How Changes in the Distribution of Earnings Affect the Federal Deficit

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Abstract

This paper by the Congressional Budget Office examines how the federal budget deficit would have differed in 2018 under four scenarios that vary the distribution of labor earnings while leaving aggregate earnings unchanged. The scenarios were constructed to isolate the budgetary effects of changes in the distribution of earnings and do not reflect an assessment of policies that would change the distribution of earnings.

CBO estimates that substantial changes in the distribution of earnings would have relatively modest effects on the deficit because of the offsetting effects on revenues and outlays. Under the two scenarios that decrease earnings inequality, the reduction in income tax revenues would be partially offset by an increase in payroll tax revenues and a reduction in federal spending (including federal subsidies for health insurance, spending on the Supplemental Nutrition Assistance Program, and spending on the Supplemental Security Income program). Increasing earnings inequality would have the opposite effect on revenues and spending. On net, the federal deficit would rise with a decrease in inequality and fall with an increase in inequality. Larger changes in inequality would result in larger changes in the deficit.

Under the scenario that decreases inequality by 14 percent (as measured by the standard deviation of the logarithm of earnings), the federal deficit would increase by $13 billion, or 1.7 percent. In the scenario in which inequality is reduced by 5 percent, the deficit would increase by a smaller amount, $4 billion. When inequality varies in the other direction, the scenario that increases inequality by 5 percent would lower the deficit by $7 billion, and the scenario with a 14 percent increase in inequality would decrease the deficit by $26 billion.

Keywords: earnings inequality, means-tested programs, income tax, payroll tax, budget deficit

JEL Classification: D30, H24, H53

Notes

Unless this report indicates otherwise, all years referred to are federal fiscal years, which run from October 1 to September 30 and are designated by the calendar year in which they end.

Numbers in the text, tables, and figures may not add to totals because of rounding.

This report presents historical earnings in 2018 dollars. To convert amounts, the Congressional Budget Office used the Bureau of Economic Analysis's price index for personal consumer expenditures.

The federal poverty guidelines, commonly referred to as the federal poverty level, are a set of income benchmarks used administratively to determine a household's financial eligibility for certain federal and state assistance programs. The guidelines, which vary according to the size and geographic location of a household, are developed by the Department of Health and Human Services. They are based on poverty thresholds determined by the Census Bureau in its calculations of official poverty rates.

Contents

Summary

Twice yearly, the Congressional Budget Office prepares forecasts of economic variables that underlie its projections of the federal budget. Those economic variables include measures of capital investment, labor force participation, and labor earnings. This paper shows how changes in the distribution of labor earnings would affect the federal deficit if total earnings from labor were unchanged. (Labor earnings include wages and salary and exclude self-employment income.)

CBO analyzed the effect on tax revenues and outlays under four scenarios in which people's labor earnings in 2018 were distributed either more or less equally than was actually the case. CBO's analysis focused on the budget items that are most directly affected by workers' earnings: revenues collected through income and payroll taxes, federal subsidies for health insurance coverage (including tax benefits for employment-based coverage), and spending on the Supplemental Nutrition Assistance Program (SNAP) and the Supplemental Security Income program (SSI).

CBO estimates that substantial changes in the distribution of earnings would have relatively modest budgetary implications because of the offsetting effects of those changes on revenues and outlays. More equally distributed earnings would result in lower outlays on federal subsidies for health insurance, lower outlays on certain means-tested programs, and lower tax revenues. In the scenarios that CBO analyzed, the effect on revenues would be larger than the effect on outlays. Accordingly, a decrease in earnings inequality would increase the federal deficit. The opposite is true when earnings are less equally distributed: The net effect on the deficit is greater for larger changes in the earnings distribution.

What Scenarios Did CBO Examine?

CBO analyzed four illustrative scenarios to determine how the distribution of labor earnings affects the budget. The scenarios are based on alternative distributions of labor earnings among low- and high-income people in 2018; they hold fixed both the aggregate labor earnings in the economy and the number of people with positive earnings. Labor earnings affect family income. Because both income tax revenues and eligibility and benefits for many government programs depend on family income, changing the distribution of labor earnings would affect the federal deficit.

The scenarios were constructed to isolate the budgetary effects of the distribution of earnings, and do not reflect an assessment of specific policies that would change the distribution of earnings. Such policies would probably change the total amount of earnings as well, and the analysis of such policies is beyond the scope of this work.

