UNEMPLOYMENT INSURANCE AND HOUSEHOLD WELFARE: MICROECONOMIC EVIDENCE 1980-93

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ABSTRACT

This study examines the relative economic well-being of households that receive unemployment insurance (UI) benefits, as measured by consumption flows that are derived from information on households' spending in the Consumer Expenditure Surveys from 1980-1993. For each quarter during this period we obtain the per-capita and equivalence-scale adjusted economic welfare of the two types of households. Adjusting for differences in the households' characteristics, we find: 1) The average UI recipient household during this period had a level of economic well-being that was on average between 3 and 8 percent below that of otherwise identical households (depending on the welfare measure used); 2) During a substantial part of this time the economic well-being of households that received UI benefits was at least that of other households; and 3) There is no cyclical variation in the relative well-being of UI recipient households compared to others. The findings imply that during the 1980s and early 1990s states' UI programs did a satisfactory job of maintaining the well-being of UI recipients. Emergency programs enacted during recessions raised potential duration sufficiently to prevent the economic position of the average UI recipient from deteriorating.

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I. Introduction

How individuals spend their unemployment benefits and how well those benefits maintain households' incomes during times when a family member is unemployed are perhaps the crucial questions in the analysis of this particular form of social insurance. For example, the preamble to the House bill that became the Social Security Act of 1935 noted that its purpose was, "To alleviate the hazards of old age, unemployment...." The founders of these programs viewed maintaining consumption as central. Despite this, most research on unemployment insurance has dealt with other issues. This topic has, however, been examined carefully in a counting framework by, e.g., Burgess and Kingston (1978), Felder and Li (1980) and Browning (1995), all of whom examined spending changes in households during one member's compensated spell of unemployment. The issue has been placed in the context of the life-cycle theory of consumption by Hamermesh (1982), Dynarski and Sheffrin (1987) and Gruber (1994), who focused on the extent to which households containing unemployed workers depart from the spending path predicted by the theory.

The difficulty with this literature is that it has not been grounded in the formal consumer theory of the household. A huge body of research (e.g., as summarized by Deaton and Muellbauer, 1980) has demonstrated the fruitfulness of taking consumer theory seriously when studying households' expenditures and the well-being of household members. It is wrong to make comparisons across households without considering, for example, how to treat households of different sizes, how to compare the same household at different times and how to account for changes in the prices of goods bought by households distinguished by, for example, UI recipiency. In this study we therefore ground the analysis of the effects of UI benefits on recipients' well-being in the theory of the

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household, thus enabling us to answer the central question: How well do these benefits insure consumption streams against spells of unemployment?

The analysis focuses on the welfare effects of UI benefits, thus providing the first direct link of the literature on benefit adequacy to microeconomic theory. We base the evaluation of the effects of UI on its impact on consumption, the appropriate focus in light of the program's goals and in view of the fact that it is consumption, not income, that determines households' well-being. The comparison is not to the recipient household's pre-unemployment spending, but instead to otherwise identical households' economic welfare. The "bottom-line" result of the study is an upper bound on the difference in economic welfare between those households receiving UI benefits and other households.[1] We thus measure the extent to which UI benefits fail to protect households against income losses resulting from unemployment as compared to otherwise identical households that do not incur such losses.

We use representative quarterly cross-sections of households over a substantial period of time (1980-93). The estimates thus offer the first examination of how well unemployment insurance maintains consumption at different points of the business cycle. Such evidence speaks to the question of whether the emergency UI programs that have extended the potential duration of benefits have been sufficient to prevent cyclical declines in the well-being of households containing unemployed workers.

II. Measures of Economic Welfare

An essential first step in addressing the impact of unemployment insurance on the well-being of recipients is to develop a measure of individual welfare. Although many different measures are used in practice, most observers would agree that material well-being is fundamentally related to the

goods consumed by individuals. The standard theoretical paradigm describes consumers as "rational" agents who choose that combination of goods and services that maximizes utility subject to the constraint of limited financial resources. Under this framework it is in principle possible to infer the level of individual welfare from the quantities consumed.

Specifically, assume that individuals maximize a (static) utility function subject to a budget constraint. The indirect utility function $V(\ )$ represents the maximum utility attainable for individual k with attributes A_k and total expenditure M_k facing prices $\mathbf{p}$:

$$V(\ ) = V(\mathbf{p}, M_k, A_k)\ .$$

The indirect utility function represents the welfare derived from the consumption of goods and services but does not provide an intuitive, monetary measure of well-being. For that purpose we use the expenditure function $M(\ )$, which is the minimum level of total expenditure required to attain utility level V_k at prices $\mathbf{p}$:

$$M_k(\ ) = M(\mathbf{p}, V_k, A_k)\ .$$

The expenditure function allows us to define a monetary measure of welfare using the indirect money metric utility function. This is defined to be the minimum expenditure required for individual k, who faces prices $\mathbf{p}^r$, to attain utility level $V(\mathbf{p}, M_k, A_k)$:

$$\mu(\mathbf{p}^r, A_k; \mathbf{p}, M_k, A_k) = M(\mathbf{p}^r, V(\mathbf{p}, M_k, A_k), A_k)\ . \tag{2.1}$$

The indirect money metric utility function provides a monetary measure of well-being that is ordinally equivalent to the individual's utility function. For fixed prices the money metric utility function increases if and only if utility and well-being rise.

The welfare function (2.1) provides a means of estimating the welfare of a household whose demographic composition does not change. Our problem, however, is that we wish to compare the

relative levels of well-being of heterogeneous households. Is a UI-recipient household with four

members and a expenditure level of $10,000 as well off as a nonrecipient couple with $5,000? To

answer this more complicated question, the money metric utility function must be evaluated at a

reference set of demographic characteristics A_r. We can rewrite the welfare function as:

$$W_k = \mu(p^r, A_r; p, M_k, A_k)$$

$$= M_k/[P_k(p, p^r, V_k)m_0(p^r, V_k, A_k)] \,. \tag{2.2}$$

In this alternative presentation of welfare P_k is a household-specific price index defined as the relative

cost of attaining utility level V_k at prices p and p^r respectively:

$$P_k(p, p^r, V_k) = M(p, V_k, A_k)/M(p^r, V_k, A_k) \,.$$

The equivalence scale m_0 captures differences in needs across households and is the cost, relative to

that needed by a reference household, of attaining a utility level V_k:

$$m_0(p^r, V_k, A_k) = M(p^r, V_k, A_k)/M(p^r, V_k, A_r) \,.$$

The welfare measure in (2.2) can be interpreted as the level of per equivalent consumption.

How does this differ from income-based estimates typically used to measure well-being? First and

foremost, the welfare measure is based on the household's consumption rather than on an income

concept such as earnings or pre-tax income. Within a single-period framework such as that described

above consumption is clearly the appropriate concept, since utility is derived exclusively from the

goods and services consumed.

Consumption is the preferred basis for a "snapshot" measure of welfare, but it is also a better

proxy for lifetime income for reasons related to the permanent-income hypothesis. Assume that

individuals choose stable paths of consumption through time based on their permanent incomes.

Among those who have lower than usual annual incomes, permanent income is understated by current income. The reverse is true for individuals who have higher than usual income levels. In each case consumption is on average equal to permanent income, so that consumption approximates lifetime welfare more accurately than does current income.[2]

Our welfare index also incorporates household-specific price effects rather than measuring the effect of price changes through an aggregate price index such as the CPI. To see why this might be important, suppose that a poor household devotes a large fraction of its resources to food and housing compared to a household that is better off. If there are dramatic increases in the prices of food and housing, the cost of living facing the poor will have risen substantially relative to that facing the rest of the population. The usual deflation of income or expenditures by the CPI will fail to capture the differential impact of such a price change.

If two households have the same consumption, is it reasonable to conclude that they are equally well-off? In general, the answer depends on the composition of the two households and their relative needs. A single individual does not need the same level of consumption as a household with seven members. This aspect of welfare measurement is captured in (2.2) through the equivalence scales, which compare the relative cost of attaining a given welfare level to that facing a reference household.[3]

III. Data

A critical component to measuring the well-being of UI recipients using the consumer-theoretic model in Section II is a set of comprehensive data on consumption. Some studies of UI and spending have relied on measures of one or a few components of spending or on very ad hoc survey responses that are unlikely to generate data of the quality necessary to allow one to measure total

consumption (e.g., Dynarski and Sheffrin, 1987; Browning, 1995).[4] We therefore rely on the only source of satisfactory spending data in the United States, the *Consumer Expenditure Surveys* (CEX), published by the Bureau of Labor Statistics. These surveys provide representative national samples that are used to calculate the expenditure weights that enter the monthly Consumer Price Index. Our sample includes quarterly observations beginning in the second quarter of 1980 and extending through the fourth quarter of 1993.

The basic observation in the CEX is the "consumer unit," defined either as a group of individuals who pool their monetary resources to make joint spending decisions, as individuals who are related by blood or legal arrangement, or as financially independent unrelated individuals. Financial independence is determined on the basis of whether the individual pays for at least two of the following three items: Food, housing and living expenses. The "reference" person, or "head" of the consumer unit, is the person who owns or rents the residence.[5] The coverage of the surveys can generally be described as the noninstitutionalized civilian population. Military personnel living off base are included, while those living on base are excluded. College students living outside their parents' homes are treated as separate consumer units. Travel expenditures abroad are part of the reported totals, but spending by U.S. citizens stationed overseas is not.

Since 1980 the surveys have been in a rotating panel format in which each consumer unit is interviewed for five consecutive quarters. Every quarter twenty percent of the households are dropped and replaced by a new group of consumer units. The first interview collects demographic information and a partial inventory of consumer durables. In the remaining four quarterly interviews detailed expenditure information covering the previous three months is collected. Each quarterly

survey provides a sample of between 4000 and 6000 separate consumer units that is representative of the U.S. population.

The CEX reports on the out-of-pocket expenditures of the consumer unit. The BLS includes in the definition of total expenditure gifts and cash contributions to persons (and organizations) outside the household as well as spending on owner-occupied housing and durables. Contributions to pensions, retirement funds and Social Security are also included, while most in-kind transfers, such as employer-paid insurance and health care, Medicaid and government housing subsidies, are not. Food stamps, and meals and rent received as pay, are part of total expenditure to the extent that they are reported accurately.

