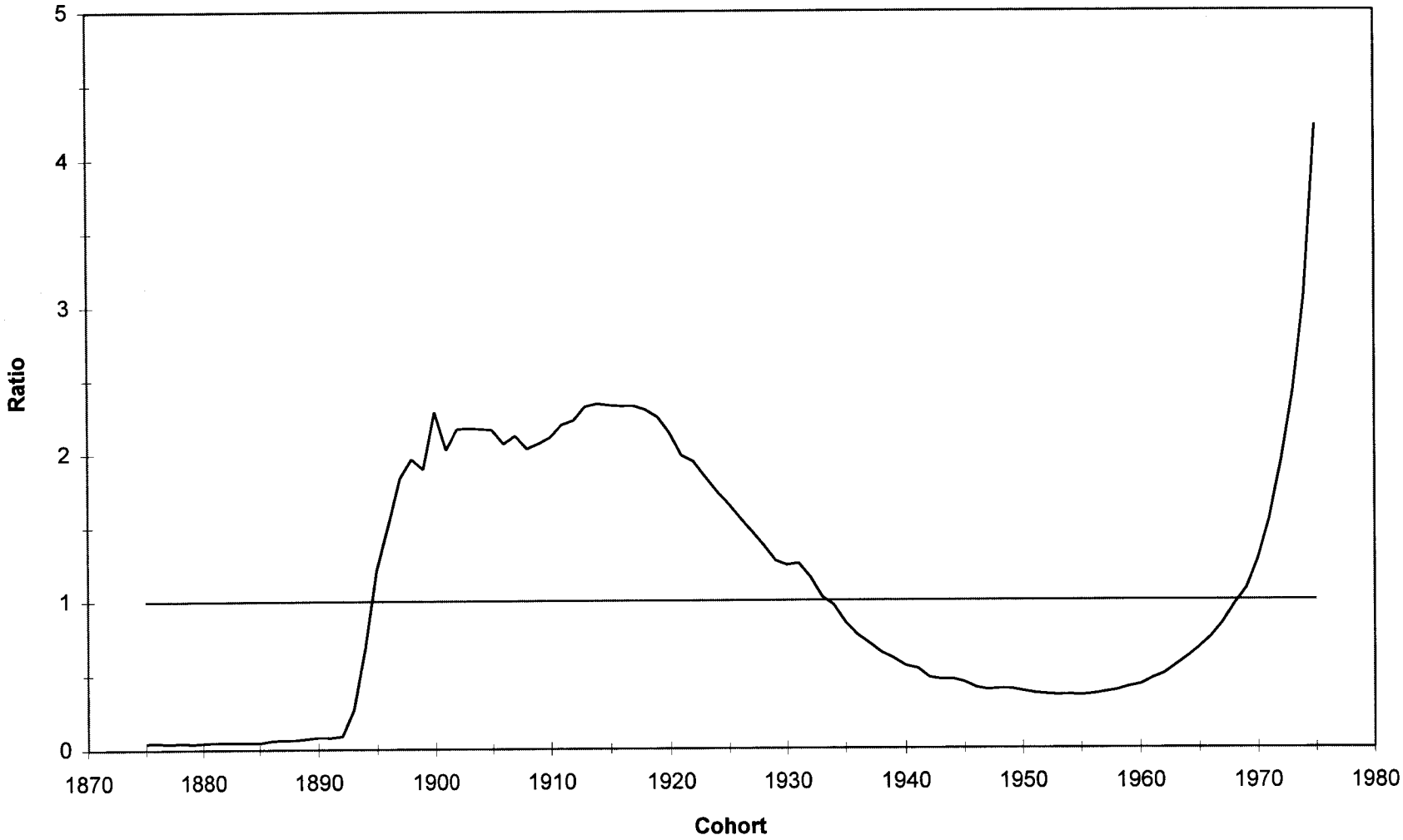

Figure 3.
DI aggregate lifetime net transfer through 1995, accumulated at the trust fund interest rate, by cohort:

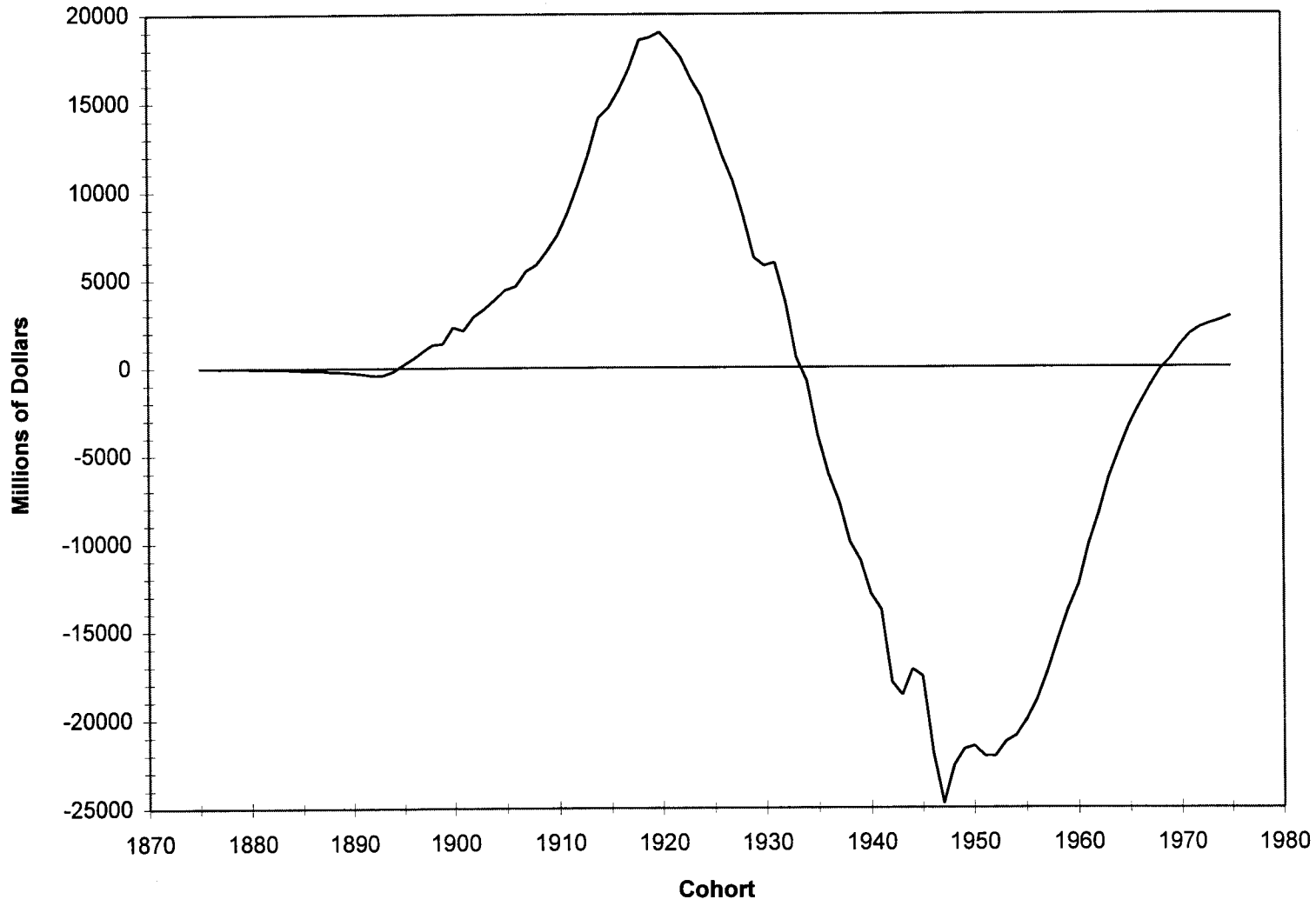

Figure 4.
DI lifetime net transfer through 1995 per initial cohort member, accumulated at the trust fund interest rate, for selected cohorts:

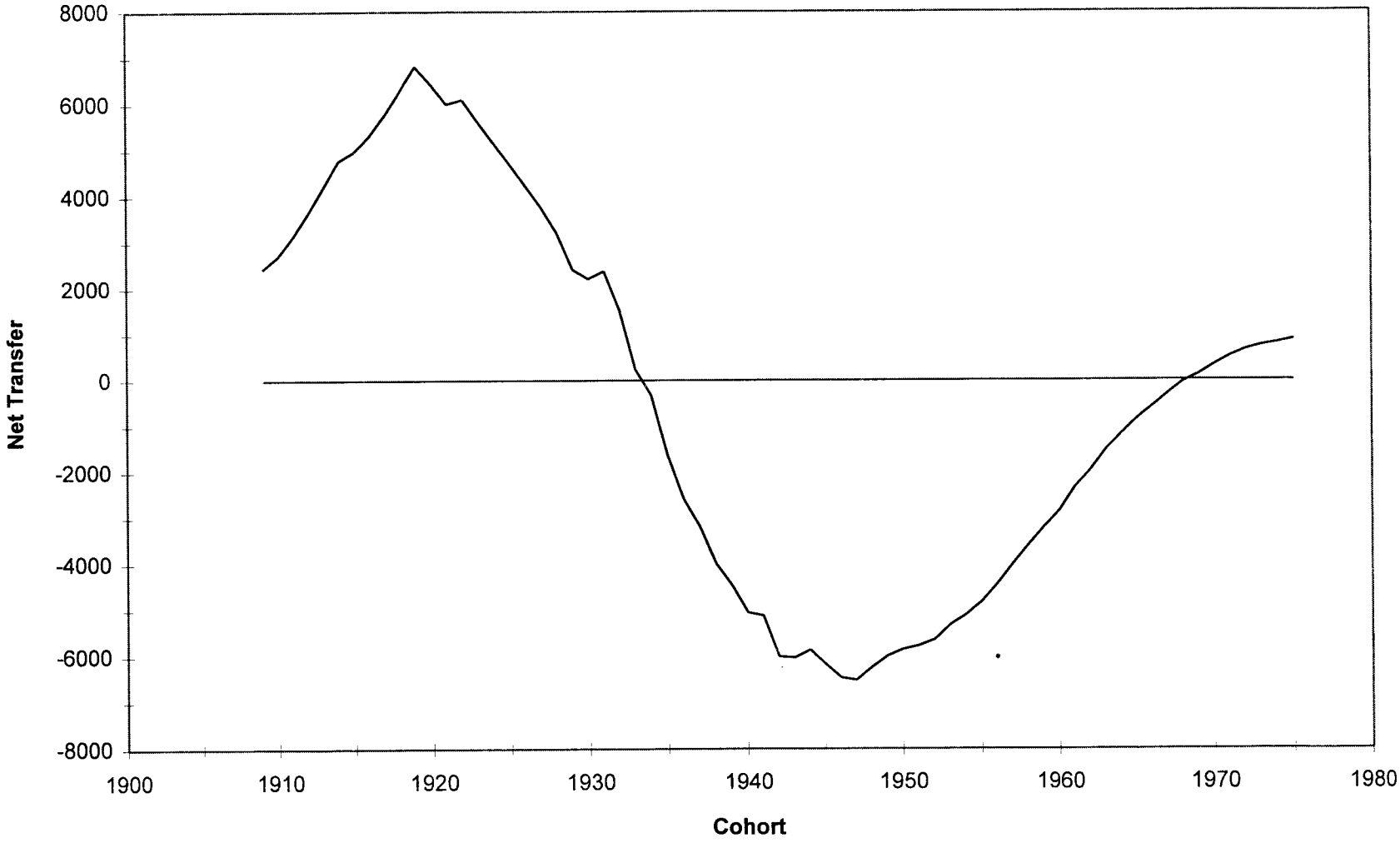

Figure 5.
DI accumulated benefit/tax ratio through 1995 for each race group, accumulated at the trust fund interest rate, by cohort:

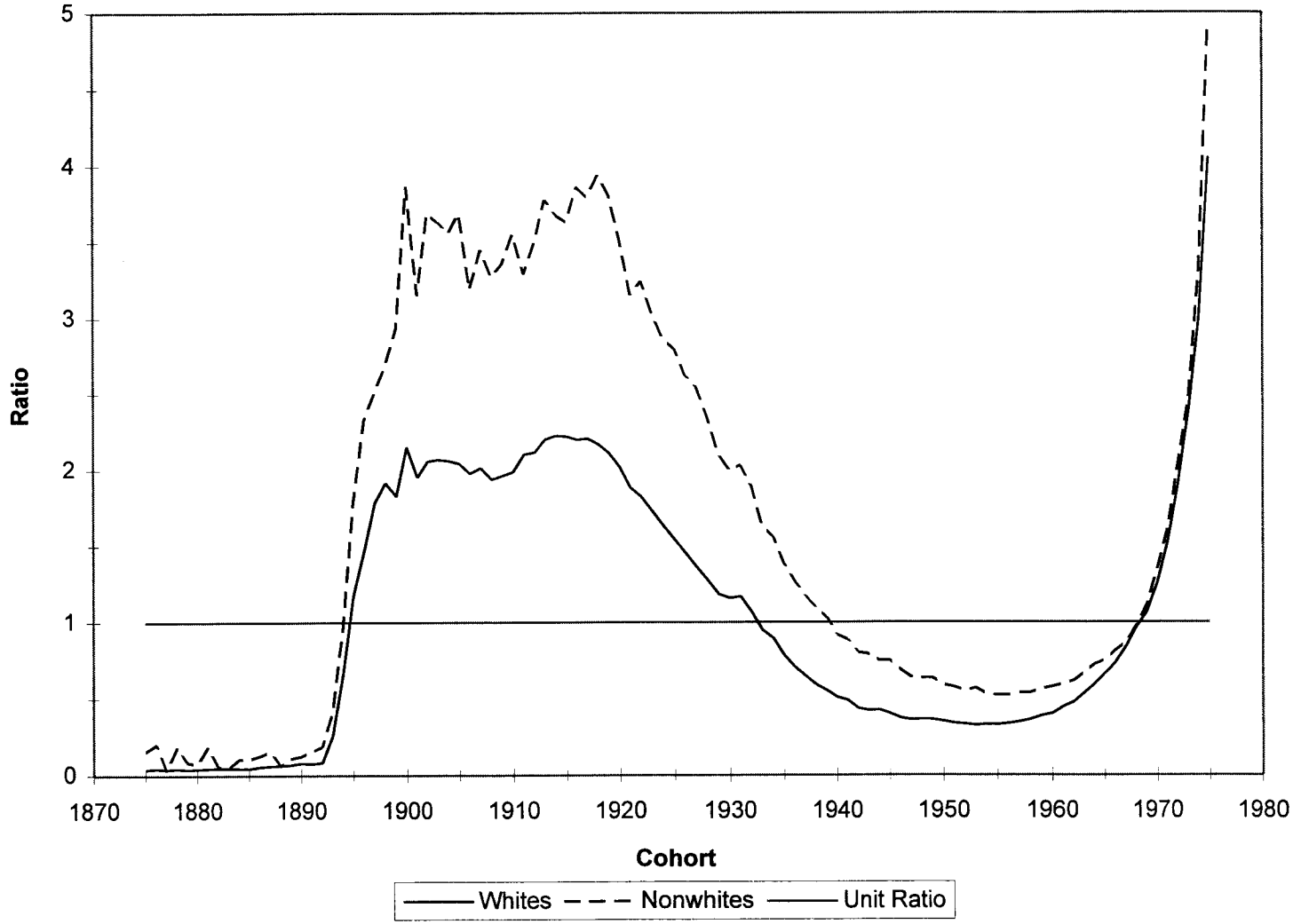

Figure 6.
DI accumulated benefit/tax ratio through 1995 for each gender group, accumulated at the trust fund interest rate, by cohort:

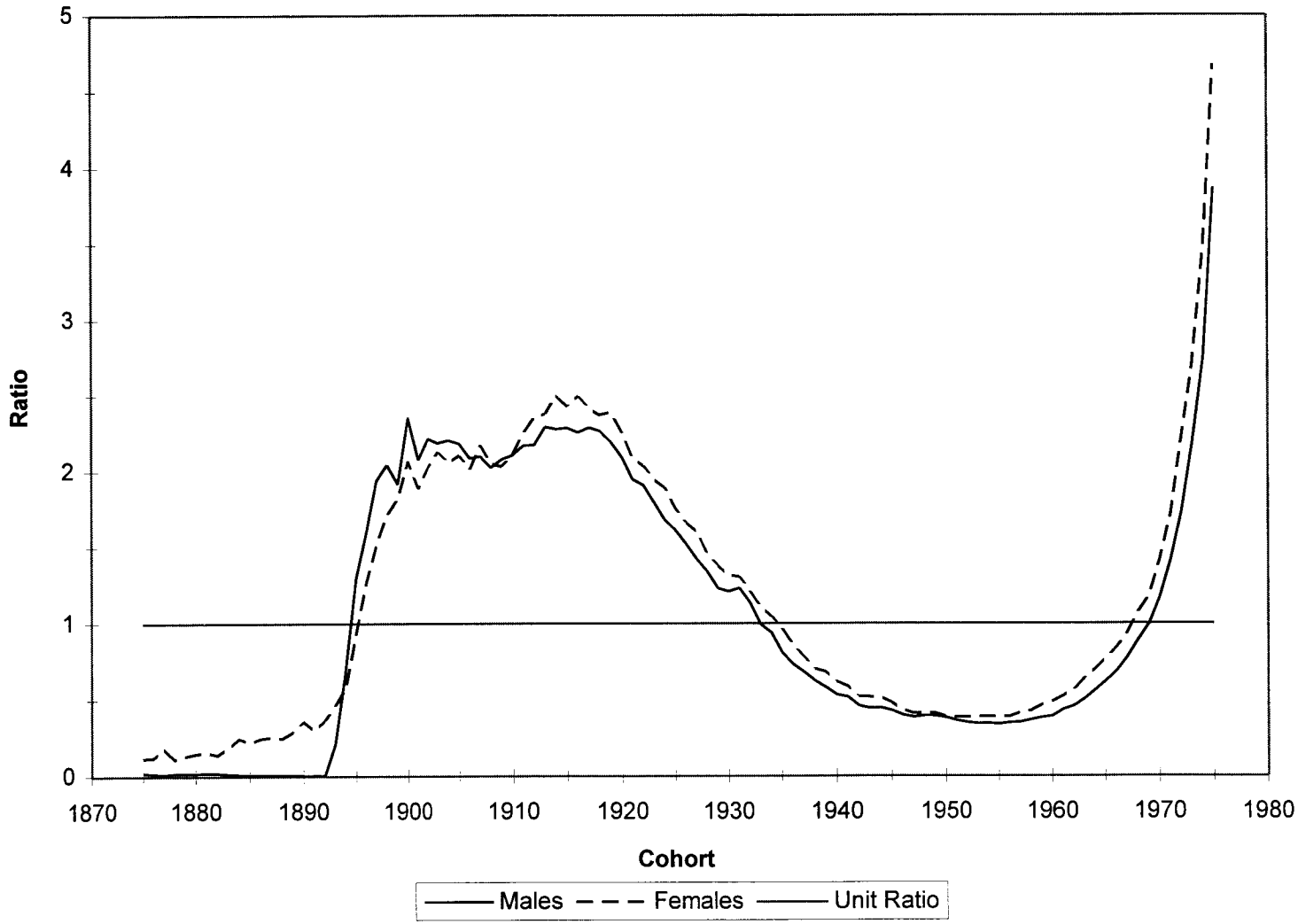

Figure 7.
DI accumulated benefit/tax ratio through 1995 for each race and gender group, accumulated at the trust fund interest rate, by cohort:

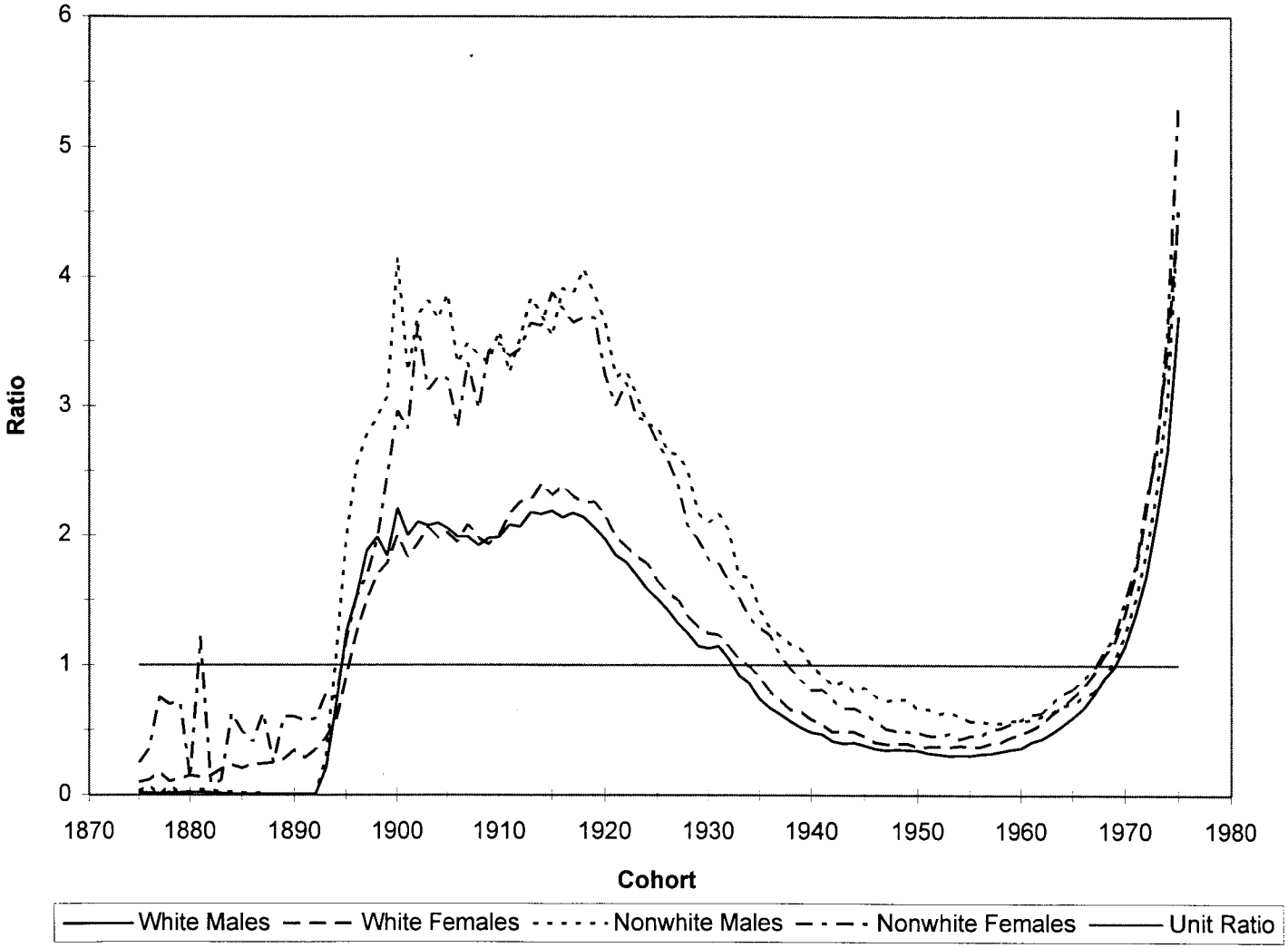

Figure 8.
Aggregate benefit/tax ratio for the White and Nonwhite race groups, by year:

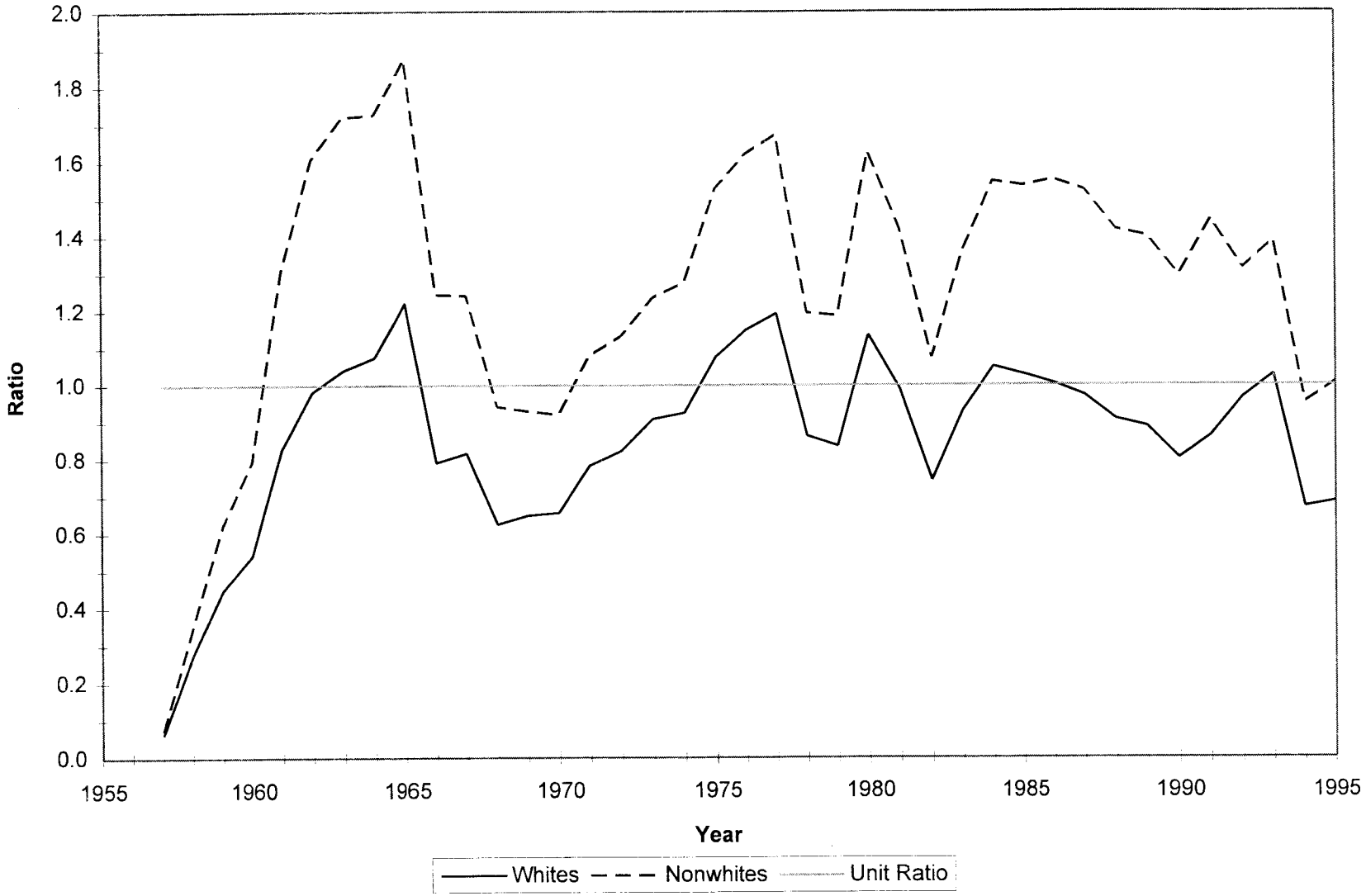

Figure 9.
Aggregate benefit/tax ratio for the White, Black, and Other race subgroups, by year:

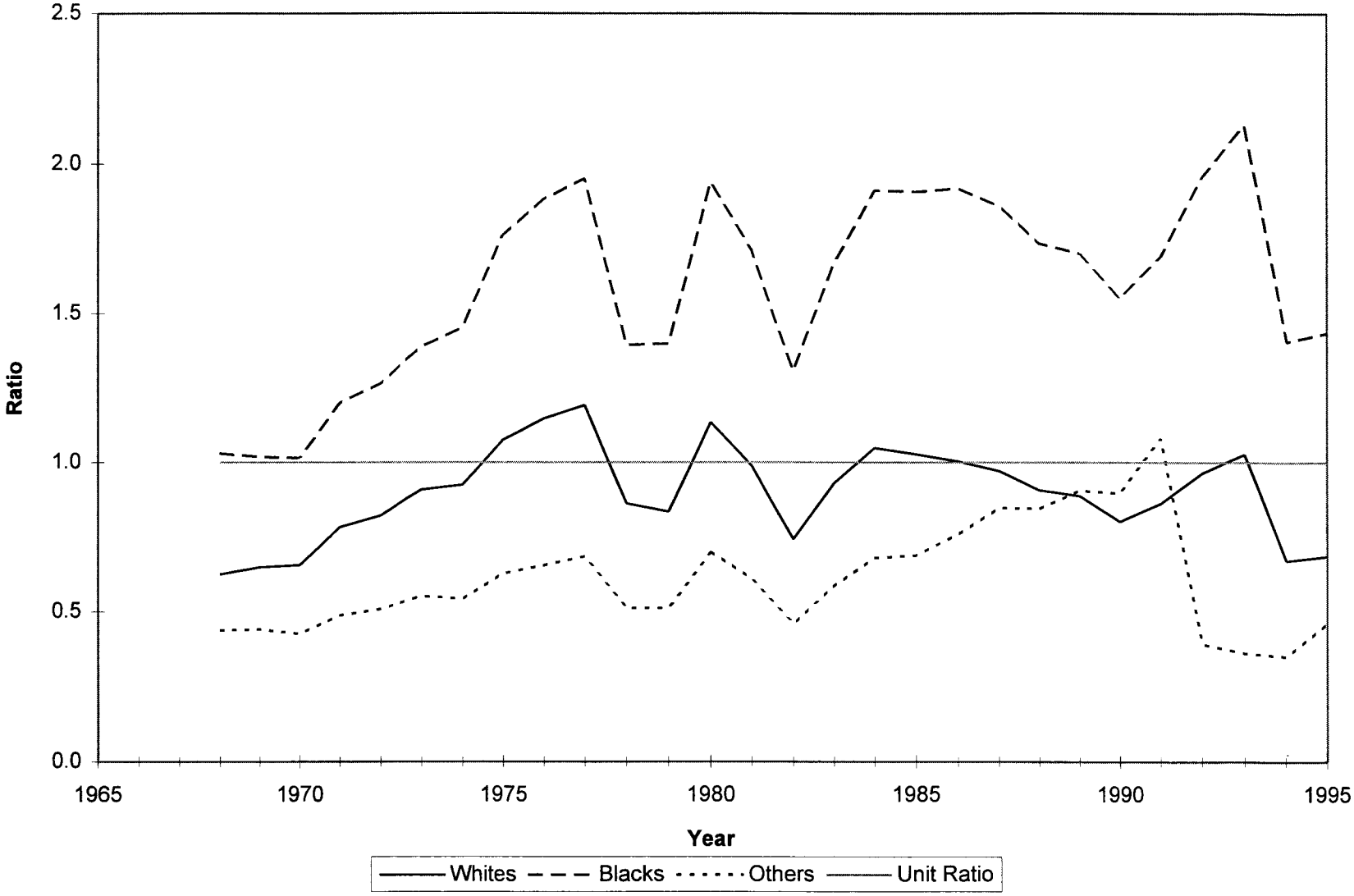

Figure 10.
Aggregate benefit/tax ratio for each gender group, by year:

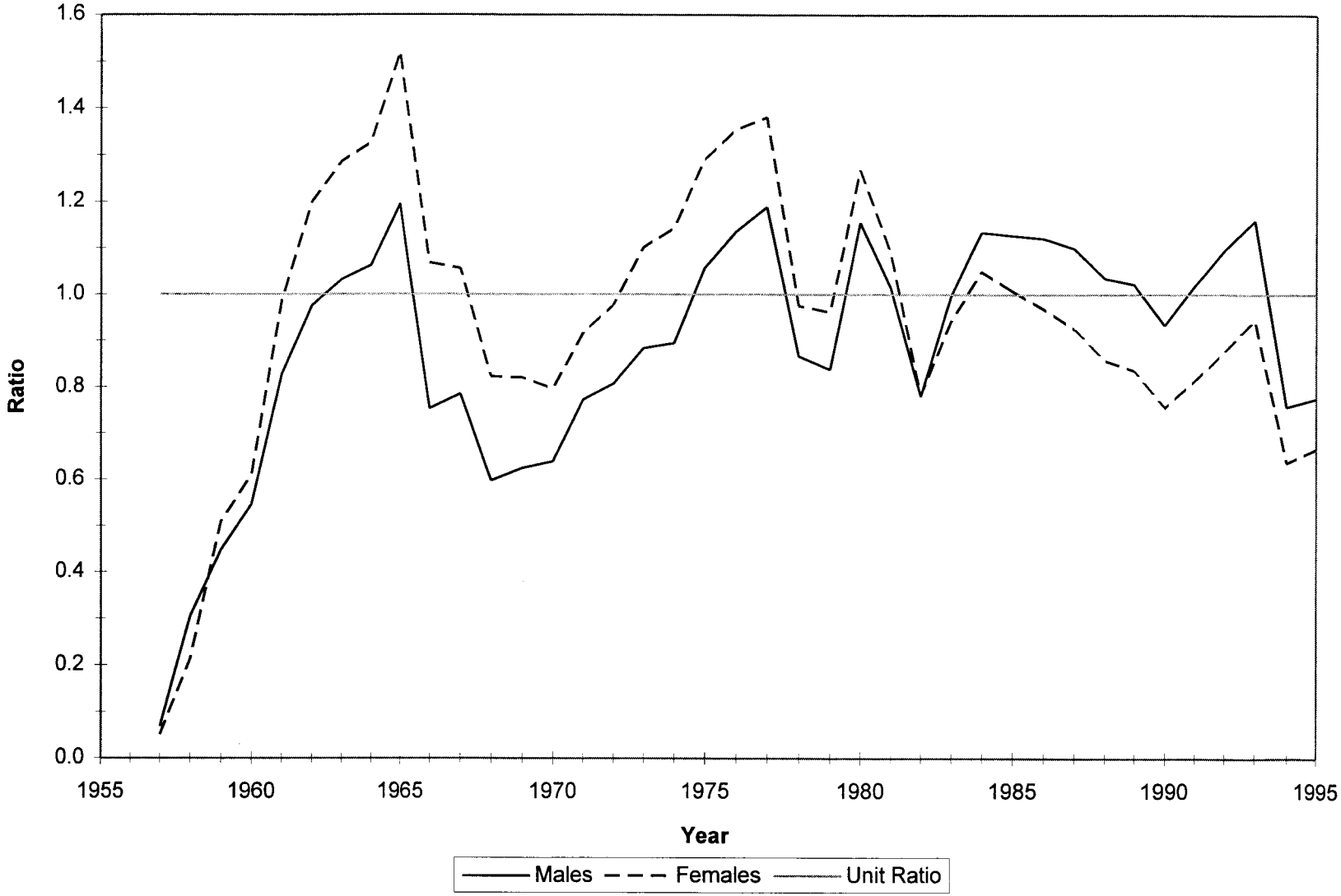

Figure 11.
Aggregate benefit/tax ratio for each race and gender group, by year:

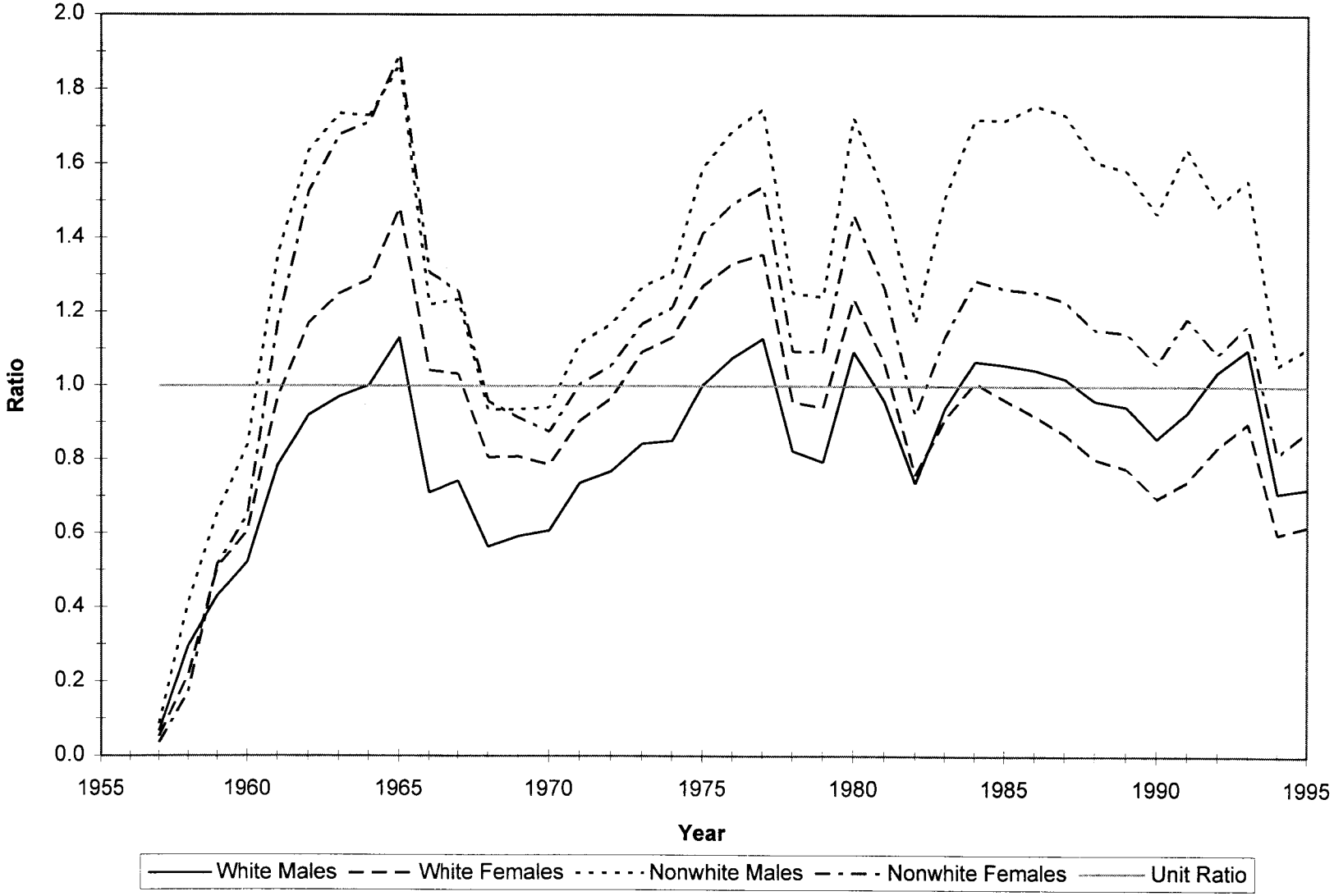

Table 1. Cumulative redistribution under the DI program over the period 1957-95.

Race/Gender Group	Accumulated Benefit/Tax Ratio	Accumulated Net Transfers (Billions)
White Males	0.868	-115.086
White Females	0.919	-29.996
Nonwhite Males	1.391	39.434
Nonwhite Females	1.137	8.488
All Whites	0.883	-145.082
All Nonwhites	1.295	47.922
All Males	0.922	-75.653
All Females	0.950	-21.508
All Persons	0.931	-97.160

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Appendix A. Data Details

This appendix provides additional details of data development problems and how they were dealt with. Specifically, the discussion focuses on problems related to the administrative race variable and problems related to incomplete information in the detailed benefit tables that were used to develop estimates of benefits by age, race, and gender in each historical year.

Administrative Race Variable

A number of problems cloud the interpretation of the Social Security administrative data race variable. The most serious of these problems for the present analysis arises because the SS-5 form has changed over time. Prior to November 1980, the form allowed only three responses to the race question, corresponding to "White," "Black," and "Other." Beginning in November 1980, the race question was expanded to allow five race/ethnic responses: "White (not Hispanic)," "Black (not Hispanic)," "Hispanic," "Asian or Pacific Islander," and "American Indian or Alaskan Native."

This change in the race/ethnic question poses problems because there is no way to cleanly map the new SS-5 race categories into the old SS-5 categories. The situation is made worse because the benefit data underlying this analysis are derived from published tables that maintain a three-way white/black/other classification from 1968 on, but include those selecting "Hispanic" on the new SS-5 form with others, rather than with whites. This creates a potential problem because survey data matched to administrative records suggest that the vast majority of persons of Hispanic origin are coded as white in these surveys and selected the white category on the old

SS-5 form.[54] A more consistent race categorization over time might have been created, then, if new SS-5 Hispanics had been placed in the white category instead of in the other category in the benefit tables.[55]

Social Security card applicants were first given the Hispanic race/ethnic response option in November 1980, suggesting that new SS-5 Hispanics are likely to be concentrated in the youngest cohorts. As such, the inconsistency introduced to date into the benefit table race classifications is probably not severe.

