

TAXING BUSINESS INCOMES: EVIDENCE FROM THE SURVEY OF CONSUMER FINANCES

William Gale, Swati Joshi, Christopher Pulliam, John Sabelhaus
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ABSTRACT

More than half of economic income generated by closely held businesses does not appear on tax returns and that ratio has declined significantly over the past 25 years. Tax data alone provide incomplete insights about business income taxation because the incomes reported to the IRS are already affected by tax rules, avoidance strategies, and non-compliance. We explore distributional analyses of business income taxation using the Survey of Consumer Finances (SCF), which has the comprehensive household-level income, wealth, and demographics needed to simulate tax filings and benchmark against published IRS data. Under conservative assumptions, we show that the part of economic income from closely held businesses that does not show up on tax forms is distributed disproportionately to the most affluent households.

INTRODUCTION

Most of the economic income generated by closely held businesses (that is, businesses other than corporations) in the United States does not show up on tax forms. Understanding the sources of this discrepancy—including tax laws, non-compliance, or differences in reporting of business losses—can have first-order implications for measuring and interpreting trends in the distribution of income and wealth. For example, determining the distribution of “missing” business income plays an important role in estimates of how top income shares have evolved over time (Auten and Splinter 2019; Kopczuk and Zwick 2020; Piketty, Saez, and Zucman 2018; Sabelhaus and Park 2020). Likewise, to the extent that the distribution of wealth is inferred by capitalizing income flows that appear on tax forms, the difference between economic income and tax-based income definitions could bias the results (Bricker et al. 2016; Saez and Zucman 2016; Smith, Zidar, and Zwick 2021).

In this paper, using aggregate data and household survey information, we examine the difference between alternative measures of reported closely held business income and discuss the implications for the distribution of income, taxes, and wealth.

We begin by comparing measures of economic income in the National Income and Product Accounts (NIPA) with those in tax data published by the IRS Statistics of Income (SOI). We divide income into three categories: closely held businesses, financial income (such as interest and dividends), and “other income” (wages, pensions, and government benefits) and make several adjustments to ensure that the data from different sources represent similar concepts. We show that the ratio of SOI to NIPA income varies across types of income and over time. For “other income,” the ratio has remained steady at around 85 percent. In contrast, for closely held business income and financial income, the ratio has consistently been below 50 percent and has fallen over time. These results are robust to inclusion of capital gains as income.

Although a complete decomposition of the differences between SOI and NIPA data is beyond the scope of the paper, incomplete tax compliance certainly plays a role (Auten and Splinter 2019; Guyton et al. 2021). We suggest that reporting of business losses for tax purposes may also play an important role. Business losses on tax forms are large—about 38 percent of reported positive business income—and grew from 2013 to 2018 despite the economy growing during that period as well.

The large and growing divergence between NIPA measures of economic income and SOI measures of income on tax forms raises distributional questions that are best addressed with micro data. We use data from the 1995-2019 Survey of Consumer Finances (SCF), triennial cross-sectional household surveys with detailed information on household income, wealth, and demographics, including an oversample of affluent households.

In an accompanying paper, Gale et al. (2022), we develop a methodology for creating tax filing units from SCF household data. In this paper, we use this methodology to generate several results. First, income is higher in the SCF than in the SOI. Closely held businesses largely account for the gap and is roughly twice as large in the SCF as in the SOI data. Second, the biggest difference arises because the SOI data report large net

operating losses (NOLs) in the lowest AGI class. This is consistent with a working hypothesis under which SCF respondents who own businesses report their business's economic (or financial accounting) income, which would not include NOLs, rather than the tax definition of income, which would include NOLs. Third, higher business income translates into higher simulated tax revenue in the SCF than in the SOI data for every year in our sample. Fourth, the tax-units SCF matches the number of tax returns overall and by filing status but has many fewer tax returns with negative AGI and many more very high-income tax returns. This is consistent with the idea that most of the additional business income in the SCF relative to SOI is received among households at the top of the income distribution.

To provide an additional perspective on the distribution of untaxed business income, we reduce all positive business income in the SCF by half. This adjustment intended to be a rough approximation of what business owners report on SOI forms and is consistent with the notion that closely held business income is about twice as large in the SCF as in the SOI. In this counterfactual scenario, imputed tax revenues from SCF households line up much more closely with published SOI data than without the adjustment. We then show that most of the untaxed business income (in the scenario without the adjustment) is at the top of the wealth distribution. We note that applying a 50 percent haircut to all positive business incomes will understate the distributional changes from aligning aggregate SOI and SCF data to the extent that, in practice, wealthier business owners are more likely than others to exploit loss-generating accounting practices.

The underlying theme of this research is that non-tax data can provide valuable information regarding income for purposes of understanding tax policy. In particular, tax data alone provide incomplete insights about business income taxation because the income recorded in the SOI data is already affected by tax rules, avoidance strategies, and non-compliance. In conjunction with Gale et al. (2022), this paper shows how using a tax-unit version of the SCF can provide new insights into the distributional and revenue impacts of tax policy.

Section II provides the aggregate comparisons of NIPA and SOI data, including the adjustment for capital gains. Section III explains the development of a tax calculator using the SCF and the NBER TAXSIM model. Section IV presents the counterfactual simulation. Section V provides concluding remarks.

HOW MUCH BUSINESS INCOME IS SUBJECT TO TAX?

Reconciling Income Concepts

Understanding how the tax system treats different types of incomes begins with reconciling income concepts. Our sources for aggregate economic incomes are the National Income and Product Accounts (NIPA) and Financial Accounts of the United States (FA). Published IRS Statistics of Income (SOI) reports provide our measures of aggregate incomes reported on tax returns. The Appendix provides details about these data sources.

The natural starting point for thinking about economic income is the NIPA concept of personal income, which includes payments to factors of production that flow through to the household sector. We group the various income flows into three categories: closely held business incomes; other financial incomes such as interest and dividends; and a broad “other” income category that includes wages and salaries, pensions, Social Security, and Unemployment Insurance. In sensitivity analysis discussed below, we also add capital gains.

