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Explicit Versus Implicit Income

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Abstract

By supplementing income explicitly through payments or implicitly through taxes collected, income-based taxes and transfers make disposable income less variable. Because disposable income determines consumption, policies that smooth disposable income also create welfare improving consumption insurance. With data from the Panel Study of Income Dynamics we find that annual consumption variation is reduced by almost 20 percent due to explicit and implicit income smoothing. Consumption insurance is as important economically as private health or automobile insurance. Although taxes have become an increasingly important source of consumption insurance, the 2001 income-tax reform legislation should have little effect on implicit consumption insurance.

Key Words: consumption, implicit insurance, income taxes, transfer payments, PSID

Introduction

Everyone agrees that social insurance is an important mechanism used to stabilize income, and in turn consumption. In practice, the most important governmentally provided income insurance may not be explicit social insurance programs but rather income taxes. With income-based taxation when before-tax income falls the household's tax burden also falls so that after-tax spendable income drops by less than the drop in pre-tax income. We examine both implicit and explicit income insurance and find that the amount of implicit income insurance occurring through the structure of income taxes is actually comparable to or of greater magnitude than the much-explored explicit social insurance.

Income insurance is important because a central goal of economic policy is to stabilize household consumption in the presence of adverse economic events. When there is an economy-wide income shock, such as a recession, the Federal Reserve or Congress implement counter-cyclical monetary or fiscal policy to support the employment and incomes of households generally. When an income shock is idiosyncratic to the household, perhaps due to poor health of a primary earner, a change in family structure, or a job loss caused by an industry or occupation shakeout, relevant public policy is the system of explicit and implicit income insurance programs. The most well known examples of explicit income insurance are Social Security (OASI), Unemployment Insurance (UI), Medicare, Workers' Compensation Insurance (WC), and means-tested transfers such as the Food Stamp Program, Medicaid, Supplemental Security Income (SSI), and Temporary Assistance to Needy Families (TANF). Economically more subtle

is the income insurance embedded in the federal and state income tax system, including the payroll tax (FICA) and the Earned Income Tax Credit (EITC). The main focus of our research is to assess empirically the relative contributions of explicit versus implicit income insurance in reducing consumption volatility in the United States.

It is instructive to establish some basic relative magnitudes of explicit and implicit insurance. Table 1 presents expenditures on social insurance programs, means-tested transfer payments, and income-based taxes and tax credits for 1979, 1989, and 1999. Social security and Medicare smooth consumption during retirement, and UI, DI, and WC buffer income and consumption during the working life. Overall real expenditures on social insurance almost doubled in the last 20 years due largely to notable growth in social security and disability insurance coupled with huge increases in Medicare expenditures. Adding to enhanced income and consumption stabilization since 1979 are real outlays on means-tested transfers, which increased nearly 140 percent. Transfer payment increases in the United States are from expansions in Medicaid, SSI, and housing assistance programs.[1] Although social insurance as a fraction of real GDP remained roughly constant over time, means-tested transfers as a fraction of real GDP increased by 30 percent.

Real growth in individual income tax collections during 1979–1999 is similar to the real growth in social insurance and the share of real GDP paid as individual income taxes also remained relatively constant. Because of the relative growth in the payroll and state income taxes and a six-fold increase in the EITC, which reduced tax collections, the share of federal income tax receipts in total tax collections has fallen since 1979. State

and local income-based taxation has become relatively more important as implicit income insurance.

Table 2 highlights some of the economically significant changes to tax parameters in the federal income tax code, the payroll tax, and the EITC. The Economic Recovery Tax Act of 1981 (ERTA) and the Tax Reform Act of 1986 (TRA86) broadened the tax base and reduced the number of federal income tax brackets from 16 to four. The marginal tax rate on the highest income earners dropped from 70 percent in 1979 to 28 percent in 1989 and then rose to 39.6 percent following the Omnibus Budget Reconciliation Act of 1993. Although the tax reforms of the 1980s removed several million households from the federal tax rolls, substantial expansions in the payroll tax base caused a shift in tax burdens from income to payroll. The fraction of families with relatively higher payroll tax burdens increased from 44 percent in 1979 to nearly 67 percent in 1999 (Mitrusi and Poterba, 2000). Through creating higher phase-in (subsidy) rates, higher income cutoffs, and differential benefits based on the household's number of qualifying children the Omnibus Budget Reconciliation Acts of 1990 and 1993 increased EITC generosity. A major part of the secular change in source of household tax liability in the United States is the expansion in the EITC during the 1990s.[2]

Access to the explicit insurance described in Table 1 is restricted based on age, health status, income status, asset status, or industry (whether employment is covered by UI). Because access to the federal and state income tax code is automatic it might be the case that income-based taxation is a readier channel of income insurance and subsequent consumption stability for many households. The implicit insurance that income taxes provide is perhaps enhanced further by the substantial changes in the tax code over the

past two decades. In particular, Kniesner and Ziliak (forthcoming) show that a married couple with median income who suffer a 30 percent income loss experience just over a 20 percent consumption drop during the late 1980s but only a 14 percent consumption drop during the late 1990s. The reason for the increased implicit insurance recently can be seen in Table 2, where we see that the median family not only faces a higher payroll tax rate in the late 1990s but also faces a relatively steep phase-out rate of 21 percent in the EITC.

We use data on U.S. households from the Panel Study of Income Dynamics (PSID) for 1980–1991 to examine the impact of explicit and implicit insurance on income and consumption volatility. Based on the work of Kniesner and Ziliak (Forthcoming) we specify a model where consumption volatility depends on estimated consumption function parameters, income variances, and covariances among gross income, transfer income, and tax payments. Our project first examines the connection between income and consumption volatility across families generally. We then consider low versus moderate versus high average income families to identify the part of the long-term income distribution most affected by explicit versus implicit insurance. We find that explicit insurance reduces overall average consumption volatility by 8.5 percent while income taxes reduce consumption volatility by an additional 10 percent. Implicit consumption insurance increases as one moves up the income distribution, and it increased across the board by the early 1990s compared to the early 1980s. Tax reforms enacted in 2001 should do little to change consumption insurance. We calculate that the consumption insurance present in the U.S. system of taxes and transfers is as economically important as automobile insurance or private health insurance.

