

# Creating 100 Years of Time-Series Tax Data with Consistent Income Ranges from Existing Historical Tabulations and Current Micro Data: Part 1

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## Abstract

Statistics of Income has published annual income statistics since 1916. While these publications continually prove to be invaluable to users, older publications use a different income definition, for sampling purposes, and groups. In order to compare the income statistics across years, one would have to reconstruct the published tables to eliminate the inconsistencies over the years. Because SOI only has the cross-sectional individual return sampled micro data for years since 1960, attempts at updating prior year tables becomes difficult at best. This paper discusses the need and feasibility of reproducing historical tables using new income groups by way of weight calibration from current micro data. More specifically, through manipulating 2007 micro data, this paper will attempt to reproduce the 1997 published Table 1.1 of Publication 1304 such that the numbers from the older tables match those calculated from the pseudo-distribution. However, our results show that our linear weight adjustment approach only works on one variable and ceases to converge when any variables are added.

**Key Words:** Time-Series, Income Distribution, Historical Data, Data Manipulation, Weight Calibration, Statistics of Income.

## 1. Introduction

For nearly 100 years Statistics of Income (SOI) has published reliable and comprehensive statistics derived from individual tax returns. Although SOI has preserved all its publications going back to the first in 1916, micro data exists only from 1960 to the present. This leaves a nearly 50-year gap in available micro data. Consequently, researchers looking to study longitudinal trends are thus limited to working with and manipulating published cross-sectional tabulations. Unfortunately, these tabulations present three problems when used to examine trends; they are in nominal dollars, they do not have a consistent income definition, and they do not use consistent income breaks.

Statistics of Income tabulations have routinely reported nominal dollars, with few exceptions. By simply using the Chain-Price Price Index for Gross Domestic Product we can normalize amounts to real dollar values.

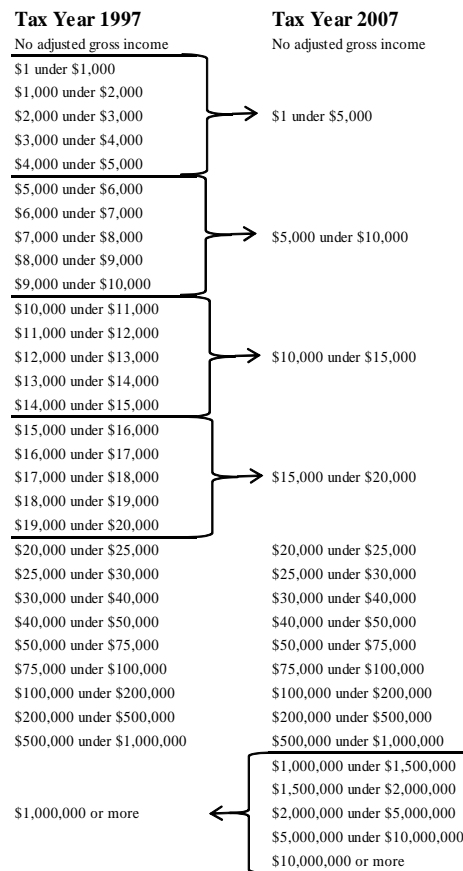
In 1944, the Individual Income Tax Bill<sup>1</sup> changed the measure of an individual's taxable income from a net income concept to an adjusted gross income (AGI) concept. Net income is defined as gross income minus general

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<sup>1</sup> See U.S. Treasury Department, Internal Revenue Service, *Statistics of Income for 1944 Part 1*. Washington, DC (1950): 7-8.

deductions. For tax purposes general deductions included business expenses, losses, taxes paid, and depreciation. AGI, rather, is defined as gross income minus enumerated deductions defined by Congress. Thus, beginning in 1945 SOI ceased to classify individual income by net income and began classifying by AGI, causing a rift in longitudinal income measurements. Given the breadth of income and deduction items shown in SOI tabulations, this limitation can be dealt with by adding and subtracting the necessary items to generate a consistent income measure.

The final limitation is the inconsistent income breaks classified by SOI over time. As income levels increased over time, the breaks used by SOI became antiquated. Over time SOI has updated the classifying groups to account for the rise in income levels. To illustrate, Figure 1 shows a comparison of the income breaks published for Tax Year 1997 versus that for Tax Year 2007. These inconsistent income breaks pose the most serious challenge when using SOI to compare data from across years.



**Figure 1:** Adjusted Gross Income Classifications

Historically, researchers have combated these three problems rather successfully by way of interpolation. Here, intermediate values are derived from two or more known values. Several different methods of interpolation have been attempted on SOI data, all with reasonable success. However, with no more than the published tables as a guide, the accuracy of interpolated data are heavily influenced by the method chosen. Also, no interpolation method exists that can satisfy all published distributional properties sufficient to develop a truly exacting replication for the unknown data it is trying to reproduce.

The research community therefore stands to benefit twofold with the closing of this micro data gap. Researchers will spend less time developing and defending their own data creation methods and also be better equipped to evaluate others' research. In support of these benefits SOI wants to close the gap on available micro data files and also try to improve the accuracy of previously attempted methods. This paper introduces the concept of weight calibration of existing micro data to back cast historical tables and examines not only the feasibility, but the overall reliability of this new approach. The paper is organized as follows. Section two introduces our calibration approach. Section three lays out how to feasibly test such an approach. And the final section discusses ongoing research with particular attention on the future direction of this project.

## 2. Calibration Estimation Approach

Calibration estimation is defined as a mathematical procedure that adjusts sample weights to match predefined population totals<sup>2</sup>. In this procedure, the weights go through an iterative process of adjustments until convergence at the predefined population totals. Using this method in accordance with SOI's published population totals, we should be able to select a year having available micro data and calibrate the weights to match the prior year's population totals. For years prior to 1960 when no micro data is available, hereafter referred to as the 'prior' year, we can use the published totals as our population constraint. Using these constraints we can adjust the weights on a year having available micro data, hereafter referred to as 'proxy' year. Thus, we can create micro data for years where none previously existed while still maintaining all required population totals.