1. Business Income

To create comparable categories in the NIPA and SOI, we construct a broad measure of business income. In the NIPA, we sum proprietor’s income and rental income, categories that include incomes from various legal forms of business organization. We exclude imputed interest (in-kind services received in lieu of interest) earned by proprietors on their bank accounts, and the imputed rent on owner occupied housing. Using the SOI data, we sum income from sole proprietors, partnerships, and S corporations. The Qualified Business Income (QBI) deduction enacted in 2017 directly reduces the amount of business income subject to tax, and we adjust for that by subtracting QBI from the sum of all other business incomes.

2. Financial Income

The NIPA personal income measure includes all interest and dividends ultimately attributed to households; we include only the potentially taxable flows paid directly to households. Thus, we exclude interest and dividends that are never taxable or—in the case of pensions—taxed only when the benefits are paid out. The “never taxable” interest on the NIPA side is an imputation—in this case, the in-kind value of financial services that bank account and other financial asset owners receive in lieu of interest payments on their balances.

The SOI measure of interest and dividends is not directly comparable to the NIPA economic concept, and thus an adjustment is required. Since 2003, dividends earned on stocks owned for a sufficient period are subject to preferential tax rates, generally half the rates on ordinary dividends. Essentially, half of Qualified Dividends are not taxed, so we show how that affects the SOI versus NIPA dividends measure. Half of the “qualified” dividend income included in the NIPA economic measure is effectively being excluded from the income tax base.

3. Other Income

We group the remaining incomes into a broad “other” income. Other income is dominated by wages and salaries. The NIPA and SOI wage and salary concepts are closely aligned, so we use the top line numbers from each data set. However, our measure of other income is intentionally broader, given that we are trying to capture all incomes not associated with businesses or financial assets. We add Unemployment Insurance and Social Security to both measures. For these income components, the ratio of SOI to NIPA income depends primarily on whether the individual files an income tax return and reports accurately. Some individuals have low levels of the given taxable income and do not file tax returns, but those low levels have only modest impact on

the overall ratio of SOI income to NIPA income. The exclusion of some or all Social Security income for individual taxpayers (based on their other incomes) also affects the overall ratio of taxable to economic income, and that is reflected in our SOI to NIPA “other” income comparison.

The “other income” measure also includes taxable retirement incomes but reconciling pension benefits and other withdrawals in the NIPA and SOI requires a timing adjustment. Employers provide untaxed compensation to their employees in the form of contributions to pensions and other retirement funds. Those retirement assets then earn untaxed interest and dividends as they grow over time. Employer contributions to retirement accounts and the interest and dividends earned on those accounts are part of NIPA personal income—those flows represent economic income earned in the relevant period and are imputed to the household sector. NIPA counts the interest and dividends as financial income, while employer contributions are clearly a component of “other” income. NIPA does not include retirement benefits paid out to households as part of personal income, because that would be double counting. However, retirement benefits paid to households are included in a supplemental NIPA table. Thus, the solution to creating a comparable retirement income measure in the NIPA and SOI is to not count employer contributions and the interest and dividends earned on retirement accounts that are part of NIPA personal income, and to instead use aggregate retirement benefits received. Thus, we are adjusting the timing and level of NIPA retirement income to match the SOI concept.

4. Comments

It is worth noting here that our disaggregation of incomes into three categories is not built around the theoretical concepts of “labor” and “capital” incomes familiar to most economists. Much of what we categorize here as business income is certainly a return to labor effort, not capital income, as highlighted by Smith et al. (2019), Kopczuk and Zwick (2020), and others. Our focus in this paper is on the tax treatment of different types of income from a legal perspective. We are concerned with how certain types of incomes do or do not show up on tax returns, and the effective rates at which those incomes are taxed if they do show up.

Time Series Data

We focus on tax years from 1994 to 2018. Tax year 1994 (survey and filing year 1995) is the first year covered by our SCF data (discussed in the next section). Tax year 2018 corresponds to the last year of our SCF data set (survey and filing year 2019) and is also the last year of published SOI tax data.

FIGURE 1

SOI Income SOI Relative to NIPA

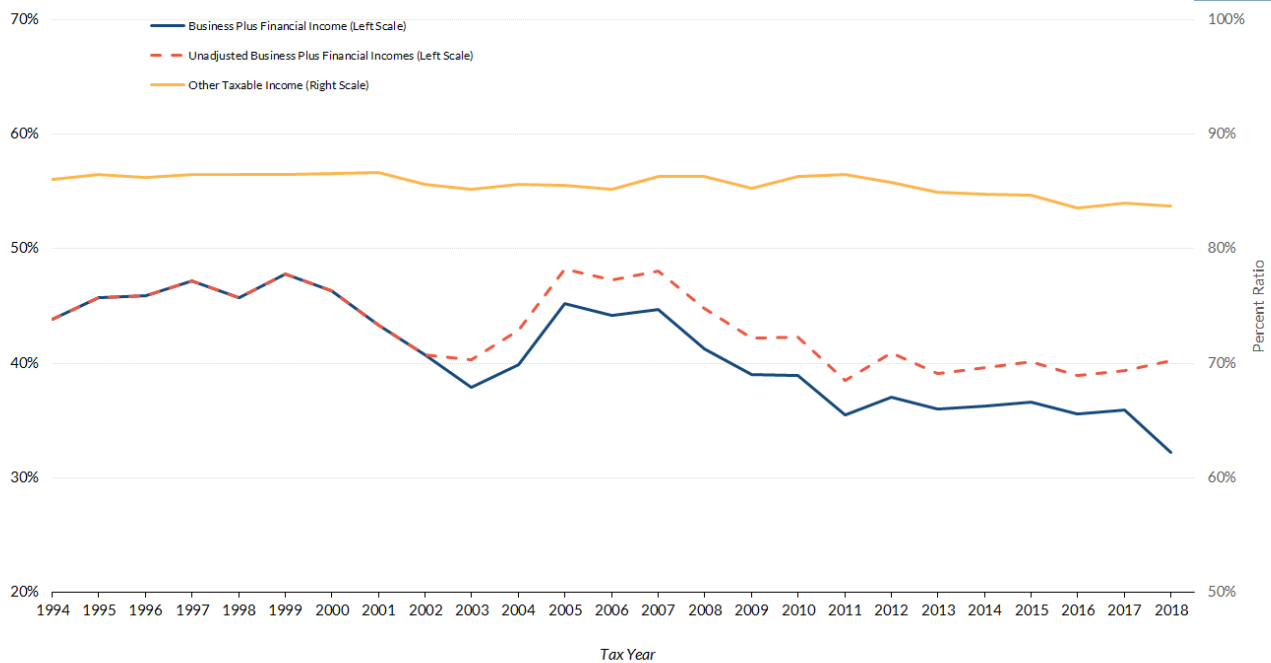


Figure 1 shows that—after making conceptual corrections to align the NIPA and SOI income concepts discussed above—the fraction of NIPA income that shows up as SOI income varies by type of income and over time. The blue line shows that the ratio of SOI to NIPA measures of “other” income has been high and relatively constant, at 86 percent in 1994 and 84 percent in 2018, with most of the decline occurring in the last few years of the sample period.