Disposable Income Insurance and Consumption Volatility

The workhorse of the recent empirical consumption insurance literature is the Euler equation for the relationship among changes in per person consumption (c/n), disposable income (y_d), and aggregate resources as metered by total consumption (C),

$$\Delta \ln(c_t^h / n_t^h) = \alpha \Delta \ln(C_t) + \beta \Delta \ln(y_{dt}^h) + \Delta \varepsilon_t^h , \qquad \textbf{(1)}$$

where h indexes households.[3] Government policy stabilizes disposable income and consumption through two avenues because disposable income is $y_{dt}^h = y_t^h (1 + g_t^h - \tau_t^h)$, where $g_t^h = G_t^h / y_t^h$ is the average transfer rate and $\tau_t^h = T_t^h / y_t^h$ is the average tax rate. Because disposable income depends on gross income (y_t^h) and the average tax and transfer rates, which also depend on gross income, the effect of changes in gross income on disposable income and consumption is dampened by coincident changes in the average and marginal tax rates and the transfer rate. Not always fully appreciated is that even a flat-rate income tax stabilizes consumption.

To obtain some additional intuition consider the case of $\alpha = 0 = \Delta \varepsilon_t^h$, which nets out any effects of group insurance and random shocks or measurement errors.[4] In the simple case of no extra-family income effects the variance of consumption growth is

$$Var(\Delta \ln(c_t^h / n_t^h)) = \beta^2 Var(\Delta \ln y_{dt}^h). \qquad \textbf{(2)}$$

Given an estimate of β, equation (2) fleshes out how the income tax and transfer systems reduce the variability of consumption changes once we substitute for the connection between the variation in disposable income and policy.

Taking the natural log of disposable income and differencing transforms (2) into

$$Var(\Delta \ln(c_t^h / n_t^h)) = \beta^2 Var(\Delta \ln y_t^h + \Delta \ln(1 + g_t^h - \tau_t^h)). \quad \textbf{(3)}$$

Because the log of 1 plus and minus two small numbers is approximately the difference in the two small numbers we can rewrite the variance decomposition in (3) as

$$Var(\Delta \ln(c_t^h / n_t^h)) \approx \beta^2 Var(\Delta \ln y_t^h + \Delta g_t^h - \Delta \tau_t^h). \quad \textbf{(4)}$$

The complete expression for the variance of consumption growth in light of the components of disposable income and their variances and covariances is then

$$\begin{aligned} &Var(\Delta \ln(c_t^h / n_t^h)) \approx \\ &\beta^2 \{Var(\Delta \ln y_t^h) + Var(\Delta g_t^h) + Var(\Delta \tau_t^h) + \\ &2Cov(\Delta \ln y_t^h, \Delta g_t^h) - 2Cov(\Delta \ln y_t^h, \Delta \tau_t^h) - 2Cov(\Delta g_t^h, \Delta \tau_t^h)\}. \end{aligned} \quad \textbf{(5)}$$

To implement the decomposition in (5) we use estimates of $\hat{\beta}$ from Kniesner and Ziliak (Forthcoming) along with the squared residuals from Mincer (1974)-type equations for gross income, average transfer rates, and average tax rates as estimates of $Var(\Delta \ln y_t^h)$, $Var(\Delta g_t^h)$, and $Var(\Delta \tau_t^h)$.[5] For example, the dependent variable in the first Mincer-type regression equation is the proportionate change in gross income from year to year and the independent variables are a quadratic in age, family size, self-employment, union membership, state unemployment rate, and year dummies. A fixed effect sweeps out all time-invariant regressors, such as race and education. The dependent variables in the two other Mincer-type equations are the annual changes in the average tax rate and the annual changes in the average transfer rate. Our measures of uncertainty are then computed as follows. We save the N(T−1) × 1 vectors of residuals from the three Mincer equations, square the residuals, and then calculate the average squared residual for each year, which tracks income, tax-rate, and transfer-rate uncertainty over time.[6]

We construct the needed covariances directly using per-period residuals from the three regressions for changes in gross income and the tax and transfer rates just described. The covariance of income and the tax rate is $Cov(\Delta \ln y_t^h, \Delta \tau_t^h) = \frac{1}{H}\sum_{h=1}^{H} \Delta \ln y_t^h \times \Delta \tau_t^h - \overline{\Delta \ln y_t} \times \overline{\Delta \tau_t}$, for example. We identify the importance of implicit versus explicit programmatic insurance of consumption by examining the decomposition in (5) with and without taxes or transfers.

Data

Our data are from the Panel Study of Income Dynamics (PSID) for the interview years of 1980–1991, which is when the PSID has its most accurate household tax information. The primary attraction of the PSID for our research is its detailed information on household income and composition and the length and timing of the panel, which encompasses several reforms concerning the taxes and transfers that provide income and consumption insurance in the United States. Although the PSID contains information for years before 1980 and after 1991, our sample begins in 1980 because it is when the PSID started including its most accurate, computer-generated, income tax data, and our sample ends in 1991 because it is when the PSID stopped collecting tax information.

Because we have no reason to suspect a connection between consumption expenditure dynamics and participation in the PSID our data are an unbalanced panel where we treat missing person years as statistically ignorable (exogenous). Persons included in our sample are household heads that (1) are at least 25 years old in 1980 and

less than 65 years old in 1991, (2) finished with school by 1980, (3) were not permanently disabled or institutionalized, and (4) did not change marital status during the sample period.[7] To downplay the influence of outliers we omit person years with over a 300 percent increase in disposable income or more than a 75 percent decrease in income from the previous year. As a final data cleaning procedure we only consider a person year with disposable income of at least $1,000.[8] The selection criteria we use create a sample of 12,341 person years for 1,298 households.

The focal variables in the variance decomposition model in equation (5) are gross income, average tax rates, and average transfer rates. Gross income is labor earnings plus income from rent, interest, and dividends. Transfers include social insurance (Social Security, SSI, AFDC, food stamps, and veteran's benefits) as well as private transfers (child support, alimony, and gifts from relatives). Because the main sources of transfers are income conditioned, transfer payments are one of two main components of insurance supporting disposable income and in turn consumption. The other component of consumption insurance, income taxation, needs some discussion about its calculation and accuracy.

