The New Tax Bill – Winners and Losers

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Abstract

The Tax Cut and Jobs Act of 2017 (TCJA) represents the most significant change in U.S. taxation since 1986. The bill's fairness and welfare impacts have been studied and widely debated. But prior distributional analyses suffer from three shortcomings. First, they examine changes in current gross, not remaining lifetime net taxes. Second, they lump together the young and the old, leading to misleading comparisons. Third, they ignore the reform's potential impact on the distribution of pre-tax income.

This paper responds to these limitations in identifying winners and losers under the TCJA. It uses *The Fiscal Analyzer* (TFA) – a program developed to understand fiscal progressivity, work disincentives and spending inequality. TFA is a detailed life-cycle consumption-smoothing program that incorporates borrowing constraints, lifespan uncertainty and all major federal and state tax and transfer programs. TFA calculates for different resource groups within specific cohorts remaining lifetime net taxes and remaining lifetime net spending. Its calculations can, in turn, be used to a) form resource- and cohort-specific average and marginal remaining lifetime net tax rates, b) measure absolute changes in remaining lifetime spending for particular resource groups within particular cohorts and c) assess changes, within-cohort, in remaining lifetime-spending inequality. The paper's measurements result from running the Federal Reserve's 2016 Survey of Consumer Finances through TFA based on both old tax law as well as the TCJA. In so doing, we consider two alternative assumptions about the new tax law's impact on real wages. The first is zero impact, which lets us consider the impact of the tax reform on its own. The second is a 5.5 percent increase in real wages – a figure suggested by analysis in Benzell, Kotlikoff and Lagarda (2017b).

We find, for all resource (human plus non-human wealth) groups within all cohorts, very modest reductions in average remaining lifetime net tax rates (remaining lifetime net taxes of a resource quintile divided by remaining lifetime resources of that resource quintile) regardless of resource level. We also find very little within-cohort change in fiscal progressivity whether one measures fiscal progressivity by the share of total net taxes paid by the richest 1 percent, the share of spending done by the top 1 percent, the percentage increase in average spending by the top 1 percent compared to other resource groups, or the degree to which average remaining lifetime net tax rates rise with resources. This said, the absolute average net tax reductions that the rich will enjoy are dramatically larger than those provided to the poor. But tax cuts, even progressive ones, can produce such a result since the rich pay dramatically more taxes per household than do the poor.

TCJA impacts the distribution of resources, albeit modestly, among similarly placed households – households within the same cohort and resource quintile. Consider, for example, middle quintile, 40-49 year olds. Leaving aside potential wage increases, TCJA produces less than a 1.0 percent rise in lifetime spending for 9.9 percent of households in the cohort and a larger than 3.0 percent rise in lifetime spending for 4.3 percent.

1. Introduction

The Tax Cut and Jobs Act of 2017 (TCJA) represents the most significant change in U.S. taxation since 1986. The bill's fairness has been studied and debated, with results generally suggesting the reform is regressive. An example is Tax Policy Center (2017), which reports "higher income households receive larger average tax cuts as a percentage of after-tax income, with the largest cuts as a share of income going to taxpayers in the 95th to 99th percentiles of the income distribution." The Congressional Budget Office (2017) and the Joint Committee on Taxation (2017a) reach similar conclusions.

But the methodology underlying these studies suffers from three major shortcomings. First, it examines current, not remaining lifetime taxes, for each household. Second, it lumps together the young and the old, mixing households in very different positions relative to their lifetime incomes. Third, it ignores the reform's potential impact on wages and, via this channel, welfare and progressivity.

This paper rectifies these problems in assessing TCJA. It measures the reform's impact on remaining lifetime net taxes of households with different levels of remaining lifetime resources. It performs this analysis separately for different age cohorts. It considers both zero percent and 5.5 percent real-wage changes, the latter figure suggested by simulations of the Global Gaidar Model (see Benzell, Kotlikoff and Lagarda, 2017a and 2017b).[1] And it shows, for each cohort, how the TCJA alters inequality in remaining household lifetime spending.

The paper's measurements result from running the Federal Reserve's 2016 Survey of Consumer Finances through *The Fiscal Analyzer* (TFA) developed in Auerbach, Kotlikoff and Koehler (2015). TFA is a detailed life-cycle consumption-smoothing program that incorporates borrowing constraints, lifespan uncertainty as well as all major federal and state tax and transfer programs, including corporate income taxes.

Considering a zero change in wages lets us isolate the impact of the tax reform from its possible dynamic economic feedback effects. It also accommodates other views, (e.g., Gravelle and

[1] Benzell, Kotlikoff and Lagarda's (2017b) simulation of the United Framework produces very similar simulation results as those for the TCJA since its corporate tax changes are essentially identical. The assumption of zero wage impact treats the U.S. economy as effectively closed when it comes to changes in effective marginal corporate income tax rates. This accords with the assessment of Gravelle and Smetters (2001). The Benzell, et. al. (2017b) model suggests, on the other hand, that the U.S. is better modeled as a small open economy since large changes in the U.S. effective marginal corporate tax rate in their model have significant U.S. wage impacts, but very little effect on the world interest rate. The Congressional Budget Office takes a middle ground position, assuming that three quarters of the incidence of the U.S. corporate income tax falls on U.S. owners of capital with the remaining one quarter falling on U.S. workers. Rather than follow the CBO approach of assuming a particular incidence outcome, we present results that assume that wages bear either none of the corporate tax incidence or close to 100 percent. We handle the latter case by running the TFA with a 5.5 percent change in real wages, but no change in the rate of return (the world interest rate) received by households.

Smetters, 2001, the Penn Wharton Budget Model, 2017, and the Joint Committee on Taxation, 2017b) of TCJA's potential dynamic effects, some of which suggest a much smaller impact than Benzell, et. al. (2017a, 2017b).

We find very modest and generally similar reductions for all cohorts in average remaining lifetime net tax rates (remaining lifetime net taxes divided by remaining lifetime resources) regardless of resource level (non-human wealth plus the present value of future wages and salaries). Regarding the magnitude of changes, consider, for example, the middle-resource quintile. Assuming a zero percent wage increase, the reductions are 15.8 percent to 14.2 percent for 40-49 year olds, 26.4 percent to 24.5 percent for 20 year olds, and -58.0 percent to -59.2 percent for 60 year olds.[2] With a 5.5 percent wage increase, the respective changes are 15.8 percent to 15.3 percent for 40 year olds, 26.4 percent to 25.2 percent for 20 year olds and -58.0 percent to -57.9 percent for 60 year olds.

TCJA has very little impact on fiscal progressivity based on average remaining lifetime net tax rates. In the case of 40-year olds, assuming no change in before-tax wages, the average remaining lifetime net tax rate for the top 1 percent falls from 34.1 percent to 33.1 percent. For the bottom 20 percent, the average net tax rate falls from -41.6 percent to -42.6 percent. With a 5.5 percent wage increase, the average net tax rate of the top 1 percent falls very little -- from 34.1 percent to 33.7 percent. For the poorest 20 percent, the average net rate rises from -41.6 percent to -37.9 percent. Clearly, the reform's feedback effects matter for fiscal progressivity as wage increases push households into higher marginal net tax brackets, particularly at the lower end of the resource distribution. Still, these are relatively small changes.

An alternative indicator of fiscal progressivity is the share of remaining lifetime gross taxes paid by the richest 1 percent. This indicator also shows very little change due to the reform. In the case of 40-49 year olds, the share is 16.6 percent under the old tax system. Under the reform, it's 16.9 percent with no wage increase and 16.7 percent if wages rise by 5.5 percent. Yes, the top 1 percent experiences a small decline in their average net tax rate. But the corresponding decline is somewhat larger for other percentile groups, which explains why the tax share of the top 1 percent actually rises slightly. Hence, by this measure, the tax reform is slightly progressive. The tax share of the middle quintile of 40-49 year olds is 11.8 percent under old law, 11.7 percent under the TCJA assuming no wage increases, and 12.0 percent assuming a 5.5 percent wage increase. For the bottom quintile of 40-49 year olds, the three respective tax shares are 2.6 percent, 2.6 percent and 2.7 percent.

TCJA-induced changes in remaining lifetime spending inequality is arguably the best measure of the reform's fiscal progressivity. The reform produces very little change in the spending shares of different percentile groups regardless of the cohort's age. Take 40-49 year olds, once again.

[2] Note that average remaining lifetime net tax rates decline with age since taxes are front loaded and transfer payments are back loaded over the life cycle.

The pre-reform spending share of the top 1 percent is 12.9 percent. It remains constant at 12.9 percent under the reform with fixed wages and decreases to 12.7 percent when wages rise. These shares are, by the way, far lower than the top 1 percent's 30.3 percent share of net wealth. The difference reflects, of course, the fact that human wealth and remaining lifetime net taxes are far more progressively distributed than is net wealth.