One approach, then, would be to group all new SS-5 Hispanics with whites in the tax data under the assumptions that the vast majority of Hispanics are grouped with whites under the old SS-5 code in both the benefit tables and the tax data, that the number of new SS-5 Hispanics included with others in the benefit tables is relatively low, and that including new SS-5 Hispanics with others in the tax data, where new SS-5 Hispanics are more prevalent than in the benefit data, might introduce more of an inconsistency with the benefit data. An alternative approach would be to maintain consistency in the grouping of new SS-5 Hispanics with others in both the tax and benefit data despite the probability that the vast majority of Hispanics are grouped with whites under the old SS-5 code. Because the choice between these alternative race allocations is not clear, estimates were generated under both alternatives. Fortunately, none of the main

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[54] Two CPS files were examined to identify the racial composition of persons of Hispanic origin in those surveys. In the 1994 CPS, 91 percent of persons of Hispanic origin are coded as white; the corresponding proportion in the 1973 CPS is 97 percent. An examination of the 1973 Exact Match File, which links the 1973 CPS with Social Security administrative data, indicates that 85 percent of persons identified as of Hispanic origin in the CPS part of that file were coded as white in the Social Security administrative data part of that file, indicating that these persons had selected the white race category on the old SS-5 form.

[55] This depends in part on the proportion of persons of Hispanic origin who select the Hispanic option on the new SS-5 form.

conclusions of the analysis were sensitive to the grouping of new SS-5 Hispanics. The results presented in this paper are for the second alternative, with new SS-5 Hispanics included with others in both the tax and benefit data. Under either alternative, it must be kept in mind that the administrative race allocations are somewhat muddled, with most Hispanics probably represented in the White race category regardless of the allocation of new SS-5 Hispanics.

Benefit Data

The degree of age detail in the summary benefit tables varies by detailed beneficiary type and year. For the most part, benefit payments are disaggregated by single year of age. For some quantitatively less important benefit types, generally five-year age ranges or "age and under" or "age and over" age ranges are reported. In those cases where the tables specify an age range rather than a single year of age, the total number of beneficiaries for the age range was allocated among individual ages within the age range on the basis of a smoothing equation estimated from the beneficiaries by age data given in the benefit table for that specific beneficiary type, race, and year.[56]

Beginning in 1967, age detail is not provided separately in the summary benefit tables for the quantitatively minor subcategory of husbands of disabled workers. Consequently, beginning

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[56] The general approach adopted was to regress the number of beneficiaries by age as a cubic function of age (or as a lower-order polynomial function if the number of age groups was insufficient to support a cubic estimation) for each beneficiary type, race, and year group. For an age range, the regression observation points were defined as the average number of beneficiaries at each age within the range and the average of the high and low age bounds for the age range. The resulting estimated equation was then used to allocate the number of beneficiaries to each individual age within each age range, resetting any negative beneficiary estimates to zero, and proportionally adjusting the resulting beneficiary estimates at each age within each age range so that their sum equaled the reported total number of beneficiaries for that age range. Special rules were adopted for special cases, including rules for allocating beneficiaries within open-ended "age and under" or "age and older" age ranges if a simple application of the smoothing equation was insufficient to exhaust the reported age range beneficiary total. The average benefit at each age within an age range for a given beneficiary type, race, and year was assumed equal to the average benefit for that beneficiary type, race, and age range in that year, as reported in the benefit table.

in 1967, the proportional age distribution of benefits for the husbands of disabled workers subcategory within each race group was assumed to be the same as for husbands of retired and disabled workers combined, for which age detail was reported.[57]

An additional problem is posed by the children of disabled workers beneficiary categories, which are not reported by gender of recipient in the benefit tables. To allocate these benefits by gender, the reported average benefit for each race and age group is assumed to apply equally to male and female child beneficiaries, and the proportion of male and female beneficiaries at each age is assumed equal to the proportion of males and females in the underlying population of that age.[58]

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[57] For years prior to 1967, age detail was provided separately for the husbands of disabled workers category. Based on the age distributions of benefits for the various beneficiary categories during and after that period, no clearly superior basis for the age allocation of husbands of disabled workers benefits after 1966 was apparent. More sophisticated approaches were not pursued because of the relatively small size of this beneficiary category — in no year during the 1957-95 period did annual benefits to husbands of disabled workers comprise as much as 0.04 percent of all DI benefits or as much as 2.1 percent of DI benefits to husbands and wives combined.

[58] Data on the historical Social Security area population by year, age, and gender, provided by the Social Security Administration Office of the Chief Actuary, were used for this purpose. These data were not given by race, forcing the implicit assumption that the male/female composition at each age in each year was the same for the White and Nonwhite race categories. A check of selected decennial census data suggests that this is a reasonable, but obviously not a perfect, assumption for the early childhood ages that comprise the bulk of child benefits. The proportion of males in the 1980 decennial census population aged 0-19, for example, was 0.512 for whites and 0.506 for nonwhites. The corresponding figures for 1960 were 0.508 for whites and 0.499 for nonwhites. Differences between the gender compositions of the beneficiary and general child populations is another source of potential bias that is difficult to assess.

Appendix B. Ratio of DI aggregate benefit/tax accumulated values through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the inflation rate (a zero real interest rate).

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1875	0.022	0.075	0.036	0.042	0.150	0.118	0.022	0.087	0.041
1876	0.020	0.095	0.043	0.100	0.368	0.224	0.020	0.100	0.046
1877	0.014	0.158	0.040	0.006	0.787	0.027	0.013	0.166	0.039
1878	0.022	0.099	0.047	0.077	0.731	0.204	0.023	0.106	0.050
1879	0.019	0.120	0.038	0.025	0.756	0.092	0.019	0.130	0.040
1880	0.021	0.151	0.045	0.027	0.129	0.074	0.021	0.148	0.047
1881	0.023	0.138	0.047	0.047	1.252	0.194	0.024	0.157	0.051
1882	0.020	0.147	0.049	0.039	0.071	0.054	0.022	0.134	0.050
1883	0.015	0.192	0.048	0.023	0.091	0.047	0.016	0.175	0.048
1884	0.011	0.223	0.047	0.022	0.639	0.099	0.011	0.238	0.050
1885	0.009	0.203	0.045	0.017	0.438	0.104	0.009	0.215	0.047
1886	0.009	0.227	0.055	0.015	0.369	0.126	0.009	0.237	0.058
1887	0.009	0.231	0.062	0.014	0.601	0.157	0.009	0.247	0.065
1888	0.008	0.239	0.064	0.003	0.200	0.050	0.007	0.235	0.062
1889	0.008	0.267	0.069	0.006	0.566	0.105	0.007	0.281	0.071
1890	0.007	0.337	0.079	0.005	0.610	0.127	0.007	0.351	0.082
1891	0.007	0.274	0.075	0.007	0.567	0.157	0.007	0.290	0.080
1892	0.006	0.345	0.084	0.008	0.517	0.181	0.006	0.358	0.089
1893	0.198	0.441	0.252	0.270	0.788	0.402	0.201	0.462	0.260
1894	0.659	0.554	0.634	1.020	0.734	0.933	0.677	0.567	0.651
1895	1.195	0.893	1.123	1.892	1.175	1.716	1.235	0.910	1.157
1896	1.470	1.205	1.407	2.433	1.485	2.222	1.530	1.221	1.457
1897	1.814	1.451	1.722	2.694	1.609	2.423	1.871	1.461	1.768
1898	1.926	1.653	1.858	2.835	1.930	2.621	1.984	1.669	1.906
1899	1.796	1.748	1.784	2.993	2.435	2.867	1.870	1.788	1.850
1900	2.169	1.960	2.115	4.071	2.885	3.787	2.319	2.026	2.244
1901	1.976	1.810	1.932	3.225	2.774	3.111	2.055	1.866	2.005
1902	2.101	1.931	2.055	3.670	3.592	3.654	2.214	2.023	2.164
1903	2.082	2.071	2.080	3.819	3.126	3.639	2.198	2.142	2.184
1904	2.109	1.995	2.078	3.705	3.241	3.589	2.225	2.076	2.185
1905	2.072	2.033	2.062	3.898	3.223	3.714	2.205	2.121	2.182
1906	2.006	1.964	1.994	3.339	2.824	3.196	2.105	2.029	2.084
1907	2.015	2.107	2.039	3.520	3.355	3.478	2.129	2.199	2.147
1908	1.961	2.014	1.975	3.447	3.002	3.322	2.066	2.087	2.072
1909	2.025	1.974	2.011	3.401	3.455	3.415	2.131	2.076	2.116
1910	2.018	2.027	2.021	3.642	3.525	3.610	2.146	2.140	2.144
1911	2.104	2.179	2.125	3.292	3.378	3.315	2.197	2.270	2.217
1912	2.081	2.266	2.131	3.554	3.437	3.520	2.193	2.365	2.240
1913	2.188	2.277	2.212	3.871	3.658	3.807	2.307	2.387	2.329
1914	2.169	2.392	2.228	3.725	3.620	3.694	2.285	2.498	2.343
1915	2.171	2.292	2.204	3.517	3.843	3.608	2.272	2.411	2.310
1916	2.093	2.330	2.156	3.858	3.685	3.804	2.214	2.444	2.276
1917	2.108	2.229	2.141	3.763	3.513	3.682	2.223	2.339	2.255

Appendix B. Ratio of DI aggregate benefit/tax accumulated values through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the inflation rate (a zero real interest rate). (Continued)

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1918	2.074	2.189	2.106	3.961	3.581	3.839	2.202	2.305	2.230
1919	2.006	2.204	2.059	3.778	3.599	3.722	2.141	2.334	2.193
1920	1.945	2.124	1.992	3.600	3.165	3.455	2.064	2.225	2.108
1921	1.845	1.985	1.882	3.220	2.981	3.141	1.947	2.083	1.984
1922	1.823	1.935	1.853	3.312	3.226	3.285	1.940	2.061	1.973
1923	1.753	1.892	1.790	3.196	2.982	3.125	1.864	2.005	1.902
1924	1.673	1.858	1.721	3.006	3.023	3.011	1.779	1.979	1.832
1925	1.627	1.740	1.657	3.062	2.880	3.001	1.742	1.862	1.774
1926	1.563	1.661	1.589	2.912	2.801	2.876	1.675	1.783	1.704
1927	1.482	1.640	1.522	2.953	2.663	2.854	1.597	1.758	1.639
1928	1.436	1.530	1.460	2.856	2.342	2.670	1.549	1.630	1.571
1929	1.356	1.472	1.386	2.551	2.282	2.456	1.456	1.573	1.487
1930	1.369	1.447	1.390	2.491	2.161	2.374	1.466	1.539	1.485
1931	1.441	1.469	1.449	2.648	2.178	2.473	1.544	1.563	1.549
1932	1.304	1.355	1.318	2.500	1.983	2.312	1.414	1.442	1.422
1933	1.145	1.218	1.164	2.053	1.853	1.983	1.233	1.307	1.253
1934	1.065	1.162	1.091	2.067	1.656	1.914	1.161	1.236	1.182
1935	0.919	1.056	0.954	1.743	1.552	1.676	1.001	1.130	1.035
1936	0.827	0.923	0.852	1.564	1.486	1.537	0.901	1.003	0.929
1937	0.760	0.837	0.781	1.485	1.287	1.414	0.833	0.903	0.852
1938	0.688	0.755	0.707	1.407	1.166	1.317	0.759	0.814	0.775
1939	0.631	0.730	0.657	1.362	1.052	1.242	0.701	0.781	0.723
1940	0.578	0.658	0.600	1.180	0.958	1.094	0.638	0.705	0.657
1941	0.558	0.614	0.574	1.100	0.956	1.048	0.616	0.664	0.630
1942	0.491	0.542	0.506	0.985	0.860	0.940	0.542	0.587	0.555
1943	0.468	0.543	0.489	1.025	0.787	0.932	0.521	0.579	0.538
1944	0.469	0.533	0.487	0.921	0.772	0.865	0.518	0.569	0.534
1945	0.438	0.491	0.453	0.959	0.731	0.870	0.494	0.528	0.504
1946	0.407	0.438	0.416	0.871	0.657	0.785	0.454	0.470	0.459
1947	0.392	0.422	0.401	0.827	0.577	0.726	0.437	0.445	0.439
1948	0.394	0.421	0.402	0.829	0.557	0.715	0.442	0.443	0.443
1949	0.386	0.421	0.397	0.837	0.549	0.715	0.437	0.442	0.439
1950	0.379	0.387	0.382	0.749	0.540	0.663	0.425	0.412	0.420
1951	0.355	0.392	0.368	0.746	0.505	0.644	0.401	0.410	0.404
1952	0.342	0.389	0.358	0.693	0.495	0.606	0.383	0.407	0.391
1953	0.327	0.382	0.345	0.707	0.508	0.623	0.371	0.403	0.382
1954	0.327	0.387	0.347	0.660	0.452	0.571	0.368	0.398	0.378
1955	0.320	0.377	0.339	0.618	0.471	0.557	0.358	0.392	0.370
1956	0.326	0.366	0.340	0.603	0.457	0.541	0.361	0.381	0.369
1957	0.321	0.381	0.342	0.583	0.487	0.543	0.356	0.398	0.371
1958	0.326	0.379	0.346	0.561	0.478	0.526	0.358	0.395	0.372
1959	0.331	0.404	0.357	0.557	0.491	0.530	0.361	0.417	0.382
1960	0.327	0.404	0.355	0.536	0.501	0.521	0.355	0.420	0.379

Appendix B. Ratio of DI aggregate benefit/tax accumulated values through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the inflation rate (a zero real interest rate). (Continued)

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	All Males	All Females	All Persons
1961	0.352	0.414	0.376	0.511	0.500	0.507	0.375	0.428	0.396
1962	0.354	0.427	0.382	0.514	0.487	0.503	0.378	0.437	0.401
1963	0.370	0.463	0.406	0.508	0.524	0.515	0.391	0.473	0.423
1964	0.397	0.479	0.430	0.522	0.543	0.531	0.417	0.490	0.446
1965	0.421	0.509	0.457	0.514	0.544	0.527	0.438	0.516	0.470
1966	0.452	0.540	0.489	0.530	0.584	0.553	0.467	0.548	0.501
1967	0.511	0.593	0.546	0.541	0.617	0.573	0.517	0.598	0.551
1968	0.585	0.677	0.625	0.591	0.699	0.636	0.586	0.682	0.627
1969	0.639	0.740	0.683	0.686	0.774	0.724	0.648	0.747	0.691
1970	0.748	0.887	0.808	0.807	0.960	0.873	0.760	0.901	0.821
1971	0.909	1.097	0.990	0.990	1.137	1.055	0.925	1.106	1.003
1972	1.113	1.436	1.248	1.234	1.490	1.345	1.137	1.448	1.269
1973	1.428	1.813	1.592	1.576	1.769	1.664	1.459	1.803	1.607
1974	1.803	2.330	2.026	2.100	2.456	2.259	1.863	2.357	2.075
1975	2.588	3.168	2.842	3.209	3.745	3.449	2.711	3.287	2.965

Appendix C. Ratio of DI aggregate benefit/tax accumulated values through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the trust fund interest rate.