Until 1992 the PSID used the household's exemptions, based on reported information on dependents, and the PSID used deductions, based on the larger of the standard deduction and typical itemized deductions for the family of interest, to calculate the households' federal taxes and tax rates. The panel also contains an estimate of the family's potential Earned Income Tax Credit, which we incorporate. Finally, we also include FICA taxes and the relevant state income tax payments, which for tractability we

take as a proportional tax on income with the tax rate determined by the average income tax rate in the state (State Government Tax Collections, 1980–1992 Tax Years).

Results

We present our empirical results in two stages. First we examine the relative importance of unexpected changes in disposable income variability across households and over time. Across households we study the uncertainty component of incomes by permanent income groupings and note how income uncertainty is affected by taxes versus transfers across income groups. Over time we study how the various tax reforms have affected the amount of income uncertainty by smoothing disposable income. The second step of our empirical research is to use equation (5) to connect the degree of income variability to consumption variability, which is a negative component of household economic well being. As we saw in the last section, if consumption is simply proportional to disposable income then consumption variability is just a fractional multiple of disposable income variability. The situation is more complex if the effect of disposable income on consumption varies over time or across income groups, which we also consider.

Estimated Income Uncertainty

To maximize understanding and the robustness of our inferences we examine income in a sequence: (1) labor and capital incomes, (2) labor and capital incomes plus transfers, (3) labor and capital incomes less taxes, and (4) labor and capital incomes plus transfers less taxes. The calculations in (2) and (3) inform us about the relative reduction

in income volatility due to taxes alone and transfers alone, while the calculation in (4) also incorporates a covariance between taxes and transfers. Recall that transfers include social insurance as well as private transfers, while taxes include federal income taxes, FICA, average state income taxes, and Earned Income Tax Credits received. Netting out predictable changes in components of disposable income is the next step in examining how income uncertainty varies across households inclusive of taxes and transfers.

Based on equation (5), the top line in Figure 1 plots the annual average squared residual measure of income uncertainty in the absence of taxes and transfers. The line connecting the points denoted by ◊'s shows the reduction in income variability when taxes are netted out, the line connecting the points denoted by Δ's adds in transfer payments to gross income, and the bottom line shows the full reduction in variability due to transfers and taxes. Figure 1 shows that overall taxes and transfers reduce disposable income variability by roughly the same amounts (about 14 percent each).[9] Also apparent is that the policy changes of the 1980s led to a greater income variability over households in the United States that seems to be reversing in the 1990s.

Figures 2–4 are similar to Figure 1 but with the extra feature that the data are organized by the household's location in the distribution of permanent income. To elaborate, we first compute the 12-year average income for each household, call that permanent income, order permanent incomes, and find median permanent income. We label as low income the households with permanent incomes less than 50 percent of the median, label as moderate income the households whose permanent incomes range 50–150 percent of the median, and label as high income those households with permanent incomes greater than 150 percent of the median.

Low and high permanent income families have patterns distinct from the average family and distinct from each other. For low-income households the temporal pattern is similar to the overall picture, but transfers are a more important disposable income stabilizer than taxes. The situation is distinctly different for high-income families, who get virtually no transfer payments so that their disposable incomes are stabilized mainly by income-based taxes. Tax rate reductions after TRA86 sharply increased the disposable income uncertainty for the highest income households, which has not totally reversed during the 1990s as it has for lower income groups.

Estimated Consumption Volatility

To operationalize the consumption variance decomposition summarized in (5) we again net out predictable components of the data series by using the person-year squared residuals from fixed-effect income growth regressions and parallel regressions for the annual change in the average transfer rate and the annual change in the average tax rate. The error variances and covariance are the components of (5) that track the relative contributions to the household's consumption variability and subsequent welfare loss. For our calculations across all families we use our preferred estimate of $\hat{\beta} = 0.78$ from Kniesner and Ziliak (Forthcoming).[10] For calculations stratifying by the three permanent income groups we use our estimates, $\hat{\beta}_1 = 0.81$, $\hat{\beta}_2 = 0.70$, and $\hat{\beta}_3 = 0.63$, which show the effect of disposable income changes on consumption changes declining with permanent income level.[11]

Table 3 summarizes the outcomes of interest. Again we highlight the contributions of policy by displaying the variability of consumption first in the absence of

policy then in the presence of transfers separately, taxes separately, and taxes and transfers jointly as income components. Across all families in our data, adding transfers reduces consumption volatility by about 8.5 percent on average (4.481/4.895 ≅ 0.915). Netting out taxes reduces consumption fluctuations an additional 10 percent (4.018/4.895). Across all families the tax code provides more consumption insurance, 10.5 percent, than social insurance and public and private transfers. For low-income families, transfers stabilize consumption by about 10 percent, and taxes combined with transfers stabilize consumption by 18 percent. For moderate-income families, transfers stabilize consumption by about 10 percent and taxes plus transfers stabilize consumption by 21 percent. For the highest income families, transfers stabilize consumption by only about two percent, but taxes alone reduce consumption volatility by 10 percent. Table 3 emphasizes how across income substrata taxes are a more important stabilizer of consumption than transfers with the largest consumption stabilizing impact of taxes coming at the highest levels of permanent income.

Figures 5–8 illustrate the year-to-year patterns that underlie the overall averages in Table 3. Most evident is how taxes and transfers mitigate the aggregate level of consumption variability (Figure 5) with the importance of taxes and transfers equally split during the early 1980s except for the high-income families (Figures 6–8). More recently, taxes have gained in importance across the board as a source of income and consumption stabilization. Particularly striking in Figures 5–8 is how consumption insurance has evolved during 1981–1991 for low and moderate-income families. In the early 1980s low and moderate income families received a relatively large proportion of their consumption stabilization from transfer payments. After TRA86 the tide turned away from transfers

and toward taxes as automatic stabilizers. The change in focus of U.S. policies concerning income support and redistribution continues in the middle 1990s with the coupling of welfare reform with EITC expansions. As the result of policy since the early 1980s, comparatively little consumption smoothing now emanates from transfer payments compared to the income tax code. Interestingly, when there is decreasing absolute risk aversion in permanent income, as in our case here, then insurance is an inferior good (Mossin (1968), Arrow (1971, Chapter 3)). Unlike the typical case where efficiency and equity considerations are offsetting the reductions in income insurance with permanent income level we identify are not only equitable but are also economically efficient.