For the middle quintile of 40-49 year olds, the spending share is 14.1 percent under both the old law and new law assuming wages remain fixed. The 5.5 percent rise in wages raises this figure slightly -- to 14.2 percent. These figures may be compared with a net wealth share of 5.6 percent. As for the poorest quintile in the 40-49 year old cohort, their spending share is 6.5 percent pre-reform. It drops slightly to 6.4 percent under the reform, assuming no wage increase. With a 5.5 percent wage increase, it's again slightly smaller – 6.4 percent. Here again, the TCJA has only a small impact on inequality. The corresponding net wealth share for the poorest 20 percent of 40 year olds is 1.0 percent.

Yet another way to measure of TCJA's progressivity TCJA is to consider the share of the total additional spending (ignoring any associated wage increase) afforded by the reform that goes to the top 1 percent. In the case of 40-49 year olds, this share is 9.7 percent, which is less than the top 1 percent's initial 12.9 percent share of total cohort spending under old law. The share of additional spending going to the lowest quintile is 2.3 percent. This too is less than their overall initial spending share, which is 6.5 percent. Consequently, for 40-49 year olds, neither the superrich nor the very poor benefit disproportionately from the reform. This measure is different for different cohorts. For example, the top 1 percent of 20-29 year olds garner 7.0 percent of their cohort's total spending increase. Among 70-79 year olds, the top 1 percent garner 28.5 percent of the total cohort's spending gain. But the share of the total, within-cohort increase in spending enjoyed by the top 1 percent is not enough to materially alter the share of total spending of the top 1 percent in any cohort.

What about changes in average spending levels among 40-49 year olds? Ignoring any wage increases, the top 1 percent experience, on average, a $320,624 rise in spending. Those in the middle quintile average a $23,159 spending increase. For those in the bottom quintile, average spending rises by $3,960. Consequently, the gain to the super rich is 81 times that of the poor. From this perspective, which is one often taken in policy discussions, the reform appears grossly unfair. But by other standard measures of progressivity and inequality, which focus not on changes in absolute net tax payments or absolute spending levels but on average tax rates as well as tax and spending shares, the TCJA appears to be roughly distributionally neutral. Of course, if it causes wages to rise, these reforms will also improve the economy and workers' welfare.

The TCJA's greatest impact on the distribution of resources, albeit modest, is among similarly placed households – households within the same cohort and resource quintile. Consider, for example, middle quintile, 40-49 year olds. Leaving aside potential wage increases, TCJA produces

less than a 1.0 percent rise in lifetime spending for 9.9 percent of households in the cohort and a larger than 3.0 percent rise in lifetime spending for 4.3 percent.

The paper proceeds in Section 2 by briefly describing the TCJA. Section 3 presents our method of calculating remaining lifetime net taxes, remaining lifetime net tax rates, and remaining lifetime spending. Section 4 describes the 2016 Survey of Consumer Finances (SCF) data, our benchmarking of the SCF to national aggregates, and the limitations of the SCF when it comes to incorporating pass-through business tax provisions. Section 5 presents results and section 6 concludes.

2. The Tax Cuts and Jobs Act of 2017 (TCJA)

The TCJA was the culmination of a year and a half of fiscal reform debate among House and Senate Republicans, beginning with *The Better Way Plan* released in June 2016. That plan envisioned replacing the corporate income tax with a 20 percent destination-based business cash-flow tax, reducing taxation of pass-through businesses, streamlining personal-income taxation by eliminating the Alternative Minimum Tax (AMT), unifying the tax treatment of personal asset income (taxing half of personal asset income), eliminating exemptions and the deductibility of state income and property taxes, raising the standard deduction, raising the child-tax credit, reducing the number of income-tax brackets from seven to three (with the top rate lowered from 39.6 percent to 33.0 percent), using a chain CPI to index tax brackets, and eliminating the estate tax.

The Unified Framework was the reform's second incarnation, differing from *The Better Way Plan* primarily in its corporate tax reform. Specifically, it eliminated border tax adjustment, eliminated expensing of long-lived investments, and permitted net interest deductions up to a limit.

The TCJA retained most of The Unified Framework's business provisions. But it set a 21 percent corporate tax rate and introduced a variety of international tax provisions aimed at limiting corporate tax avoidance. It also placed restrictions on the nature and extent of pass-through income that can receive favorable tax treatment. On the personal side, the TCJA retains 7 tax brackets, with a top rate of 37 percent. The mortgage interest deduction on old mortgages up to $1 million was grandfathered. For new mortgages, the limit was reduced to $750,000. State and local tax and property tax deductions were restored, but only up to a combined total of $10,000. The top marginal rate was set at 37 percent. The individual AMT was retained in modified form. There were also some minor changes to capital gains tax brackets. Finally, the estate tax was retained, but the exemption level was doubled. *The Fiscal Analyzer* incorporates all the aforementioned elements of the TCJA and, as described in Auerbach et. al. (2016) and Auerbach et. al. (2017), all elements of prior tax law.

Many of TCJA's tax provisions become less favorable over the course of the 10-year budget period. In addition, many of its individual tax cut provisions are set to expire by the end of the decade. These features appear to have been included simply to meet arbitrary budget targets within the budget period and to limit the growth in projected deficits beyond the budget period. Meeting the budget targets and limiting future projected deficits were needed to permit passage of the bill with a simple majority in the Senate. However, there was no coherent policy reason offered for such temporary provisions, nor are we aware of any. Consequently, in this analysis we assume TCJA's provisions are permanent. This assumption is important to keep in mind when interpreting our results and comparing them with those of other studies that adhere strictly to the letter of TCJA's law.

3. Methodology

To measure the effects of the TCJA on revenue, inequality, progressivity, and work incentives, we ran all households sampled in the Federal Reserve's 2016 Survey of Consumer Finances (SCF) through *The Fiscal Analyzer* (TFA). TFA is a detailed life-cycle consumption-smoothing program that incorporates both borrowing constraints and lifespan uncertainty as well as all major federal and state tax and transfer programs.[3]

In the course of doing its consumption smoothing, TFA determines each household's expected present value of remaining lifetime spending, where the term *expected* references averaging over different longevity outcomes and spending encompasses all expenditures, including terminal bequests net of estate taxes. The impetus for focusing on remaining lifetimes, rather than just the current year, comes from standard life cycle economic theory.

The lifetime budget constraint facing each household is given by

(1) $S = R - T,$

where S references the present expected value of a household's remaining lifetime spending, R stands for remaining lifetime resources (the present expected value of remaining lifetime labor earnings plus its current net worth) and T stands for the present expected value of remaining lifetime taxes net of transfer payments received. The average net tax rate, t, is defined by

(2) $t = T/R.$

Thus, if the expected present value of a household's spending is, for example, 65 percent of remaining lifetime resources, its average net tax rate, t, equals 35 percent. Average remaining lifetime net tax rates tell us not only the net share of their resources that households surrender

[3] See Auerbach, Kotlikoff, and Koehler (2016).

to the government. They also tell us about the progressivity of the fiscal system. If average net tax rates rise with the level of resources, the fiscal system is progressive. If they fall, the system is regressive. If they are independent of the level of resources, the system is proportional.

This paper, like our prior studies using TFA (Auerbach et. al., 2016, Auerbach et. al., 2017), calculates inequality and the progressivity of the fiscal system on a cohort-specific basis. Specifically, we consider inequality by looking within 10-year age cohorts at the share of total remaining lifetime spending attributable to households falling within different within-cohort percentiles of remaining lifetime resources, *R*. To measure within-cohort progressivity, we consider how average remaining lifetime net tax rates vary with resources.

We use cohort-specific analysis to consider inequality and progressivity because failing to do so amounts to comparing apples with oranges. Ranked by remaining lifetime spending, older cohorts would look poorer than younger cohorts simply because they had shorter remaining lifespans. And remaining lifetime net tax rates of older cohorts would appear lower than those of younger cohorts simply because the elderly would receive no credit for net taxes paid in the past and appear to be subsidized because they are collecting or will start to collect Medicare, Medicaid, and Social Security benefits sooner than younger cohorts. Even if we were considering just one-year's income and taxes for each cohort, comparing individuals from different cohorts would lead to misleading results. Consider, for example, the case in which all households earn the same amount over their life cycles regardless of their year of birth. Hence, there is no inequality in lifetime welfare either across or within generations. But if such an economy featured a social security system that taxed the working (and earning) young to pay benefits to the retired (and non-earning) old, policy would look highly progressive (those with high incomes pay taxes, those with low income receive benefits), contrary to reality.

4. The 2016 SCF

The Federal Reserve's Survey of Consumer Finances is primarily a cross-section survey that collects data from some 6,500 American households. The survey includes data on assets, liabilities, income, demographics and a host of other socio-economic variables. Unfortunately, the survey doesn't link to past earnings records. Consequently, to estimate future Social Security benefits as well as future labor earnings, we used, as described in Auerbach, Kotlikoff and Kohler (2016), data from the past Current Population Surveys to backcast and forecast labor income.