Choosing the correct method is essential to the accuracy of any recreated data. Drawing from both Deville and Särndal's (1992) and Kott's (2009) work, we let the variable of interest be  $k$ , stratum groups previously published be  $h$ , and the sample space be  $S_h$ . Therefore, the adjusted weights must satisfy the calibration equation,

$$\sum_{k \in S_h} w_k x_k = X_h \quad \text{and} \quad \sum_{k \in S_h} w_k = N_h. \quad (2.1)$$

In this equation  $x_k$  is the 'proxy' year's deflated amount of element  $k$  and  $w_k$  is the calibration weight of  $k$ . Finally,  $N_h$  is the total number of returns in stratum group  $h$  and  $X_h$  is the total income amount in stratum group  $h$ . Our objective is to solve for  $w_k$ , as defined in equation (2.1). To do so we will use the SUDAAN procedure WTADJUST this allows for separate weight adjustments for each variable  $k$ . WTADJUST works by multiplying the 'proxy' year's initial weight by the adjustment factor,

$$\alpha_k = \frac{\ell_k (u_k - c_k) + u_k (c_k - \ell_k) \exp(A_k \mathbf{x}_k' \boldsymbol{\beta})}{(u_k - c_k) + (c_k - \ell_k) \exp(A_k \mathbf{x}_k' \boldsymbol{\beta})}, \quad (2.2)$$

where  $\boldsymbol{\beta}$  is the vector of model parameters that will be estimated within the procedure,

$A_k = \frac{(u_k - \ell_k)}{(u_k - c_k)(c_k - \ell_k)}$  is a constant in the model, and  $\ell_k$  and  $u_k$  are lower and upper

<sup>2</sup> See Särndal, Carl-Erik. "The Calibration Approach in Survey Theory and Practice." *Survey Methodology* 33 No. 2 (December, 2007): 99.

bounds, respectively, imposed on the adjustment factor  $\alpha_k$ . We use SUDAAN's default values of  $c_k = 1$ ,  $\ell_k = 0$  and  $u_k = e^{20}$ . Using these defaults reduces equation (2.2) to the standard exponential model,

$$\alpha_k = \exp(\mathbf{x}_k' \beta). \quad (2.3)$$

Letting  $d_k$  be the initial weight on our 'proxy' year, then  $w_k = \alpha_k d_k$ . That is to say, our adjusted weight for variable k is equal to our adjustment factor times the initial weight.

### 3. Feasibility Testing

While our ultimate goal is extensive, we concluded that the best first step is to test the feasibility of such an approach. To do this we attempted to reproduce Table 1.1 reported in "Selected Income and Tax Items, by Size and Accumulated Size of Adjusted Gross Income" of *Statistics of Income Individual Income Tax Returns*, commonly referred to as Publication 1304<sup>3</sup>. Since in theory, any year can be used as the proxy for any 'prior' year with a similar sampling structure, we chose the most current micro data file available at the time, 2007. The 2007 table is presented in Table 1.

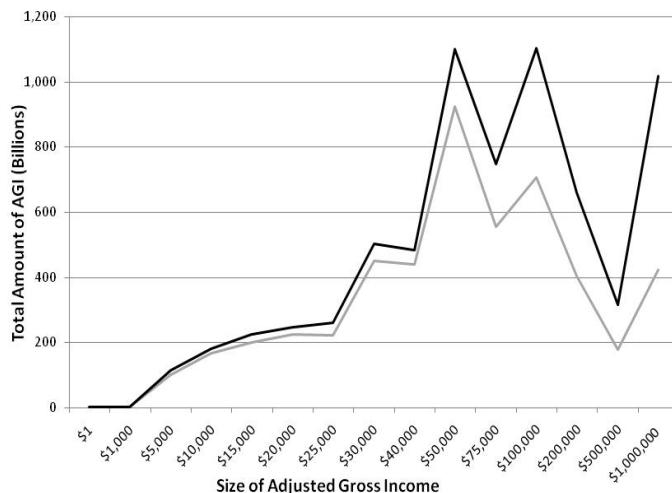
Two criteria had to be met when deciding on the year we would attempt to reproduce. First, we wanted a year in which micro data existed. This would enable us to test the accuracy of potentially new tables. Second, the year had to be recent enough that changes to the economic culture would not significantly affect the distribution of taxpayers and also far enough in the past to successfully represent the vast gap of time we are trying to close. Thus we selected 1997 as our 'prior' year, presented in Table 2.

As mentioned above, several data limitations exist. Before running the calibration procedure we first deflate all 2007 amounts into 1997 dollars. So too must we reclassify income breaks to match the 1997 income classifications. By making these few changes, our tables more closely resemble the desired 1997 published table. Table 3 compares the original 1997 values with the newly deflated 2007 values re-categorized into 1997 income groupings. As shown in Figure 2, deflated 2007 totals generally follow the same distributional pattern as 1997, but are consistently larger in magnitude. This suggests that calibration will force a reduction in overall current return weights. Figure 3, Number of Returns comparison, which was not affected by the deflation factor, also suggests an overall weight reduction requirement.