The Economic Growth and Tax Relief Reconciliation Act of 2001

Recently, Congress passed and President Bush signed into law The Economic Growth and Tax Relief Reconciliation Act of 2001 (EGTRRA). Among other things, the law lowers the rate in the highest federal income tax bracket and creates a new (10 percent) bracket for some persons formerly in the 15 percent federal income tax bracket. By lowering the tax rates for the highest income families and the lowest income families with taxes owed, EGTRRA reduces implicit insurance. An offsetting factor is that the structure of tax rates becomes more progressive than before as the ratio of the highest to the lowest positive tax rate is now greater (over 3:1 versus 2.5:1). An insurance neutral aspect of the Act is that a large concentration of taxpayers (about 50 percent of returns) remains in the 15 percent income tax bracket despite its narrowing. Because some components of EGTRRA add to disposable income smoothing, some components reduce disposable income smoothing, and other components leave the amount of smoothing

more or less unchanged we expect little effect on economic well being stemming from changes in implicit insurance in the most recent round of tax reform.

Discussion

The welfare-enhancing effect of reduced consumption variability is an under-appreciated dimension of income-based taxes. Annual consumption variation is reduced by about 10 percent due to implicit income smoothing. In the United States taxes do as much to stabilize income and consumption implicitly as do social insurance programs explicitly. Over time the stabilizing effect of taxes has also been growing relative to the stabilizing effect of transfers.

An instructive way to frame the importance of consumption insurance implicit in the income tax code is to compare it to formal market purchased insurance. In Kniesner and Ziliak (Forthcoming) we find that the current set of income-based taxes in the United States enhances the typical household's economic well being by an amount equivalent to one to two percent more total consumption.[12] Expressed in 2001 dollars the aggregate welfare gain from income tax based implicit consumption insurance in the U.S. is in the range $70–140 billion. Implicit consumption insurance is then of a magnitude roughly similar to total private health insurance premiums collected, $155 billion, or total automobile insurance premiums collected, $147 billion.[13]

A notable implication of the welfare enhancing reductions in consumption variability from income-based taxation we find concerns the future of research into and practical design of an economically optimal income tax. Up to now most of the optimal income tax research has considered two dimensions of social welfare, the deadweight welfare loss

because the income tax distorts labor supply (Ziliak and Kniesner 1999) and the welfare gains because a nonlinear income tax produces greater equality of spendable income and consumption (Auerbach and Hines 2001). Our results demonstrating the welfare-enhancing importance of an income-based tax through its effects on consumption dynamics imply that future optimal tax research need consider a third dimension, which is how an optimal tax creates beneficial dampening of otherwise unintended fluctuations in spendable income and consumption. The interesting complexity of three-dimensional optimal tax research will be that although a flatter tax structure has welfare-increasing effects because it reduces labor supply distortions, a flatter tax structure also has welfare reducing effects because it may not only promote less equal after-tax incomes and consumption levels but it also lowers implicit insurance of incomes and consumption.

Endnotes

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1. An extensive discussion of social insurance and means-tested transfer programs is in Scholz and Levine (Forthcoming).

2. Some useful empirical studies of recent income tax reforms are Auerbach (1996), Auerbach and Feenberg (2000), Auerbach and Slemrod (1997), Burman, Gale, and Weiner (1998), Engen and Gale (1996), Kasten, Sammartino, and Toder (1994), and Pechman (1985).

3. A short reading list is Cochran (1991), Gruber (1997), Ham and Jacobs (2000), Hayashi, Altonji, and Kotlikoff (1996), Kniesner and Ziliak (Forthcoming), Mace (1991), Morduch (1995), Nelson (1994), and Townsend (1994). Much of the literature is concerned with testing for complete insurance, or whether $\hat{\beta} = 0$.

4. By setting $\alpha = 0$ we simply adjust the scale of insurance but do not alter the relative contributions of taxes and transfers across households or over time.

5. In Kniesner and Ziliak (Forthcoming) we produce $\hat{\beta}$ with a forward-filter instrumental variables estimator applied to equation (1). Additional control variables include the number of children, the age of the youngest child, as well as the race, education, and five-year birth cohort of the household head.

6. For additional discussion of measuring income volatility see Dynarski and Gruber (1997) and Gottschalk and Moffitt (1994).

7. The marital status screen means that the persons in our data keep the same tax table, which simplifies understanding how tax reforms that interact with income-splitting provisions affect insurance implicit in income taxes.

8. There are a small number of person-years with average tax rates or average transfer rates that exceed 100 percent. Close examination of the observations with extreme tax or transfer rates reveals that they are outliers, which we remove from our calculations.

9. Additional useful references on income and consumption stabilization in the United States include Auerbach and Feenberg (2000), Cohen and Follette (2000), Gruber (1997, 2000), and Hamermesh (1982).

10. Estimated from models of total consumption, defined as disposable income less saving.

11. We do not reject the null hypothesis that $\hat{\beta}$ is unchanging over time, however.

12. The basis of comparison is a lump-sum tax that collects the same revenue but provides no implicit income and consumption insurance.

13. *Statistical Abstract of the United States* 2000, pp. 530-531 expressed in 2001 dollars using CPI.

Table 1. Changes in Selected Sources of Income Insurance, 1979–1999
(billions of $1999)

	1979	1989	1999
Social Insurance	355.9	504.7	683.9
(Percent of Real GDP)	(6.9)	(7.3)	(7.4)
OASI	207.8	279.5	334.4
Medicare	66.9	129.7	233.4
Unemployment Insurance	22.6	18.7	21.4
Workers Compensation[a]	27.2	46.1	43.4
Disability Insurance	31.4	30.7	51.3
Means-Tested Transfers	115.6	159.7	276.2
(Percent of Real GDP)	(2.3)	(2.3)	(3.0)
Medicaid	49.9	82.3	189.5
Supplement Security	16.2	19.8	29.8
AFDC/TANF	24.7	23.2	13.5
Food Stamps	14.9	15.7	15.8
Housing Assistance	9.9	18.7	27.6
Individual Income Taxes	893.3	1201.3	1663.6
(Percent of Real GDP)	(17.4)	(17.4)	(17.9)
Federal	499.5	599.2	879.6
State	75.2	119.2	172.4
Payroll (FICA)	318.6	483.1	611.6
Earned Income Tax Credit	4.7	8.9	31.9

Notes: Data on social insurance, means-tested transfers, and the EITC are from Scholz and Levine (Forthcoming). Data on federal income taxes, payroll taxes, and real GDP are from the *2001 Economic Report of the President*. Data on state income taxes are from the Department of Commerce's *State Government Tax Collections* in 1979, 1989, and 1999.