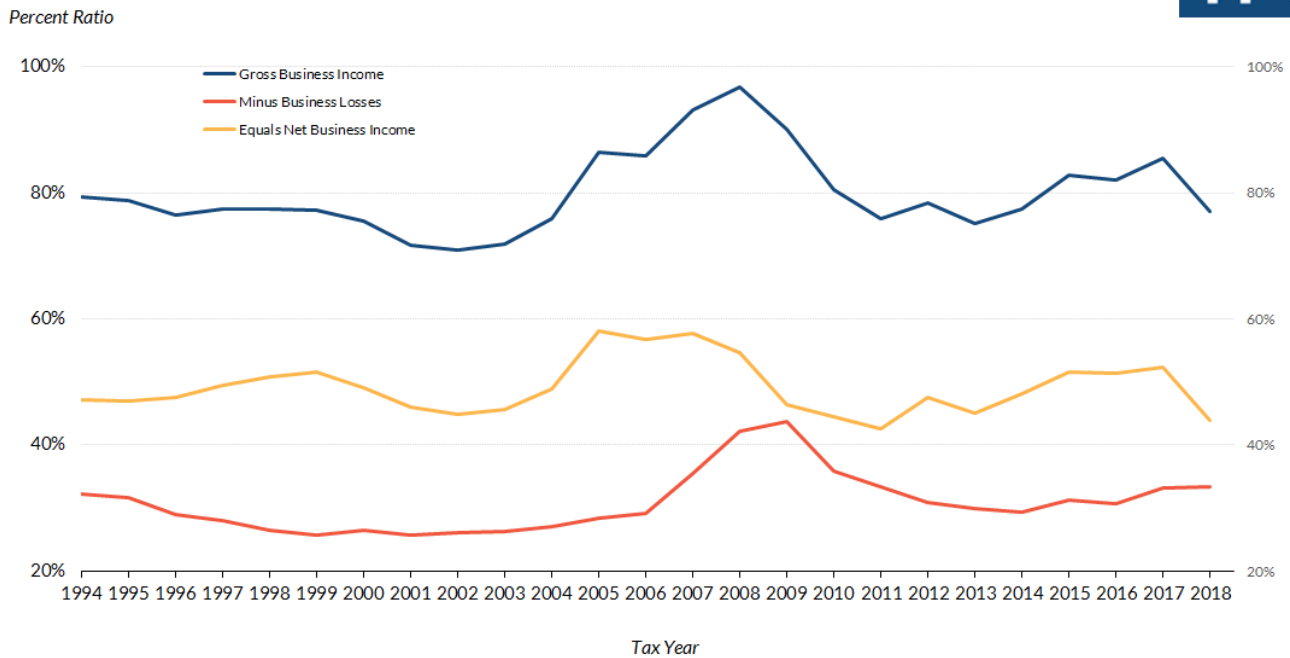
In contrast, the ratio of SOI to NIPA measures of income from closely held businesses and financial income is lower and has declined over time. The solid green line in Figure 1 shows that the ratio was 44 percent in 1994 and declined to 32 percent by 2018. That is, the United States has shifted from taxing less than half of economic measures of business and financial income to taxing less than a third of such incomes over that period. The green dashed line shows that removing the adjustments for qualified dividends and QBI leaves the ratio at 44 percent in 1994 and 40 percent in 2018.

The Role of Business Losses

The NIPA economic concept of business income is, by definition, a net number aggregated across all closely held businesses. The SOI business income concepts are reported separately for sole proprietorships, partnerships and S-corps, and rental income, and within each category of income, the SOI reports positive and negative separately entries, which makes it possible to construct measures of gross, negative, and net business incomes (Figure 2).

FIGURE 2

Gross, Negative, and Net SOI Business Income Relative to NIPA



Business losses play an important role in SOI net business income. For example, in 2018, gross business incomes—the sum of only positive business incomes reported to the IRS—were about 77 percent of the NIPA economic measure (Figure 2, black line). Business losses—the sum of negative business incomes in the SOI—were about 33 percent of net NIPA business income (Figure 2, red line). The net effect is that only 44 percent of NIPA business income showed up in the net SOI business income measure, and depending on one’s reference point, the ratio is either stable or declining over time.

SOI business losses have increased steadily over our entire sample period, and there is little or no correlation with actual business cycle conditions. In 2018, the ratio of SOI business losses to NIPA net business income was higher than in the mid-1990s and rising—even though the economy had been expanding (and in principle making more firms profitable) for several years.

Gains-Inclusive Business and Financial Incomes

It may be incomplete to compare only the NIPA-comparable business and financial income flows because a firm that creates a business loss is also driving down the basis on its underlying assets, and they will be taxed on what is effectively just deferred income when the asset is sold. Thus, we need to expand both the SOI numerator and NIPA denominator of our income measures to account for the timing shift.

Adding capital gains to the sum of closely held business and financial incomes discussed above yields a measure of the business and financial part of Haig-Simons income—essentially, what the individual could spend during the references period and keep wealth constant.