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1875	0.019	0.098	0.039	0.031	0.247	0.159	0.020	0.117	0.046
1876	0.016	0.116	0.044	0.070	0.358	0.202	0.017	0.122	0.047
1877	0.012	0.172	0.040	0.005	0.752	0.031	0.012	0.181	0.039
1878	0.018	0.105	0.045	0.064	0.698	0.188	0.019	0.113	0.048
1879	0.018	0.123	0.039	0.021	0.715	0.086	0.018	0.133	0.040
1880	0.019	0.149	0.043	0.023	0.131	0.072	0.019	0.147	0.045
1881	0.021	0.138	0.045	0.043	1.217	0.187	0.022	0.157	0.049
1882	0.019	0.150	0.048	0.037	0.081	0.056	0.020	0.139	0.049
1883	0.014	0.199	0.048	0.023	0.110	0.051	0.015	0.185	0.049
1884	0.010	0.231	0.047	0.022	0.627	0.106	0.011	0.246	0.050
1885	0.008	0.207	0.044	0.016	0.484	0.107	0.009	0.219	0.047
1886	0.008	0.234	0.056	0.014	0.405	0.128	0.009	0.246	0.060
1887	0.009	0.240	0.062	0.013	0.630	0.154	0.009	0.256	0.066
1888	0.007	0.249	0.064	0.004	0.245	0.063	0.007	0.249	0.064
1889	0.007	0.276	0.070	0.005	0.603	0.109	0.007	0.291	0.072
1890	0.006	0.344	0.079	0.005	0.603	0.125	0.006	0.357	0.082
1891	0.006	0.286	0.076	0.007	0.570	0.159	0.006	0.302	0.080
1892	0.006	0.349	0.084	0.008	0.586	0.187	0.006	0.365	0.089
1893	0.208	0.441	0.260	0.290	0.783	0.417	0.212	0.462	0.269
1894	0.694	0.570	0.665	1.065	0.749	0.972	0.713	0.582	0.682
1895	1.255	0.918	1.175	1.985	1.198	1.794	1.297	0.935	1.211
1896	1.537	1.254	1.470	2.554	1.534	2.329	1.599	1.270	1.522
1897	1.881	1.503	1.787	2.780	1.688	2.516	1.940	1.515	1.834
1898	1.987	1.699	1.916	2.913	1.970	2.692	2.046	1.716	1.965
1899	1.842	1.786	1.828	3.073	2.464	2.936	1.918	1.825	1.896
1900	2.207	2.001	2.154	4.149	2.962	3.869	2.360	2.069	2.286
1901	2.000	1.829	1.954	3.264	2.819	3.153	2.080	1.887	2.028
1902	2.104	1.937	2.059	3.705	3.630	3.689	2.219	2.029	2.169
1903	2.074	2.060	2.070	3.817	3.123	3.638	2.190	2.132	2.175
1904	2.093	1.980	2.063	3.670	3.221	3.559	2.208	2.061	2.168
1905	2.053	2.019	2.044	3.869	3.215	3.691	2.186	2.107	2.164
1906	1.990	1.950	1.979	3.325	2.836	3.190	2.088	2.016	2.068
1907	1.988	2.084	2.013	3.490	3.337	3.451	2.102	2.175	2.121
1908	1.923	1.980	1.938	3.386	2.974	3.271	2.026	2.053	2.034
1909	1.977	1.933	1.964	3.339	3.425	3.361	2.081	2.035	2.068
1910	1.983	2.001	1.988	3.578	3.484	3.553	2.109	2.112	2.110
1911	2.081	2.164	2.104	3.256	3.386	3.290	2.173	2.255	2.196
1912	2.065	2.258	2.117	3.523	3.440	3.498	2.176	2.357	2.225
1913	2.176	2.273	2.203	3.838	3.642	3.779	2.295	2.382	2.319
1914	2.164	2.396	2.226	3.705	3.624	3.681	2.280	2.501	2.340
1915	2.187	2.311	2.221	3.539	3.879	3.633	2.289	2.432	2.328
1916	2.136	2.381	2.201	3.911	3.754	3.862	2.258	2.497	2.322
1917	2.173	2.302	2.208	3.871	3.646	3.799	2.290	2.417	2.325

Appendix C. Ratio of DI aggregate benefit/tax accumulated values through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the trust fund interest rate. (Continued)

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1918	2.138	2.255	2.170	4.060	3.685	3.940	2.268	2.374	2.297
1919	2.058	2.257	2.111	3.858	3.683	3.804	2.195	2.389	2.248
1920	1.972	2.151	2.019	3.656	3.238	3.517	2.094	2.256	2.137
1921	1.845	1.989	1.883	3.226	3.000	3.152	1.948	2.088	1.986
1922	1.792	1.915	1.825	3.272	3.180	3.244	1.909	2.038	1.944
1923	1.691	1.839	1.730	3.087	2.910	3.028	1.798	1.949	1.839
1924	1.583	1.783	1.635	2.856	2.887	2.866	1.684	1.897	1.740
1925	1.507	1.643	1.543	2.845	2.709	2.800	1.614	1.757	1.653
1926	1.422	1.553	1.456	2.638	2.583	2.620	1.523	1.662	1.560
1927	1.319	1.504	1.365	2.625	2.389	2.545	1.422	1.605	1.469
1928	1.243	1.375	1.277	2.494	2.071	2.343	1.343	1.460	1.374
1929	1.144	1.297	1.183	2.173	1.964	2.101	1.230	1.380	1.269
1930	1.127	1.244	1.157	2.093	1.811	1.994	1.210	1.317	1.238
1931	1.145	1.232	1.168	2.169	1.788	2.030	1.232	1.306	1.252
1932	1.044	1.139	1.068	2.033	1.633	1.891	1.135	1.207	1.155
1933	0.918	1.038	0.949	1.685	1.517	1.627	0.992	1.106	1.022
1934	0.860	0.993	0.894	1.675	1.365	1.562	0.939	1.049	0.968
1935	0.742	0.908	0.783	1.431	1.289	1.382	0.811	0.965	0.851
1936	0.671	0.798	0.703	1.281	1.231	1.264	0.732	0.859	0.766
1937	0.620	0.730	0.649	1.228	1.071	1.173	0.681	0.781	0.708
1938	0.566	0.656	0.590	1.160	0.966	1.090	0.624	0.701	0.646
1939	0.520	0.643	0.552	1.124	0.883	1.033	0.579	0.681	0.606
1940	0.481	0.583	0.508	0.985	0.806	0.917	0.531	0.618	0.555
1941	0.468	0.547	0.490	0.928	0.810	0.886	0.517	0.586	0.537
1942	0.415	0.485	0.434	0.839	0.732	0.801	0.458	0.521	0.476
1943	0.397	0.490	0.422	0.870	0.667	0.792	0.442	0.516	0.463
1944	0.403	0.485	0.426	0.795	0.667	0.748	0.445	0.513	0.465
1945	0.380	0.453	0.401	0.826	0.628	0.750	0.427	0.480	0.443
1946	0.356	0.406	0.371	0.759	0.573	0.686	0.397	0.430	0.407
1947	0.346	0.391	0.360	0.726	0.507	0.639	0.385	0.408	0.393
1948	0.351	0.394	0.364	0.734	0.494	0.635	0.394	0.410	0.399
1949	0.347	0.395	0.362	0.738	0.489	0.635	0.391	0.411	0.398
1950	0.342	0.368	0.350	0.665	0.482	0.591	0.382	0.387	0.383
1951	0.322	0.371	0.338	0.660	0.456	0.576	0.362	0.385	0.370
1952	0.313	0.372	0.332	0.625	0.453	0.551	0.349	0.385	0.361
1953	0.303	0.370	0.326	0.639	0.473	0.570	0.342	0.386	0.357
1954	0.306	0.378	0.331	0.604	0.429	0.530	0.343	0.386	0.358
1955	0.305	0.373	0.328	0.570	0.455	0.522	0.338	0.386	0.355
1956	0.315	0.373	0.336	0.565	0.458	0.521	0.347	0.386	0.361
1957	0.320	0.397	0.347	0.560	0.499	0.535	0.352	0.413	0.374
1958	0.336	0.408	0.363	0.554	0.514	0.538	0.365	0.425	0.387
1959	0.352	0.447	0.387	0.571	0.549	0.562	0.380	0.462	0.411
1960	0.362	0.469	0.402	0.574	0.581	0.577	0.391	0.487	0.427

Appendix C. Ratio of DI aggregate benefit/tax accumulated values through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the trust fund interest rate. (Continued)

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1961	0.409	0.506	0.446	0.577	0.620	0.594	0.433	0.523	0.468
1962	0.432	0.550	0.478	0.608	0.632	0.618	0.458	0.563	0.499
1963	0.478	0.624	0.535	0.637	0.715	0.669	0.502	0.639	0.556
1964	0.536	0.681	0.594	0.685	0.777	0.723	0.560	0.697	0.615
1965	0.599	0.755	0.663	0.703	0.815	0.749	0.617	0.766	0.678
1966	0.667	0.828	0.734	0.757	0.893	0.814	0.684	0.840	0.749
1967	0.773	0.931	0.840	0.795	0.960	0.864	0.777	0.937	0.845
1968	0.892	1.068	0.967	0.887	1.104	0.977	0.891	1.075	0.969
1969	0.986	1.173	1.067	1.038	1.215	1.115	0.996	1.181	1.076
1970	1.153	1.395	1.258	1.235	1.503	1.351	1.169	1.416	1.276
1971	1.394	1.707	1.529	1.505	1.762	1.618	1.416	1.718	1.547
1972	1.693	2.202	1.907	1.865	2.276	2.043	1.728	2.218	1.935
1973	2.143	2.728	2.392	2.346	2.642	2.481	2.185	2.708	2.412
1974	2.660	3.438	2.990	3.075	3.602	3.311	2.744	3.474	3.057
1975	3.700	4.508	4.055	4.548	5.320	4.894	3.869	4.675	4.224

Appendix D. Ratio of DI aggregate benefit/tax accumulated values through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the rate of return to large company stocks.

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1875	0.012	0.108	0.034	0.019	0.380	0.197	0.012	0.136	0.042
1876	0.009	0.141	0.042	0.029	0.272	0.134	0.010	0.146	0.044
1877	0.009	0.190	0.036	0.004	0.522	0.033	0.008	0.198	0.036
1878	0.011	0.109	0.037	0.032	0.491	0.124	0.012	0.115	0.039
1879	0.013	0.113	0.033	0.012	0.469	0.062	0.013	0.121	0.034
1880	0.013	0.127	0.034	0.014	0.129	0.062	0.013	0.128	0.035
1881	0.015	0.122	0.036	0.027	0.932	0.148	0.015	0.139	0.039
1882	0.013	0.138	0.039	0.025	0.095	0.050	0.013	0.133	0.040
1883	0.010	0.184	0.042	0.018	0.138	0.052	0.011	0.178	0.042
1884	0.007	0.212	0.041	0.016	0.517	0.094	0.007	0.224	0.043
1885	0.006	0.188	0.039	0.011	0.449	0.091	0.006	0.200	0.041
1886	0.006	0.219	0.050	0.010	0.395	0.111	0.006	0.230	0.053
1887	0.006	0.226	0.055	0.009	0.588	0.126	0.006	0.241	0.058
1888	0.005	0.238	0.058	0.004	0.291	0.075	0.005	0.242	0.059
1889	0.005	0.262	0.063	0.004	0.549	0.103	0.005	0.275	0.065
1890	0.005	0.321	0.072	0.004	0.531	0.111	0.005	0.332	0.074
1891	0.005	0.275	0.070	0.005	0.518	0.142	0.005	0.289	0.073
1892	0.005	0.326	0.075	0.006	0.607	0.164	0.005	0.342	0.080
1893	0.295	0.418	0.322	0.412	0.695	0.483	0.301	0.434	0.330
1894	0.829	0.579	0.773	1.234	0.711	1.090	0.851	0.588	0.791
1895	1.394	0.966	1.294	2.166	1.188	1.939	1.439	0.978	1.332
1896	1.719	1.349	1.633	2.854	1.594	2.587	1.789	1.363	1.691
1897	1.978	1.580	1.880	2.908	1.781	2.651	2.039	1.592	1.930
1898	2.105	1.779	2.026	3.058	2.010	2.818	2.167	1.793	2.077
1899	1.920	1.806	1.893	3.178	2.473	3.022	1.998	1.845	1.962
1900	2.207	1.993	2.153	4.179	2.950	3.897	2.362	2.060	2.286
1901	1.932	1.756	1.886	3.141	2.689	3.031	2.009	1.810	1.957
1902	1.998	1.832	1.954	3.574	3.429	3.543	2.110	1.918	2.060
1903	1.930	1.902	1.922	3.574	2.911	3.405	2.039	1.968	2.021
1904	1.887	1.790	1.861	3.317	2.894	3.214	1.991	1.861	1.956
1905	1.840	1.821	1.835	3.487	2.936	3.341	1.960	1.902	1.944
1906	1.794	1.766	1.786	3.038	2.600	2.919	1.885	1.827	1.869
1907	1.775	1.879	1.802	3.140	3.013	3.108	1.878	1.961	1.900
1908	1.669	1.752	1.691	2.956	2.630	2.867	1.760	1.816	1.775
1909	1.715	1.715	1.715	2.928	3.036	2.956	1.808	1.805	1.807
1910	1.874	1.913	1.885	3.347	3.339	3.345	1.989	2.019	1.998
1911	2.012	2.120	2.041	3.125	3.339	3.181	2.098	2.210	2.129
1912	1.982	2.208	2.042	3.350	3.367	3.355	2.086	2.304	2.144
1913	2.119	2.237	2.151	3.720	3.580	3.679	2.233	2.344	2.263
1914	2.137	2.386	2.203	3.630	3.627	3.629	2.250	2.493	2.314
1915	2.164	2.307	2.203	3.496	3.894	3.605	2.264	2.429	2.309
1916	2.061	2.327	2.131	3.764	3.671	3.736	2.178	2.440	2.247
1917	2.092	2.244	2.133	3.739	3.587	3.691	2.206	2.358	2.247