We modify the BLS definition of consumption to correspond as closely as possible to the concept appropriate for the model described in Section II. We delete gifts and cash contributions (and discuss them separately later on), since altruism requires a conceptual formulation that differs from the basis of most studies of individual welfare. Pensions, retirement contributions and Social Security taxes are also deleted, since they are components of saving rather than consumption. Expenditures on owner-occupied housing and consumer durables are replaced by the appropriate rental equivalents, so that we obtain a flow of consumption of these items and avoid problems generated by, for example, lumpiness in purchases. For housing this is a straightforward exercise, since the estimated rental value of the home is reported in all but two of the surveys.[6] We calculate service flows from consumer durables using a method developed by Christensen and Jorgenson (1969) in which the services received correspond to the opportunity cost of holding the asset represented by the durable good.[7]

Income in the CEX is defined to be the combined income during the previous 12 months of all members of the consumer unit over 14 years of age. Questions related to income are asked only in the second and fifth interviews. If there is a new member in the consumer unit in the fifth interview, the earned income history is reconstructed for the previous quarters. The components of income included are: Wages and salaries, self-employment income, Social Security and other retirement income, interest, dividends, rental income, unemployment insurance, worker's compensation, veteran's benefits, public assistance, regular contributions for support, and other income. Unlike expenditures, no imputations are performed for nonresponses to the income questions. If the respondent did not provide values for major sources of income, such as wages and salaries, self-employment income or Social Security, the consumer unit was classified as an "incomplete income reporter."

For budgetary reasons only the urban population was sampled in 1982 and 1983. Since we want a continuous time series beginning in 1980, we delete all rural households from the CEX in the other years. Because very few households with a head over age 65 received UI benefits, such households were also excluded from the sample. A household was classified as a UI recipient if it reported receiving a positive level of benefits at some time during the last twelve months. In multiple-person households the CEX does not allow determining the identity of the recipient, and in no household can we determine the actual duration of the benefits.[8]

Throughout this study the accounting period is the most recent twelve months from the quarter indicated in the figures or the discussion. Each household can be in the sample from one to four quarters, depending on attrition. The focus on annual incomes, and benefits received during the past twelve months, is consistent with accounting periods that are standard in government programs.

This does mean, however, that we cannot necessarily focus on the (possibly few) weeks when a household member might have been unemployed. That lacuna represents the trade-off one must make to obtain good data on spending flows over time intervals that are consistent with the ways in which economists usually measure consumption.

In the 55 quarters from 1980:2 to 1993:4 a total of 195,689 consumer units are in the sample. Each household is included in each quarter in which it appears in the CEX sample. The crucial point, however, is that in every quarter the sample is generally representative of households in the U.S. Of the households 12,999 (6.6 percent) are UI recipients, but the proportion fluctuates substantially over the fourteen years. Figure 1 presents this proportion in each quarter. Participation follows the business cycle fairly closely: An average of 9.2 percent of the sample received benefits around the business-cycle trough between 1982:2 and 1984:2, while only 4.7 percent did so during the business-cycle peak period between 1987:4 and 1989:4.

Table 1 compares the composition of the UI and non-UI populations. Most of the data reflect what has been observed in previous comparisons of UI recipients to other workers, but the focus on households is slightly novel. UI recipients have below-average total expenditures and income despite having more earners in the household.[9] The average age of the head of the household is identical for both recipients and nonrecipients, although the average size of the household is substantially larger among recipient households. Nonwhites and female-headed households are underrepresented among UI recipients, as are households living in the South. Perhaps most significant is the fact that UI households have, on average, less education than nonrecipients. While 53 percent of non-UI households have at least some college education, only 37 percent of UI households have similar educational levels; and only 13 percent of UI households are college graduates compared with 27
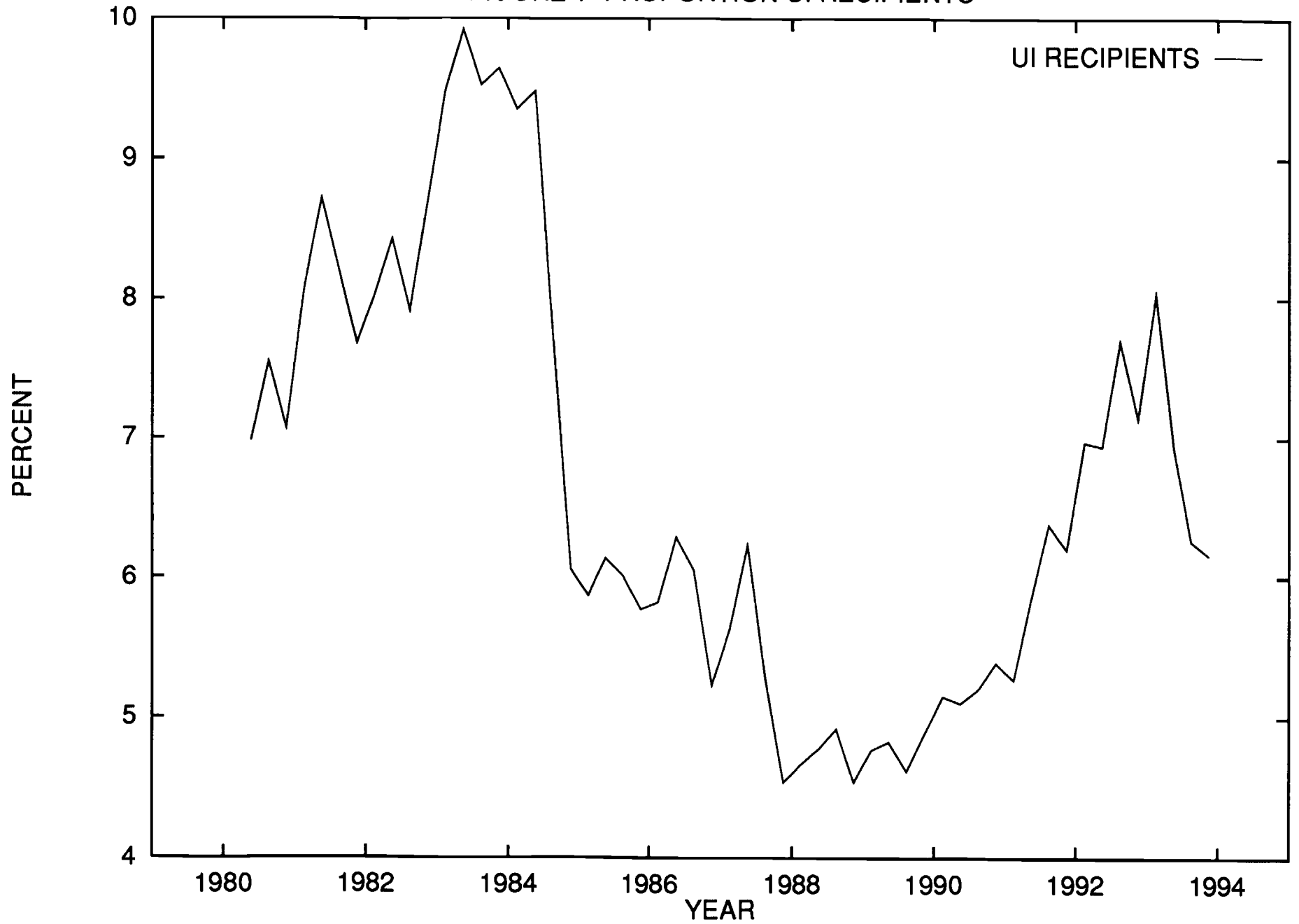
FIGURE 1- PROPORTION UI RECIPIENTS

Table 1. Sample Means (standard deviations in parentheses)

	Overall	UI	Non-UI
Total expenditure	$22,918 ($15,013)	$21,132 ($12,191)	$23,045 ($15,186)
Before-tax income	$29,240 ($22,978)	$26,632 ($18,815)	$29,446 ($23,264)
Age of head	39.68 (12.53)	39.31 (11.62)	39.70 (12.59)
Household size	2.79 (1.59)	3.14 (1.65)	2.76 (1.59)
Number of earners	1.61 (0.94)	1.90 (0.96)	1.59 (0.93)
Race of head			
White	0.84	0.86	0.84
Nonwhite	0.16	0.14	0.16
Gender of head: Male	0.75	0.82	0.74
Education of head			
No school	0.00	0.00	0.00
1 - 8 grade	0.06	0.08	0.06
9 - 11 grade	0.12	0.15	0.11
High school graduate	0.30	0.40	0.30
Some college	0.25	0.24	0.26
College graduate	0.14	0.08	0.14
Graduate school	0.12	0.05	0.13
Region			
Northeast	0.21	0.22	0.21
Midwest	0.26	0.30	0.26
South	0.29	0.22	0.29
West	0.24	0.26	0.24
Married	0.58	0.67	0.57
Earner Composition			
Head	0.38	0.29	0.39
Head & spouse	0.28	0.34	0.27
Head, spouse & others	0.09	0.13	0.09
Head & others	0.12	0.16	0.12
Spouse	0.02	0.02	0.02
Spouse & others	0.01	0.01	0.01
Others	0.02	0.02	0.02
No earners	0.07	0.03	0.08

percent among non-UI households. Finally, UI-recipient households are more likely to have both spouses working in the past twelve months than are non-recipient households.

While the average income of UI recipients is substantially below that of nonrecipients, one would expect there to be differences across subgroups of the population. In the first two columns of Table 2 we examine the relative income and expenditure levels for groups classified by age, race, sex, education and region of residence. Younger recipients and those with lower educational attainment have higher incomes relative to comparable nonrecipients, while the average incomes are roughly the same for female-headed households. The income gap between recipients and nonrecipients is smaller among nonwhites than among whites. Among the four Census regions the gap is larger in the South, where we saw that those receiving UI are underrepresented.

Do the differences narrow when we examine total expenditure instead of income? In general the answer is yes. The fourth column of Table 2 indicates that the differences in average total expenditures between UI recipients and nonrecipients are closer in four of the five age categories than are differences in income. Only among households with a head age 55-64, where non-UI households are more likely to contain retirees and thus be saving less, is this not true. This is also found for whites, nonwhites, and male-headed households, and most educational categories.[10] In general, however, the qualitative results are the same whether one looks at total expenditure or income. Young, uneducated recipient households have higher total expenditures relative to nonrecipients, as do female-headed households. Comparing the four main Census regions, recipients living in the South have the lowest average total expenditure relative to the rest of the population. Households with both spouses working during the past twelve months have the lowest ratio of expenditures of UI recipients compared to others among households containing different combinations of earners.