For SOI figures, we use realized capital gains. For NIPA, we follow Sabelhaus and Park (2020) in using direct estimates of capital gains from the FA. The FA household sector “change in net worth” table divides changes in various balance sheet components between “net investment” and “net holding gains.” We use holding gains on directly held corporate equities, mutual funds, and debt securities to capture gains on taxable financial assets. We use the FA measure of holding gains on equity in noncorporate business, which are taxable upon sale of the business. An alternative approach, used in the “distributional national accounts” literature relies on undistributed corporate profits in the NIPA data (Piketty, Saez, and Zucman 2018; Auten and Splinter 2019). The NIPA measure only applies to corporate equities, however, and retained earnings are only one source of capital gains on those corporate equities. Although we prefer the more expansive FA measure, we show results using both measures in the spirit of robustness. We produce a measure of FA gains inclusive business and financial income based on a three-year lagged moving average.¹ We also collapse our sample period into three subperiods (tax years 1994 to 2002, 2003 to 2010, and 2011 to 2018) to further isolate whether deferred business losses are increasingly showing up as taxable capital gains. We show the gains-inclusive measure using both the corporate retained earnings proxy and our preferred FA gains measure, and we show both

TABLE 1
Ratio of Taxable SOI Gains-Inclusive Income to Corresponding Economic Aggregates



Subperiod	SOI Taxable Income Measures (Billions)			Adjusted Gains-Inclusive SOI Income Relative to NIPA Taxable Business and Financial Income Plus:		Unadjusted Gains-Inclusive SOI Income Relative to NIPA Taxable Business and Financial Income Plus:	
	Business and Financial Income	Gains-Inclusive Business and Financial Income	Unadjusted Gains-Inclusive Business and Financial Income	NIPA Corporate Retained Earnings	Financial Account Three Year Lagged Capital Gains	NIPA Corporate Retained Earnings	Financial Account Three Year Lagged Capital Gains
1994 to 2002	\$5,572	\$8,274	\$8,927	57%	38%	62%	41%
2003 to 2010	\$6,741	\$9,643	\$10,887	49%	46%	55%	52%
2011 to 2018	\$8,112	\$11,846	\$13,446	43%	33%	48%	38%

conceptually adjusted and unadjusted capital gains measures (Table 1).

Working from left to right in Table 1, the first column is the sum of business and financial incomes in the SOI reproduced from Figure 1, aggregated into the three sub-periods. The second column adds capital gains with an adjustment for effective taxation of capital gains—the same principle as adjusting for Qualified Dividends

¹ So, for example, the measure of economic gains-inclusive business and financial income in 2018 is the sum of the NIPA business and financial measures discussed above plus the average of FA capital gains observed in 2015, 2016, and 2017.

and QBI above. For completeness (as in Figure 1) we show the unadjusted SOI (net) capital gains measure in the third column.

The second and third columns provide two options for measuring the extent to which capital gains are taxed, and there are two economic measures of gains-inclusive business and financial income based on our preferred FA measure and corporate retained earnings, so there are four possible ways to examine how taxable gains-inclusive income compares to economic benchmarks.

The four measures of taxable relative to economic gains-inclusive business and other financial income tell slightly different stories, but the message is basically the same, and the ratios in the last four columns of Table 1 provide no strong counter to the main points above based on the direct NIPA versus SOI comparisons. Both ratios using FA capital gains in the denominator are lower than those based on corporate retained earnings. Also, using the unadjusted capital gains raises all SOI-to-NIPA ratios by a few percentage points. Still, the basic message that taxation of business and other financial income is “low and declining” is robust to the inclusion of capital gains in all four measures.

SIMULATING INCOME TAX LIABILITY IN THE SURVEY OF CONSUMER FINANCES (SCF)

²The large and growing divergence between NIPA and SOI measures raises questions that micro data can usefully address. Using tax data alone, however, is problematic because how much business income is reported on tax forms is itself a function of tax laws, avoidance strategies, evasion practices, and so on.

Our approach is to simulate income taxes using data from the SCF and benchmark the simulated values against published SOI tables. Most recently conducted in 2019, the SCF is a triennial household survey with extensive demographic, income, and balance sheet information (see, for example, Bhutta et al. 2020). The SCF is unique among public-use household surveys because it oversamples wealthy households and has been shown to statistically capture families at the top of the wealth and income distribution, though it excludes the Forbes 400. Like most household surveys, however, the SCF does not ask detailed questions about household income tax filing or tax liabilities, so comparison of tabulated SCF with published SOI tax measures is not possible.³

² This section summarizes the technical companion paper that describes how we developed and benchmarked the new SCF tax simulation capability for this project. See Gale et al. (2022). Our program borrows heavily from earlier work at the Federal Reserve Board by Kevin B. Moore, which was the basis for analyzing tax policy in Moore, Pack, and Sabelhaus (2016) and Bricker et al. (2020).

³ The literature on simulating tax filing in public-use survey data sets is quite extensive. See, for example, Hertz et al. (2020), Jones and O’Hara (2016), Warren, Fox, and Edwards (2020), and Wheaton and Stevens (2016). Recent work at the U.S. Census Bureau by Meyer et al. (2021) uses linked survey and administrative tax data to explore the accuracy of tax simulations in survey data.

Simulating income tax liabilities in the SCF requires determining the appropriate tax units, reconciling taxable and survey income concepts, calculating adjustments to income, and estimating itemized deductions. Those derived income tax inputs are benchmarked against published SOI tax inputs. The final step is processing those inputs through the National Bureau of Economic Research (NBER) online TAXSIM model. TAXSIM captures the key aspects federal income tax law that are needed to study how different types of income are taxed for the years the SCF covers.

Tax Units

In any given year there are many more tax returns filed with the IRS than there are U.S. households. The SCF is a household level micro data file, and the math implies that some households will have multiple tax units. Thus, the first step in creating our tax unit version of the SCF is allocating SCF household members across likely tax units within the household. Many of those tax units are straightforward and most households are simulated to file exactly one tax return. The typical situations are a married couple or a single person at the head of a household, with or without dependent children. Although the relatively simple cases are the vast majority, it is important to capture the more complicated situations so we can benchmark the SCF tax unit micro file against SOI tax filings.

Although there is no direct tax filing information in the SCF, there is an extensive set of demographic variables for all household members that make it possible to identify those members who are likely to file tax returns and which other household members are likely to be claimed as dependents on those tax returns. In addition to typical survey variables like age, sex, marital status, and relationship to the primary respondent, the SCF also includes questions about whether a given household member is “financially dependent” on the main survey respondent or the respondent’s spouse/partner. The financial dependence measure is key to separating the household into multiple tax units.

There is no way to directly verify our allocation of SCF household members across tax units, but we can benchmark the counts of tax units by type of tax return against published SOI totals for the nine individual tax filing years (triennial, 1994 to 2018) in our sample period. Our SCF tax input simulation model aligns well with published SOI counts for Married Filing Jointly, Married Filing Single, and Head of Household tax returns. The simulation model is consistently low on Single tax returns by an amount that is consistent with the SCF lacking financial information for dependent filers living in the parents’ homes.