Appendix D. Ratio of DI aggregate benefit/tax accumulated values through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the rate of return to large company stocks. (Continued)

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1918	2.042	2.181	2.080	3.877	3.573	3.781	2.167	2.296	2.202
1919	1.938	2.156	1.996	3.639	3.529	3.605	2.068	2.283	2.125
1920	1.843	2.041	1.895	3.440	3.109	3.332	1.958	2.143	2.008
1921	1.696	1.864	1.740	2.979	2.832	2.932	1.792	1.959	1.837
1922	1.620	1.777	1.661	2.980	2.930	2.964	1.727	1.890	1.770
1923	1.506	1.683	1.552	2.763	2.660	2.729	1.603	1.784	1.651
1924	1.390	1.620	1.448	2.523	2.592	2.544	1.480	1.720	1.542
1925	1.296	1.472	1.341	2.457	2.401	2.439	1.389	1.570	1.437
1926	1.206	1.383	1.251	2.236	2.255	2.242	1.292	1.476	1.340
1927	1.096	1.316	1.150	2.179	2.032	2.131	1.182	1.398	1.237
1928	1.010	1.186	1.054	2.042	1.743	1.938	1.092	1.254	1.134
1929	0.912	1.104	0.960	1.748	1.616	1.704	0.982	1.168	1.030
1930	0.889	1.043	0.927	1.683	1.469	1.610	0.957	1.098	0.993
1931	0.876	1.014	0.911	1.709	1.430	1.610	0.947	1.068	0.979
1932	0.806	0.938	0.839	1.597	1.308	1.497	0.880	0.989	0.908
1933	0.711	0.865	0.749	1.334	1.207	1.291	0.771	0.914	0.808
1934	0.672	0.827	0.711	1.312	1.093	1.234	0.734	0.867	0.769
1935	0.579	0.759	0.623	1.136	1.043	1.104	0.635	0.801	0.677
1936	0.527	0.670	0.563	1.014	0.994	1.007	0.576	0.716	0.613
1937	0.491	0.618	0.523	0.986	0.869	0.946	0.540	0.655	0.571
1938	0.452	0.554	0.479	0.929	0.781	0.877	0.499	0.587	0.523
1939	0.419	0.551	0.452	0.905	0.721	0.837	0.466	0.578	0.495
1940	0.392	0.504	0.421	0.804	0.663	0.752	0.433	0.529	0.459
1941	0.386	0.480	0.411	0.767	0.671	0.734	0.426	0.508	0.449
1942	0.346	0.431	0.369	0.702	0.610	0.670	0.382	0.457	0.403
1943	0.333	0.441	0.362	0.728	0.555	0.663	0.371	0.458	0.395
1944	0.344	0.444	0.371	0.677	0.568	0.638	0.380	0.464	0.403
1945	0.329	0.424	0.356	0.703	0.534	0.639	0.369	0.441	0.390
1946	0.312	0.382	0.332	0.654	0.494	0.592	0.347	0.399	0.362
1947	0.305	0.367	0.324	0.630	0.441	0.557	0.339	0.377	0.351
1948	0.312	0.370	0.330	0.642	0.431	0.556	0.349	0.380	0.359
1949	0.310	0.372	0.329	0.640	0.429	0.554	0.348	0.381	0.359
1950	0.305	0.348	0.319	0.578	0.422	0.516	0.339	0.360	0.346
1951	0.288	0.346	0.307	0.570	0.405	0.502	0.321	0.355	0.333
1952	0.282	0.350	0.304	0.548	0.406	0.488	0.312	0.359	0.328
1953	0.279	0.356	0.305	0.562	0.436	0.510	0.312	0.368	0.331
1954	0.286	0.367	0.313	0.540	0.408	0.485	0.316	0.374	0.336
1955	0.289	0.370	0.317	0.515	0.442	0.486	0.318	0.381	0.340
1956	0.310	0.390	0.338	0.530	0.474	0.507	0.337	0.403	0.361
1957	0.336	0.445	0.375	0.555	0.550	0.553	0.364	0.461	0.399
1958	0.370	0.480	0.411	0.577	0.603	0.588	0.397	0.498	0.435
1959	0.402	0.541	0.453	0.623	0.673	0.644	0.431	0.560	0.479
1960	0.441	0.603	0.501	0.668	0.749	0.701	0.470	0.625	0.529

Appendix D. Ratio of DI aggregate benefit/tax accumulated values through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the rate of return to large company stocks. (Continued)

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1961	0.526	0.689	0.590	0.722	0.860	0.777	0.554	0.714	0.616
1962	0.586	0.785	0.664	0.798	0.916	0.847	0.616	0.806	0.691
1963	0.678	0.919	0.773	0.882	1.071	0.960	0.709	0.943	0.802
1964	0.792	1.049	0.896	0.993	1.212	1.084	0.824	1.076	0.926
1965	0.924	1.201	1.038	1.059	1.318	1.165	0.948	1.221	1.060
1966	1.057	1.350	1.179	1.179	1.459	1.297	1.079	1.370	1.200
1967	1.250	1.545	1.376	1.263	1.590	1.400	1.253	1.554	1.381
1968	1.441	1.768	1.581	1.422	1.834	1.593	1.437	1.780	1.583
1969	1.595	1.933	1.742	1.658	1.992	1.803	1.607	1.945	1.754
1970	1.864	2.287	2.047	1.987	2.451	2.187	1.888	2.319	2.074
1971	2.239	2.767	2.467	2.390	2.834	2.587	2.269	2.781	2.491
1972	2.673	3.505	3.022	2.912	3.584	3.204	2.721	3.522	3.059
1973	3.315	4.235	3.708	3.573	4.049	3.790	3.369	4.193	3.725
1974	4.007	5.192	4.509	4.576	5.375	4.933	4.121	5.232	4.597
1975	5.387	6.520	5.886	6.512	7.666	7.028	5.611	6.753	6.116

Appendix E. Accumulated DI aggregate net transfers through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the inflation rate (a zero real interest rate), in millions of dollars.

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1875	-3	-1	-4	0	0	0	-3	-1	-5
1876	-4	-2	-5	0	0	0	-4	-2	-5
1877	-6	-1	-8	-1	0	-1	-7	-1	-8
1878	-5	-2	-8	0	0	0	-6	-2	-8
1879	-10	-2	-12	0	0	0	-10	-2	-12
1880	-12	-2	-14	0	0	-1	-12	-3	-15
1881	-14	-3	-18	0	0	0	-15	-3	-18
1882	-17	-4	-22	-1	-1	-2	-19	-5	-24
1883	-25	-5	-29	-2	-1	-3	-27	-6	-32
1884	-35	-6	-41	-2	0	-2	-37	-6	-43
1885	-45	-8	-54	-2	0	-2	-47	-9	-56
1886	-50	-10	-60	-2	-1	-3	-52	-11	-63
1887	-54	-13	-67	-2	0	-3	-56	-13	-70
1888	-71	-18	-89	-9	-2	-12	-81	-20	-100
1889	-82	-19	-101	-6	-1	-6	-88	-19	-107
1890	-102	-19	-121	-6	-1	-7	-108	-20	-128
1891	-120	-30	-150	-6	-1	-8	-127	-31	-158
1892	-156	-31	-187	-8	-2	-9	-164	-32	-196
1893	-154	-31	-185	-8	-1	-9	-162	-32	-194
1894	-78	-32	-109	0	-1	-1	-77	-33	-110
1895	54	-9	45	15	1	16	69	-8	61
1896	163	22	185	33	3	36	196	25	221
1897	304	57	361	44	5	49	348	62	410
1898	424	98	522	57	9	66	481	107	588
1899	415	122	536	69	14	83	483	136	619
1900	688	197	885	154	30	184	842	227	1069
1901	665	201	866	102	27	130	767	229	996
1902	901	280	1180	171	45	216	1072	325	1397
1903	1027	351	1378	191	51	242	1219	402	1620
1904	1203	399	1602	229	63	291	1432	462	1893
1905	1337	478	1815	284	82	366	1620	560	2181
1906	1423	522	1944	265	80	345	1688	601	2289
1907	1658	638	2295	338	108	446	1996	745	2741
1908	1803	713	2516	350	112	462	2152	825	2978
1909	2069	778	2848	403	146	549	2472	925	3397
1910	2262	882	3144	499	177	676	2761	1059	3820
1911	2684	1093	3777	471	179	650	3155	1272	4427
1912	3046	1316	4362	591	233	824	3637	1549	5185
1913	3623	1467	5090	669	265	934	4292	1732	6024
1914	4132	1791	5923	779	318	1097	4911	2109	7020
1915	4319	1790	6109	756	330	1086	5075	2120	7195
1916	4392	1935	6327	842	358	1200	5234	2292	7526
1917	4732	1983	6715	878	379	1257	5610	2362	7972

Appendix E. Accumulated DI aggregate net transfers through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the inflation rate (a zero real interest rate), in millions of dollars. (Continued)

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1918	5136	2150	7286	1024	423	1446	6160	2573	8733
1919	5057	2211	7268	1147	488	1635	6203	2699	8902
1920	5331	2294	7625	1142	477	1619	6474	2771	9244
1921	5320	2257	7576	1127	494	1621	6446	2750	9197
1922	5191	2161	7352	1253	553	1806	6443	2714	9158
1923	5018	2142	7160	1219	551	1770	6237	2693	8930
1924	4850	2167	7017	1248	589	1837	6098	2757	8855
1925	4554	1946	6500	1301	593	1894	5855	2539	8394
1926	4215	1777	5992	1294	577	1871	5510	2354	7863
1927	3881	1760	5641	1344	593	1937	5226	2352	7578
1928	3581	1523	5104	1322	542	1864	4903	2065	6968
1929	2974	1365	4339	1178	529	1707	4151	1895	6046
1930	3244	1386	4630	1230	529	1759	4474	1915	6389
1931	3788	1447	5235	1310	554	1863	5097	2001	7098
1932	2658	1123	3781	1332	499	1831	3990	1622	5612
1933	1290	680	1971	1002	437	1439	2292	1118	3410
1934	589	519	1107	1017	371	1388	1606	889	2495
1935	-783	185	-598	792	320	1112	9	505	514
1936	-1671	-267	-1938	610	277	887	-1061	10	-1051
1937	-2336	-578	-2914	525	176	701	-1812	-402	-2213
1938	-3219	-973	-4193	459	110	569	-2760	-863	-3624
1939	-3879	-1016	-4894	406	37	443	-3473	-978	-4452
1940	-4578	-1373	-5950	216	-32	185	-4361	-1404	-5766
1941	-4851	-1669	-6520	131	-33	99	-4720	-1702	-6422
1942	-6483	-2296	-8779	-22	-116	-138	-6505	-2412	-8917
1943	-6952	-2322	-9275	35	-191	-156	-6917	-2513	-9430
1944	-6305	-2241	-8546	-115	-199	-314	-6420	-2440	-8860
1945	-6509	-2504	-9013	-57	-242	-298	-6565	-2746	-9312
1946	-8045	-3377	-11422	-199	-353	-553	-8244	-3731	-11975
1947	-9046	-3919	-12964	-299	-494	-792	-9344	-4413	-13757
1948	-8203	-3651	-11854	-292	-543	-835	-8495	-4194	-12689
1949	-7901	-3575	-11476	-273	-549	-822	-8174	-4124	-12298
1950	-7588	-3796	-11384	-435	-560	-996	-8023	-4357	-12380
1951	-7984	-3857	-11841	-423	-602	-1026	-8408	-4459	-12867
1952	-8154	-3800	-11954	-497	-636	-1133	-8650	-4436	-13086
1953	-8054	-3743	-11797	-461	-564	-1025	-8515	-4307	-12822
1954	-7879	-3717	-11596	-560	-672	-1231	-8438	-4389	-12827
1955	-7620	-3669	-11288	-618	-614	-1232	-8238	-4283	-12520
1956	-7200	-3661	-10861	-625	-615	-1240	-7824	-4277	-12101
1957	-6874	-3379	-10253	-640	-552	-1192	-7514	-3931	-11445
1958	-6198	-3294	-9492	-628	-533	-1160	-6826	-3826	-10652
1959	-5819	-2960	-8779	-595	-479	-1074	-6415	-3439	-9853
1960	-5503	-2797	-8300	-596	-461	-1057	-6099	-3258	-9357

Appendix E. Accumulated DI aggregate net transfers through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the inflation rate (a zero real interest rate), in millions of dollars. (Continued)

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1961	-4637	-2590	-7227	-592	-419	-1011	-5229	-3009	-8238
1962	-4158	-2300	-6458	-540	-416	-955	-4698	-2716	-7413
1963	-3516	-1897	-5413	-499	-345	-844	-4016	-2241	-6257
1964	-2947	-1674	-4621	-456	-307	-763	-3404	-1980	-5384
1965	-2329	-1353	-3682	-430	-282	-713	-2759	-1636	-4395
1966	-1857	-1104	-2961	-359	-231	-590	-2216	-1335	-3551
1967	-1373	-844	-2217	-319	-193	-512	-1692	-1037	-2729
1968	-982	-573	-1555	-243	-128	-371	-1225	-701	-1926
1969	-750	-415	-1165	-158	-88	-246	-909	-503	-1412
1970	-449	-154	-603	-83	-13	-96	-531	-167	-698
1971	-124	101	-23	-4	37	34	-128	138	10
1972	111	311	421	59	95	154	170	405	575
1973	304	429	733	108	121	228	412	549	961
1974	434	528	962	151	162	313	585	690	1275
1975	601	639	1240	208	210	418	809	849	1658

Appendix F. Accumulated DI aggregate net transfers through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the trust fund interest rate, in millions of dollars.