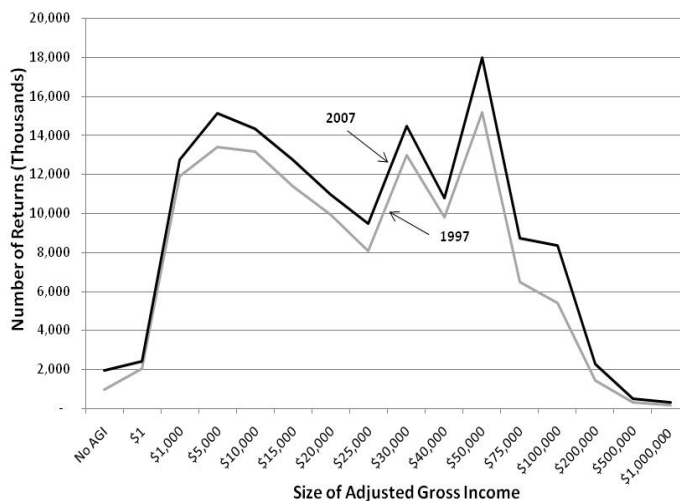
In our first attempt at calibration we have selected AGI as our variable of interest. From here we will progressively add one additional variable, in the order presented on Tables 1 and 2, until either we have successfully replicated the table or the weights no longer converge to match the published totals. The resulting table after this process should look exactly like the original 1997 table.

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<sup>3</sup> U.S. Treasury Department, Internal Revenue Service, *Statistics of Income for 1997*. Washington, DC (1999).



**Figure 2:** Amount of Total Adjusted Gross Income for All Returns Published in 1997 v. Deflated 2007



**Figure 3:** Total Number of Returns Published in 1997 v. 2007

**3.1 Method Evaluation**

While the overall feasibility test will result in a replication of 1997 table, we have also chosen several additional techniques to evaluate the results of our approach. Even before running the 'proxy' year data through the weight adjustment procedure, we first collapsed several of the lower AGI groups. This left us with sixteen AGI groups from the original thirty-one. In so doing, when we expand the AGI groupings we can check how similar the calibrated totals are to the 'prior' year totals. If the expanded totals are significantly different we can conclude the presence of a fundamental error in our approach. Given that we have the micro data available for 1997 we can also expand the high-income groups to evaluate the capacity of our approach to correct for potentially unbounded income outliers given the one-sided income constraint. Finally, we can create unpublished tables from both the adjusted 2007 data and the original 1997 data and

compare the accuracy of the 'proxy' year in producing appropriate 1997 income distributions.

Using these three methods of evaluation; expanding the low income classes, expanding the high income class, and creating a new table, we will be able to assess the future accuracy of such a calibration method. Although the failure of any one of these three evaluations does not necessarily imply overall failure, it will inform us of possible limitations and required expansions to our proposed approach.

### 3.2 Results

After running the calibration procedure, WTADJUST was successful in converging. We need only to compare the distribution between the calibrated weights and starting weights for 2007 to see the effects of the weight adjustment. Figures 4 through 7, found in the appendix, show the distribution of adjusted weights for each collapsed low AGI group. Each point represents the adjusted weight, vertically, as compared to the initial weight, horizontally. The solid line dividing the figures indicates a one-to-one ratio; that is to say, had the weights not changed each point would lay directly on this solid line. Given the smaller population size of 1997 and the aforementioned lesser magnitude of amounts, nearly all adjusted weights fall below the solid line.

Given convergence, the collapsed low AGI groups match the 1997 table exactly. However, when we expanded the AGI groups to return to the reported 1997 income classifications, we saw several small discrepancies, such as those shown on Table 4. The difference in the amount of AGI spans from slightly below -4 percent to slightly above 6 percent. Therefore, as we proceed we will have to calibrate our weight on all AGI groups. Even with these small differences, our results for the first evaluation are encouraging. With having such minor differences, we can conclude that our calibration method is rather accurate for bounded within-group estimations.

But do these results hold true for unbounded estimations? To examine this, we expanded the highest income group, \$1,000,000 or more, to three additional income groups. These groups were \$1,000,000 under \$5,000,000, \$5,000,000 under \$10,000,000, and \$10,000,000 or more. The results can be found on Table 5 of the Appendix. As expected, discrepancies are present, but the differences remain small. For the amount of AGI the differences are 2 percent, 8 percent, and -8 percent respectively. These results suggest that our calibration method is not only reliable for bounded within-group estimations but for unbounded as well.

The final evaluation is the ability to produce new tables. This will allow us to speak to the between-group accuracy. Since we have only included AGI as our constraint, we chose to create a table highly correlated with this variable. Hence, we produced "The Number of Returns and Amount of Taxable Interest Income Given the Presence of Wage Income, by Size of Adjusted Gross Income" presented in Table 6. Our results are far less promising than earlier. In every AGI class, with the exception of No Positive AGI, the calibrated 2007 totals are less accurate than had we simply deflated the amounts. These results suggest that our between-group accuracy is not as reliable as within-group. To correct for this we would need to expand our calibration criterion to at least one additional variable.

As decided previously, the next variable of interest is the second element reported in Tables 1 and 2, Adjusted Gross Income for Taxable Returns, AGITAXED. Unfortunately, when we ran our weight adjustment for both AGI and AGITAXED inclusively the weights never converged.

This non-convergence is the response of two possible causes. First, we chose the order of variables independent of correlation between variables; had we chosen the second variable on its relation to the first, convergence might have resulted. To examine

this, we attempted calibration using a different variable, Taxable Income, with the same result. Second, we chose our proxy year independent of the socio-economic climate as related to the 'prior' year; had we selected based on corresponding economic indicators, convergence might have occurred. While more research needs to be conducted as to the appropriate economic indicators to utilize, we did attempt calibration on two variables for three additional years, all with the same non-converging results.