In the SCF data, household-weighted totals of various economic and fiscal aggregates may not have direct counterparts in the National Income and Produce Account (NIPA) or Federal Reserve Financial Accounts (FA). Thus, we decided to follow the approach outlined in Appendix A and B in Dettling, et al. (2015), namely benchmarking the 2016 SCF based on "conceptually equivalent" values. Specifically, we set SCF benchmark factors to ensure that SCF-weighted aggregates coincide with conceptually comparable NIPA and FA aggregates. For wages and self-employment income (reported for 2015 in the 2016 SCF) we use 2015 NIPA aggregates. For assets, we use FA-2016 Q3 aggregates.

Table 1a details the overall values, their sources, and our benchmark adjustments. First, we inflate all SCF-reported wage income by 12.3 percent to match the NIPA 2015 measure of employee compensation. Second, we deflate all SCF-reported self-employment income by 29.3 percent to match the NIPA 2015 proprietorship and partnership income total. The fact that we need to inflate wage income and significantly deflate self-employment income to match national aggregates may reflect, in part, a tendency of SCF respondents to report wage earnings as self-employment income. Third, we inflate all wage and self-employment income amounts reported in the 2016 SCF by nominal average wage growth through 2017.[4]

Benchmarking assets and net worth reported in the SCF requires several adjustments to the Financial Accounts values. Using the approach outlined in Appendix B of Dettling, et. al. (2015), we first created a net worth breakdown as detailed in Table 1b. We then adjusted the corresponding TFA components to align with the particular FA aggregate producing the table 1c's reported net worth. The difference in net worth is almost entirely due to differences in Liabilities. Our liabilities are 17.2 percent lower than in the FA. We chose not to benchmark our liabilities as we weren't clear how to do so on a component by component basis, e.g., whether to adjust mortgage debt by the same percentage as student loans. Furthermore, TFA doesn't used liability values per se. It uses repayment values, such as monthly mortgage payments, in its calculations. We believe that respondents have far more accurate knowledge of what they need to repay every month with respect to their mortgages, car loans, student loans, etc. than of the remaining balance on these liabilities.

Our first asset adjustment was to reduce SCF-reported home market value by 11.6 percent to match the 2016 Q3 Federal Reserve Financial Accounts measure. Second, we reduce the SCF-reported equity in non-corporate businesses by 38.0 percent to match the 2016 Q3 Federal Reserve Financial Accounts estimate. Fourth, we increased reported retirement account assets by 4.4 percent to match the total reported for 2016 Q3 Federal Reserve Financial Accounts. Finally, we inflate all financial and non-financial assets by the growth rate implied by the change in total assets between 2016 and 2017 in the Financial Accounts[5].

Our baseline corporate tax rate is derived relative to all capital income, based on the traditional Harberger analysis that attributes the incidence of corporate taxes to all capital income, whether corporate or non-corporate. To make this calculation we use 2017 national income less indirect business taxes as reported in the 2017 NIPA. We then calculate the ratio of employee compensation to net national income less proprietorship income to find the portion of national

[4] https://www.ssa.gov/oact/cola/AWI.html#Series reports Social Security's average wage index series through 2016. We assume the same growth rate for 2017 as that reported for 2016.

[5] Federal Reserve Z.1-Financial Accounts, B.101, Line 1, 2016-2017

income attributed to capital. Finally, we divide total corporate taxes less taxes on Federal Reserve profits by capital income giving an overall corporate tax rate of 9.3 percent[6].

In modeling the TCJA, we reduced our corporate tax rate, by 12.4 percent. This is the average, over the next five years, due to TCJA, in the Joint Committee on Taxation's static projected corporate tax revenue loss divided by the 2017 NIPA estimate of corporate tax revenue.[7]

One useful check of our benchmarking procedure is to compare our results to those of the Joint Committee on Taxation, which are based on tax return data. Table 2 shows average current-year tax rates under old law, under the TCJA, and the change between the two, from JCT (2017a) and according to our calculations, where we adhere as closely as possible to JCT's income classification and income and tax definitions.[8] As the table shows, our measures are relatively close to JCT's. Indeed, the correlation coefficient between our static TCJA average rates and the JCT's across the income categories in table 2 is 96.0 percent. Moreover, like JCT, we find an increase in percentage tax cuts as income increases, although this upward trend is less pronounced in our analysis.

The fact that we are able to come reasonably close to the JCT's analysis of progressivity with the SCF data, but that, as shown below, our preferred method of assessing progressivity produces a different picture based on these same data indicates that our findings are not driven primarily by differences in data, but that differences in methodology play an important role.

5. Findings

Remaining Lifetime Spending Inequality

Tables 3-5 consider our central measure of inequality, namely within-cohort, lifetime spending shares of different resource-percentile groups. Specifically, the tables show, by cohort, the lifetime spending shares for the top 1 percent, middle 20 percent and poorest 20 percent, respectively, under old law, TCJA with no wage increase and under TCJA with a 5.5 percent wage increase. Top, middle, and poorest refer to the resource ranking of households within cohorts.

[6] All values used to derive our corporate tax rate are from NIPA 2017. Net National Income (NNI) equals Table 1.7.5 Line 16 minus Line 18. Capital Income (CI) equals (1 minus Table 2.1 Line 2 divided by (NNI minus Table 2.1 Line 9)) times NNI. Corporate Tax Rate equals (Table 3.1 Line 5 minus Table 3.2 Line 8) divided by CI.

[7] https://www.jct.gov/publications.html?func=startdown&id=5053

[8] We are unable to include certain components of JCT's expanded income measure, including worker's compensation, alternate minimum tax preference items, individual share of business taxes, and excluded income of U.S. citizens living abroad. The JCT is also using 2013 IRS data, which is the latest such data available, whereas our SCF data reference either 2015 or 2016. Our approach and the JCT's (at least with respect to table 2) both assume that the incidence of the corporate income tax falls 100 percent on owners of capital. The JCT also assumes that nearly 10 percent of corporate income accrues to foreign owners, whose burden is excluded from their calculation (JCT, 2013). We make no adjustment in our analysis for foreign ownership.

A quick glance across the rows in the three tables shows that the distribution of spending is essentially unchanged under the TCJA regardless of whether wages remain fixed or rise by 5.5 percent. With no wage increase, the spending share of the top 1 percent is unchanged for five of the six age-cohorts, and it falls slightly for one. With the wage increase, the top-1 percent spending share remains fixed for three cohorts, falls slightly for one and rises slightly for two.

Among middle-quintile households, spending shares, in the no-wage increase, are identical in five of six cases, and slightly lower in the other one. With the wage increase, the shares are the same in just one case, slightly higher in one and slightly lower in four.

Finally, among the bottom quintile with no wage increase, spending shares are the same for one cohort and slightly lower for five cohorts. With wage increases, spending shares are slightly lower across all six cohorts. This reflects the smaller share of resources among the bottom quintile than among other quintiles that's represented by human wealth.

Shares of Remaining Lifetime Taxes

Tables 6-8 repeat tables 3-5, but consider remaining lifetime taxes, not remaining lifetime spending. Here, again, we see very small changes from TCJA. The top 1 percent with one exception – 70 year olds -- pay a slightly higher share of remaining lifetime taxes than they do without the reform and this holds regardless of the size of the wage increase. The same holds for the middle and bottom quintiles within the different cohorts. There is certainly no systematic shifting of the tax burden away from the rich arising from TCJA.

Impact on Average Spending Levels within Cohort, for Top 1% and Middle and Bottom Quintiles

The next set of tables, 9-11, report average remaining spending levels for the old tax regime as well as under TCJA with and without wage increases, with percentage increases in parentheses. As above, the analysis is by cohort for the top 1 percent, middle and bottom quintiles.

Ignoring wage increases, the average spending increases range from 0.0 percent for the poorest 70-79 year olds to 2.6 percent for the middle quintile of 20-29 year olds. With wage increases, the average spending increases range from 0.1 percent for the poorest 70-79 year olds to 7.0 percent for the middle quintile of 20-29 year olds.

The bottom quintile clearly experiences the smallest increase in spending whether or not wages rise. But the differential is larger if they do rise. This is expected given that the poor pay relatively little in taxes and rely to a much larger extent on transfer payments to finance their spending. Depending on the age cohort, the superrich enjoy larger or smaller percentage spending increases than the middle class depending to some degree on whether or not wages rise.