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1875	-6	-2	-8	0	0	0	-6	-2	-8
1876	-7	-3	-10	0	0	0	-7	-3	-10
1877	-13	-2	-15	-1	0	-1	-14	-2	-17
1878	-12	-5	-17	0	0	0	-12	-5	-17
1879	-20	-4	-24	-1	0	-1	-21	-4	-25
1880	-26	-5	-31	-1	-1	-2	-27	-6	-32
1881	-31	-7	-38	-1	0	-1	-32	-7	-39
1882	-38	-9	-47	-2	-2	-4	-40	-11	-51
1883	-51	-9	-60	-4	-2	-6	-55	-11	-67
1884	-75	-12	-86	-4	0	-4	-78	-12	-90
1885	-96	-17	-113	-4	-1	-5	-100	-18	-118
1886	-102	-21	-123	-5	-1	-6	-107	-22	-129
1887	-113	-26	-140	-5	-1	-5	-118	-27	-145
1888	-150	-35	-185	-16	-4	-19	-165	-39	-204
1889	-173	-38	-211	-12	-1	-13	-185	-39	-224
1890	-215	-39	-255	-13	-1	-14	-228	-41	-269
1891	-253	-61	-314	-13	-2	-15	-266	-63	-329
1892	-331	-64	-395	-16	-3	-19	-347	-67	-414
1893	-324	-66	-390	-16	-2	-17	-340	-67	-407
1894	-148	-64	-212	2	-3	-1	-147	-67	-213
1895	150	-15	135	35	2	38	185	-13	173
1896	394	58	451	75	7	82	468	65	533
1897	695	132	827	97	12	110	793	144	937
1898	949	220	1169	126	20	145	1075	239	1314
1899	918	267	1184	149	31	180	1067	297	1364
1900	1484	424	1908	330	63	393	1814	488	2301
1901	1412	426	1838	216	58	273	1628	484	2111
1902	1876	581	2456	357	94	451	2233	674	2907
1903	2108	718	2826	395	104	498	2503	821	3324
1904	2445	808	3253	467	128	594	2912	936	3848
1905	2703	968	3671	578	166	744	3282	1134	4416
1906	2869	1051	3920	538	162	700	3407	1213	4621
1907	3303	1275	4578	682	217	898	3985	1491	5476
1908	3525	1403	4929	695	223	917	4220	1626	5846
1909	4011	1516	5527	796	290	1086	4807	1806	6614
1910	4434	1741	6175	990	352	1343	5424	2093	7517
1911	5331	2182	7513	940	360	1301	6272	2543	8814
1912	6082	2643	8724	1183	469	1652	7264	3112	10376
1913	7262	2952	10214	1343	533	1875	8605	3485	12089
1914	8327	3621	11948	1569	641	2211	9896	4262	14159
1915	8858	3668	12526	1541	673	2214	10399	4341	14739
1916	9227	4046	13273	1739	740	2479	10966	4786	15752
1917	10121	4221	14342	1841	797	2637	11961	5018	16979

Appendix F. Accumulated DI aggregate net transfers through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the trust fund interest rate, in millions of dollars. (Continued)

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1918	10967	4557	15523	2139	884	3022	13105	5440	18545
1919	10687	4619	15306	2375	1010	3385	13063	5628	18691
1920	10994	4684	15679	2337	973	3310	13331	5658	18989
1921	10624	4489	15113	2257	986	3243	12881	5475	18356
1922	9919	4156	14075	2439	1069	3509	12359	5225	17584
1923	9083	3943	13025	2293	1034	3327	11376	4976	16352
1924	8230	3828	12058	2262	1062	3325	10492	4891	15382
1925	7173	3256	10429	2269	1030	3299	9443	4286	13728
1926	6095	2819	8915	2148	962	3110	8244	3781	12025
1927	4908	2604	7511	2142	930	3071	7049	3533	10582
1928	3788	2003	5791	2013	798	2811	5801	2801	8602
1929	2255	1576	3831	1677	730	2407	3932	2306	6238
1930	2072	1369	3441	1674	670	2344	3746	2039	5785
1931	2295	1285	3580	1714	664	2378	4010	1949	5958
1932	697	780	1477	1686	570	2256	2383	1350	3732
1933	-1317	211	-1106	1181	469	1650	-135	680	545
1934	-2262	-39	-2301	1164	361	1525	-1098	322	-776
1935	-4439	-525	-4964	821	290	1111	-3618	-235	-3853
1936	-5655	-1205	-6860	540	228	768	-5114	-977	-6092
1937	-6568	-1633	-8200	438	75	513	-6130	-1557	-7687
1938	-7917	-2314	-10231	319	-38	281	-7598	-2353	-9950
1939	-8843	-2264	-11108	245	-141	104	-8598	-2406	-11004
1940	-9839	-2803	-12642	-32	-247	-279	-9870	-3050	-12920
1941	-10161	-3257	-13418	-165	-236	-402	-10326	-3493	-13819
1942	-12875	-4271	-17146	-404	-370	-774	-13279	-4641	-17920
1943	-13572	-4270	-17841	-308	-496	-804	-13879	-4766	-18645
1944	-12141	-4045	-16187	-508	-479	-987	-12649	-4524	-17174
1945	-12211	-4401	-16612	-410	-552	-962	-12621	-4953	-17574
1946	-14768	-5820	-20588	-628	-718	-1346	-15396	-6538	-21934
1947	-16338	-6707	-23044	-794	-933	-1727	-17132	-7640	-24772
1948	-14655	-6196	-20851	-753	-1006	-1758	-15407	-7201	-22609
1949	-13940	-6026	-19967	-727	-997	-1724	-14667	-7023	-21690
1950	-13255	-6307	-19562	-951	-1006	-1957	-14207	-7313	-21519
1951	-13730	-6402	-20132	-922	-1047	-1969	-14652	-7449	-22100
1952	-13821	-6240	-20062	-974	-1076	-2049	-14795	-7316	-22111
1953	-13377	-6071	-19448	-907	-937	-1843	-14284	-7008	-21292
1954	-12885	-5969	-18854	-1020	-1071	-2092	-13905	-7040	-20945
1955	-12213	-5804	-18017	-1083	-960	-2042	-13296	-6764	-20059
1956	-11322	-5633	-16955	-1041	-918	-1959	-12364	-6551	-18915
1957	-10482	-5071	-15553	-1012	-792	-1804	-11494	-5863	-17357
1958	-9132	-4756	-13888	-938	-716	-1654	-10070	-5472	-15542
1959	-8270	-4091	-12361	-829	-603	-1432	-9099	-4694	-13793
1960	-7465	-3633	-11098	-768	-536	-1305	-8233	-4170	-12403

Appendix F. Accumulated DI aggregate net transfers through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the trust fund interest rate, in millions of dollars. (Continued)

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1961	-5903	-3099	-9002	-700	-431	-1130	-6602	-3530	-10132
1962	-4956	-2485	-7441	-580	-393	-973	-5536	-2878	-8414
1963	-3833	-1772	-5605	-476	-265	-741	-4309	-2037	-6346
1964	-2904	-1326	-4230	-377	-188	-565	-3281	-1514	-4795
1965	-2011	-851	-2862	-323	-140	-463	-2333	-991	-3324
1966	-1372	-505	-1877	-223	-72	-294	-1595	-576	-2171
1967	-758	-171	-929	-168	-24	-192	-927	-195	-1121
1968	-300	141	-158	-78	51	-27	-378	193	-185
1969	-34	317	283	22	96	118	-12	413	401
1970	309	606	915	114	185	298	423	791	1214
1971	600	819	1419	191	229	420	791	1048	1839
1972	751	943	1694	239	271	510	990	1214	2205
1973	885	994	1879	272	279	552	1157	1273	2431
1974	962	1038	2000	303	309	612	1265	1347	2612
1975	1078	1096	2174	352	349	701	1431	1445	2875

Appendix G. Accumulated DI aggregate net transfers through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the rate of return to large company stocks, in millions of dollars.

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1875	-19	-5	-24	-1	0	-1	-20	-5	-25
1876	-24	-7	-31	0	0	-1	-25	-7	-32
1877	-43	-6	-50	-3	0	-3	-46	-6	-53
1878	-45	-14	-59	-1	0	-1	-46	-15	-60
1879	-63	-14	-78	-3	0	-3	-66	-14	-81
1880	-88	-17	-105	-4	-2	-6	-92	-20	-111
1881	-109	-24	-132	-4	0	-4	-112	-24	-136
1882	-132	-31	-163	-8	-4	-12	-140	-35	-175
1883	-169	-31	-199	-13	-4	-17	-181	-35	-216
1884	-250	-39	-289	-12	-1	-13	-261	-40	-302
1885	-316	-57	-373	-14	-2	-16	-331	-59	-389
1886	-330	-68	-398	-16	-3	-19	-346	-71	-417
1887	-374	-82	-456	-17	-2	-19	-391	-84	-475
1888	-490	-109	-599	-37	-9	-45	-526	-118	-644
1889	-567	-122	-688	-36	-4	-39	-603	-125	-728
1890	-695	-129	-824	-42	-5	-47	-737	-134	-871
1891	-816	-188	-1003	-42	-7	-49	-858	-195	-1053
1892	-1102	-211	-1313	-55	-8	-63	-1156	-219	-1376
1893	-966	-223	-1190	-43	-7	-50	-1009	-231	-1240
1894	-272	-196	-469	21	-10	11	-251	-206	-458
1895	753	-20	733	138	7	145	891	-13	878
1896	1674	246	1919	283	24	308	1957	270	2227
1897	2415	465	2880	329	40	368	2743	505	3248
1898	3266	737	4004	420	61	481	3686	799	4484
1899	3008	819	3828	473	91	564	3482	911	4392
1900	4411	1225	5636	989	181	1170	5400	1406	6806
1901	3812	1107	4918	594	151	745	4406	1258	5664
1902	4854	1455	6310	962	241	1204	5817	1697	7513
1903	5097	1697	6794	1007	254	1262	6104	1951	8055
1904	5457	1775	7232	1118	296	1413	6575	2070	8645
1905	5867	2097	7965	1368	384	1752	7236	2481	9717
1906	6152	2252	8404	1252	368	1621	7404	2620	10024
1907	6850	2713	9563	1546	484	2031	8397	3197	11593
1908	6675	2789	9464	1491	473	1963	8165	3262	11427
1909	7675	3001	10675	1710	624	2334	9384	3625	13009
1910	10237	4078	14314	2345	843	3187	12581	4920	17501
1911	12905	5368	18273	2286	891	3177	15191	6259	21450
1912	14473	6453	20927	2852	1147	3999	17325	7600	24926
1913	17794	7282	25076	3312	1319	4632	21106	8601	29708
1914	20851	9080	29931	3922	1615	5536	24773	10695	35467
1915	22136	9189	31324	3849	1688	5537	25985	10877	36861
1916	21878	9712	31590	4201	1791	5992	26080	11503	37583
1917	23761	9996	33757	4416	1914	6330	28176	11910	40086

Appendix G. Accumulated DI aggregate net transfers through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the rate of return to large company stocks, in millions of dollars. (Continued)