[a] Due to missing data, the 1980 value appears for 1979; *Statistical Abstract of the United States, 1998*, p. 377.

Table 2. Changes in Selected Federal Tax Parameters, 1979–1999[a]

Income Tax[b]					
1979		**1989**		**1999**	
MTR (percents)	**Range ($1,000)**	**MTR (percents)**	**Range ($1,000)**	**MTR (percents)**	**Range ($1,000)**
0	0–3.4	15	0–30.95	15	0–43.05
14	3.4–5.5	28	30.95–74.85	28	43.05–104.05
16	5.5–7.6	33	74.85–177.72	31	104.05–158.55
18	7.6–11.9	28	177.72+	36	158.55–283.15
21	11.9–16.0			39.6	283.15+
24	16.0–20.2				
28	20.2–24.6				
32	24.6–29.9				
37	29.9–35.2				
43	35.2–45.8				
49	45.8–60.0				
54	60.0–85.6				
59	85.6–109.4				
64	109.4–162.4				
68	162.4–215.4				
70	215.4+				
Payroll Tax[c]					
6.13	0–22.9	7.51	0–48.0	6.20	0–72.6
				1.45	0–

Earned Income Tax Credit[d]					
1979 (range in $1,000)		**1989 (range in $1,000)**		**1999 (range in $1,000)**	
Phase-In Rate	**Phase-Out Rate**	**Phase-In Rate**	**Phase-Out Rate**	**Phase-In Rate**	**Phase-Out Rate**
10.0 (0–5.0)	12.5 (6.0–10.0)	14.0 (0–6.5)	10.0 (10.24–19.34)	7.65 (0–4.53)	7.65 (5.67–10.2)
				34.0 (0–6.8)	15.98 (12.46–26.93)
				40.0 (0–9.54)	21.06 (12.46–30.58)

[a]Data on the federal income tax and payroll tax parameters are from the Commerce Clearing House *U.S. Master Tax Guide* for 1980 and 1990, and from the 1999 Forms and Publications link on the IRS WebPages <http://www.irs.gov/forms_pubs/formpub99.html>. Data on the EITC parameters are from Ventry (2000).

[b]Federal income tax rates and ranges are for a married couple filing jointly. The Tax Reform Act of 1986 altered the definition of taxable income to eliminate the so-called zero bracket amount.

[c]Beginning in 1991 separate bases applied to the retirement and health-insurance portions of the payroll tax. The tax base is labor market earnings.

[d]Beginning in 1991, separate EITC parameters applied to families with one qualifying child versus more than one qualifying child. Beginning in 1994 the EITC extends to families with no dependents. The tax base is labor market earnings.

Table 3. Consumption Volatility, Transfers, and Taxes 1981–1991[a]

	Means	Standard Deviations
Total Sample		
Gross labor and capital income	4.895	0.268
Plus transfers	4.481	0.260
Less taxes	4.378	0.253
Plus transfers less taxes	4.018	0.275
Low Income Sub-sample		
Gross labor and capital income	8.375	0.916
Plus transfers	7.520	0.908
Less taxes	7.568	0.812
Plus transfers less taxes	6.857	0.842
Moderate Income Sub-sample		
Gross labor and capital income	3.199	0.223
Plus transfers	2.875	0.218
Less taxes	2.823	0.195
Plus transfers less taxes	2.534	0.215
High Income Sub-sample		
Gross labor and capital income	2.591	0.352
Plus transfers	2.539	0.329
Less taxes	2.332	0.341
Plus transfers less taxes	2.282	0.311

[a]The low-income households have 12-year average incomes below one-half the median income; moderate-income households have average incomes between one-half and one and one-half the median income; high-income households have average incomes above one and one-half the median income.