Taxable Incomes

Having allocated household members across tax units and showing those counts align well with SOI benchmarks, the next step is identifying, classifying, and assigning the taxable versions of survey incomes across those tax units. Our approach to allocating and adjusting incomes across tax units within the household is focused on creating the necessary inputs for TAXSIM, and we also want to benchmark the distribution of

incomes against published SOI values to better understand how the survey incomes are diverging from incomes reported on tax returns.

The SCF collects household incomes in several categories: wages and salaries, proprietor's income reported on Schedule C, non-taxable interest income, taxable interest income, dividend income, capital gains income, various other types of business incomes such as S-Corps, rent, partnerships reported on Schedule E, Unemployment Insurance income, child support and alimony received, government transfers, retirement incomes, and a catch-all "other category" which is matched to an "other sources" code frame. For example, two tax-relevant components of SCF "other" income are gambling earnings and net operating loss carry forwards.

Many of these SCF income measures correspond directly to TAXSIM inputs.⁴ One exception is retirement income, which includes Social Security, traditional pension benefits, and retirement account withdrawals. We separate Social Security from other retirement incomes using questions from the survey labor module. We then compute the taxable share of Social Security (between 0 and 85 percent of gross Social Security, depending on other income components and filing status) using IRS worksheets.

As with counts of tax units, the processed SCF incomes summed across all SCF tax units can be benchmarked against published SOI incomes. The ratio of our estimated SCF income to SOI published income is generally consistent over the nine survey waves between 1995 and 2019, with the SCF total averaging about 15 percent above the published SOI. Although business incomes account for less than 10 percent of total SOI income in any given year, the gap between SCF and SOI total taxable income is dominated by the business income category. For example, in tax year 2018, our estimated SCF taxable income exceeded SOI by 11 percent, and business income accounted for 75 percent of the total differential. In every year in our sample, SCF business incomes are more than double the business incomes reported to the IRS and published by SOI.

Tax Returns and Total Taxable Incomes by Adjusted Gross Income (AGI)

Published SOI tables with summary information from U.S. income tax returns show numbers of returns and tax variable dollar values organized by Adjusted Gross Income (AGI). The concept of AGI is closely related to the sum of taxable incomes discussed above, but a handful of statutory adjustments to taxable income such as deductions for self-employment taxes, student loan interest, alimony paid, and contributions to Individual Retirement Arrangements outside of employer-sponsored plans are important for various subsets of taxpayers. Some of those AGI adjustments correspond directly to SCF questions while others can be inferred from related SCF variables.

⁴ SCF interviewers encourage respondents to use their tax returns and the SCF question wording has notes that connect the question to a specific line number on IRS Form 1040. In practice, unfortunately, few respondents use their tax returns when answering the income questions.

Given an SCF estimate of AGI, we can proceed to tabulate the distribution of simulated tax returns and taxable incomes for each tax year in our sample. The same pattern emerges in every year, so we focus here on tax year 2018, the last year in our sample (Table 2). As noted above, the overall SCF count of tax returns (just over 147 million) is below the SOI benchmark (153 million), but that is expected because we do not capture dependent filers living in their parents' homes in the SCF. The estimated SCF total taxable income (just over \$13 trillion) is 11 percent above the published SOI total.

TABLE 2
Distributional Effects of Differential Business Income Reporting
 Tax Year 2018



Wealth Class	Distribution by Wealth Class				Average Taxes	
	Households	Wealth	Taxes: Unadjusted SCF	Taxes: 50 Percent Business Loss	Unadjusted SCF	50 Percent Business Loss
Less Than \$25,000	30.30%	-0.30%	2.30%	2.50%	\$1,033	\$978
\$25,000 to <\$50,000	5.60%	0.30%	1.10%	1.20%	\$2,677	\$2,567
\$50,000 to <\$100,000	11.00%	1.10%	3.00%	3.30%	\$3,735	\$3,582
\$100,000 to <\$500,000	31.60%	10.50%	15.30%	16.60%	\$6,655	\$6,192
\$500,000 to <\$1,000,000	9.60%	9.30%	10.30%	11.30%	\$14,720	\$13,844
\$1,000,000 to <\$5,000,000	9.10%	24.90%	23.00%	23.50%	\$34,665	\$30,441
\$5,000,000 to <\$10,000,000	1.70%	15.30%	14.70%	13.90%	\$121,881	\$98,995
\$10,000,000 or More	1.10%	39.10%	30.30%	27.60%	\$367,145	\$287,830
<i>All</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>\$13,725</i>	<i>\$11,793</i>

The data demonstrate several patterns. First, there are nearly four times as many tax returns with zero or negative AGI in the published SOI, and substantially less (net) negative incomes.⁵ Second, we estimate the SCF has about twice as many tax returns with AGI of \$1 million or more, and 2.5 million more returns with AGI between \$100,000 and \$1 million. Third, the count of estimated SCF returns in the \$1 to \$25,000 AGI category—where most dependent filers would be found if we could identify them in the SCF—is exactly where the shortfall of simulated SCF tax returns is concentrated. More generally, the data in Table 2 is consistent with the idea that SCF business owners are more likely to report what their businesses earned, as opposed to what their accountants reported to the IRS.

⁵ The count of estimated zero or negative SCF tax returns shown in Table 1 makes full use of the disclosure prevention codes in the public-use SCF. If an SCF respondent indicates they have negative or no income for tax purposes but has positive or negative entries in individual income components, users see the code “-9” in the total income field. Simply summing incomes without careful consideration of disclosure codes eliminates half of (the already low) count of SCF negative or zero income tax returns.

Estimating Income Tax Liabilities Using NBER TAXSIM

Having developed the necessary inputs for simulating income taxes, the final step is estimating federal tax liabilities by applying year-specific tax parameters. The federal income tax code contains complicated brackets, deductions, rates, and credits; treats various forms of income differently; and features many changes from one tax year to the next. Developing the capability to compute tax liability in a survey data set is prohibitive for most projects. Fortunately, data users can use the NBER TAXSIM program to estimate tax liability.⁶

The current version of TAXSIM begins with 32 user inputs for incomes, demographics, itemizable expenses, and other key variables, and returns estimated before- and after-credit tax liability. As noted, the SCF tax unit file is close to published SOI in terms of tax filing but has noticeably more income, especially business income. In addition, we know that much of the incremental income is in the top tail, which (because we have a progressive tax system) suggests those incremental dollars are subject to an above average tax rate. Thus, we expect and we see that processing our SCF tax unit file through TAXSIM generates total taxes that exceed SOI reported values, and by more than the gap in taxable incomes.