Table 2. Household Income and Expenditures, Levels and Ratios for Recipient and Other Households

	Income		Expenditures	
	UI	UI / Non-UI	UI	UI / Non-UI
Overall	$26,632	0.90	$21,132	0.92
Age of head				
16 - 24	$16,730	1.39	$13,997	1.22
25 - 34	$23,980	0.88	$18,516	0.92
35 - 44	$28,675	0.81	$23,430	0.86
45 - 54	$31,491	0.84	$24,467	0.86
55 - 64	$28,640	0.98	$22,753	0.95
Race of head				
White	$27,437	0.89	$21,688	0.91
Nonwhite	$21,688	0.95	$17,740	0.96
Gender of head				
Male	$28,838	0.85	$22,319	0.87
Female	$16,885	1.00	$15,825	1.02
Education of head				
No school	$15,817	0.99	$15,127	0.97
1 - 8 grade	$20,805	1.20	$17,785	1.09
9 - 11 grade	$22,496	1.21	$18,161	1.10
High school graduate	$25,981	0.97	$20,069	0.95
Some college	$28,013	1.01	$22,837	1.03
College graduate	$33,348	0.85	$25,906	0.91
Graduate school	$37,611	0.85	$29,151	0.90
Region of residence				
Northeast	$27,739	0.93	$22,277	0.94
Midwest	$26,572	0.92	$19,966	0.92
South	$24,167	0.84	$19,707	0.87
West	$27,795	0.90	$22,706	0.93
Earner Composition				
Head	$16,908	0.78	$15,647	0.87
Head & spouse	$30,847	0.77	$22,823	0.81
Head, spouse & others	$40,540	0.84	$29,169	0.85
Head & others	$28,405	0.91	$22,294	0.88
Spouse	$19,966	0.76	$19,104	0.76
Spouse & others	$29,512	0.92	$26,157	0.89
Others	$19,642	1.18	$20,403	1.05
No earners	$7,440	0.80	$11,849	0.91

IV. Welfare Comparisons of UI Recipients and Others

Under ideal circumstances the welfare function in (2.2) could be estimated by specifying a parametric form for the indirect utility function, fitting the implied demand functions to price and demand data and recovering the expenditure function by integrating backwards from the estimated demand functions (as in Hausman, 1981). Since the sample period is fairly short (14 years) and purchase prices are not reported in the CEX, it is very difficult to obtain precise estimates of price effects. These difficulties make this direct approach impractical here.

As a second-best alternative we approximate the welfare function using price indexes and equivalence scales that do not require a formal econometric model of demand. For each household we use a Paasche index defined as:

$$P_k^{-1}(\mathbf{p}, \mathbf{p}^r, V_k) = \sum_{n=1}^{N} s_{nk}[\, p_n^r/p_n \,],$$

where s_{nk} is the budget share of good n for household k, and p_n is the price of the n'th commodity. This price index is calculated using the shares reported in the CEX for each household and the implicit price deflators of personal consumption expenditures in the National Income and Product Accounts. Since the Paasche index assumes that the weights s_{nk} are fixed, inflation will be underestimated relative to an index that incorporates households' adjustments in spending patterns that arise from changes in relative prices. Previous estimates of the "substitution bias" (for example, Braithwait, 1980, and Manser and MacDonald, 1988), however, indicate that it is very small.

The second critical component of the welfare function is the household equivalence scale, which is designed to measure the needs of heterogeneous households. Within this framework a larger household requires more resources to maintain the same level of well-being so that, other things equal, an increase in family size reduces welfare. The empirical issue is to determine the magnitude

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by which well-being decreases with each additional household member at a constant total consumption. A per-capita adjustment implicitly assumes that each additional family member, regardless of age or sex, increases the needs of the household by the same amount. While easy to implement, this approach is unlikely to provide an adequate representation of needs, since it presumes that the requirements of a child are the same as those of an adult. Economies of scale in consumption are also ignored.[11]

An alternative approach is to represent needs by an estimate of the number of adult-equivalent members in the household. One way of doing this is to base the equivalence scale on the nutritional intake required to avoid malnutrition. Adding up the costs of purchasing these nutrients for the different types of households provides the basis for comparing their relative needs. These types of scales are implicit in the poverty thresholds used by the Bureau of the Census to calculate the national poverty rate.

Figure 2 compares the per-capita adjustment to household spending with the equivalence scales used by the Census.[12] The two estimates represent polar extremes in terms of their implicit assumptions concerning economies of scale in consumption. The per-capita adjustment assumes that a family of four requires four times the expenditure of a single individual to attain the same level of well-being. The corresponding level for the Census equivalence scales is 1.89. For a family of seven or more individuals, the scale is only 3.09. While neither set of estimates is plausible, they provide reasonable upper and lower bounds on our estimates of welfare. The per-capita adjustment overdeflates consumption and underestimates the level of welfare, while the Census' equivalence scales do the opposite. In what follows we compare living standards of UI recipient households to those of nonrecipients using both types of adjustments.

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FIGURE 2 -- HOUSEHOLD EQUIVALENCE SCALES
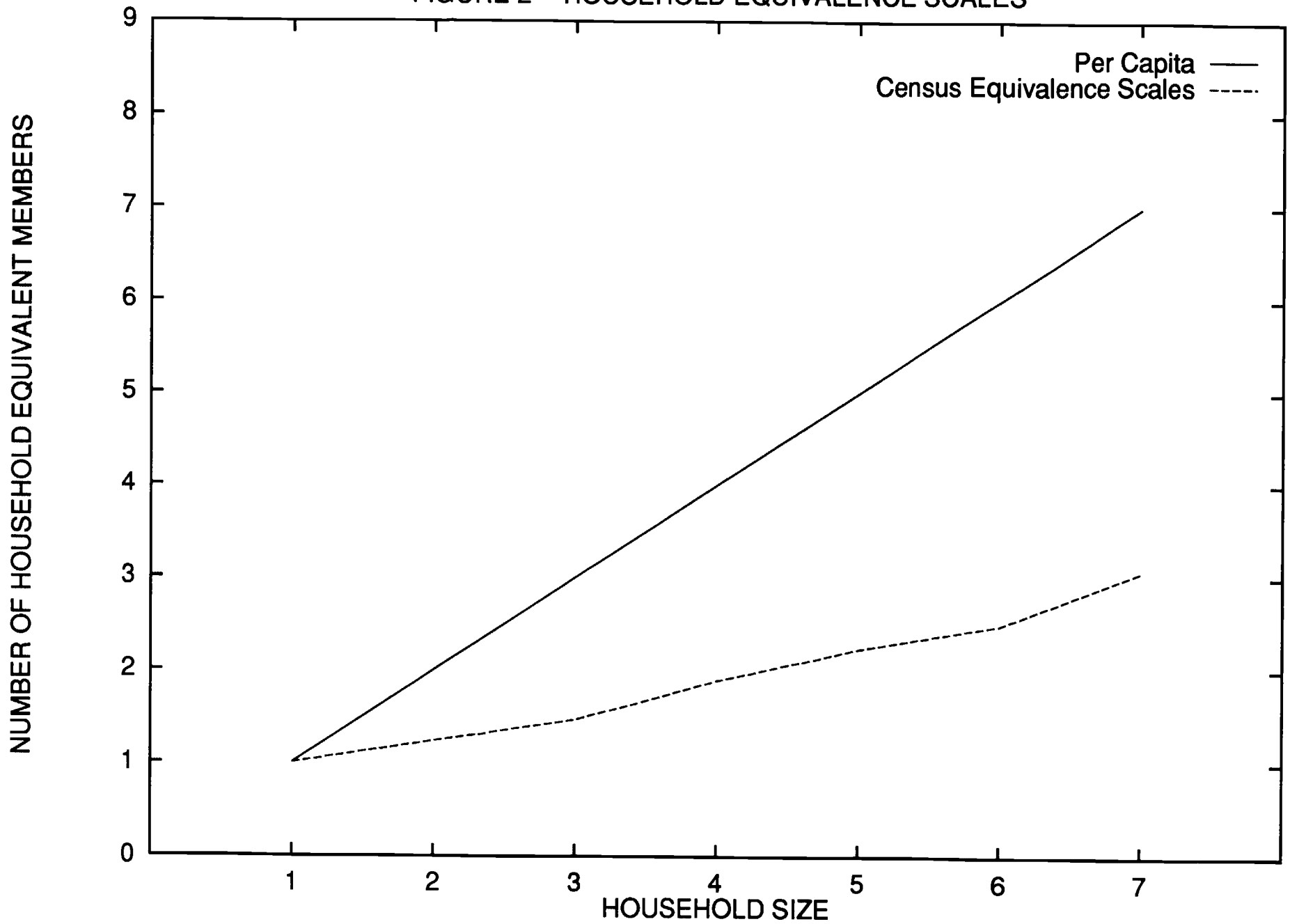
The average logarithmic (percentage) differences in economic welfare between UI recipients and others are presented in the first column of Table 3 using per-capita consumption as an estimate of well-being. On average the welfare of UI recipients is 83.4 percent of nonrecipients'. There is, however, substantial variation across subgroups classified by age, race, sex, education and region of residence. UI households with a head age 16-24 have an average welfare level that is 3.6 percent below that of nonrecipients. The corresponding figure for those with a head age 45-54 is 21.1 percent. The gap between recipients and nonrecipients is narrower for nonwhites as well as for female-headed households. UI recipients with low educational attainment have average welfare levels much closer to those of nonrecipients compared to the gap among households with more education.

The second column of Table 3 repeats these tabulations using per-equivalent consumption as the welfare measure. Using this representation of well-being the discrepancy between UI recipients and others is narrower than when per-capita consumption is used. This primarily results from UI households being larger, but the effect is diminished because of the substantial economies of scale in consumption implicit in the equivalence scales. On average UI recipients have a welfare level that is 91.1 percent of nonrecipients' using this representation of well-being. However, the qualitative differences by demographic group that were shown in column (1) are preserved. The differences between UI recipients and nonrecipients are again smaller for nonwhites, female-headed households and those where only the head is working. Young household heads who receive UI attain higher welfare levels relative to nonrecipients, as do those with some education but less than a high school diploma.

UI recipients are on average worse off than nonrecipients; but we saw in Table 1 that they also have different characteristics that could explain the lower welfare levels. To examine the role

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**Table 3.   Welfare Difference - UI vs Non-UI (percent differences)**

	Total		Unexplained	
	W1	**W2**	**W1**	**W2**
Overall	-16.6	-8.9	-7.7	-3.6
Age of head				
16 - 24	-3.6	21.4	10.5	22.9
25 - 34	-17.5	-10.7	-9.7	-5.7
35 - 44	-17.9	-15.2	-7.4	-6.9
45 - 54	-21.1	-15.8	-10.3	-7.7
55 - 64	-19.6	-10.1	-10.9	-3.5
Race of head				
White	-18.3	-10.4	-8.0	-3.8
Nonwhite	-11.1	-3.8	-6.1	-2.8
Gender of head				
Male	-19.7	-13.8	-7.9	-4.2
Female	-9.1	0.0	-7.0	-1.1
Education of head				
No school	-15.3	-9.9	-12.6	-10.4
1 - 8 grade	-2.1	6.0	-2.2	3.4
9 - 11 grade	3.9	13.4	1.7	7.1
High school graduate	-12.0	-7.2	-9.8	-6.6
Some college	-5.9	2.7	-7.4	-3.0
College graduate	-19.6	-14.7	-18.1	-14.2
Graduate school	-13.3	-8.8	-13.4	-10.2
Region of residence				
Northeast	-14.9	-6.6	-7.7	-3.5
Midwest	-14.6	-6.5	-4.8	-1.2
South	-23.3	-15.2	-12.4	-8.1
West	-15.3	-8.7	-7.1	-2.8
Earner Composition				
Head	-16.6	-11.6	-7.4	-6.9
Head & spouse	-19.7	-18.4	-5.8	-5.9
Head, spouse & others	-18.7	-17.6	-4.9	-6.0
Head & others	-10.0	-9.6	-4.3	-5.0
Spouse	-25.4	-25.2	-13.8	-14.8
Spouse & others	-17.5	-14.5	-8.3	-7.2
Others	2.8	4.4	-1.7	-0.9
No earners	-19.4	-9.8	-11.0	-6.7

of compositional differences between the two groups we measure the average logarithmic differences in welfare levels accounting for differences in age, race, sex, education and region of residence.[13] Each figure in columns (3) and (4) thus adjusts for all the other demographic differences among households except the earner composition of the family and the particular characteristic listed in that section of the table.