Average Changes in Spending and Share of Total Within-Cohort Spending Changes

Another perspective on winners and losers from TCJA is the size and distribution of changes in lifetime spending. Consider, in this regard, tables 12-14. Table 12 focuses on 40-49 year olds for the case of no wage increase. It shows that the average absolute increase in remaining lifetime spending for the top 1% is $320,624. This is 81.0 times the average spending gain in the lowest quintile. If one judges fairness based on absolute spending, TCJA is clearly highly unfair. But if one considers the share of the spending increase enjoyed by the top 1 percent, it's 9.7 percent. This figure is smaller than this group's 12.9 percent of total cohort spending (see Table 3). Consequently, the richest 1 percent end up with a slightly smaller share of total cohort spending under TCJA than before it was enacted. This is supported by the middle column of table 12, which shows that the average percentage increase in spending of the top 1 percent of 40-49 year olds is lower than that of other resource percentile groups with the exception of that of the bottom quintile.

Table 13, which show results for 20-29 year olds, tells a very similar story, although the average absolute spending gain of the top 1 percent is 27.0, not 81.0, times that of the bottom quintile. The top 1 percent account for 7.0 percent of the cohort's total spending gain. This compares with their pre-reform 12.5 percent share of cohort spending. The middle column of this table also shows that the top 1 percent experience, on average, the smallest percentage increase in spending of any resource percentile group in this cohort.

The story for 70-70 year olds, provided by table 14, is somewhat different. For this cohort, the average spending increase of the top 1 percent is the highest among the three age cohorts, at $389,887. For the lowest quintile, the average spending gain is only $84. That's a ratio of 4,641 to 1! For the middle quintile, the average gain is just $4,080. Moreover, the top 1% of 70-79 year olds garner 28.5 percent of their cohort's total spending gains, which exceeds their 21.7 percent share of spending under the old tax law. Their average percentage increase in spending is higher than for other resource groups. Still, at the level of precision measured in table 3, the spending share of the top 1 percent is only slightly higher (0.1 percent) in the no-wage-increase case than pre reform.

Average Remaining Lifetime Net Tax Rates

Another means of examining progressivity is to consider changes in average remaining lifetime net tax rates arising from the reform. Figures 1-3 do this for the age 40-49 cohort. Figure 1 shows rates pre-reform. Figures 2 and 3 show rates post reform without and with wage increases, respectively. Comparison of figures 1 and 2 shows small cuts in net tax rates (ignoring any economy-wide wage increase), whether one calculates tax rates based on a lifetime or current-year basis.[9] Moreover, these cuts in net tax rates are similar in size for all resource groups. For example, our net lifetime tax rates fall by, respectively, 1.0, 1.5, 1.6, 1.6, and 1.5 percentage points for the five quintiles and by 1.4 and 1.0 percentage points for the top 5 percent and top 1

[9] Current-year net tax rates are 2018 net taxes divided by current-year income.

percent of the resource distribution. The changes (again, between figures 1 and 2) in average current-year net tax rates are also quite uniform across our resource groups, falling in the 7 percentile groups by 1.2, 1.3, 1.3, 1.3, 1.4, 1.4, and 0.9 percentage points, respectively.

To summarize, partitioning by age group, as economic reasoning suggests, and also focusing on net, not gross tax rates leaves TCJA very slightly regressive. And this is true whether we consider remaining lifetime net tax rates or current year net tax rates.

Table 3 shows the impact on net tax rates of higher wages. This pushes certain households, particularly those in the lowest quintile, into higher brackets, raising their net tax rates somewhat.

Within Cohort and Resource Percentile Differences in Treatment

A final important feature of TCJA is its redistribution across households within the same cohort and, indeed, within the same resource percentile range within given cohorts. Figures 4 and 5 show, for the age 40-49 cohort, scatterplots of before and after remaining lifetime spending levels without and with wage increases. With no wage increases, most points lie above the 45-degree line, but not far above. This accords with the small net tax-rate reductions implied by figures 1 and 2. With the wage increase, the points lie farther north of the 45-degree line. Some points are farther out than others. Figures 6 and 7 explore this. They show histograms of percentage changes in lifetime spending for the 40-49 year-old cohort both without and with wage increases. Both figures indicate significant differences across households in the extent of their welfare gain from the tax reform. The spread between maximum and minimum values in tables 12-14 show that differences in treatment under the TCJA occur not just across households with different resources, but also across households with similar levels of resources.

6. Conclusion

The Tax Cut and Jobs Act of 2017 made significant changes to the structure of both corporate and personal federal taxes. This study used *The Fiscal Analyzer* in conjunction with the Federal Reserve's 2016 Consumer Expenditure Survey to study the TCJA's progressivity and its effect on spending inequality. Our results compare outcomes within cohorts and are based on remaining lifetime net taxation and spending. Analyzing fiscal progressivity on a remaining lifetime, rather than current-year basis, doing so within age cohort, and considering net rather than gross tax burdens are, we believe, three important and long overdue improvements to conventional fiscal distributional analysis. As a comparison of the JCT's average tax rates under TCJA in table 2 and, for example, the TFA average remaining lifetime net tax rates portrayed in figure 1 indicates, the assessment of progressivity is very different under the two methodologies. This is particularly the case when it comes to considering the fiscal burden on the poor. Our approach also focuses on the bottom line, namely how the within-cohort distribution and levels of spending change by resource group.

We find that the TCJA did not materially alter the fiscal system's within-cohort progressivity whether one measures progressivity in terms of the share of spending done by the rich or the share of taxes paid by the rich. If the reform succeeds in raising wages, it will, on average, produce a small, but meaningful increase in remaining lifetime spending, i.e., in economic welfare. As one would expect from a major reform, there are winners and losers, relative to a benchmark of equal reductions in net tax rates or equal percentage increases in consumption. But much of the dispersion is within cohort members with roughly the same level of resources.

These results are fully consistent with our own estimates, and those of others, that the absolute gains of those at the top are far greater than those who are lower in the income distribution. One may, of course, view such a distribution of absolute gains as unfair, indeed extremely unfair even if they are consistent with maintaining the existing degree of inequality as conventionally measured. Also, we stress again that our results assume that the new tax provisions do not change over time, even though the law formally stipulates many tax increases that might affect progressivity by the end of the ten-year budget period. Finally, our analysis doesn't address the important issue of fiscal sustainability and requisite major future tax increases and government spending cuts, which will have their own, very significant distributional effects.

References

Auerbach, Alan J., Laurence J. Kotlikoff, and Darryl Koehler. 2016. "U.S. Inequality, Fiscal Progressivity, and Work Disincentives." NBER working paper no. 22032.

Auerbach, Alan J., Laurence J. Kotlikoff, Darryl Koehler and Manni Yu. 2017. "Is Uncle Sam Inducing the Elderly to Retire?" in *Tax Policy and the Economy*. NBER vol. 31, no 1, pp. 1-42.

Benzell, Seth G., Laurence J. Kotlikoff, Guillermo Lagarda. 2017a. "Simulating Business Cash Flow Taxation: An Illustration Based on the "Better Way" U.S. Corporate Tax Reform." NBER working paper 23675. December.
https://www.kotlikoff.net/sites/default/files/Simulating%20the%20Better%20Way%20Tax%20Reform%20Plan.pdf

Benzell, Seth G., Laurence J. Kotlikoff, Guillermo Lagarda. 2017b. "Simulating the Unified Framework Tax Reform." October.
https://www.kotlikoff.net/sites/default/files/Simulating%20the%20Better%20Way%20Tax%20Reform%20Plan.pdf

Congressional Budget Office. 2017. "Distributional Effects of Changes in Taxes and Spending Under the Conference Agreement for H.R. 1." December.
https://www.cbo.gov/system/files/115th-congress-2017-2018/reports/53429-distributionhr1.pdf.

Dettling, Lisa J., Sebastian J. Devlin-Foltz, Jacob Krimmel, Sarah J. Pack, and Jeffrey P. Thompson (2015). "Comparing Micro and Macro Sources for Household Accounts in the United States: Evidence from the Survey of Consumer Finances," Finance and Economics Discussion Series 2015-086. Washington: Board of Governors of the Federal Reserve System, http://dx.doi.org/10.17016/FEDS.2015.086.

Fullerton, Don, and Diane Lim Rogers. 1993. *Who Bears the Lifetime Tax Burden?*. Washington, DC: Brookings Institution.

Gravelle, Jane, and Kent Smetters. "Who Bears the Burden of the Corporate Tax in the Open Economy?." No. w8280. National Bureau of Economic Research, 2001.

Joint Committee on Taxation. 2013.

Joint Committee on Taxation. 2017a. "Distributional Effects of the Conference Agreement for H.R.1 "The Tax Cuts and Jobs Act." December 18.
https://www.jct.gov/publications.html?func=startdown&id=5054.