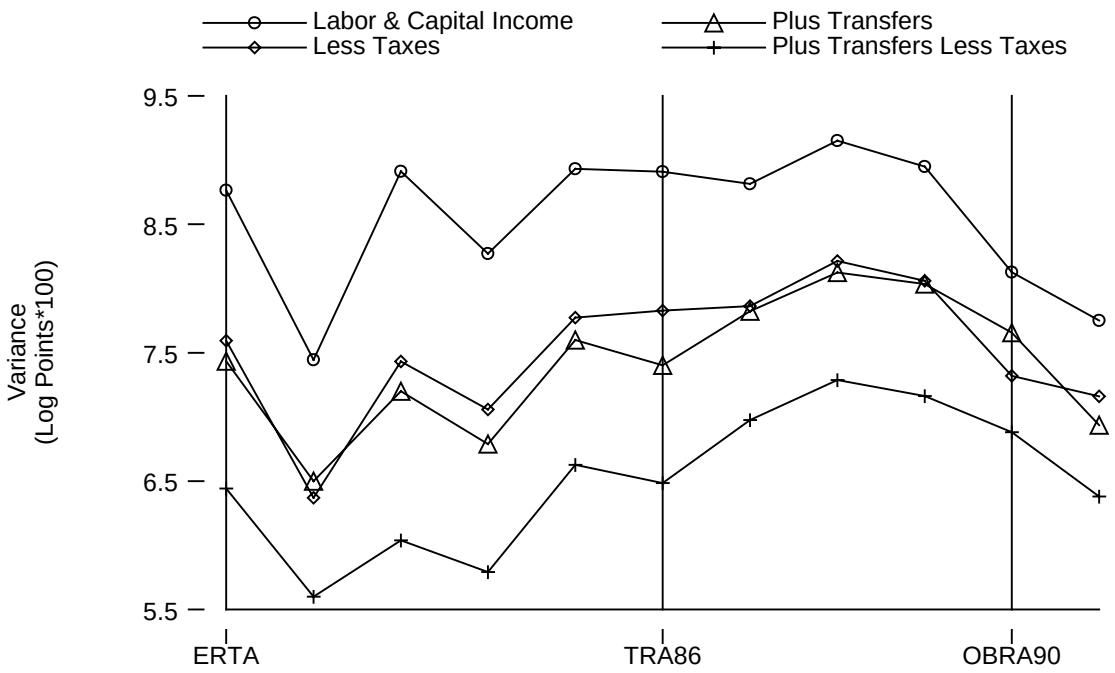

Figure 1: Income Uncertainty for all Families 1981-1991

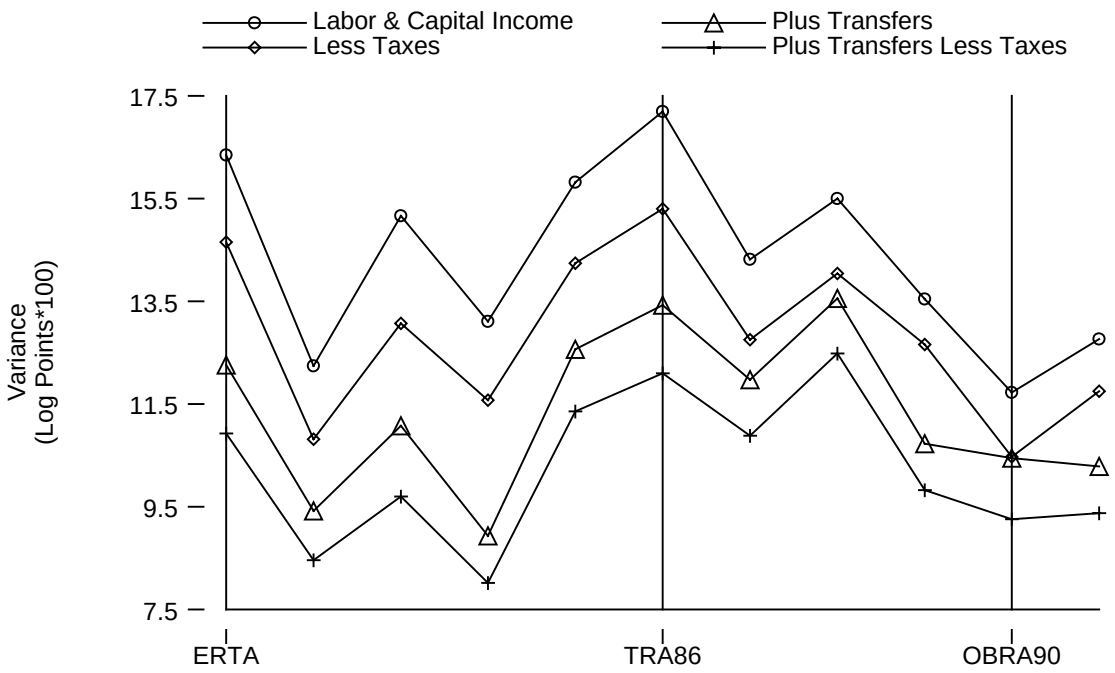

Figure 2: Income Uncertainty for Low-Income Families

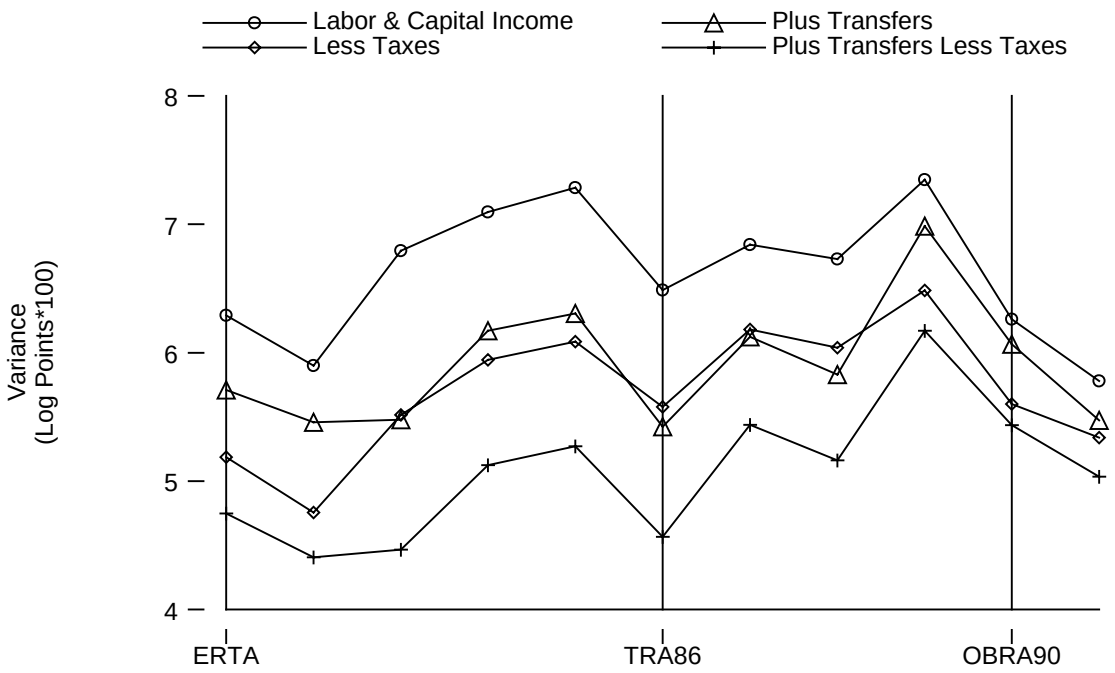

Figure 3: Income Uncertainty for Moderate-Income Families