IMPLICATIONS FOR INCOME DISTRIBUTION AND TAX POLICY

As noted above, NIPA and SCF closely held business incomes are generally twice as large as those reported on tax returns in SOI data and most of the aggregate and distributional gaps between SCF+TAXSIM and published SOI (shown in Table 2) is attributable to differential business income measures. In this section, we report the results of a simulation—using the SCF+TAXSIM modeling capability discussed above—where we reduce business income by 50 percent for all business owners in the SCF with positive values for Schedule C and Schedule E incomes. We use this specification as a rough approximation of what business owners report on their tax forms and we aim to measure the revenue and distributional effects of this assumption.

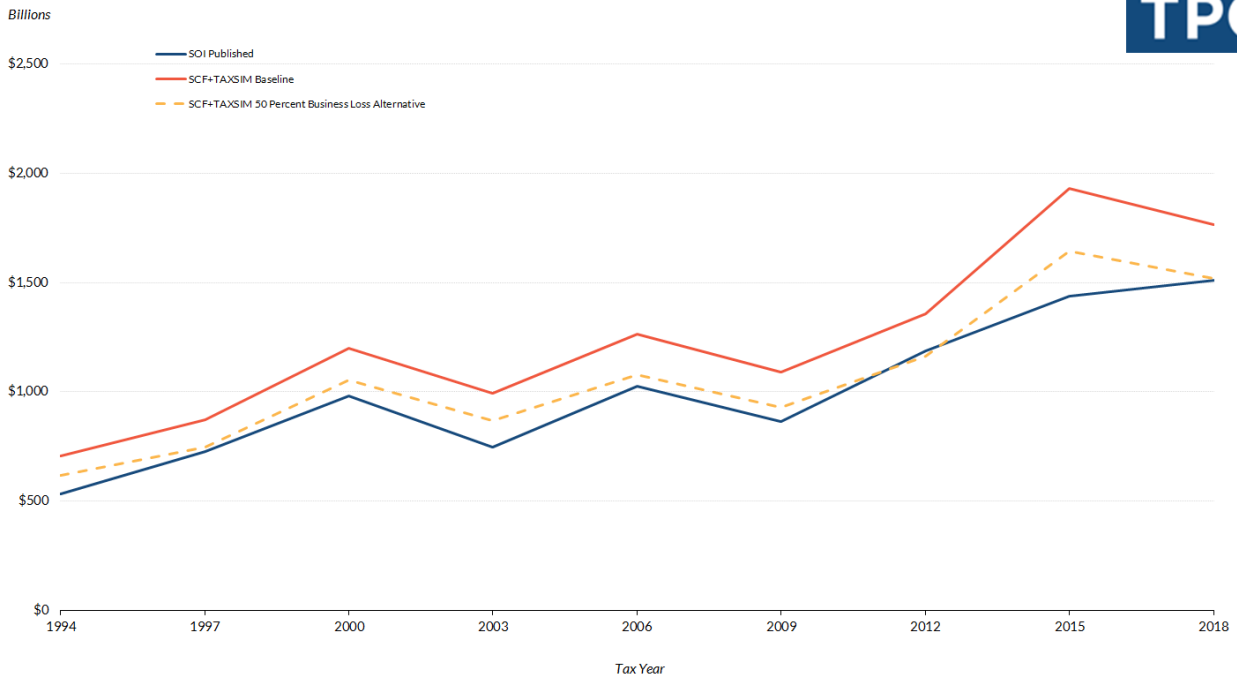
The purpose of the simulation is to estimate where the untaxed business income falls in the income distribution. More complicated alternatives would involve simulating business losses for a subset of business owners, and those losses might be correlated with business income or business wealth. In addition, those losses would on average necessarily be greater than 50 percent of the reported business incomes for that subset of owners. Applying a 50 percent haircut to all positive business incomes understates the distributional changes to the extent that wealthier business owners were more likely to avail themselves of loss-generating accounting practices.

Figure 3 shows that the unadjusted SCF+TAXSIM simulation (the solid red line) produces aggregate taxes that are well above published SOI values (the black line). The unadjusted SCF+TAXSIM baseline has higher total income, most of which is accounted for by higher business incomes. Moreover, the gaps between SCF+TAXSIM

⁶ The latest version of TAXSIM is available at <https://users.nber.org/~taxsim/>. For a description of TAXSIM, see Feenberg and Coutts (1993).

and SOI tax liabilities are relatively stable over time, which is consistent with a systematic reporting difference. In the counterfactual exercise, SCF+TAXSIM aggregate tax liabilities (the red dotted line) is much closer to published SOI. The SCF is a relatively small sample, and sampling variability within the wealth-oversample affects any given year, so some volatility is expected. Still, the overwhelming impression from Figure 3 is that the reduced business income simulation aligns well with published SOI over our sample period.

FIGURE 3
Aggregate Tax Liability After Credits, SOI and SCF+TAXSIM



Turning to distributional effects, we reproduce the SCF+TAXSIM distributional table for tax year 2018 (Table 2, Section III.C) using the counterfactual simulation, and (as with aggregate tax liability) the observed distribution comes into much better alignment with the published SOI (Table 3). The overall gap between SCF and SOI taxable income shrinks from 11 percent in the Table 2 baseline to just 3 percent in the Table 3 counterfactual. More importantly, the distribution of the gaps between SCF+TAXSIM and SOI changes dramatically, with most of the reduced taxable income in the SCF+TAXSIM counterfactual occurring in the top AGI groups where the gaps were largest.