Comparing columns (1) and (3), or (2) and (4), in Table 3, a large proportion of the differences between the average welfare level of the UI and non-UI samples can be explained by differences in their characteristics. The "unexplained" difference in the per-capita welfare measure averages -7.7 percent over the 55 quarters, although there is substantial variation from quarter to quarter. Of the variables included to create the adjusted differences, the differences in the human-capital characteristics alone explain most of the discrepancies in welfare levels. After accounting for age and education the unexplained differences only average -7.0 percent over the sample period using measure W_1. Adjusting the per-equivalent welfare measure W_2 yields qualitatively identical results, but the unexplained differences are even smaller. The fundamental result is that, once we account for differences in households' characteristics, a bit more than half of the differences in welfare between UI recipient households and others disappears.

Figure 3 shows how the unexplained differences vary over time. Clearly, there is substantial quarter-to-quarter variation in this measure. Indeed, using W_1 we find that in 9 quarters the adjusted welfare of recipient households is actually at least that of nonrecipient households.[14] The equations are estimated to account for seasonal changes, so there is no seasonal variation in these measures. They could, however, show cyclical variation, but they do not. Even though administrative data suggest that replacement rates fall in recessions (because higher-wage workers, whose benefits are

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FIGURE 3- UNEXPLAINED WELFARE DIFFERENCE UI VS. NONUI
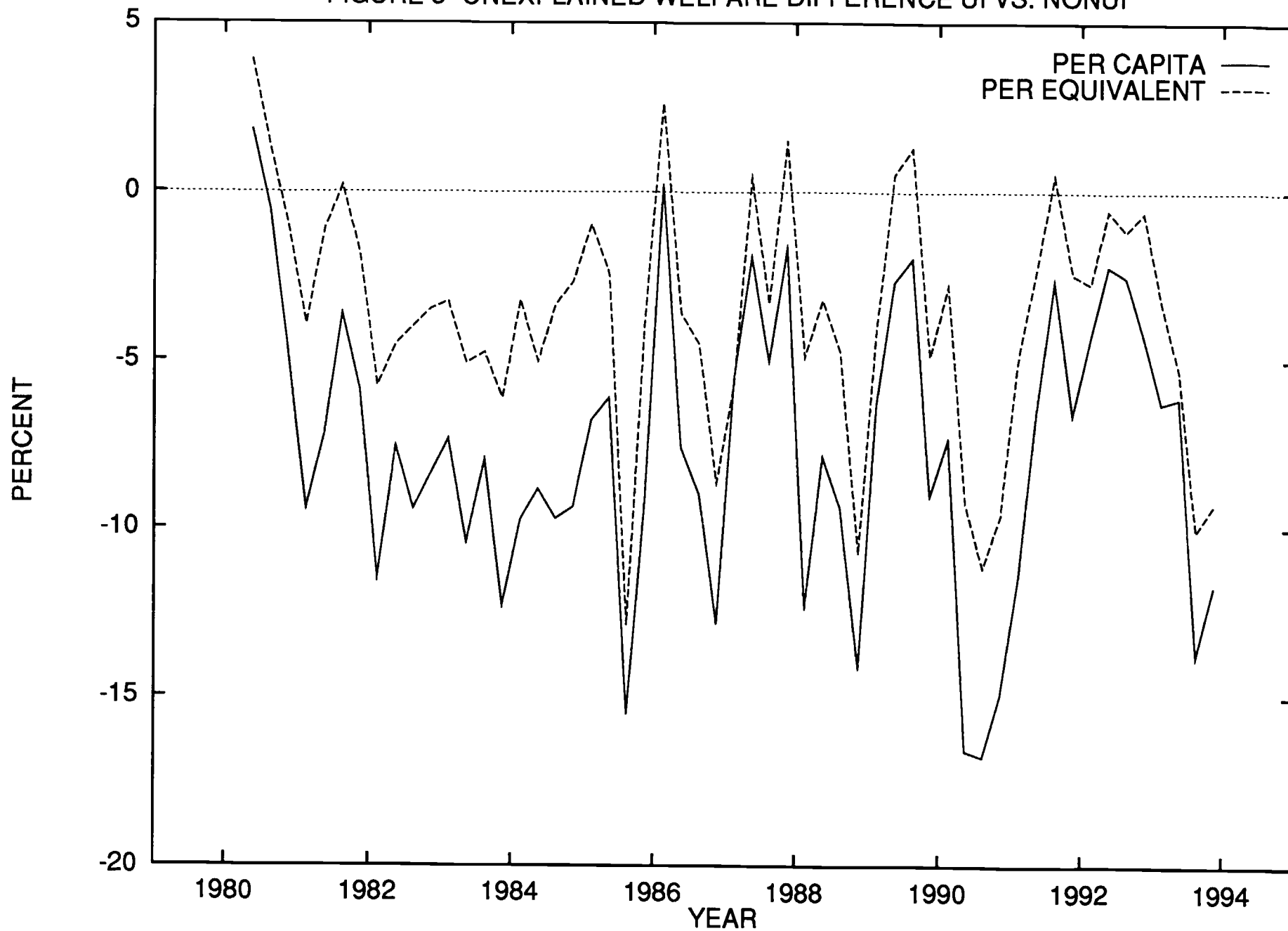
limited by state maxima, constitute a larger fraction of recipients), the evidence here suggests that cyclical losses in well-being relative to those of nonrecipient households are small or nonexistent. This result suggests that the emergency programs in place during recessions in the 1980s sufficed to prevent UI recipient households' welfare from falling further below that of nonrecipient households.

While the central focus has and should be on differences between the average UI recipient household and other households, it is interesting to focus too on the impact of UI at the lower end of the distribution of income. We thus conclude this section by considering the role of UI benefits in relation to the poverty status of households. While the average welfare of recipients is substantially lower than that of nonrecipients, are they at greater risk of falling below the poverty line? To answer this question we arbitrarily choose the welfare of a family of four with $14,000 in 1993 as a "poverty threshold." Using per-equivalent consumption W_2 as the welfare measure, 9.6 percent of nonrecipient households are below the threshold compared to 9.3 percent of those receiving benefits. The poverty rates using the per-capita welfare measure W_1 are 9.6 percent and 10.4 percent respectively. Thus despite the fact that the mean of the distribution for recipients is roughly 10 to 15 percent below that of nonrecipients (depending on the welfare measure), those receiving benefits are not at substantially greater risk of falling into poverty. Both because the UI population necessarily includes people with recent work histories and because UI benefits maintain the incomes of low-wage workers especially well due to states' benefit maxima, the chances of UI-recipient households being in poverty are essentially the same as those facing other households.

V. Expenditure Patterns

In the previous section we concentrated on the average well-being of UI recipients; but it is also important to examine how the difference between them and nonrecipients is reflected in their

allocations of resources across different goods. Do those who receive benefits spend a larger fraction of their budgets on necessities? Do unemployment and the receipt of UI benefits result in a change in expenditure patterns? Does unemployment decrease spending on what one might view as discretionary or postponable items, for instance, purchases of durables or gifts to people outside the household? To answer these questions we examine the allocation of total expenditure across six broad categories of consumption:

1. Energy -- expenditures on electricity, natural gas, heating oil and gasoline.

2. Food -- expenditures on all food products, including tobacco and alcohol.

3. Consumer Goods -- expenditures on all other nondurable goods included in consumer expenditures.

4. Housing -- the service flow from owner-occupied and rental housing.

5. Durable Services -- the service flows from consumer durables such as cars and major appliances.

6. Consumer Services -- expenditures on consumer services, such as car repairs, medical care, entertainment and so on.

Figures 4-9 show the average shares of the expenditure groups over the period 1980:2-1993:4 for the UI and non-UI households. The trends in the average shares of all commodity groups are the same for the two sets of households. The share of spending on energy decreases over the sample period, as does the proportion of expenditures allocated to food. Spending on housing and, to a lesser extent, durables and consumer services rises over the sample period. Spending on consumer goods exhibits a classical seasonal pattern but comprises a small fraction of total expenditure and exhibits little trend over the 55 quarters.