Joint Committee on Taxation. 2017b. “Macroeconomic Analysis of the Tax Cuts and Jobs Act.” November 30.
https://www.jct.gov/publications.html?func%3Dstartdown%26id%3D5045

Penn Wharton Budget Model. 2017. “The Senate Tax Cuts and Jobs Act: Dynamic Effects on the Budget and the Economy.” November 15.
http://budgetmodel.wharton.upenn.edu/issues/2017/11/21/the-senate-tax-cuts-and-jobs-act-amended-111517-dynamic-effects-on-the-budget-and-the-economy

Poterba, J.M., 1989. Lifetime incidence and the distributional burden of excise taxes. NBER working paper no. 2833.
Tax Policy Center. 2017. “Distributional Analysis of the Conference Agreement for the Tax Cuts and Jobs Act.” The Tax Policy Center, Washington, D.C. December 18.
http://www.taxpolicycenter.org/sites/default/files/publication/150816/2001641_distributional_analysis_of_the_conference_agreement_for_the_tax_cuts_and_jobs_act_0.pdf

Table 1a Benchmarking TFA

Line	Variable	Data (Billions)	Benchmarked TFA Estimate Value (Billions)	Benchmark Factor	Data Source
1	Wages	7,858.9	7,858.8	1.1227	NIPA data - Table 2.1. Personal Income and Its Disposition - Line 2 – 2015
2	Self-employment Income	1,318.8	1,318.7	0.7067	NIPA data - Table 2.1. Personal Income and Its Disposition - Line 9 – 2015
3	Home Market Value, owner-occupied	22,588.8	22,589.1	0.8836	Financial Accounts – Z.1, B.101, Line 4
4	Equity in Non-corporate business	11,156.5	11,156.0	0.6202	Financial Accounts – Z.1, B.101, Line 28
5	Regular Assets	32,506.7	32,505.1	0.9936	Conceptually Equivalent Financial Assets FA (Table 1b) minus Retirement Accounts (Table 1a Line 6)
6	Retirement Accounts	14,407.8	14.408.5	1.0444	Financial Accounts – Z.1, L.117, Line 26 & 27

Sources: National Income and Produce Account (NIPA) 2015; Financial Accounts of the United States – Z.1, March, 2017 Release

Table 1b FA Values that Are Conceptually Equivalent to SCF Aggregates

($Billions)

Published Net Worth FA		**90,762.1**	**Source**
Published Nonfinancial Assets FA		31,827.2	B.101 - Line 2
(-)	Identifiable Nonprofit Net Worth		
	Real Estate	3,382.4	B.101 - Line 5
	Equipment	336.6	B.101 - Line 6
	Intellectual Property	145.2	B.101 - Line 7
(-)	Consumer Durable Goods	5,374.1	B.101 - Line 8
(+)	Equity in Non-corporate		
	Business	11,156.5	B.101 - Line 28
Conceptually Equivalent (to SCF)			
FA Nonfinancial Assets		**33,745.4**	
Published Financial Assets FA		73,889.5	B.101 - Line 9
(-)	Identifiable Nonprofit Net Worth		
	Open Market Paper		
	Consumer Credit (Student Loans)	39.9	B.101 - Line 22
(-)	Life Insurance Reserves	1,356.6	B.101 - Line 26
(-)	Misc. Assets	983.8	B.101 - Line 29
(-)	Other loans and Advances	862.3	B.101 - Line 20
(-)	Mortgages	112.9	B.101 - Line 21
(-)	Pension Entitlements	22,078.2	B.101 - Line 27
(-)	Equity in Non-Corporate Business	11,156.5	B.101 - Line 28
(+)	Pension Entitlements		
	DC Pensions	6,640.8	L.117 - Line 26
	Annuities in IRAs at Life Ins Co.	2,974.4	L.227 - Line 2
Conceptually Equivalent (to SCF)			
FA Financial Assets		**46,914.5**	
Published Liabilities FA		14,954.6	B.101 - Line 40
(-)	Identifiable Nonprofit Net Worth		
	Municipal Securities	219.6	B.101 - Line 31
	Commercial Loans and Advances	238.5	B.101 - Line 37
	Trade Payables	314.2	B.101 - Line 38
(-)	Depository Institution loans n.e.c.	319.2	B.101 - Line 35
(-)	Other loans and Advances	448.0	B.101 - Line 36
(-)	Deferred and Unpaid Life		
	Insurance Premiums	32.7	B.101 - Line 39
Conceptually Equivalent (to SCF)			
FA Liabilities		**13,382.4**	
Conceptually Equivalent (to SCF)			
FA Net Worth		**67,277.5**	

Table 1c Benchmarking TFA Net Worth to Financial Accounts

(Billions)	FA Conceptually Equivalent Value	Benchmarked TFA Estimate using SCF
Non-financial Assets:	33,745.4	33,746.3
Financial Assets:	46,914.5	46,913.6
Liabilities:	13,382.4	11,084.3
Net Worth:	**67,277.5**	**69,575.5**

Table 2. Distributional Effects of the TCJA, 2019

	TFA Estimates			JCT (2017a) Estimates		
Income Category	**Avg. Tax Rate Under Present Law**	**Avg. Tax Rate Under TJCA**	**Change**	**Avg. Tax Rate Under Present Law**	**Avg. Tax Rate Under TJCA**	**Change**
Less than 10,000	7.25%	6.46%	-0.79%	9.10%	8.60%	-0.50%
10,000 to 20,000	4.04%	3.25%	-0.79%	-0.70%	-1.20%	-0.50%
20,000 to 30,000	3.05%	1.93%	-1.12%	3.90%	3.40%	-0.50%
30,000 to 40,000	7.14%	5.80%	-1.34%	7.90%	7.00%	-0.90%
40,000 to 50,000	9.58%	8.27%	-1.30%	10.90%	9.90%	-1.00%
50,000 to 75,000	11.43%	10.01%	-1.43%	14.80%	13.50%	-1.30%
75,000 to 100,000	13.87%	12.33%	-1.53%	17.00%	15.60%	-1.40%
100,000 to 200,000	18.48%	16.68%	-1.80%	20.90%	19.40%	-1.50%
200,000 to 500,000	25.34%	23.17%	-2.17%	26.40%	23.90%	-2.50%
500,000 to 1,000,000	33.78%	31.23%	-2.55%	30.90%	27.80%	-3.10%
1,000,000 and over	38.30%	36.92%	-1.38%	32.50%	30.20%	-2.30%

Table 3 Share of Remaining Lifetime Spending of Top 1%, by Cohort

Cohort Age Range	Old Law	TCJA Assuming No Wage Increase	TCJA Assuming a 5.5% Wage Increase
20-29	12.5%	12.3%	12.3%
30-39	10.7%	10.7%	10.6%
40-49	12.9%	12.9%	12.8%
50-59	18.3%	18.3%	18.2%
60-69	19.7%	19.7%	19.7%
70-79	21.7%	21.8%	21.8%

Table 4 Share of Remaining Lifetime Spending of 3rd Quintle, by Cohort

Cohort Age Range	Old Law	TCJA Assuming No Wage Increase	TCJA Assuming a 5.5% Wage Increase
20-29	14.9%	14.9%	15.0%
30-39	15.6%	15.5%	15.6%
40-49	14.1%	14.1%	14.1%
50-59	10.1%	10.1%	10.1%
60-69	10.3%	10.3%	10.3%
70-79	10.2%	10.2%	10.2%

Table 5 Share of Remaining Lifetime Spending of Bottom Quintle, by Cohort

Cohort Age Range	Old Law	TCJA Assuming No Wage Increase	TCJA Assuming a 5.5% Wage Increase
20-29	7.4%	7.3%	7.2%
30-39	7.3%	7.2%	7.1%
40-49	6.5%	6.4%	6.3%
50-59	5.3%	5.3%	5.2%
60-69	5.3%	5.3%	5.2%
70-79	5.6%	5.6%	5.6%

Table 6 Share of Remaining Lifetime Taxes Paid By Top 1%, by Cohort

Cohort Age Range	Old Law	TCJA Assuming No Wage Increase	TCJA Assuming a 5.5% Wage Increase
20-29	13.9%	14.2%	14.1%
30-39	15.5%	15.8%	15.7%
40-49	16.6%	16.9%	16.8%
50-59	24.1%	24.6%	24.4%
60-69	25.5%	25.8%	25.6%
70-79	26.4%	26.3%	26.3%

Table 7 Share of Remaining Lifetime Taxes of 3rd Quintile, by Cohort

Cohort Age Range	Old Law	TCJA Assuming No Wage Increase	TCJA Assuming a 5.5% Wage Increase
20-29	13.2%	13.1%	13.1%
30-39	12.5%	12.4%	12.5%
40-49	11.8%	11.7%	11.9%
50-59	7.8%	7.7%	7.8%
60-69	6.6%	6.6%	6.7%
70-79	6.4%	6.4%	6.4%

Table 8 Share of Remaining Lifetime Net Taxes of Bottom Quintile, by Cohort

Cohort Age Range	Old Law	TCJA Assuming No Wage Increase	TCJA Assuming a 5.5% Wage Increase
20-29	3.3%	3.2%	3.3%
30-39	3.0%	3.0%	3.1%
40-49	2.6%	2.6%	2.7%
50-59	1.7%	1.8%	1.8%
60-69	2.0%	2.1%	2.1%
70-79	2.7%	2.8%	2.8%