TABLE 3

Simulated SCF+TAXSIM 50 Percent Business Loss Alternative

Tax Year 2018



AGI Class	Number of Returns		Total Income (Millions)	
	SCF	SOI	SCF	SOI
None	552,253	1,962,253	-21,556	-200,109
\$1 to Under \$25,000	40,900,270	50,453,810	503,849	647,707
\$25,000 to Under \$50,000	38,216,316	36,512,304	1,388,156	1,340,764
\$50,000 to Under \$100,000	37,105,216	35,146,085	2,657,590	2,534,215
\$100,000 to Under \$1,000,000	30,024,270	29,160,637	6,025,139	5,670,128
\$1,000,000 or More	716,009	539,207	1,617,559	1,792,574
<i>Total</i>	<i>147,514,334</i>	<i>153,774,296</i>	<i>12,170,736</i>	<i>11,785,278</i>

The simplicity of the counterfactual exercise is likely playing a role in the remaining gaps. As suggested above, the counterfactual is likely conservative in terms of distributional implications, because tax-motivated business losses are likely to play a bigger role among wealthier households. It is possible (and an important area for future research) to consider whether other counterfactuals and introducing a business loss adjustment that is correlated with business wealth will bring the distributions even closer.

The revenue implications of taxing all business incomes would be substantial. As indicated in Figure 1, income tax liability after credits in the 50 percent business income simulation is \$1,517 billion in 2018, almost identical to the IRS figure of \$1,510 billion. Using the unadjusted SCF business incomes raises income tax liability after credits to \$1,766 billion, an increase of \$249 billion, or by 16.4 percent. The substantial increase in revenues reflects both the doubling of business incomes and the above average marginal tax rates that additional business income faces.

Although it is a simple adjustment, the SCF+TAXSIM counterfactual is arguably a reasonable representation of our existing tax system as captured by the published SOI. We generate distributions of tax returns and taxable income that align well, and the aggregates are close. In that sense, the SCF+TAXSIM baseline is an alternative relative to the SOI baseline.

Because income itself is endogenous to this exercise, we focus on the implications of the counterfactual for the distribution of taxes by wealth class (Table 4). The first two columns of Table 4 provide some perspective on wealth distribution, including, for example, the fact that SCF households with net worth of \$10 million or more account for 1.1 percent of the population, and own 39.1 percent of the wealth. The total wealth owned by the 35.9 percent of SCF households with net worth below \$50,000 is zero—debts effectively offset positive assets for the bottom two wealth groups.

TABLE 4

Distributional Effects of Differential Business Income Reporting
Tax Year 2018



Wealth Class	Distribution by Wealth Class			Average Taxes		
	Households	Wealth	Taxes: Unadjusted SCF	Taxes: 50 Percent Business Loss	Unadjusted SCF	50 Percent Business Loss
Less Than \$25,000	30.30%	-0.30%	2.30%	2.50%	\$1,033	\$978
\$25,000 to <\$50,000	5.60%	0.30%	1.10%	1.20%	\$2,677	\$2,567
\$50,000 to <\$100,000	11.00%	1.10%	3.00%	3.30%	\$3,735	\$3,582
\$100,000 to <\$500,000	31.60%	10.50%	15.30%	16.60%	\$6,655	\$6,192
\$500,000 to <\$1,000,000	9.60%	9.30%	10.30%	11.30%	\$14,720	\$13,844
\$1,000,000 to <\$5,000,000	9.10%	24.90%	23.00%	23.50%	\$34,665	\$30,441
\$5,000,000 to <\$10,000,000	1.70%	15.30%	14.70%	13.90%	\$121,881	\$98,995
\$10,000,000 or More	1.10%	39.10%	30.30%	27.60%	\$367,145	\$287,830
All	100.00%	100.00%	100.00%	100.00%	\$13,725	\$11,793

The distribution of taxes is very different. In the unadjusted SCF+TAXSIM simulation, households with wealth of \$10 million or more account for 30.3 percent of taxes. In the counterfactual 50 percent business loss offset simulation—arguably much closer to our actual tax system—those same households account for only 27.6 percent of taxes. The last two columns drive the point home even more clearly. If we were to move from the income tax system we have (as captured by the SCF+TAXSIM counterfactual) to the tax system we might have if business incomes were taxed more effectively (the unadjusted SCF+TAXSIM baseline) average tax liability would jump from \$287,830 to \$367,145 (a 28 percent increase) for families with \$10 million or more in wealth. The fact that simulated tax liabilities are little changed for households with less than \$1 million in net worth drives home the point that taxing business incomes more effectively may be the key to taxing wealthy people more effectively.

CONCLUSION

We find that aggregate data implies a large and growing gap between NIPA and SOI measures of income from closely held businesses and financial investments. In addition, we demonstrate that business income reporting in

the SCF is consistent with the idea that business losses generated for tax purposes are likely a key to understanding why many business owners pay little in tax. Finally, we show that much of the untaxed business income is likely to be found at the top of the income and wealth distribution.

Although some researchers (e.g., Bhandari et al. 2020) argue that SCF business income data are unreliable, we show that there is important information in the differences in alternative measures of business income. The SCF has been shown to capture the incidence of business ownership and other aspects of business operations quite well, and thus it is more likely that there is important information about the difference between economic and taxable business incomes buried in the gap.

This paper, coupled with Gale et al. (2022), brings non-tax data to bear on tax policy, with multiple directions for future work. One possibility is to obtain a better understanding of how and why various SCF incomes differ from published SOI incomes, in both a time-series and cross-sectional sense. A good starting point would be to test, using the univariate distributions of business incomes in the tax data and the SCF whether our prior that SCF business owners seem to be reporting their true economic income is valid.

A second issue is better understanding the joint distributions of business incomes and other incomes such as wages. Do the wages business owners report paying themselves in the SCF align with the SOI values? One possibility is that SCF business owners are misreporting the wages they paid to themselves as a component of business income. Although we cannot say for sure this is not the case, and we have not done an exhaustive comparison of SCF versus SOI incomes by type of income, it is apparent that SCF total wage income is not below SOI wage income in a way that seems consistent with that sort of misreporting. Given access to IRS tax data, one could address that possibility directly by comparing the distributions of wages reported by SCF business owners with wages of Schedule C and E filers in the tax data.

Addressing these and related issues requires a deeper dive into restricted-use tax data, and, as in our counterfactual exercise, thinking skeptically about the information content of the tax data. Relative to the current tax system, taxing what business owners effectively earned has first-order revenue and distributional implications. More generally, the key policy challenge in this regard may be finding a way to have both higher effective taxation on wealthy business owners and the sustained investment that is key to economic growth.