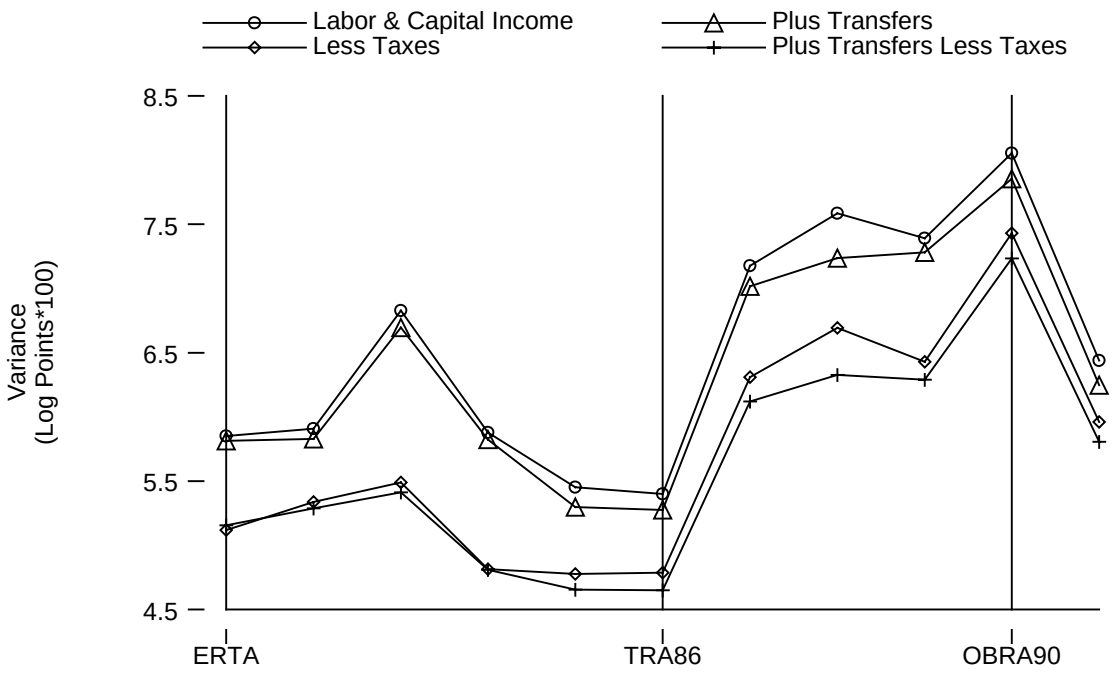

Figure 4: Income Uncertainty for High-Income Families

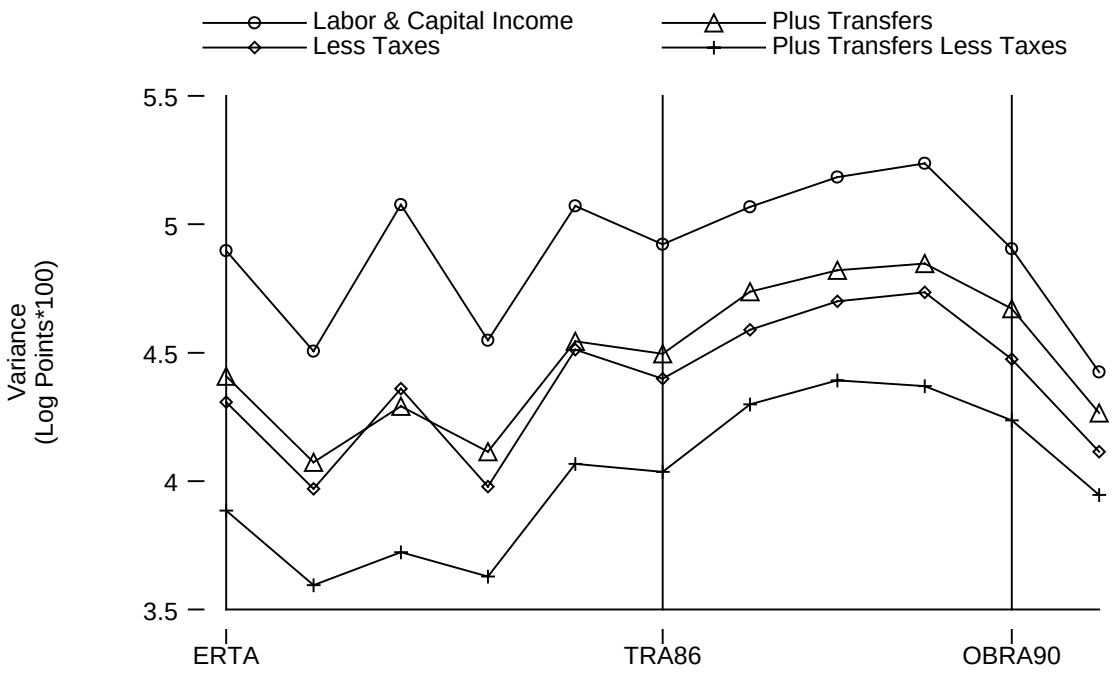

Figure 5: Consumption Volatility for all Families 1981-1991

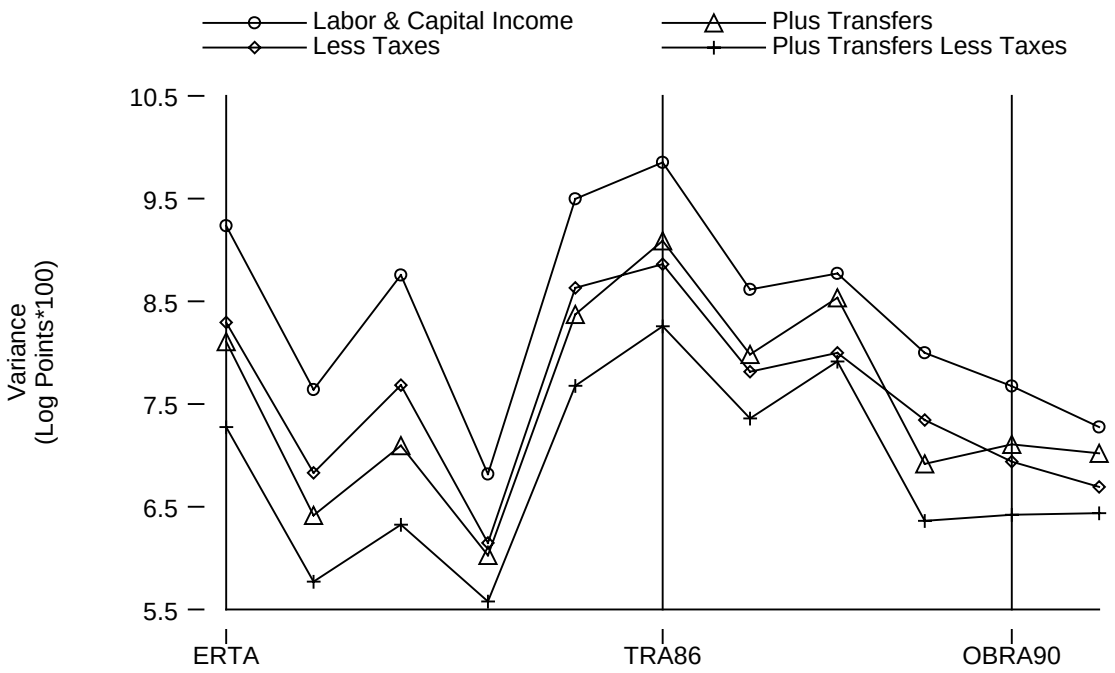

Figure 6: Consumption Volatility for Low-Income Families