#### 4. Ongoing Research

Due to non-convergence during the feasibility research, we are currently looking into more robust approaches. One such method is to rank variable importance and calibrate one variable at a time, as opposed to our attempt at convergence on multiple variables at once. Once convergence has been achieved on one variable, we can attempt convergence on other variables, after which we can cycle back to the highest ranked variables. That is to say, given three variables, A, B, and C we rank importance as  $A > B > C$ . This new approach is applied as follows:

- Step 1: Adjust on variable A
- Step 2: Adjust on variable B
- Step 3: Adjust back on variable A
- Step 4: Adjust on variable C
- Step 5: Adjust back on variable A

We are therefore able to incorporate an expanded list of constraints. By cycling back through the highest ranked variables we will necessarily constrain the weight adjustments to add to the required population totals. This new approach presents two identifiable risks however. First, by cycling back to the highest ranked variables, we are necessarily undoing convergence on the lesser ranked variables. And second, the final results will be heavily reliant on the ranking order of variables. Future research into these risks will need to be conducted.

Once we are able to identify the correct method we will then need to research the appropriate proxy year. Originally, we assumed any current year could be used as a proxy for any 'prior' year. However, as we have proven, this is not the case. Therefore, before more work can continue, we must look into appropriate 'proxy' year selection. We are currently considering expanding from a strictly one-year proxy to the combination of two or more years as the proxy for one prior year.

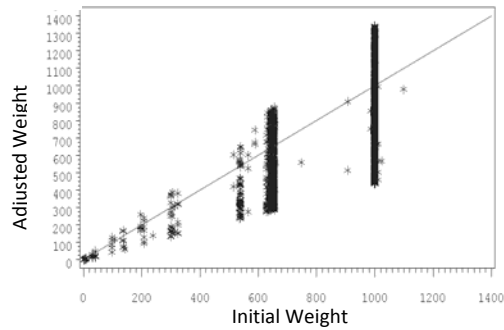
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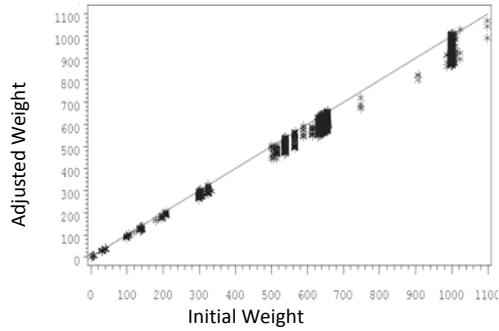
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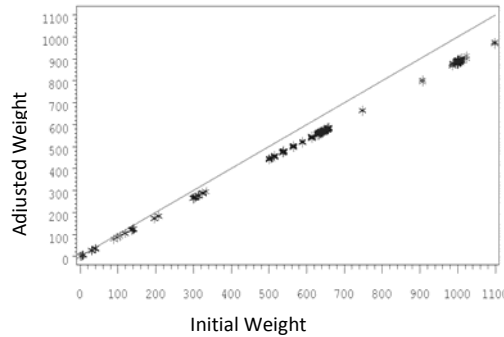
### Appendix



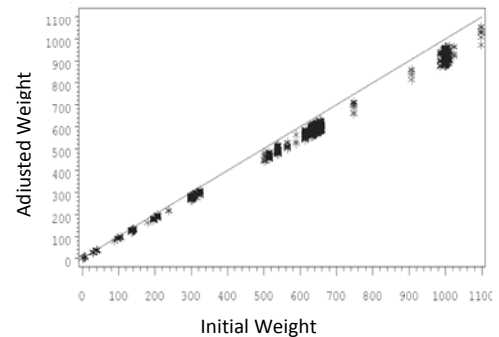
**Figure 4:** Weight Adjustment for Returns with \$1 under \$1,000 of AGI



**Figure 5:** Weight Adjustment for Returns with \$1,000 under \$5,000 of AGI



**Figure 6:** Weight Adjustment for Returns with \$5,000 under \$10,000 of AGI



**Figure 7:** Weight Adjustment for Returns with \$10,000 under \$15,000 of AGI

Section on Survey Research Methods – JSM 2010

**Table 1: Selected Income and Tax Items, by Size of Adjusted Gross Income for Tax Year 2007**

(All figures are estimates based on samples—money amounts are in thousands of dollars except as indicated)