In the text we present several measures of aggregate economic and taxable incomes by type of income. In this appendix we explain how those series are derived. NIPA data are available for download at https://apps.bea.gov/iTable/index_nipa.cfm. Published SOI data tables are available for download at <https://www.irs.gov/statistics/soi-tax-stats-individual-income-tax-return-form-1040-statistics>. Financial Account data are available for download at <https://www.federalreserve.gov/releases/z1/>.

Bureau of Economic Analysis National Income and Product Accounts (NIPA)

The two top-line income concepts in the NIPA are national income and personal income, captured in NIPA Tables 1.12 and 2.1 respectively. National income describes all payments to factors of production, and personal income is the income that flows to the household sector. Neither measure corresponds to taxable incomes. Although we begin with the personal income concepts in Table 2.1, we also use Tables 7.9, 7.10, 7.11, and 7.20 to remove imputations and shift timing of retirement incomes to correspond to tax treatment, and we use one line item (corporate retained earnings) from Table 1.12 to construct the gains-inclusive business and financial income measure.

Our broad concept of “other” income in the NIPA includes wages (Table 2.1 line 3), Social Security benefits received (Table 2.1 line 18), Unemployment Insurance (Table 2.1 line 21), and pension benefits received (Table 7.20 line 21). In NIPA accounting, personal income includes employer contributions to pension plans plus the interest and dividends earned by pension funds. Pension benefits (and retirement account withdrawals more generally) are not taxed until received, so we shift the timing accordingly by including the pension benefits received (Table 7.20 line 21) while excluding employer contributions to pensions (Table 2.1 line 7) as well as the imputed interest (part of Table 7.11 line 63) and dividends (part of Table 7.11 line 17) earned by pension funds.

The concept of “business” income we construct in the NIPA is also very broad, to maintain correspondence between SOI and SCF concepts. The starting point is proprietor’s income (Table 2.1 line 9) plus rental income (Table 2.1 line 12). We subtract the imputed interest earned by proprietors (Table 7.11 Line 59), which are “in kind” imputations for the value of financial services received in lieu of interest. We also subtract the imputed rent on owner occupied housing (Table 7.9 line 8).

The final category of NIPA taxable income is what we refer to as “other financial,” which is effectively interest and dividends paid directly to households. The starting point is total household interest (Table 2.1 line 14) and dividends (Table 2.1 line 15), but much of what is included in Table 2.1 is imputed. We subtract the imputed interest (Table 7.11 line 63) and imputed dividends (Table 7.10 line 17) received by the household sector. These imputed flows are mostly the receipts of pension plans (see the notes on timing of retirement benefits above). As with business incomes, imputed interest includes imputations for the “in kind” value of financial services received by households in lieu of interest.

Our first measure of “gains-inclusive” taxable business and other financial income in the main text adds NIPA corporate retained earnings (Table 1.12 line 13) to the other income measures. Corporate retained earnings are the proxy measure of accrued capital gains used in the “distributional national accounting” literature. The idea is that a dollar of retained earnings is ultimately owned by the household sector, and that income should be distributed along with the other components of Table 2.1.

Federal Reserve Board Financial Accounts (FA)

In addition to tracking levels of household balance sheet components, the Federal Reserve Board Z.1 data release also disaggregates the change in household wealth between “net investment” or “net acquisition” and “net holding gains.” Net holding gains is our measure of capital gains in the expanded “gains-inclusive” business and other financial income measure. We use the disaggregation in Z.1 Table R.101 to get capital gains on corporate equities (line 24), mutual funds (line 25), other financial instruments (line 23), and non-corporate business (line 28). Note that we exclude holding gains on (generally) non-taxable owner-occupied housing.

The FA measure of capital gains is larger and more volatile than the NIPA corporate retained earnings proxy. This makes sense because the FA measure is more expansive, particularly in terms of capturing increases in the value of closely held businesses. Indeed, over the 1994 to 2018 period we study, FA holding gains totaled about \$28 trillion, of which just over \$8 trillion was increases in the value of closely held businesses. The other \$20 trillion was accounted for by mutual funds and corporate equities, and that is roughly double the sum of NIPA corporate retained earnings (\$10.6 trillion) over the same period.

IRS Statistics of Income (SOI)

The IRS Statistics of Income (SOI) Division publishes several annual tables with summarized data from income tax filings. The main table we use to construct the time series measures in this paper is the Table 1.4 series. Table 1.4 is based on the carefully selected and managed sample of U.S. tax returns that is the basis for Statistics of Income reports going back several decades. Table 1.4 is available electronically since the mid-1990s, and as of this writing runs through tax year 2018.

Both the substance and the electronic layout of Table 1.4 evolve over the course of our study period. The principal income data series in Table 1.4 correspond one for one with or can be aggregated to match NIPA equivalents. The taxable SOI income categories are Salaries and Wages, Sole Proprietor Income, Other Interest Income, Ordinary Dividends, Capital Gains, Rent and Royalty Income, Partnership and S Corp Income, UI and Worker’s Comp, a smattering of other incomes that are mapped into either “other” or business and financial, taxable Pension Income, and taxable Social Security. In addition, there are separate positive and negative entries for Sole Proprietor Income, Capital Gains, Rent and Royalty, Partnership and S Corp, and the “other”

NOTES

income components that are part of business and other financial. Net Operating Losses are also reported in a separate field.

Changes in tax law introduce new data series in Table 1.4. For example, Qualified Dividends did not exist before 2003, and QBI appears in 2018. Our top line taxable SOI business and other financial income involves subtracting half of Qualified Dividends and all QBI from the other components. There is no consistent Table 1.4 adjustment for the changes in long-term capital gains taxation that were implemented in 1998, though a cursory look at capital gains realizations in other SOI tables shows that most capital gains are long-term for tax purposes. In the text we apply our 30 percent adjustment to capital gains and show the unadjusted taxable SOI capital gains series.

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ABOUT THE AUTHORS

William G. Gale is the Arjay and Frances Miller Chair in Federal Economic Policy and a senior fellow in the Economic Studies program at the Brookings Institution. His research focuses on tax policy, fiscal policy, pensions, and saving behavior. He is co-director of the Tax Policy Center, a joint venture of the Brookings Institution and the Urban Institute. He is also director of the Retirement Security Project.

Swati Joshi is a senior research assistant with the Tax Policy Center.

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