Table 9 Average Remaining Lifetime Spending and Percentage Increases Relative to No Reform, Top 1%, by Cohort

Cohort Age Range	Old Law	TCJA Assuming No Wage Increase	TCJA Assuming a 5.5% Wage Increase
20-29	$13,409,166	$13,581,823 (1.3%)	$14,115,969 (5.3%)
30-39	$15,496,134	$15,841,922 (2.2%)	$16,351,594 (5.5%)
40-49	$21,758,600	$22,079,223 (1.5%)	$22,594,045 (3.8%)
50-59	$35,965,838	$36,425,132 (1.3%)	$36,937,566 (2.7%)
60-69	$33,996,632	$34,444,460 (1.3%)	$34,576,286 (1.7%)
70-79	$33,309,785	$33,699,673 (1.2%)	$33,745,728 (1.3%)

Table 10 Average Remaining Lifetime Spending (Percentage Increases) Relative to No Reform, Third Quintile, by Cohort

Cohort Age Range	Old Law	TCJA Assuming No Wage Increase	TCJA Assuming a 5.5% Wage Increase
20-29	$957,345	$981,921 (2.6%)	$1,024,094 (7.0%)
30-39	$1,139,022	$1,164,084 (2.2%)	$1,208,715 (6.1%)
40-49	$1,213,620	$1,236,779 (1.9%)	$1,276,088 (5.1%)
50-59	$994,140	$1,007,751 (1.4%)	$1,030,398 (3.6%)
60-69	$932,663	$939,748 (0.8%)	$945,040 (1.3%)
70-79	$819,781	$823,861 (0.5%)	$824,352 (0.6%)

Table 11 Average Remaining Lifetime Spending and Percentage Increases Relative to No Reform, Bottom Quintile, by Cohort

Cohort Age Range	Old Law	TCJA Assuming No Wage Increase	TCJA Assuming a 5.5% Wage Increase
20-29	$473,679	$480,083 (1.4%)	$489,659 (3.4%)
30-39	$539,698	$545,650 (1.1%)	$553,349 (2.5%)
40-49	$558,498	$562,458 (0.7%)	$569,748 (2.0%)
50-59	$522,383	$524,027 (0.3%)	$525,095 (0.5%)
60-69	$481,259	$481,570 (0.1%)	$481,922 (0.1%)
70-79	$451,966	$452,051 (0.0%)	$452,198 (0.1%)

Table 12 Average Changes and Share of Total Changes in Remaining Lifetime Spending, Ages 40-49, Assuming No Wage Increase

Quintile	Average Change in Remaining Lifetime Spending	Share of Total Changes in Remaining Lifetime Spending	Percentage Change in Average Spending	Minimum Percentage Change in Spending	Maximum Percentage Change in Spending
Lowest	$3,960	2.34%	0.75%	-5.539%	2.77%
Second	$13,957	8.32%	1.66%	-1.209%	3.09%
Third	$23,159	13.71%	1.94%	-0.477%	3.44%
Fourth	$34,966	20.74%	2.05%	-0.053%	4.09%
Highest	$92,315	54.89%	1.97%	-2.063%	5.88%
Top 5%	$183,803	27.39%	1.79%	-2.063%	5.48%
Top 1%	$320,624	9.74%	1.36%	-2.063%	4.08%

Table 13 Average Changes and Share of Total Changes in Remaining Lifetime Spending, Ages 20-29, Assuming No Wage Increase

Quintile	Average Change in Remaining Lifetime Spending	Share of Total Changes in Remaining Lifetime Spending	Percentage Change in Average Spending	Minimum Percentage Change in Spending	Maximum Percentage Change in Spending
Lowest	$6,404	4.33%	1.31%	-0.300%	3.14%
Second	$14,127	9.59%	2.10%	0.273%	4.06%
Third	$24,576	16.56%	2.61%	1.513%	3.67%
Fourth	$38,021	25.58%	2.71%	0.220%	4.16%
Highest	$65,287	43.95%	2.44%	-0.973%	5.25%
Top 5%	$110,070	18.60%	2.16%	-0.973%	5.25%
Top 1%	$172,658	6.96%	0.85%	-0.973%	5.25%

Table 14 Average Changes and Share of Total Changes in Remaining Lifetime Spending, Ages 70-79, Assuming No Wage Increase

Quintile	Average Change in Remaining Lifetime Spending	Share of Total Changes in Remaining Lifetime Spending	Percentage Change in Average Spending	Minimum Percentage Change in Spending	Maximum Percentage Change in Spending
Lowest	$84	0.12%	0.02%	-0.074%	0.22%
Second	$1,490	2.06%	0.26%	-0.090%	1.72%
Third	$4,080	5.72%	0.48%	-0.229%	1.85%
Fourth	$12,888	17.99%	0.95%	-0.046%	2.48%
Highest	$52,911	74.12%	1.07%	-0.935%	4.09%
Top 5%	$139,286	49.15%	1.17%	-0.935%	4.09%
Top 1%	$389,887	28.52%	1.27%	-0.935%	4.09%

Figure 1 Old Tax Law – Average Remaining Lifetime and Current-Year Net Tax Rates, by Percentile Range, Ages 40-49

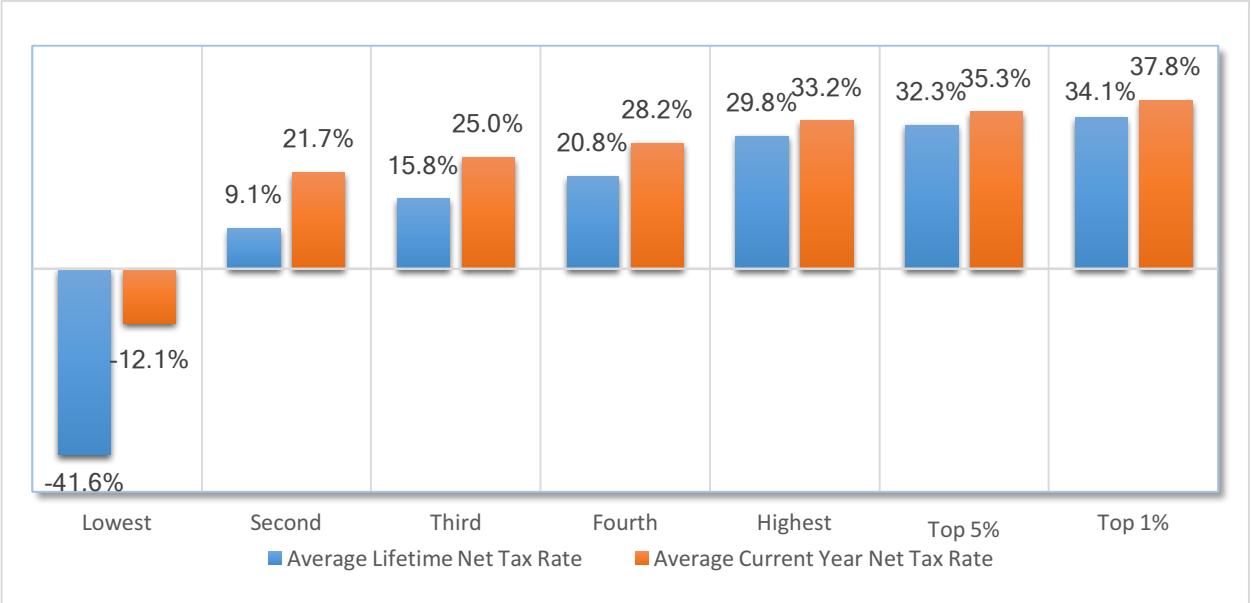

Figure 2 TCJA– Average Remaining Lifetime and Current-Year Net Tax Rates, by Percentile Range, Ages 40-49, Assuming No Rise in Wages