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1918	25122	10540	35662	5045	2082	7127	30167	12622	42789
1919	23506	10367	33872	5461	2320	7781	28967	12687	41653
1920	23479	10255	33734	5290	2196	7486	28769	12451	41220
1921	21386	9394	30780	4920	2152	7072	26306	11545	37852
1922	18785	8352	27137	5154	2251	7405	23939	10603	34542
1923	16001	7562	23563	4676	2107	6783	20677	9669	30346
1924	13121	7059	20180	4430	2087	6518	17551	9146	26697
1925	9898	5513	15412	4252	1937	6188	14150	7450	21600
1926	6992	4448	11440	3817	1738	5554	10809	6185	16994
1927	3432	3690	7122	3626	1556	5182	7059	5246	12304
1928	356	2213	2569	3233	1227	4460	3588	3441	7029
1929	-3144	1220	-1924	2451	1028	3479	-693	2248	1555
1930	-4107	532	-3575	2364	845	3209	-1743	1377	-366
1931	-4399	165	-4234	2336	780	3116	-2063	945	-1118
1932	-6893	-751	-7644	2175	594	2769	-4717	-157	-4875
1933	-10280	-1577	-11857	1272	401	1673	-9008	-1176	-10184
1934	-11633	-2052	-13685	1184	195	1379	-10449	-1857	-12306
1935	-15745	-2906	-18651	560	89	649	-15185	-2817	-18002
1936	-17561	-4128	-21689	58	-12	46	-17503	-4140	-21642
1937	-18921	-4831	-23752	-57	-285	-343	-18979	-5117	-24095
1938	-21295	-6236	-27531	-300	-512	-812	-21595	-6749	-28344
1939	-22667	-5859	-28526	-399	-682	-1082	-23066	-6541	-29607
1940	-24156	-6747	-30903	-859	-866	-1726	-25015	-7613	-32629
1941	-24427	-7499	-31926	-1102	-814	-1916	-25529	-8313	-33842
1942	-29699	-9364	-39063	-1536	-1069	-2605	-31235	-10433	-41668
1943	-30791	-9190	-39982	-1322	-1319	-2640	-32113	-10509	-42622
1944	-27202	-8508	-35710	-1627	-1222	-2849	-28829	-9730	-38559
1945	-26761	-8999	-35761	-1414	-1363	-2777	-28176	-10363	-38538
1946	-31784	-11724	-43508	-1809	-1658	-3467	-33594	-13382	-46975
1947	-34752	-13509	-48262	-2139	-2050	-4189	-36891	-15559	-52450
1948	-30918	-12453	-43371	-2012	-2186	-4197	-32930	-14638	-47568
1949	-29123	-12093	-41216	-1971	-2130	-4101	-31094	-14223	-45316
1950	-27500	-12592	-40092	-2344	-2136	-4480	-29844	-14728	-44572
1951	-28120	-12848	-40968	-2271	-2168	-4439	-30391	-15016	-45407
1952	-27922	-12386	-40309	-2253	-2177	-4430	-30175	-14563	-44738
1953	-26453	-11839	-38292	-2094	-1851	-3945	-28547	-13690	-42237
1954	-25064	-11502	-36566	-2218	-2021	-4239	-27282	-13523	-40805
1955	-23211	-10935	-34147	-2251	-1756	-4008	-25463	-12691	-38154
1956	-20809	-10058	-30867	-2023	-1558	-3581	-22832	-11616	-34448
1957	-18228	-8414	-26642	-1796	-1218	-3014	-20024	-9632	-29656
1958	-15037	-7351	-22388	-1522	-976	-2497	-16559	-8326	-24885
1959	-12881	-5828	-18709	-1203	-710	-1913	-14083	-6538	-20621
1960	-10706	-4511	-15217	-957	-505	-1463	-11664	-5016	-16680

Appendix G. Accumulated DI aggregate net transfers through 1995 for each race and gender group, by cohort, evaluated as of year-end 1995 using the rate of return to large company stocks, in millions of dollars. (Continued)

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1961	-7460	-3121	-10582	-710	-241	-952	-8171	-3363	-11533
1962	-5501	-1825	-7326	-445	-133	-578	-5946	-1958	-7904
1963	-3465	-566	-4031	-221	93	-128	-3686	-473	-4159
1964	-1840	293	-1546	-11	247	236	-1851	540	-1311
1965	-522	962	439	86	324	410	-436	1286	849
1966	311	1375	1686	215	400	615	526	1775	2300
1967	1083	1759	2842	277	449	726	1361	2208	3569
1968	1551	2034	3586	368	516	884	1920	2550	4470
1969	1780	2145	3924	473	548	1021	2253	2693	4945
1970	2143	2428	4570	584	652	1236	2727	3079	5807
1971	2283	2481	4764	635	664	1299	2918	3144	6062
1972	2171	2348	4519	630	653	1283	2801	3001	5802
1973	2132	2213	4345	618	614	1232	2750	2827	5577
1974	2046	2093	4139	611	605	1216	2657	2698	5355
1975	2028	2009	4037	635	621	1256	2663	2631	5293

Appendix H. Aggregate DI benefit/tax ratio for each race and gender group, by year.

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1957	0.067	0.052	0.063	0.086	0.035	0.074	0.068	0.051	0.064
1958	0.295	0.216	0.277	0.412	0.171	0.353	0.304	0.213	0.282
1959	0.431	0.509	0.449	0.656	0.517	0.623	0.448	0.509	0.462
1960	0.522	0.607	0.542	0.839	0.651	0.792	0.546	0.610	0.561
1961	0.784	0.969	0.828	1.358	1.171	1.310	0.827	0.986	0.866
1962	0.919	1.169	0.981	1.636	1.527	1.608	0.976	1.199	1.031
1963	0.970	1.249	1.040	1.735	1.678	1.720	1.032	1.286	1.096
1964	1.001	1.288	1.074	1.730	1.712	1.725	1.062	1.326	1.130
1965	1.131	1.481	1.222	1.867	1.893	1.874	1.195	1.521	1.280
1966	0.710	1.042	0.791	1.219	1.307	1.244	0.753	1.068	0.831
1967	0.742	1.033	0.816	1.234	1.257	1.241	0.785	1.056	0.855
1968	0.564	0.806	0.625	0.934	0.959	0.942	0.597	0.823	0.655
1969	0.593	0.808	0.649	0.936	0.914	0.929	0.624	0.820	0.676
1970	0.607	0.786	0.655	0.940	0.876	0.920	0.638	0.797	0.682
1971	0.736	0.905	0.783	1.116	1.004	1.079	0.773	0.917	0.813
1972	0.768	0.966	0.822	1.168	1.056	1.131	0.807	0.978	0.854
1973	0.843	1.092	0.908	1.268	1.168	1.235	0.884	1.102	0.943
1974	0.851	1.131	0.924	1.307	1.212	1.275	0.894	1.142	0.961
1975	1.002	1.271	1.075	1.590	1.413	1.527	1.057	1.290	1.122
1976	1.076	1.332	1.147	1.691	1.494	1.620	1.135	1.354	1.198
1977	1.128	1.356	1.192	1.747	1.540	1.672	1.189	1.381	1.244
1978	0.824	0.957	0.862	1.252	1.094	1.194	0.867	0.976	0.899
1979	0.793	0.941	0.835	1.241	1.093	1.186	0.838	0.962	0.874
1980	1.092	1.237	1.134	1.724	1.463	1.626	1.156	1.269	1.189
1981	0.958	1.060	0.988	1.515	1.265	1.419	1.014	1.090	1.037
1982	0.736	0.759	0.743	1.172	0.921	1.072	0.780	0.782	0.780
1983	0.939	0.909	0.930	1.508	1.132	1.358	0.996	0.941	0.979
1984	1.066	1.009	1.049	1.720	1.286	1.547	1.134	1.049	1.107
1985	1.057	0.964	1.028	1.718	1.264	1.535	1.127	1.008	1.088
1986	1.044	0.919	1.004	1.758	1.255	1.551	1.121	0.970	1.070
1987	1.020	0.871	0.971	1.732	1.230	1.524	1.099	0.926	1.041
1988	0.960	0.802	0.907	1.607	1.153	1.418	1.036	0.857	0.974
1989	0.944	0.777	0.887	1.583	1.145	1.400	1.022	0.836	0.957
1990	0.857	0.696	0.802	1.465	1.059	1.293	0.933	0.756	0.870
1991	0.928	0.741	0.862	1.641	1.183	1.444	1.019	0.815	0.944
1992	1.038	0.835	0.965	1.488	1.085	1.313	1.096	0.877	1.015
1993	1.099	0.899	1.027	1.556	1.165	1.387	1.160	0.945	1.080
1994	0.710	0.599	0.670	1.057	0.814	0.952	0.757	0.636	0.712
1995	0.722	0.620	0.685	1.103	0.879	1.006	0.775	0.666	0.734

Appendix I. Aggregate DI net transfers for each race and gender group, by year, in millions of dollars.

Year	White Males	White Females	Whites	Nonwhite Males	Nonwhite Females	Nonwhites	Males	Females	All Persons
1957	-585.73	-179.94	-765.67	-47.54	-15.25	-62.79	-633.27	-195.19	-828.46
1958	-437.93	-151.56	-589.50	-29.51	-13.61	-43.13	-467.45	-165.18	-632.62
1959	-399.12	-104.23	-503.34	-19.48	-8.67	-28.15	-418.59	-112.90	-531.49
1960	-340.59	-87.12	-427.71	-9.40	-6.76	-16.17	-349.99	-93.88	-443.87
1961	-155.12	-7.05	-162.17	21.04	3.51	24.55	-134.08	-3.54	-137.61
1962	-59.87	41.21	-18.66	40.24	11.82	52.06	-19.63	53.03	33.40
1963	-23.02	63.30	40.28	49.11	16.44	65.55	26.09	79.74	105.84
1964	0.82	77.77	78.60	52.94	19.21	72.15	53.76	96.99	150.75
1965	108.22	139.66	247.88	69.00	27.34	96.35	177.22	167.00	344.22
1966	-428.79	19.87	-408.93	30.14	16.20	46.34	-398.65	36.06	-362.59
1967	-395.67	17.09	-378.58	34.58	15.79	50.37	-361.09	32.88	-328.21
1968	-1036.36	-155.01	-1191.37	-15.14	-4.04	-19.18	-1051.50	-159.05	-1210.55
1969	-1021.28	-169.35	-1190.63	-16.22	-9.97	-26.19	-1037.50	-179.32	-1216.82
1970	-1160.87	-233.23	-1394.10	-18.25	-18.22	-36.47	-1179.13	-251.44	-1430.57
1971	-791.45	-108.31	-899.77	36.88	0.70	37.58	-754.57	-107.61	-862.18
1972	-792.79	-42.78	-835.57	61.33	10.20	71.52	-731.46	-32.58	-764.04
1973	-627.99	131.16	-496.83	114.63	35.97	150.60	-513.36	167.13	-346.23
1974	-707.65	220.35	-487.30	153.96	54.50	208.47	-553.69	274.85	-278.83
1975	8.36	492.44	500.80	300.01	115.52	415.54	308.37	607.97	916.34
1976	409.68	681.71	1091.39	393.93	158.61	552.54	803.60	840.32	1643.92
1977	755.43	820.12	1575.55	478.43	197.08	675.51	1233.86	1017.20	2251.06
1978	-1552.95	-154.43	-1707.38	248.21	54.06	302.28	-1304.73	-100.37	-1405.10
1979	-2069.76	-233.20	-2302.95	265.77	59.88	325.65	-1803.98	-173.32	-1977.30
1980	755.41	790.00	1545.41	657.47	255.85	913.32	1412.88	1045.85	2458.73
1981	-432.82	259.65	-173.17	598.52	191.17	789.70	165.70	450.82	616.52
1982	-3625.64	-1436.55	-5062.19	262.84	-79.49	183.35	-3362.80	-1516.04	-4878.84
1983	-674.41	-442.71	-1117.12	629.22	108.58	737.80	-45.19	-334.13	-379.31
1984	651.03	38.52	689.55	814.55	213.89	1028.44	1465.58	252.41	1717.99
1985	592.35	-173.43	418.92	882.99	219.05	1102.04	1475.33	45.62	1520.95
1986	479.02	-421.75	57.27	1005.46	235.30	1240.76	1484.48	-186.44	1298.04
1987	232.45	-728.05	-495.60	1054.47	235.17	1289.65	1286.92	-492.87	794.05
1988	-512.18	-1274.29	-1786.47	1026.92	184.52	1211.44	514.75	-1089.77	-575.03
1989	-752.42	-1557.11	-2309.54	1093.52	194.57	1288.10	341.10	-1362.54	-1021.44
1990	-2272.90	-2556.02	-4828.92	1059.40	97.71	1157.11	-1213.50	-2458.32	-3671.81
1991	-1163.45	-2283.46	-3446.91	1506.89	323.27	1830.16	343.45	-1960.20	-1616.75
1992	635.98	-1539.88	-903.90	1205.89	160.97	1366.86	1841.87	-1378.91	462.96
1993	1724.30	-982.83	741.47	1465.60	333.05	1798.65	3189.90	-649.78	2540.12
1994	-8245.58	-6428.99	-14674.58	254.01	-629.64	-375.63	-7991.57	-7058.64	-15050.21
1995	-8235.26	-6416.25	-14651.51	491.74	-443.35	48.39	-7743.52	-6859.60	-14603.11

Appendix J. Measures of cumulative redistribution under the DI program across race and gender groups, using alternative interest rates.

Table J1. Cumulative redistribution under the DI program over the period 1957-1995, evaluated using a nominal rate equal to the rate of inflation (a zero real interest rate).

Race/Gender Group	Accumulated Benefit/Tax Ratio	Accumulated Net Transfers (Billions)
White Males	0.872	-64.704
White Females	0.884	-25.998
Nonwhite Males	1.391	23.938
Nonwhite Females	1.113	4.412
All Whites	0.876	-90.702
All Nonwhites	1.283	28.350
All Males	0.928	-40.766
All Females	0.918	-21.586
All Persons	0.925	-62.352

Table J2. Cumulative redistribution under the DI program over the period 1957-1995, evaluated using the interest rate earned by the DI trust funds.

Race/Gender Group	Accumulated Benefit/Tax Ratio	Accumulated Net Transfers (Billions)
White Males	0.868	-115.086
White Females	0.919	-29.996
Nonwhite Males	1.391	39.434
Nonwhite Females	1.137	8.488
All Whites	0.883	-145.082
All Nonwhites	1.295	47.922
All Males	0.922	-75.653
All Females	0.950	-21.508
All Persons	0.931	-97.160

Table J3. Cumulative redistribution under the DI program over the period 1957-1995, evaluated using the total return to large company stocks.

Race/Gender Group	Accumulated Benefit/Tax Ratio	Accumulated Net Transfers (Billions)
White Males	0.846	-282.327
White Females	0.942	-43.391
Nonwhite Males	1.363	73.793
Nonwhite Females	1.150	17.666
All Whites	0.874	-325.718
All Nonwhites	1.285	91.459
All Males	0.898	-208.534
All Females	0.970	-25.725
All Persons	0.919	-234.259