Size and accumulated size of adjusted gross income	All returns				Taxable returns				
	Number of returns [1]	Adjusted gross income less	Number of returns	Adjusted gross income less deficit	Taxable income		Income tax after credits		Total income tax
		Amount		Amount	Number of returns	Amount	Number of returns	Amount	Amount
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<b>All returns</b>	<b>142,978,806</b>	<b>8,687,718,769</b>	<b>96,269,751</b>	<b>8,072,293,831</b>	<b>96,247,999</b>	<b>5,942,759,558</b>	<b>96,269,750</b>	<b>1,115,750,799</b>	<b>1,115,601,803</b>
No adjusted gross income	1,907,836	-110,781,565	5,559	-5,805,111	0	0	5,559	98,577	97,427
\$1 under \$5,000	11,930,752	31,801,165	926,371	2,485,641	924,082	1,060,339	926,371	98,820	98,820
\$5,000 under \$10,000	12,114,741	90,653,578	3,283,042	25,110,545	3,281,904	6,390,911	3,283,042	634,370	634,370
\$10,000 under \$15,000	11,914,564	148,907,608	5,762,743	72,054,297	5,762,489	23,530,605	5,762,743	2,237,057	2,237,057
\$15,000 under \$20,000	11,061,903	193,198,281	5,701,605	100,006,852	5,701,458	45,204,603	5,701,605	4,587,626	4,587,626
\$20,000 under \$25,000	9,963,693	223,679,496	5,849,507	131,421,585	5,849,414	66,342,902	5,849,507	7,354,942	7,354,942
\$25,000 under \$30,000	9,005,338	247,203,999	5,743,893	157,935,646	5,743,882	89,963,476	5,743,893	10,244,160	10,244,160
\$30,000 under \$40,000	14,740,806	512,920,308	11,472,967	400,857,058	11,472,916	243,049,449	11,472,967	27,853,217	27,853,208
\$40,000 under \$50,000	11,150,798	499,464,110	9,740,232	436,936,873	9,739,355	277,980,017	9,740,232	33,514,554	33,514,554
\$50,000 under \$75,000	19,450,744	1,195,768,325	18,317,115	1,129,155,048	18,316,130	743,855,438	18,317,115	96,882,363	96,882,330
\$75,000 under \$100,000	11,744,133	1,014,677,916	11,558,977	999,002,337	11,555,430	689,246,832	11,558,977	93,832,809	93,832,750
\$100,000 under \$200,000	13,457,877	1,793,040,262	13,383,717	1,783,982,311	13,380,760	1,310,767,155	13,383,717	228,749,526	228,687,547
\$200,000 under \$500,000	3,492,353	1,004,658,689	3,483,359	1,002,130,763	3,480,889	818,731,290	3,483,359	196,466,965	196,380,629
\$500,000 under \$1,000,000	651,049	441,439,447	649,403	440,314,397	648,473	382,835,155	649,403	103,163,081	103,163,081
\$1,000,000 under \$1,500,000	166,363	200,785,834	165,971	200,311,903	165,790	177,558,926	165,970	48,354,258	48,354,319
\$1,500,000 under \$2,000,000	70,733	121,767,964	70,556	121,462,384	70,498	108,120,003	70,556	29,351,266	29,351,266
\$2,000,000 under \$5,000,000	108,641	324,592,983	108,357	323,759,212	108,198	290,051,422	108,357	77,554,241	77,554,612
\$5,000,000 under \$10,000,000	28,090	192,327,659	28,014	191,814,385	27,984	172,139,692	28,014	43,929,689	43,929,717
\$10,000,000 or more	18,394	561,612,712	18,362	559,357,705	18,349	495,931,345	18,362	110,843,279	110,843,388

**Table 2: Selected Income and Tax Items, by Size of Adjusted Gross Income for Tax Year 1997**

(All figures are estimates based on samples—money amounts are in thousands of dollars except as indicated)

Size and accumulated size of adjusted gross income	All returns				Taxable returns				
	Number of returns	Adjusted gross income less deficit	Number of returns	Adjusted gross income less deficit	Taxable income		Income tax after credits		Total income tax
		Amount		Amount	Number of returns	Amount	Number of returns	Amount	Amount
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<b>All returns</b>	<b>122,421,993</b>	<b>4,969,949,985</b>	<b>93,471,203</b>	<b>4,765,197,109</b>	<b>93,442,063</b>	<b>3,409,491,960</b>	<b>93,449,613</b>	<b>727,303,175</b>	<b>731,321,398</b>