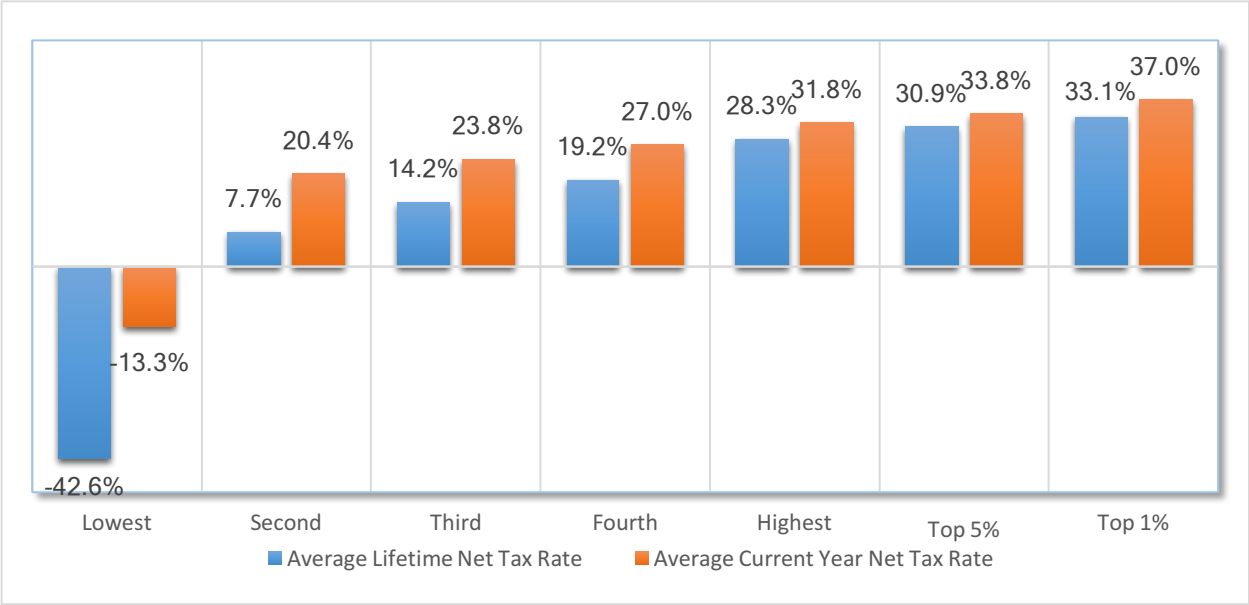

Figure 3 TCJA – Average Remaining Lifetime and Current-Year Net Tax Rates, by Percentile Range, Ages 40-49, Assuming 5.5% Rise in Wages

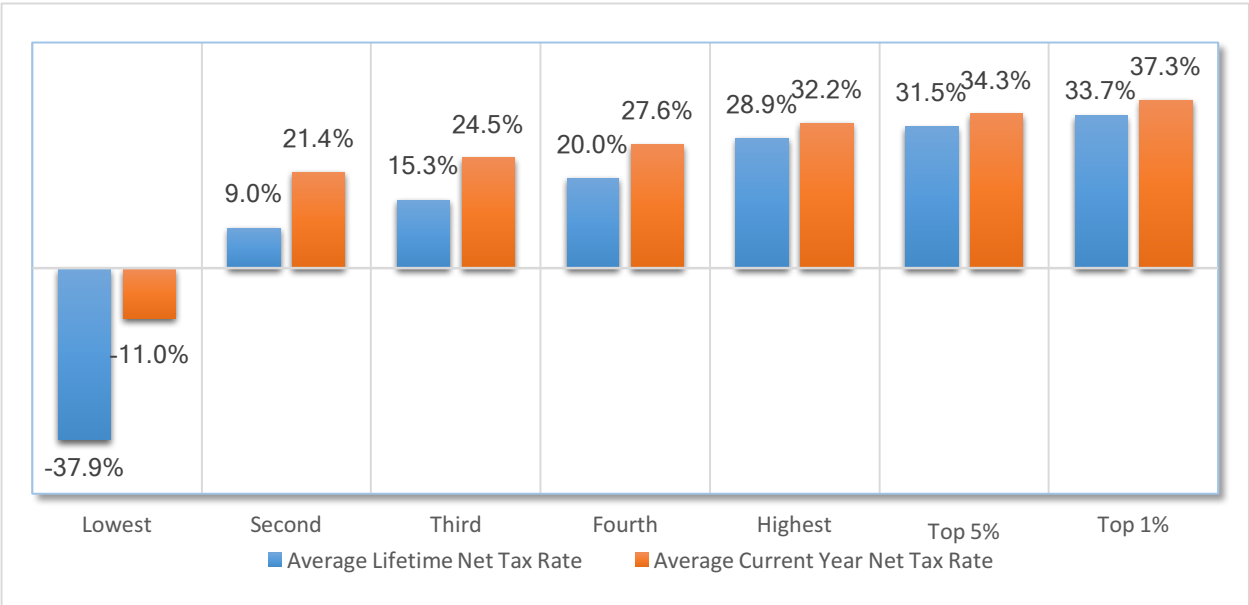

Figure 4 Comparing Pre- and Post-Reform Lifetime Spending, Ages 40-49, Assuming 0% Rise in Real Wages

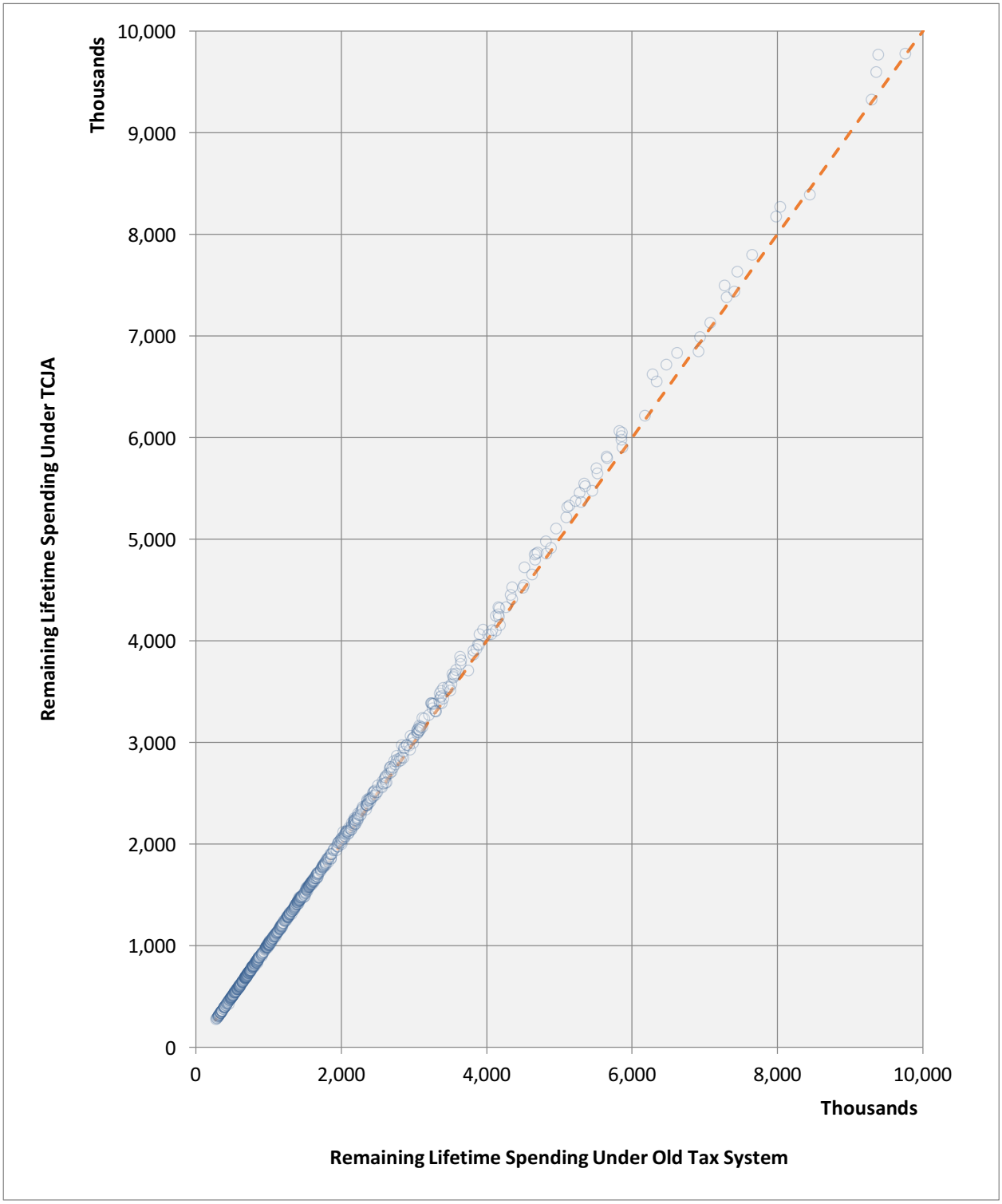

Figure 5 Comparing Pre- and Post-Reform Lifetime Spending, Ages 40-49, Assuming 5.5% Rise in Real Wages