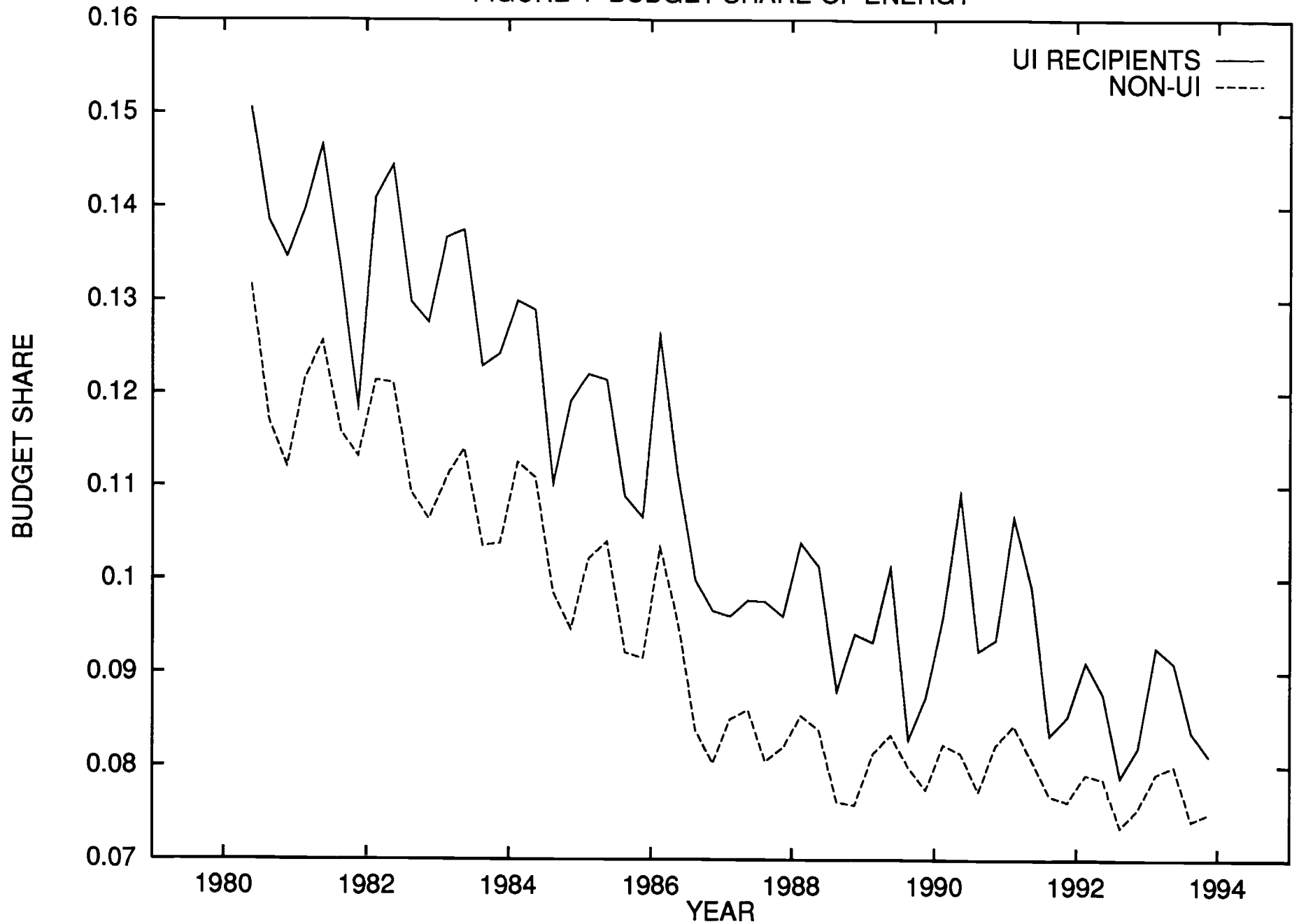FIGURE 4- BUDGET SHARE OF ENERGY

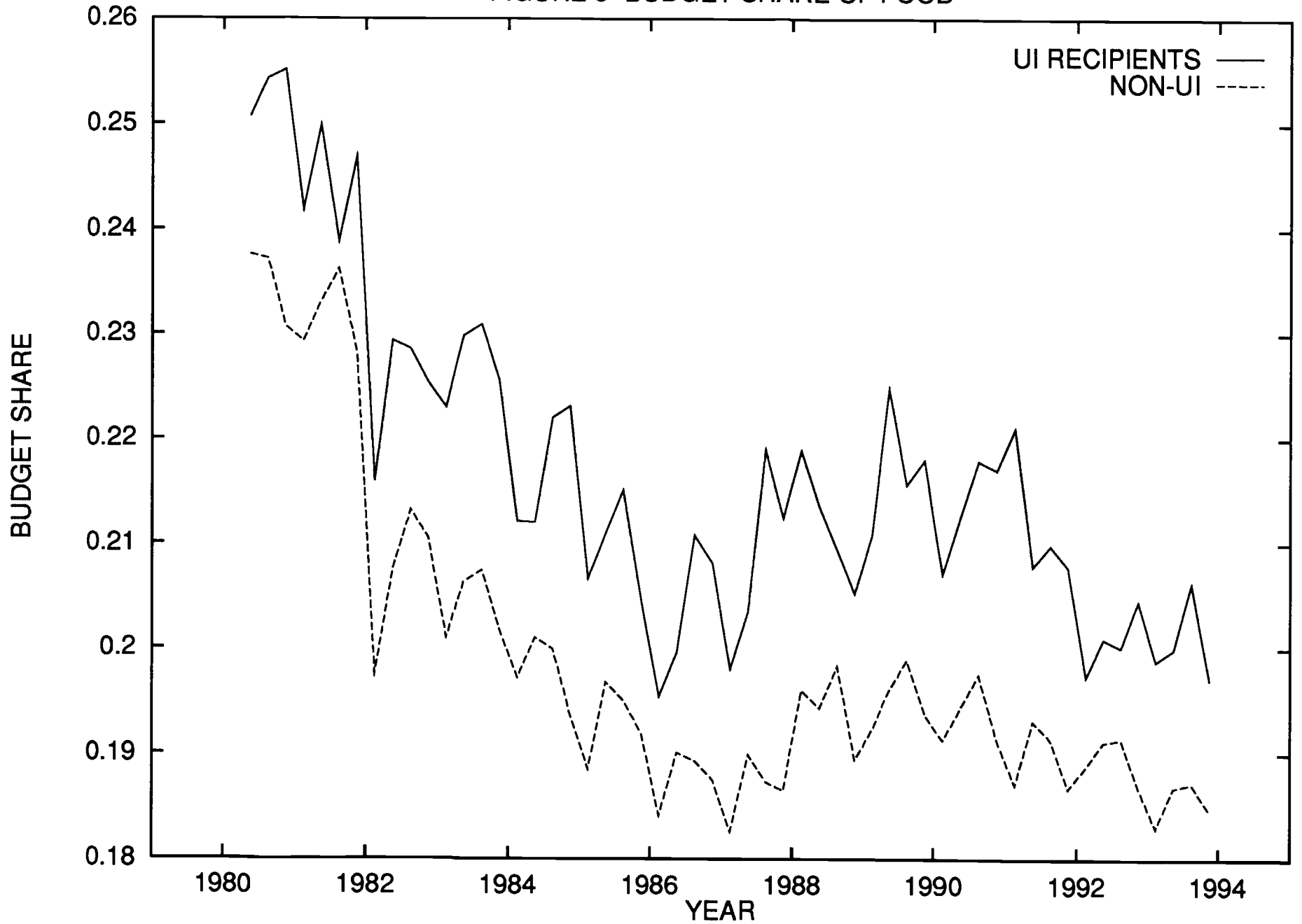FIGURE 5- BUDGET SHARE OF FOOD

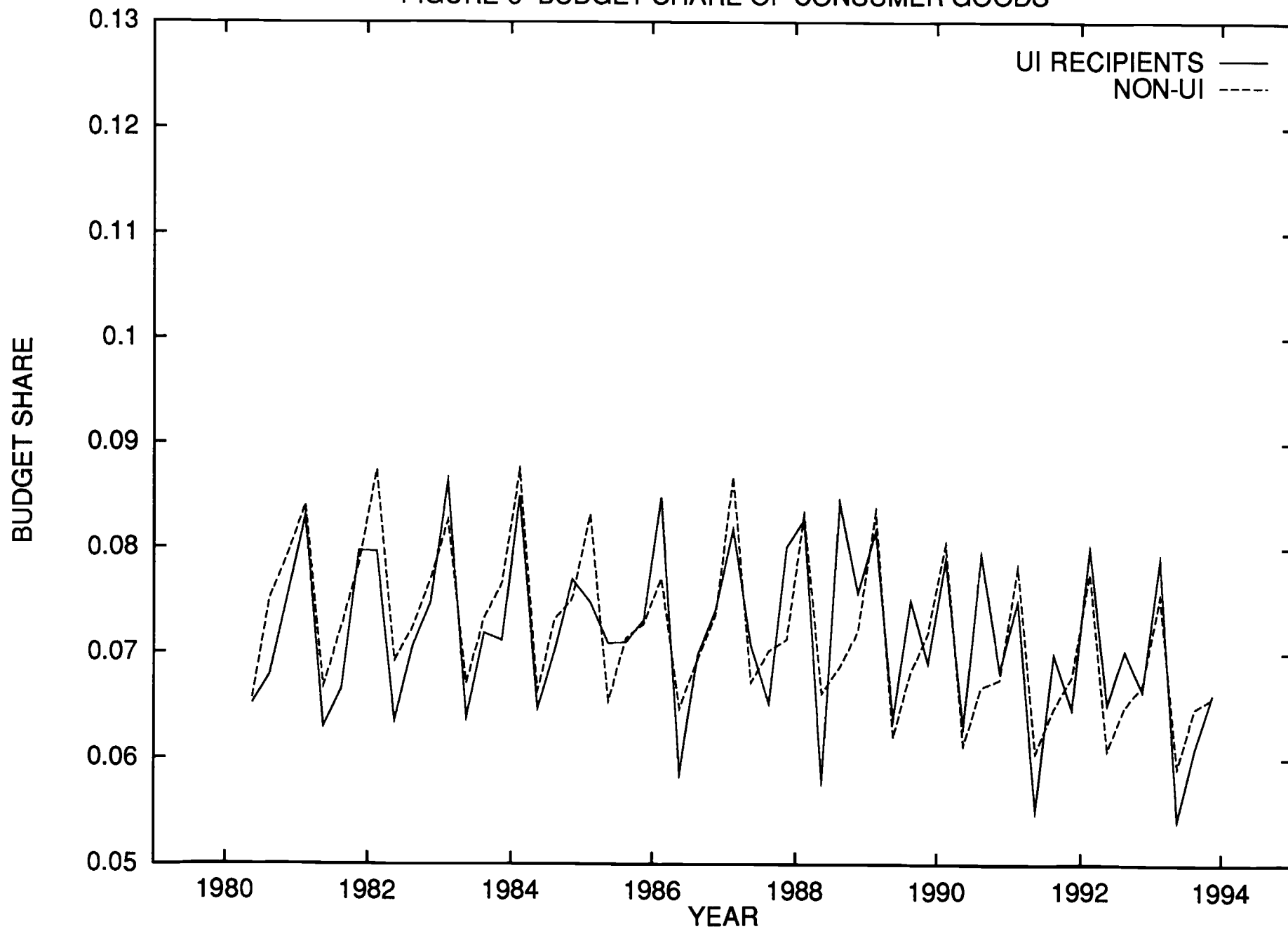FIGURE 6- BUDGET SHARE OF CONSUMER GOODS

FIGURE 7- BUDGET SHARE OF HOUSING

FIGURE 8- BUDGET SHARE OF DURABLES

UI RECIPIENTS ——
NON-UI ----
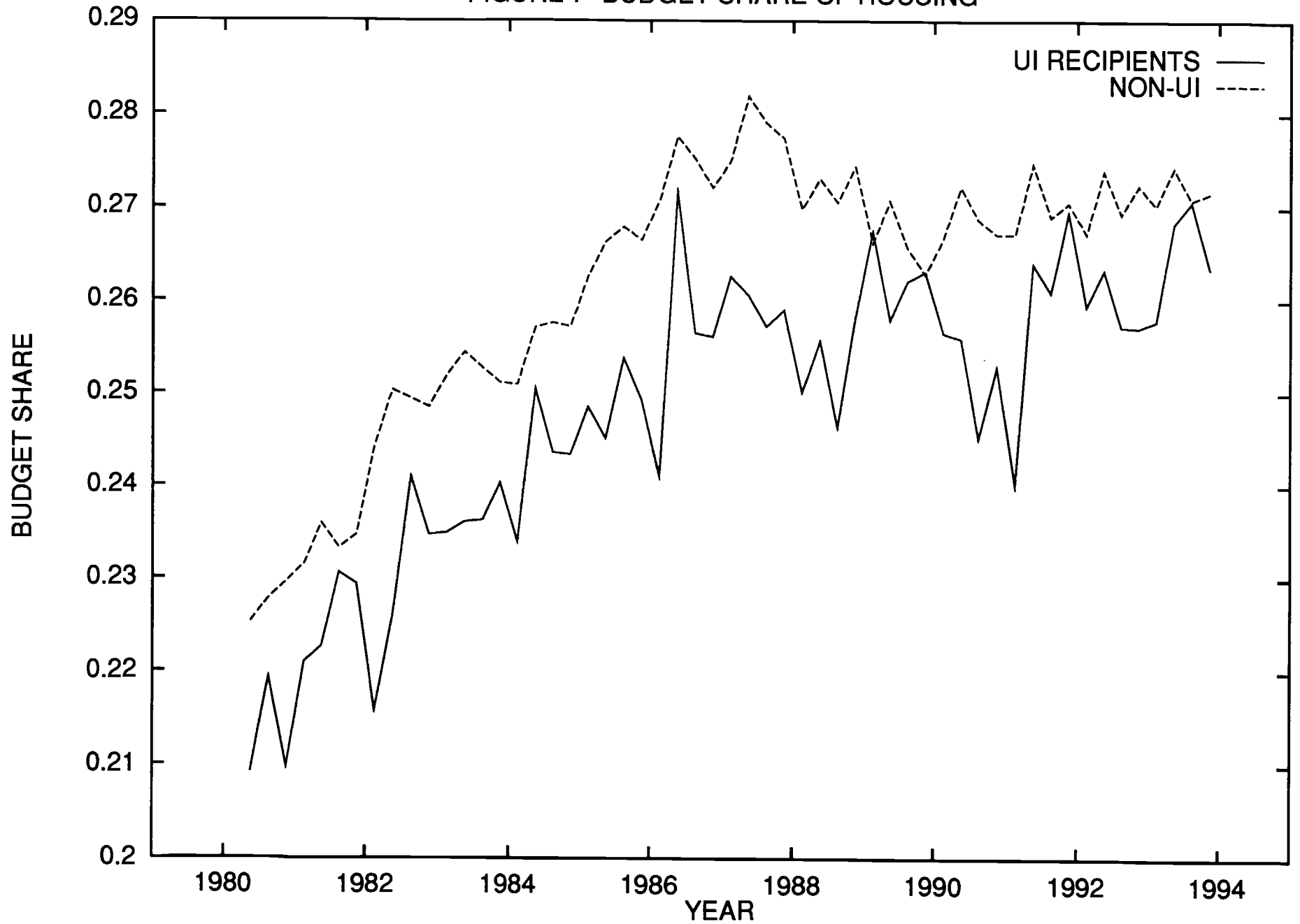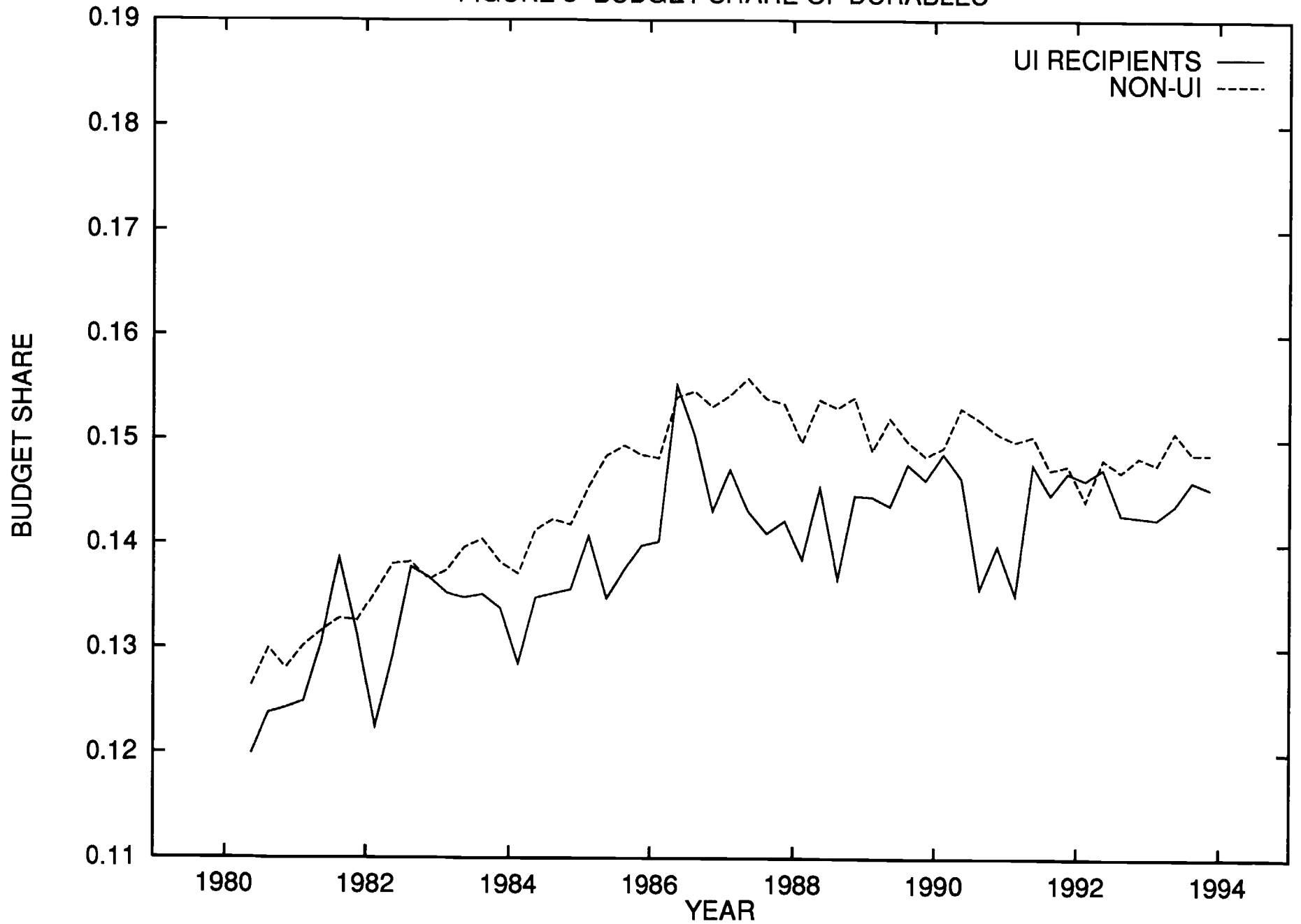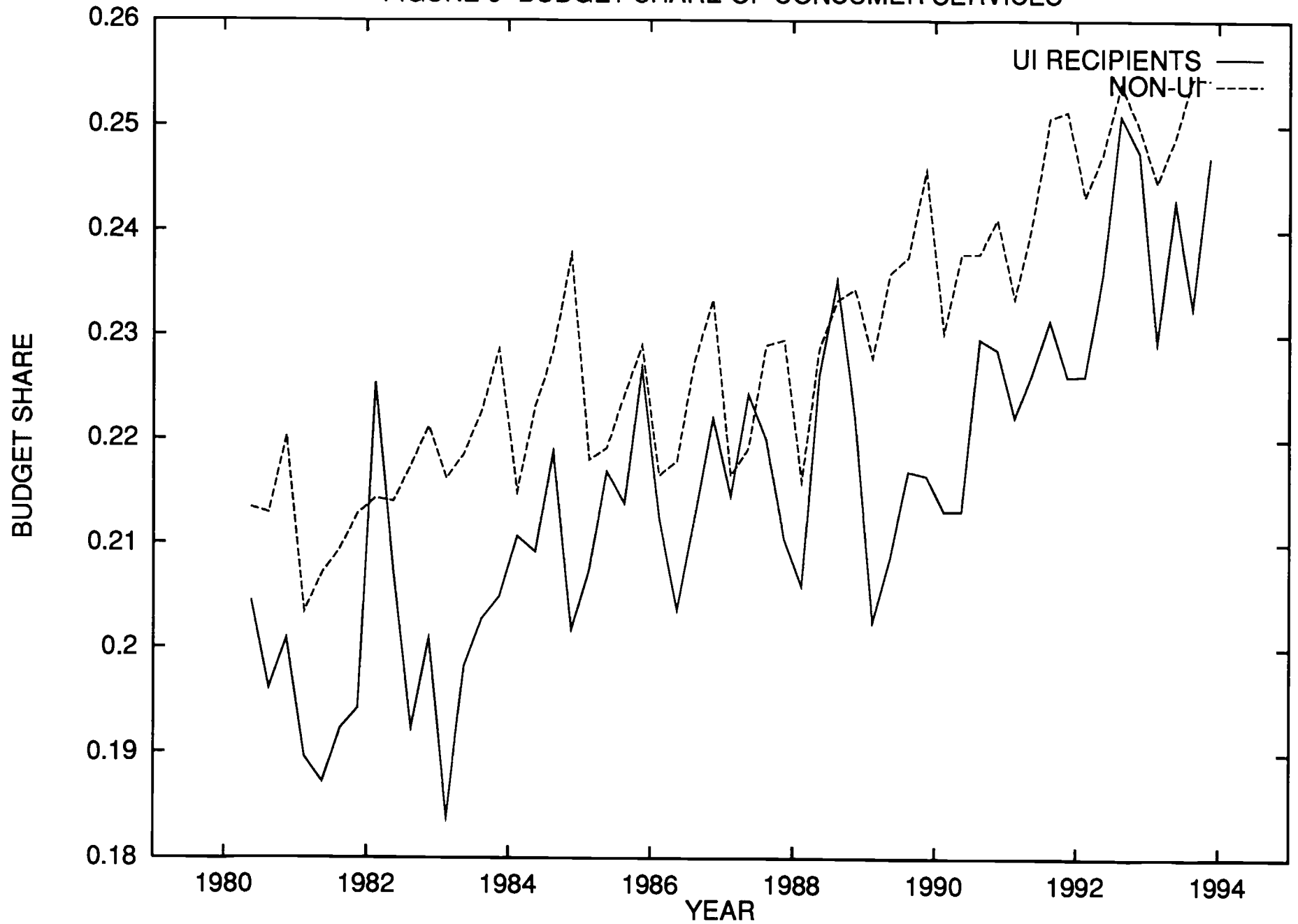
FIGURE 9- BUDGET SHARE OF CONSUMER SERVICES

The surprising fact is the absence of major differences in expenditure patterns between recipients and nonrecipients. Households receiving benefits spend larger proportions of their budgets on necessities such as energy and food, but the differences are small. Over the entire sample period the share of spending on energy by UI-recipient households is 1.6 percent higher, while the average food share is 1.8 percent higher. Expenditures on housing, consumer services and durable services comprise smaller fractions of total spending in almost every quarter, but again, the magnitudes of the differences are modest. Shares of spending on consumer goods are roughly the same for recipients and nonrecipients.