No Positive AGI	918,707	-53,507,056	6,478	-6,969,404	-	-	536	58	111,358
\$1 under \$1,000	2,011,837	1,261,666	352,763	288,066	348,398	49,554	352,759	20,052	20,072
\$1,000 under \$2,000	3,140,310	4,729,586	970,586	1,446,950	970,586	500,532	970,586	74,100	74,545
\$2,000 under \$3,000	2,967,904	7,361,902	740,050	1,816,345	740,047	629,068	740,047	104,323	104,484
\$3,000 under \$4,000	2,971,626	10,373,438	717,948	2,486,408	717,599	700,135	717,599	119,222	122,056
\$4,000 under \$5,000	2,844,202	12,775,432	1,065,719	4,824,252	1,065,719	887,568	1,065,719	138,235	138,582
\$5,000 under \$6,000	2,774,279	15,247,205	873,475	4,782,864	873,475	1,475,990	873,475	230,057	231,321
\$6,000 under \$7,000	2,692,850	17,500,357	765,142	5,006,482	765,133	1,631,529	765,133	252,243	252,322
\$7,000 under \$8,000	2,586,509	19,419,756	1,219,796	9,187,163	1,219,409	2,334,498	1,219,751	345,605	349,500
\$8,000 under \$9,000	2,612,781	22,170,358	1,613,780	13,692,537	1,613,780	3,425,362	1,613,780	483,427	483,870
\$9,000 under \$10,000	2,747,828	26,097,857	1,674,251	15,916,521	1,674,243	5,024,406	1,674,243	747,828	747,855
\$10,000 under \$11,000	2,676,264	28,118,572	1,528,631	16,058,500	1,528,631	6,029,756	1,528,631	907,436	907,436
\$11,000 under \$12,000	2,592,213	29,792,889	1,538,328	17,678,286	1,535,929	6,965,502	1,538,328	1,050,184	1,050,192
\$12,000 under \$13,000	2,655,932	33,131,592	1,570,708	19,615,969	1,570,691	8,162,109	1,570,691	1,208,879	1,212,221
\$13,000 under \$14,000	2,627,773	35,420,548	1,600,871	21,577,353	1,598,346	8,811,116	1,600,711	1,317,456	1,318,128
\$14,000 under \$15,000	2,621,944	38,011,310	1,724,371	25,014,701	1,723,219	10,667,770	1,724,329	1,591,119	1,591,478
\$15,000 under \$16,000	2,473,602	38,353,446	1,627,007	25,218,455	1,626,998	11,497,996	1,626,998	1,715,957	1,716,061
\$16,000 under \$17,000	2,306,943	38,067,218	1,510,162	24,918,257	1,510,153	11,728,557	1,510,153	1,765,021	1,765,101
\$17,000 under \$18,000	2,211,138	38,706,854	1,418,848	24,846,131	1,416,170	12,067,145	1,418,491	1,784,203	1,784,476
\$18,000 under \$19,000	2,245,062	41,503,281	1,559,049	28,844,074	1,559,041	15,063,442	1,559,038	2,149,842	2,149,906
\$19,000 under \$20,000	2,157,060	42,020,576	1,643,600	32,008,202	1,643,591	16,575,159	1,643,591	2,283,618	2,283,904
\$20,000 under \$25,000	9,944,746	222,845,058	8,479,844	190,630,264	8,479,499	106,171,257	8,478,549	14,972,429	14,973,568
\$25,000 under \$30,000	8,064,922	221,433,117	7,876,771	126,461,259	7,874,831	127,624,128	7,875,594	18,685,044	18,688,572
\$30,000 under \$40,000	12,966,743	450,251,891	12,881,191	447,341,579	12,881,017	279,286,629	12,881,026	43,074,009	43,078,975
\$40,000 under \$50,000	9,787,857	437,634,246	9,739,055	435,466,440	9,739,002	288,271,687	9,739,002	46,701,409	46,713,703
\$50,000 under \$75,000	15,180,241	924,955,724	15,146,748	922,918,536	15,145,416	646,291,097	15,144,700	110,196,215	110,278,865
\$75,000 under \$100,000	6,454,920	553,971,683	6,445,155	553,142,160	6,443,547	404,476,058	6,441,428	79,954,110	80,166,627
\$100,000 under \$200,000	5,377,899	707,810,825	5,374,164	707,310,957	5,371,757	548,297,942	5,370,546	125,614,990	126,267,568
\$200,000 under \$500,000	1,401,734	404,313,871	1,400,848	404,056,325	1,400,170	345,678,318	1,398,793	97,977,461	99,511,646
\$500,000 under \$1,000,000	261,708	176,669,572	261,529	176,546,923	261,453	157,773,256	261,215	50,836,930	51,290,896
\$1,000,000 or more	144,459	423,507,211	144,335	423,064,554	144,213	381,394,394	144,171	121,001,713	121,936,110