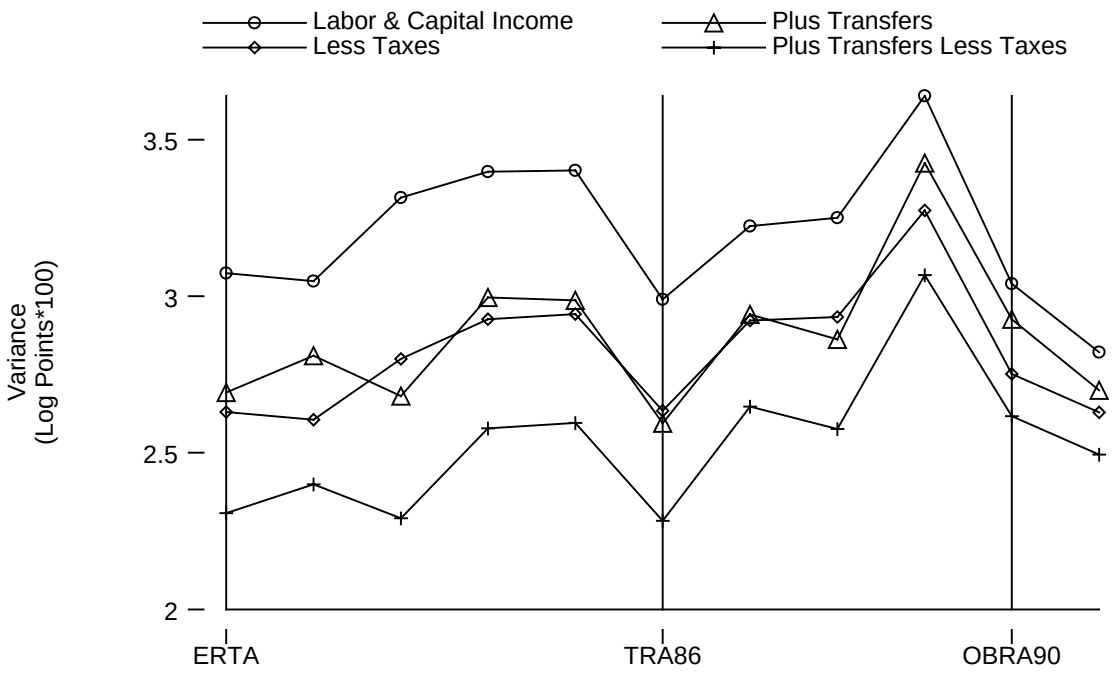

Figure 7: Consumption Volatility for Moderate-Income Families

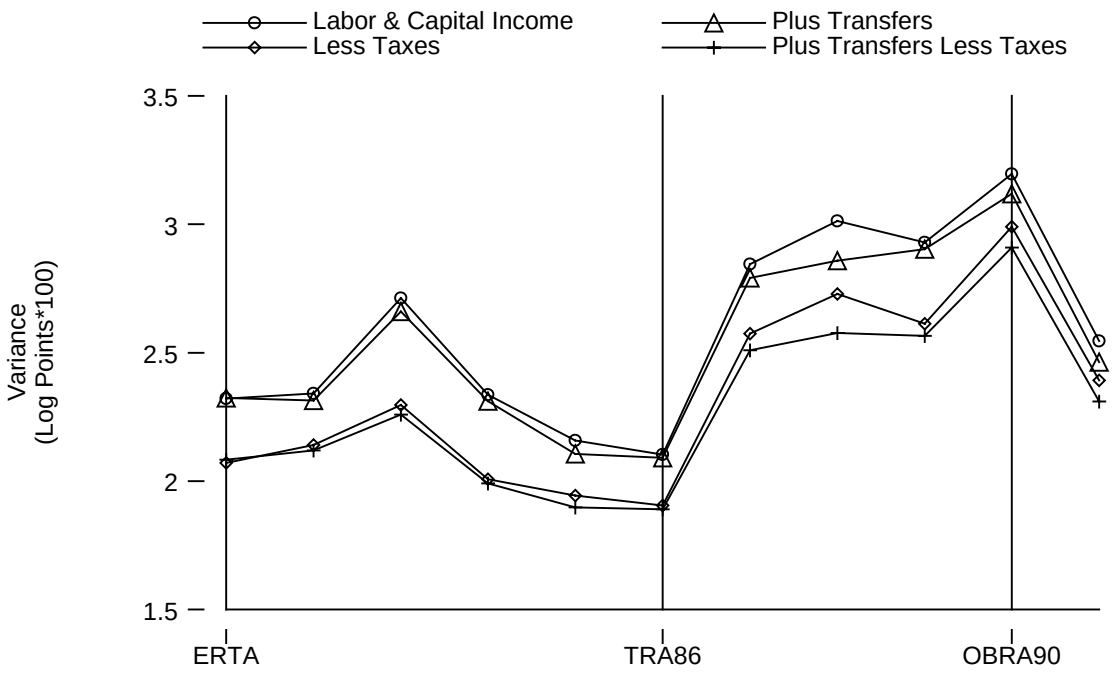

Figure 8: Consumption Volatility for High-Income Families

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