While average expenditure patterns are very similar between the two groups of households, there could be offsetting compositional effects. Specifically, UI households are typically larger, headed by white males and overrepresented in the Midwest and West, and these differences undoubtedly affect their allocation of total consumption across goods and services. To isolate differences in spending patterns between observationally equivalent recipients and nonrecipients we estimate Engel curves for each good. Budget shares for each of the six commodity groups are regressed against a quadratic in the logarithm of total expenditure and vectors of dummy variables for household size, age, region, race, sex, year, quarter and UI status. The results are presented in Table 4.

The central issue is the magnitude and sign of the coefficient on UI-recipient status. For every spending category except consumer goods that coefficient is statistically significant but very small. Relative to identical nonrecipients, households receiving UI benefits spend one percent more of their total budgets on energy and much less than one percent more on food and consumer goods. Recipients spend proportionately less on housing, durables and consumer services, although the

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Table 4. Expenditure Share Equations, 1980:2 - 1993:4

	(1) Energy	(2) Food	(3) Consumer Goods	(4) Housing	(5) Durables Services	(6) Consumer Services
Log Expenditure	0.2114 (0.0034)	-0.2976 (0.0057)	-0.2298 (0.0037)	0.4619 (0.0055)	0.1847 (0.0031)	-0.3306 (0.0064)
(Log Expenditure)^2	-0.0122 (0.0002)	0.0108 (0.0003)	0.0125 (0.0002)	-0.0224 (0.0003)	-0.0085 (0.0002)	0.0198 (0.0003)
UI Recipient	0.0109 (0.0005)	0.0033 (0.0009)	0.0006 (0.0006)	-0.0071 (0.0009)	-0.0040 (0.0005)	-0.0038 (0.0010)
R^2	0.1664	0.2346	0.0743	0.1765	0.1794	0.0833

N = 195,689

Also included in the regessions were indicator variables for household size, age, race, sex, year, and quarter.

magnitudes of the differences are well under one percent. The general conclusion is that the spending patterns of these two groups are very similar, especially after we account for differences in the demographic composition of the households.

While expenditure patterns do not differ substantially between UI recipients and others, it is possible that outlays on other items are influenced by whether or not the household has members who are unemployed. One might expect a priori that households receiving UI benefits are less likely to allocate expenditures toward what might be viewed as "postponable" items, such as purchases of durable goods, and less willing to provide gifts (either in-kind or in the form of cash) to individuals outside the household.[15] In Table 5 we present tobit estimates describing the variation in purchases of durables and gifts as determined by the logarithm of total expenditure and vectors of dummy variables representing household size, age of head, region of residence, race, sex, year, quarter and UI status.

The impact of UI status on both purchases of durables and the provision of gifts is negative and significantly different from zero, as expected. Once other demographic characteristics are accounted for, the level of total expenditure, a proxy for permanent income, has by far the largest impact on the decision to purchase durables and a quite large effect on gift-giving. As with purchases of goods and services, these decisions do not differ much between the two populations.

Taken together, this foray into analyzing disaggregated spending differences between UI recipient households and others corroborates the results of the previous section. Once we account for differences in their demographic characteristics and for the effect of family size and composition on well-being the two groups differ from each other much less than one might have expected. By inference, the level of UI benefits is sufficient to maintain recipients' spending patterns at what the

Table 5. Tobit Estimates of Impact of UI Receipts on Durable Purchase and Gifts

	(1) Durables	(2) Gifts
Log Expenditure	5519.39 (57.85)	1899.63 (19.13)
UI Recipient	-498.57 (92.78)	-456.23 (31.38)
χ^2	18840	21700

N = 195,689

Also included in the regressions were indicator variables for household size, age, race, sex, year, and quarter.

behavior of otherwise identical households indicates they would have been if they had not experienced unemployment.

VI. UI Benefits and the Standard of Living

Thus far we have examined the welfare levels of recipients relative to those of nonrecipients, but we have not explicitly studied the role of UI benefit amounts in particular in maintaining the standard of living within the population of recipients. Average reported unemployment benefits for recipient households over the 55 quarters in our sample total $2,137, which constitutes 8.0 percent of the total annual income of these households. This fraction seems quite consistent with known facts: If average compensated duration is 13 weeks (one-fourth of a year), lost earnings constitute 50 percent of the household's flow of income, and gross replacement is 60 percent, we would observe that UI benefits add 7.5 percent to a receipient household's annual income.

There are substantial fluctuations in the importance of UI benefits over time. Figure 10 plots the average fraction of benefits in total income from 1980:2 through 1993:4. UI benefits are a more important source of income for recipient households in those quarters when the fraction of households receiving benefits is highest. Over the two-year period 1982:2 through 1984:2 UI benefits averaged 9.3 percent of recipient households' incomes. From 1987:4 through 1989:4 the corresponding average was 6.3 percent. No doubt this is the result of the countercyclical pattern of the actual duration of benefit payments that unemployed workers receive.

To determine the impact of UI benefits on recipients' welfare we must assess their influence on recipients' consumption levels. This, in turn, depends fundamentally on the consistency of their behavior with the permanent-income hypothesis Rather than attempt to measure the extent to which

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FIGURE 10- UI BENEFITS AS A PROPORTION OF RECIPIENT HOUSEHOLD INCOME
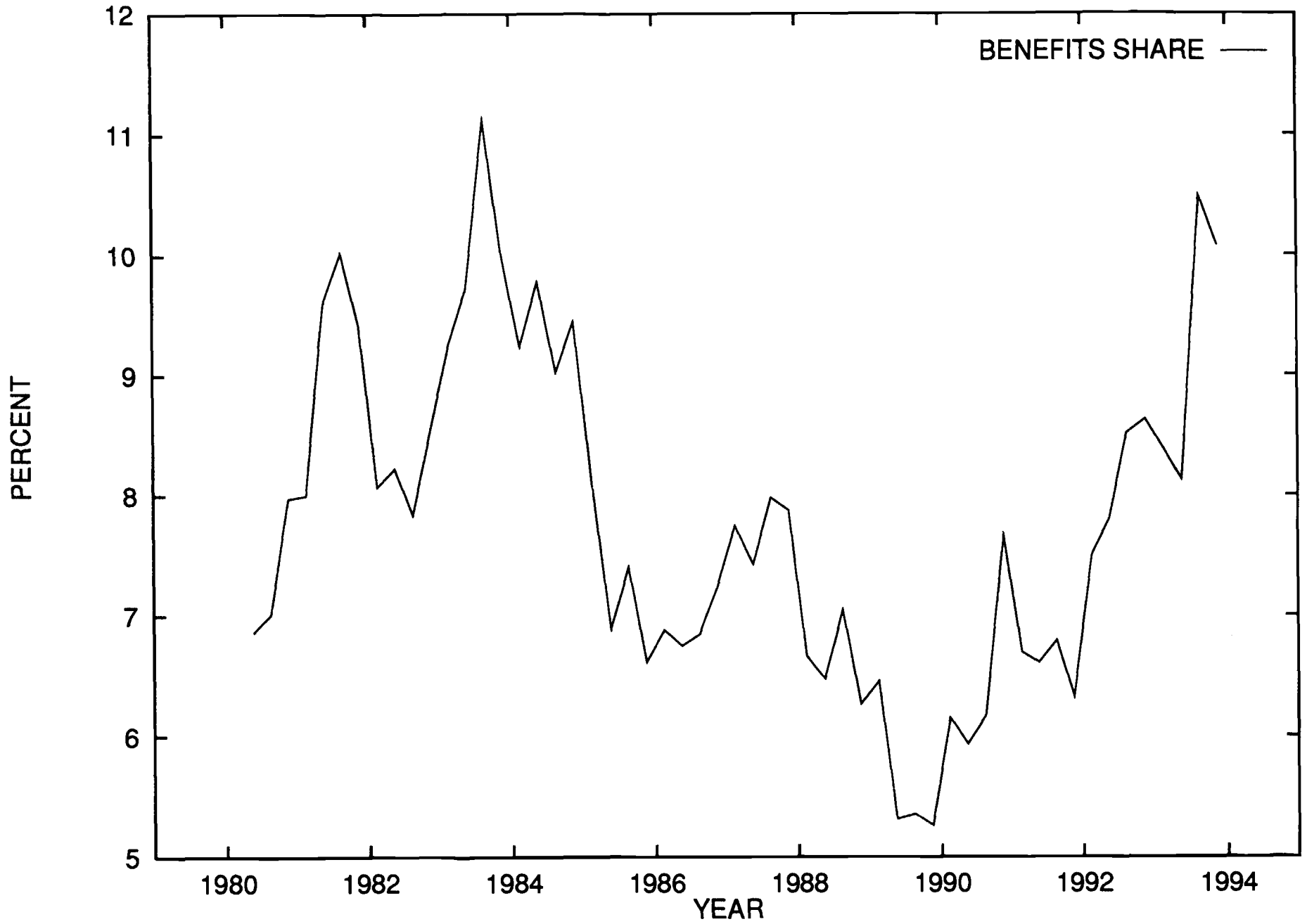
consumers are able to borrow and lend to smooth consumption over time, we again bracket the magnitude of the effects of UI benefits by making two extreme assumptions:

UI benefits would have the largest possible effect in maintaining expenditures if every recipient were completely constrained by liquidity, so that a change in current income would be fully reflected in an equal change in total expenditure. Among such individuals their well-being without the benefits is simply the observed level of total expenditure less the unemployment benefits received, deflated by the relevant price index and equivalence scale.

UI benefits would have the smallest possible effect if every recipient were a "permanent-income consumer." In that case eliminating benefits would reduce recipients' lifetime wealth and therefore consumption by the annuitized value of this decrease.

We initially examine the effects of UI benefits under the extreme assumption that households are completely liquidity-constrained. Table 6 lists the two measures of household welfare evaluated with and without benefits. For the entire UI sample over the 55 quarters the overall ratio of welfare with and without benefits is 1.12. Younger households gain more from receiving unemployment benefits relative to their older counterparts, however, as do nonwhite and female-headed households. The relative effects of UI are higher among less-educated households and those in the Northeast and the Midwest. These simple bivariate comparisons differ only slightly from comparisons based on multiple regressions that include all these determinants at once.

Has the impact of UI benefits on the welfare of recipients changed substantially over the sample period? Figure 11 shows the average proportional difference in the welfare of recipients with

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Table 6. Ratios of Household Welfare, With / Without UI Benefits, UI Recipients Only

|	(1) W1	(2) W2
Overall	1.12	1.12
Age of head		
16 - 24	1.14	1.14
25 - 34	1.13	1.13
35 - 44	1.12	1.12
45 - 54	1.11	1.10
55 - 64	1.12	1.11
Race of head		
White	1.12	1.11
Nonwhite	1.16	1.16
Gender of head		
Male	1.12	1.11
Female	1.14	1.13
Education of head		
No school	1.15	1.14
1 - 8 grade	1.14	1.14
9 - 11 grade	1.14	1.13
High school graduate	1.13	1.13
Some college	1.11	1.11
College graduate	1.11	1.10
Graduate school	1.09	1.09
Region of residence		
Northeast	1.14	1.13
Midwest	1.13	1.13
South	1.13	1.12
West	1.10	1.10
Earner Composition		
Head	1.15	1.15
Head & spouse	1.11	1.11
Head, spouse & others	1.07	1.07
Head & others	1.10	1.10
Spouse	1.17	1.17
Spouse & others	1.13	1.13
Others	1.17	1.17
No earners	1.44	1.44

and without benefits during these nearly 14 years. The average increase in welfare resulting from the receipt of UI benefits is 14.7 percent. The gains are, however, positively related to the relative size of the program. Between 1982:2 and 1984:2, when the proportion of recipients was highest, the average welfare gain from benefits was 18.1 percent. Between 1987:4 and 1989:4, when only 4 percent of the sample received benefits, the average welfare gain among recipients was 12.0 percent.