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**Table 3: Selected Income and Tax Items, by Size of Adjusted Gross Income, Tax Year 2007 deflated to 1997 dollars**  
 (All figures are estimates based on samples—money amounts are in thousands of dollars except as indicated)

Size and accumulated size of adjusted gross income	All returns						Taxable returns						Income tax after credits			
	Number of returns ***	Adjusted gross income less deficit		Number of returns	Adjusted gross income less deficit		Number of returns	Taxable income		Number of returns	Income tax after credits		Total income tax			
		Amount Deflated 2007	Amount Published 1997		Amount Deflated 2007	Amount Published 1997		Amount Deflated 2007	Amount Published 1997		Amount Deflated 2007	Amount Published 1997				
<b>Total</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>	<b>(8)</b>	<b>(9)</b>	<b>(10)</b>	<b>(11)</b>	<b>(12)</b>	<b>(13)</b>	<b>(14)</b>		
No adjusted gross income	142,978,805	6,938,948,706	4,969,949,985	96,272,960	6,409,907,252	4,765,197,106	96,251,166	4,718,747,813	3,409,491,958	96,272,959	885,913,275	727,303,171	885,913,734	731,321,399		
\$1 under \$1,000	1,514,152	87,960,562	63,507,056	5,446	4,647,387	6,989,404	119,316	20,229	49,554	119,463	77,139	58	77,139	111,358		
\$1,000 under \$2,000	2,781,453	1,282,685	1,261,686	119,463	101,942	288,066	3,364,435	218,404	500,532	338,068	3,189	20,052	3,189	20,072		
\$2,000 under \$3,000	3,059,781	4,597,603	4,729,586	338,068	508,350	1,446,960	273,635	308,675	629,068	308,675	16,934	74,100	16,934	74,545		
\$3,000 under \$4,000	3,308,503	8,298,159	7,361,902	274,277	683,290	1,816,345	199,634	298,455	700,135	199,639	30,470	104,323	30,470	104,484		
\$4,000 under \$5,000	3,276,703	11,476,926	10,373,438	199,639	699,698	2,486,408	604,882	604,882	887,568	604,887	29,846	119,222	29,846	122,056		
\$5,000 under \$6,000	3,086,404	13,890,175	12,775,432	812,668	3,727,307	4,824,252	811,666	811,666	887,568	812,668	60,897	138,235	60,897	138,582		
\$6,000 under \$7,000	3,053,448	16,813,688	15,247,205	788,774	4,322,843	4,782,864	788,774	1,173,559	1,475,990	788,774	117,275	117,275	117,275	231,321		
\$7,000 under \$8,000	3,121,613	20,325,570	17,500,357	665,583	4,324,655	5,006,482	665,583	1,525,553	1,631,529	665,583	150,889	252,243	150,889	252,322		
\$8,000 under \$9,000	2,933,643	21,996,464	19,419,756	1,073,984	8,044,529	9,187,163	1,073,984	1,876,005	2,334,498	1,073,984	184,831	345,605	184,831	349,500		
\$9,000 under \$10,000	2,942,345	25,009,117	22,170,358	1,433,945	12,203,634	13,692,537	1,433,945	3,048,298	3,425,362	1,433,945	272,786	483,427	272,786	483,870		
\$10,000 under \$11,000	3,095,384	29,388,273	26,097,857	1,506,020	14,294,918	15,916,521	1,506,020	4,424,202	5,024,406	1,506,020	416,120	747,828	416,120	747,855		
\$11,000 under \$12,000	2,978,460	31,276,433	28,118,572	1,449,242	15,212,165	16,058,500	1,449,235	5,265,981	6,029,756	1,449,242	512,175	907,436	512,175	907,436		
\$12,000 under \$13,000	2,972,932	34,177,268	29,792,889	1,441,334	16,561,966	17,678,286	1,441,196	6,488,086	6,965,502	1,441,334	628,176	1,050,184	628,176	1,050,192		
\$13,000 under \$14,000	2,908,834	36,335,100	33,131,592	1,447,762	18,091,487	19,615,969	1,447,762	7,721,644	8,162,109	1,447,762	745,534	1,208,879	745,534	1,212,221		
\$14,000 under \$15,000	2,730,131	36,838,682	35,420,548	1,316,018	17,766,670	21,577,383	1,315,879	8,081,759	8,811,116	1,316,018	798,507	1,317,456	798,507	1,318,128		
\$15,000 under \$16,000	2,752,808	39,996,515	38,011,310	1,458,348	21,147,565	25,014,701	1,458,339	9,675,241	10,667,770	1,458,348	992,345	1,591,119	992,345	1,591,478		
\$16,000 under \$17,000	2,751,083	42,643,076	38,353,446	1,541,215	23,904,601	25,218,455	1,541,215	11,228,902	11,497,996	1,541,215	1,200,448	1,715,957	1,200,448	1,716,061		
\$17,000 under \$18,000	2,611,771	43,096,781	38,067,218	1,517,159	25,031,841	24,918,257	1,517,159	11,851,400	11,728,557	1,517,159	1,292,961	1,765,021	1,292,961	1,765,101		
\$18,000 under \$19,000	2,538,053	44,405,907	38,706,854	1,481,235	25,916,886	24,846,131	1,481,227	12,992,680	12,067,145	1,481,235	1,437,408	1,784,203	1,437,408	1,784,476		
\$19,000 under \$20,000	2,402,235	44,426,350	41,503,281	1,412,989	26,132,374	28,844,074	1,412,949	13,390,052	15,063,442	1,412,989	1,500,252	2,149,842	1,500,252	2,149,906		
\$20,000 under \$21,000	2,451,897	47,820,729	42,020,576	1,477,356	28,815,908	32,008,202	1,477,309	15,513,222	16,575,159	1,477,356	1,733,385	2,283,618	1,733,385	2,283,904		
\$21,000 under \$22,000	10,983,381	246,842,843	222,845,059	7,212,672	162,273,695	190,630,284	7,212,621	93,621,320	106,171,257	7,212,672	10,667,641	14,972,429	10,667,641	14,973,568		
\$22,000 under \$23,000	9,450,109	259,182,813	221,433,117	7,338,179	201,646,752	216,461,259	7,338,167	121,764,329	127,624,128	7,338,179	13,936,880	18,685,044	13,936,880	18,688,572		
\$23,000 under \$24,000	14,478,541	502,821,987	450,251,891	12,526,944	436,113,165	447,341,579	12,526,067	276,081,450	279,286,629	12,526,944	33,074,499	43,074,009	33,074,499	43,078,975		
\$24,000 under \$25,000	10,783,672	482,671,073	437,634,246	9,993,871	447,800,314	435,466,440	9,992,964	290,805,258	288,271,687	9,993,871	37,305,871	46,701,409	37,305,871	46,713,703		
\$25,000 under \$26,000	17,980,419	1,099,547,477	924,955,724	17,514,707	1,072,438,686	922,918,536	17,511,383	728,937,832	646,291,097	17,514,707	97,461,161	110,196,215	97,461,161	110,278,865		
\$26,000 under \$27,000	8,707,033	747,825,326	553,971,625	8,634,609	741,776,444	553,142,160	8,632,991	528,930,458	404,476,058	8,634,609	81,151,584	79,984,110	81,151,584	80,166,627		
\$27,000 under \$28,000	8,315,810	1,103,215,601	707,810,883	8,284,301	1,099,961,012	707,310,987	8,287,655	528,379,458	548,297,942	8,284,301	161,947,712	161,947,712	161,947,712	126,267,588		
\$28,000 under \$29,000	2,260,039	658,108,407	404,313,871	2,254,844	656,589,248	404,056,325	2,253,167	550,629,505	345,678,318	2,254,844	140,205,286	97,977,461	140,205,286	99,511,646		
\$29,000 under \$30,000	462,837	314,557,684	176,669,571	461,639	313,758,261	176,566,923	460,825	275,036,898	157,773,256	461,639	74,616,247	50,836,930	74,616,247	51,290,896		
\$30,000 under \$1,000,000	285,351	1,017,832,556	423,507,212	284,630	1,014,564,351	423,064,554	284,309	903,985,559	381,994,994	284,629	223,344,847	121,001,713	223,345,299	121,936,110		

\*\*\* Totals will equal those published for 2007 but will not equal when split by AGI groups. Numbers do not include the returns filed by individuals to only received the economic stimulus payment and who had no other reason to file.

**Table 4: Adjusted Gross Income for Calibrated Tax Year 2007 and Published Tax Year 1997, Uncompressed for Low Income Classes**

(All figures are estimates based on samples—money amounts are in thousands of dollars except as indicated)