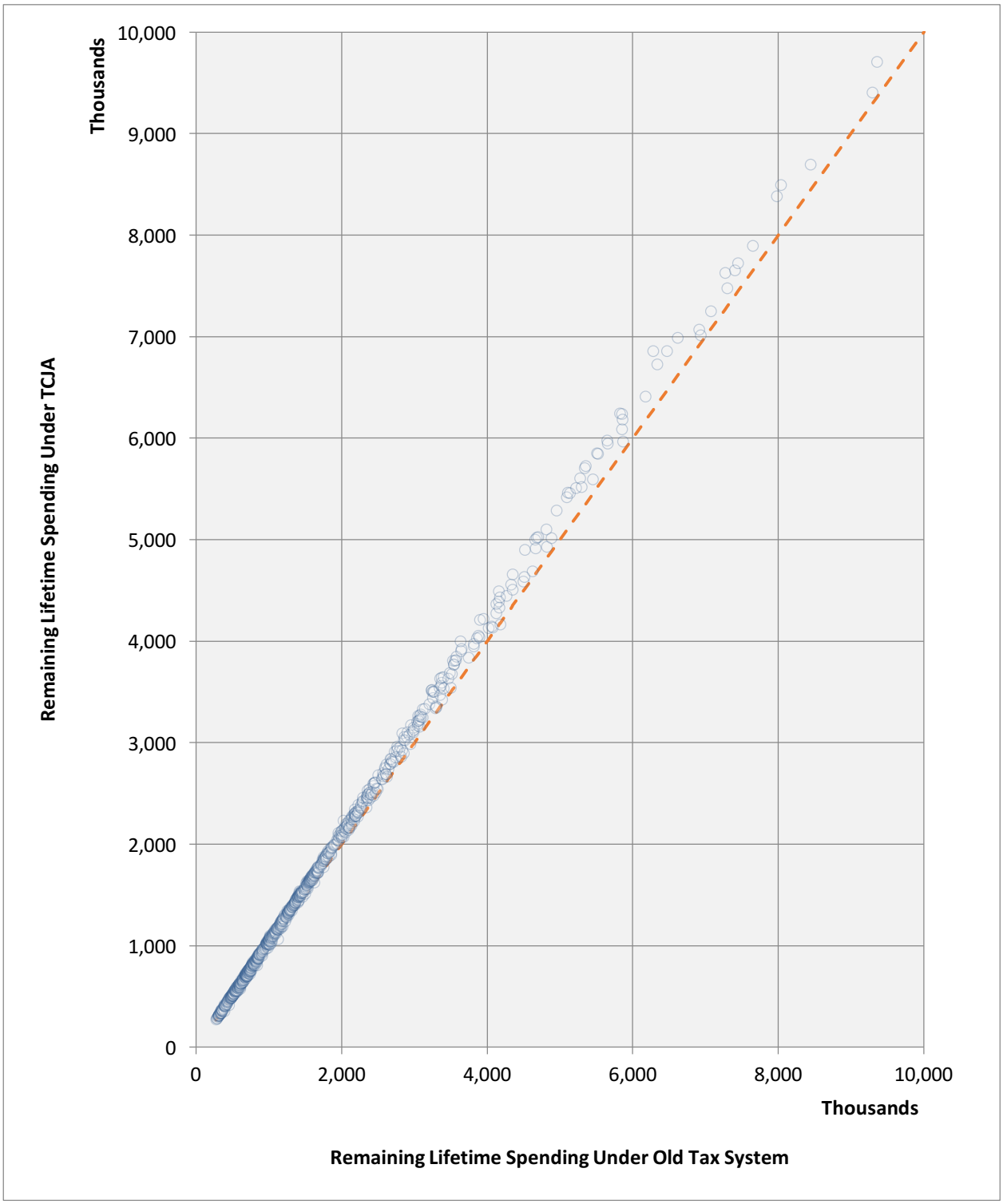

Figure 6 Share of 40-49 Cohort by Percent Change in Remaining Lifetime Spending, Assuming 0% Rise in Real Wages

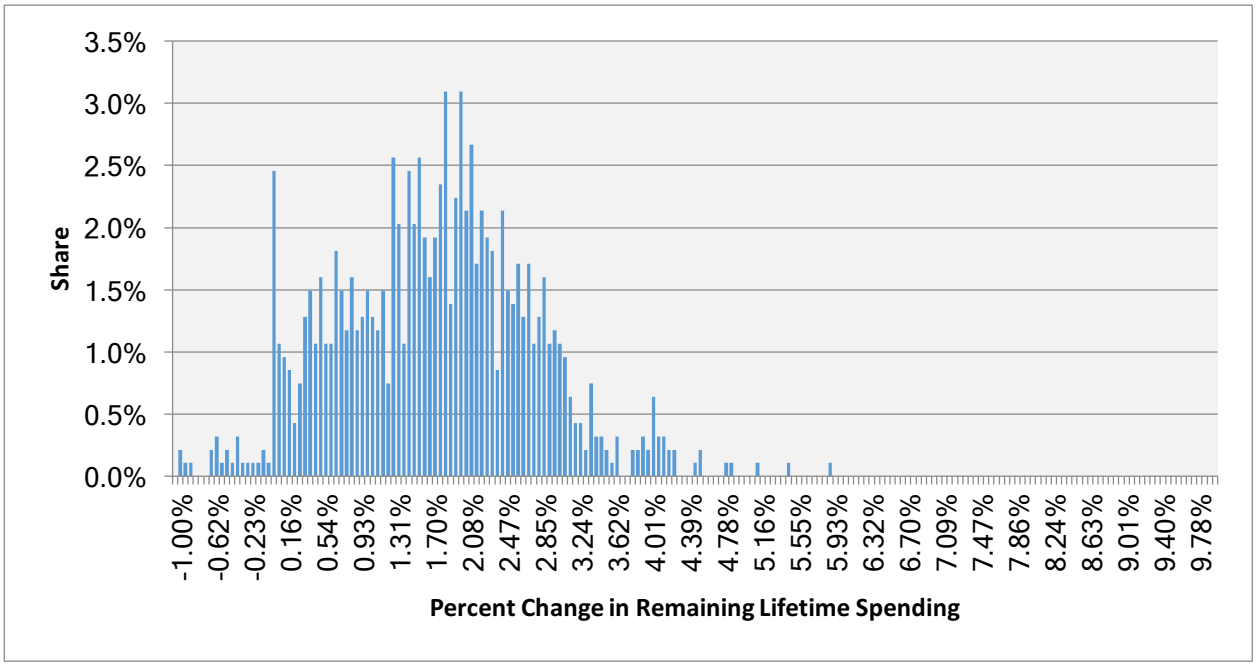
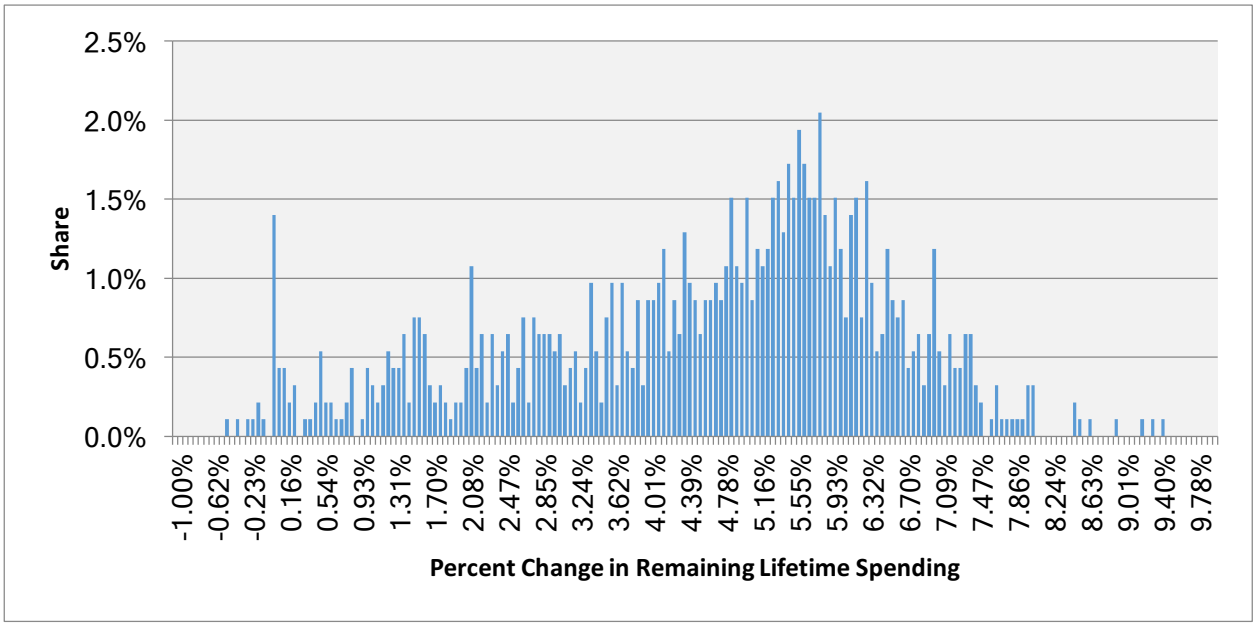
Figure 7 Share of 40-49 Cohort by Percent Change in Remaining Lifetime Spending, Assuming 5.5% Rise in Real Wages