All of these comparisons are based on the first polar case, that UI-recipient households are all constrained by liquidity. As such, the calculations present an upper bound on the proportional effect of UI benefits on the welfare of recipients relative to what it would have been in the absence of the program. A lower bound can be calculated in the second polar case by assuming that the typical recipient is no more likely to receive UI benefits in any particular year than the average labor-force participant (i.e., that UI recipiency is distributed randomly across the labor force). In this case UI benefits just raise permanent income and yield a flow of annual consumption equal to the amount of the benefits divided by the household's expected years of remaining lifetime. With benefits totalling only 8.0 percent of average income in recipient households; and with the average household head being only 39 years old, it is clear that, if households behave as permanent-income consumers, the fillip to consumption provided by UI benefits is very small. The lower-bound estimate of the welfare effects of UI benefits is nearly zero.

VII. Conclusion

This study has presented the first welfare-theoretic measures of the adequacy of UI benefits in the United States. The general result is very clear: Given the amount of benefits they are paid, households that receive benefits achieve nearly the same level of economic welfare as demographically identical households that do not receive benefits. By this economic criterion UI

FIGURE 11- MAXIMUM PERCENTAGE IMPACT OF BENEFITS ON RECIPIENTS' WELFARE
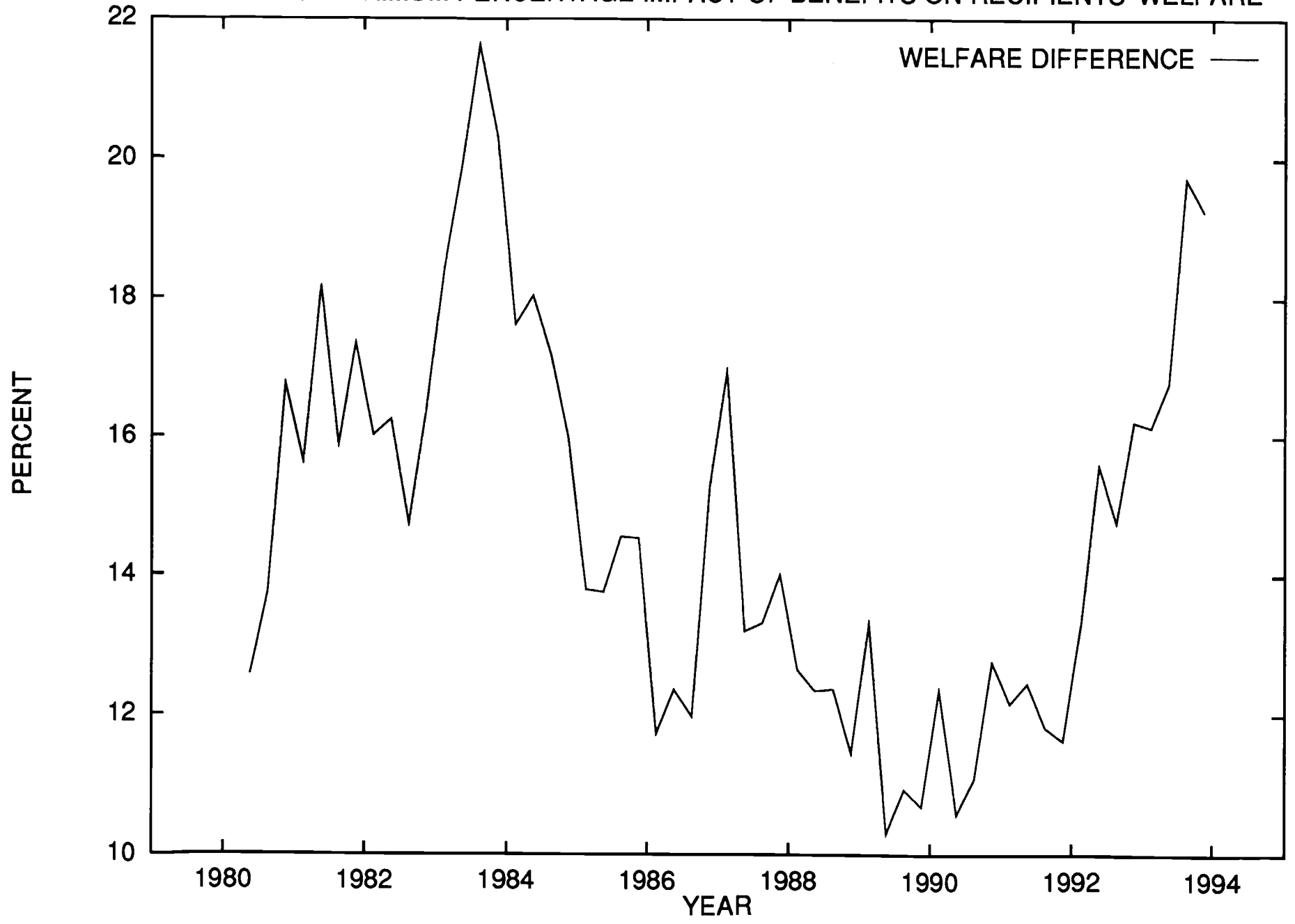
benefits are at least adequate to maintain the consumption of American UI recipients. At the levels provided in the 1980s and early 1990s states' UI benefits and federal extended programs achieved the Act's original goal of "alleviating the hazards of ... unemployment."

This conclusion could be modified by additional analysis (which is not possible on any currently available set of data). On narrow grounds we may have overstated the welfare-improving effects of UI benefits by our inability to account for changes in the allocation of recipient households' labor between market and household production that is induced by their unemployment.[16] If, for example, one spouse's unemployment induces the other to enter the market, the welfare loss that seems to be overcome by the receipt of benefits is in fact not fully compensated. (Of course, the unemployed worker's leisure changes the welfare comparison in the opposite direction.) Also, we have not accounted for the effects of the burden of the UI tax on recipients and others. At first glance one would expect that accounting for the burden of the tax would strengthen our conclusion (since ipso facto recipients earn less than otherwise identical fully-employed workers); but the net effect of financing on the welfare comparisons that we have made would be extremely difficult to calculate.

On broader grounds our data do not allow us to determine whether spells of unemployment are being compensated at all, so that the group of nonrecipient households includes some households in which one member experiences a spell of unemployment during the twelve-month accounting period. This failure in the data makes UI benefits seem more adequate than they really are, since the income (and presumably consumption) of employed workers is understated by this classification problem. How important is this bias? If we assume (following Blank and Card, 1991) that fully two-thirds of unemployment spells are not compensated, and make the extreme assumption that the average income loss in those spells was the same as that lost by UI recipients, then the impact is still

tiny. The average adjusted difference in welfare between UI recipients and households that experienced no unemployment during the year rises from the 7.7 percent difference (using the per-capita measure) that we noted in Section IV to no more than 8.2 percent.[17] Our conclusion would thus hardly be changed if we could exclude unemployed nonrecipient households from the comparison group.

This central finding implies that benefit amounts and potential duration are adequate at their current levels for those who receive them. It says nothing about how well compensated spells of unemployment generally are. The results also make it abundantly clear that programs that offered extended benefits during times of high unemployment, both temporary and triggered extensions, were of sufficient magnitude to prevent the welfare loss in recipient households relative to nonrecipient households from rising during the recessions of the early 1980s and of 1990-91. The constant legislative battles over these programs seem to have generated an outcome that was roughly consistent with a goal of leaving UI recipients relatively as well off during recessions as they are during other times in the business cycle.

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NOTES

1. This is an upper bound because it ignores any possible negative effects that the existence of public UI benefits might induce in households' precautionary saving.

2. Consumption also has a transitory component and therefore is itself a noisy measure of lifetime welfare. For the reasons described in the text, however, it is undoubtedly a more accurate measure than current income.

3. Arguments against the use of equivalence scales for welfare comparisons are summarized by Browning (1992).

4. As Attanasio and Weber (1994) show, basing studies on data that include only a few components of spending yields results on consumer behavior that are inconsistent with what is implied by complete measures of consumption.

5. To preserve consistency with earlier surveys, the head in consumer units with married couples is assumed to be the husband. Also, for ease of exposition we use the terms "household" and "consumer unit" interchangeably.

6. For 1980 and 1981 a hedonic regression is estimated using the 1984 survey and detailed information on the characteristics of the residence.

7. For details on how this method was applied to the CEX see Slesnick (1992).

8. The question posed is, "During the past 12 months, did you or any members of your consumer unit receive income from unemployment compensation? If so, how much was received from unemployment compensation?"

9. All tabulations of income exclude incomplete reporting of income and households with topcoded income.

10. Only 43 UI-recipient households reported having had no schooling.

11. See Deaton and Muellbauer (1980) and, more recently, Browning (1992) for an exhaustive discussion of the issues involved in equivalence scales and their estimation.

12. The Census scales vary over dimensions other than household size. The equivalence scales in Figure 2 are for nonfarm households with a male head under age 65.

13. Annual and quarterly dummy variables are also incorporated in these regressions.

14. The absence of any cyclical variation in the difference in economic well-being between UI-recipient and other households is corroborated by respecifications of the regressions used to generate Figure 3 and Table 3. Adding the prime-age male unemployment rate for each quarter and an interaction of it with UI-recipient status yields t-statistics that are consistently well below 1 in absolute value.

15. The CEX includes information on both cash and in-kind gifts. Cash gifts are reported only in the household's fifth (final) appearance in the panel. Thus the totals in this category are likely to be underestimates.

16. O'Leary (1994) examines the effect of UI benefits on household well-being through their impact on each spouse's leisure only.

17. This means that 13.2 percent (twice the 6.6 percent that were recipient households) of all households (in the 93.4 percent of the sample that are nonrecipients) might have experienced a spell of unemployment. With UI benefits accounting for 8.0 percent of UI recipients' incomes, and assuming sixty-percent replacement, we may have understated the incomes of households with no unemployment spells by 0.9 percent. Assuming, following Hamermesh (1982) that half of unemployed households are not liquidity-constrained, consumption-smoothing means that their expenditures are understated by perhaps only 0.5 percent. Given the shape of utility functions, their welfare is understated still less.