Size of Adjusted Gross Income	All returns			
	Number of Returns for Adjusted 2007	Number of Returns for 1997	Adjusted Gross Income less Deficit Amount	
			Adjusted 2007	Published 1997
	(1)	(2)	(3)	(4)
<b>Total</b>	<b>41,442,957</b>	<b>41,442,959</b>	<b>247,905,395</b>	<b>247,905,412</b>
No Positive AGI	918,707	918,707	-53,507,074	-53,507,056
\$1 under \$1,000	2,011,837	2,011,837	1,261,666	1,261,666
\$1,000 under \$2,000	3,034,535	3,140,310	4,550,137	4,729,586
\$2,000 under \$3,000	3,155,987	2,967,904	7,906,657	7,361,902
\$3,000 under \$4,000	3,007,735	2,971,626	10,525,198	10,373,438
\$4,000 under \$5,000	2,725,785	2,844,202	12,258,367	12,775,432
\$5,000 under \$6,000	2,726,075	2,774,279	15,010,115	15,247,205
\$6,000 under \$7,000	2,775,615	2,692,850	18,071,783	17,500,357
\$7,000 under \$8,000	2,598,077	2,586,509	19,479,487	19,419,756
\$8,000 under \$9,000	2,595,234	2,612,781	22,057,911	22,170,358
\$9,000 under \$10,000	2,719,246	2,747,828	25,816,237	26,097,857
\$10,000 under \$11,000	2,638,698	2,676,264	27,712,583	28,118,572
\$11,000 under \$12,000	2,682,429	2,592,213	30,841,702	29,792,889
\$12,000 under \$13,000	2,673,047	2,655,932	33,394,005	33,131,592
\$13,000 under \$14,000	2,555,469	2,627,773	34,485,825	35,420,548
\$14,000 under \$15,000	2,624,481	2,621,944	38,040,796	38,011,310

**Table 5: Adjusted Gross Income for Calibrated Tax Year 2007 and Published Tax Year 1997, Extended for High Income Classes**

(All figures are estimates based on samples—money amounts are in thousands of dollars except as indicated)

Size and accumulated size of adjusted gross income	All returns			
	Number of Returns for Adjusted 2007	Number of Returns for 1997	Adjusted gross income less deficit	
			Amount Adjusted 2007	Amount 1997
	(1)	(2)	(3)	(4)
<b>Total</b>	<b>122,406,515</b>	<b>122,407,585</b>	<b>4,969,949,967</b>	<b>4,784,927,053</b>
No adjusted gross income	918,707	918,707	(53,507,074)	(53,507,056)
\$1 under \$1,000	2,011,837	2,011,837	1,261,666	1,261,666
\$1,000 under \$5,000	11,924,043	11,924,043	35,240,359	35,240,359
\$5,000 under \$10,000	13,414,246	13,414,246	100,435,533	100,435,533
\$10,000 under \$15,000	13,174,125	13,174,125	164,474,911	164,474,911
\$15,000 under \$20,000	11,393,805	11,393,805	198,651,374	198,651,374
\$20,000 under \$25,000	9,944,746	9,944,746	222,845,058	222,845,058
\$25,000 under \$30,000	8,064,922	8,064,922	221,433,117	221,433,117
\$30,000 under \$40,000	12,966,743	12,966,743	450,251,891	450,251,891
\$40,000 under \$50,000	9,787,857	9,787,857	437,634,246	437,634,246
\$50,000 under \$75,000	15,180,241	15,180,241	924,955,724	924,955,724
\$75,000 under \$100,000	6,454,920	6,454,920	553,971,683	553,971,683
\$100,000 under \$200,000	5,377,899	5,377,899	707,810,825	707,810,825
\$200,000 under \$500,000	1,401,734	1,401,734	404,313,870	404,313,870
\$500,000 under \$1,000,000	261,708	261,708	176,669,572	176,669,572
\$1,000,000 under \$5,000,000	128,982	130,052	242,273,779	238,484,280
\$5,000,000 under \$10,000,000	10,016	9,191	68,398,342	62,981,666
\$10,000,000 or more	5,460	5,215	112,835,090	122,041,265

**Table 6: Number of Returns and Amount of Interest Income Given the Presence of Wage Income, by Size of Adjusted Gross Income for Tax Year 1997, Adjusted and Deflated Tax Year 2007**

(All figures are estimates based on samples—money amounts are in thousands of dollars except as indicated)

Size of Adjusted Gross Income	Number of Returns			Amount		
	Published 1997	Tax Year 2007		Published 1997	Tax Year 2007	
		Adjusted	Deflated		Adjusted	Deflated
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Total</b>	<b>8,258,087</b>	<b>5,541,735</b>	<b>6,320,764</b>	<b>5,394,663,989</b>	<b>4,331,924,402</b>	<b>6,026,945,479</b>
No Positive AGI	192,081	155,798	324,510	2,033,070,098	2,077,488,961	3,484,373,041
\$1 under \$1,000	260,682	204,931	237,376	28,196,718	31,251,658	35,679,651
\$1,000 under \$2,000	587,286	378,589	387,778	118,158,642	83,117,617	89,516,856
\$2,000 under \$3,000	580,406	437,547	470,673	130,005,057	104,331,363	113,398,460
\$3,000 under \$4,000	696,509	464,251	516,949	193,044,105	160,487,695	182,684,982
\$4,000 under \$5,000	603,998	380,169	438,522	148,275,430	112,376,576	130,420,728
\$5,000 under \$6,000	548,086	362,778	417,189	207,610,025	146,818,482	173,096,323
\$6,000 under \$7,000	459,368	344,823	391,383	154,268,368	128,258,055	145,373,672
\$7,000 under \$8,000	481,025	313,669	361,183	168,513,691	131,430,974	156,331,333
\$8,000 under \$9,000	508,775	326,469	372,758	234,926,907	148,620,050	168,564,031
\$9,000 under \$10,000	534,439	351,301	403,326	209,253,422	151,188,136	176,134,293
\$10,000 under \$11,000	535,743	363,070	414,899	344,020,142	191,044,760	227,121,870
\$11,000 under \$12,000	542,755	353,853	399,321	269,956,265	203,982,760	231,620,379
\$12,000 under \$13,000	577,840	361,704	397,051	394,507,710	216,297,038	239,281,905
\$13,000 under \$14,000	555,356	349,129	374,251	395,690,211	227,137,491	244,099,082
\$14,000 under \$15,000	593,738	393,654	413,595	365,167,198	218,092,786	229,248,873