Two of the four scenarios would increase earnings inequality.[1] As measured by the standard deviation of the logarithm of earnings, inequality would rise by 5 percent under the scenario with a small increase in equality and by 14 percent under the scenario with a large increase in equality.[2] In the other two scenarios, inequality would be reduced by 5 percent under the scenario with a small decrease in inequality and 14 percent under the scenario with a large decrease in inequality. Those changes would be larger than recent actual changes. For example, under the scenario with a large decrease in inequality, earnings at the 90th percentile of the earnings distribution would fall to 2014 levels and earnings at the 10th percentile of the earnings distribution would increase by an amount equal to earnings growth in that percentile since 2010.[3]

This paper focuses on changes in labor earnings, which generally differ from related but distinct outcomes such as wage rates, income, or wealth. Income includes earnings from labor as well as income from other sources. Wealth is often measured as the value of a family's assets net of debt.[4]

How Would Changes in the Distribution of Earnings Affect Revenues and Outlays?

Taxes on labor earnings consist of income taxes and payroll taxes. Income tax revenues are affected by the distribution of earnings because marginal tax rates tend to increase with a family's income.[5] As a result of that progressivity of marginal tax rates, income tax revenues would be lower if earnings were more equally distributed. (The effects on income taxes would also include changes to tax benefits of employment-based health insurance coverage.) The opposite is true for payroll taxes. Earnings above a maximum amount are not subject to Social Security payroll taxes, so payroll tax revenues would be greater if earnings were more equally distributed. In contrast, if earnings were less equally distributed, income tax revenues would be more, and payroll tax revenues would be less.

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[1] To distinguish among the scenarios, this paper refers to a scenario with a large increase in inequality and a scenario with a small increase in inequality. Similar language is adopted for the scenarios in which inequality decreases.

[2] How much inequality changes depends on the measure used. Another summary measure of inequality, the Gini coefficient, would change inequality by 4 percent in the two scenarios with small changes in inequality. Inequality would go up by 12 percent in the scenario with a large increase in inequality and would fall by 14 percent in the scenario with a large decrease in inequality.

[3] Calculations are for annual wage and salary earnings in a calendar year among people with positive earnings, using data from the Annual Social and Economic Supplement to the Current Population Survey. See Sarah Flood and others, "IPUMS-CPS: Version 7.0" (Current Population Survey data, accessed August 12, 2020), https://doi.org/10.18128/D030.V7.0.

[4] See Congressional Budget Office, *Trends in Family Wealth, 1989 to 2013* (August 2016), www.cbo.gov/publication/51846. Among other factors, asset values and levels of household debt affect wealth. Since 1989, wealth has grown increasingly concentrated in the United States.

[5] The marginal tax rate is the percentage of an additional dollar of income from labor or capital that is unavailable to an individual because it is paid in taxes or offset by reduced benefits from government programs.

Changes in the distribution of earnings affect outlays through means-tested programs, which provide cash payments or other forms of assistance to people with relatively low income or few assets. The means-tested programs CBO analyzed include Medicaid, the Children's Health Insurance Program (CHIP), subsidies for health insurance coverage obtained through the marketplaces established by the Affordable Care Act, Supplemental Nutrition Assistance Program (SNAP), and the Supplemental Security Income (SSI) program. Those programs accounted for 88 percent of all federal outlays on means-tested programs in 2019.[6] On net, the outlays examined in this paper would decrease with a more equal distribution of labor earnings, primarily because there would be fewer participants in those means-tested programs.

Under the scenario with a large decrease in inequality, CBO found that the deficit would increase by $13 billion in 2018 (see Table 1). The scenario with a small decrease in inequality would result in a $4 billion increase in the deficit, or slightly less than one-third of the deficit change under the scenario with a large decrease in inequality. The change in the deficit was approximately proportional to the change in inequality for those two scenarios. The findings suggest that the results in Table 1 can be generalized to apply to other counterfactual experiments within the range of scenarios CBO investigated.

The budgetary effects estimated in the scenarios that increase inequality would be the opposite of the effects under the scenarios that reduce inequality, but the net effects on the deficit would still be modest in relation to the magnitude of the posited change in earnings. The deficit would fall by $26 billion in the large-increase scenario and by $7 billion in the small-increase scenario.

The budgetary effects estimated here only include the direct effects of the redistribution of earnings on the budget, for instance, changes in revenues from income and payroll taxes. Factors that are not directly affected by labor earnings, including the tax code and laws governing program eligibility, are held fixed in the analysis. (See the final section for a discussion of some of the other indirect effects that are outside the scope of this paper.)

Four Scenarios That Change the Distribution of Earnings

To gauge whether changes in earnings dispersion—the difference between the highest and lowest points in the earnings distribution—would affect the deficit, CBO adjusted earnings values in 2018 by different amounts at different points in the earnings distribution. Earnings differ substantially by decile of the income distribution, and those differences have changed over time (see Figure 1). In calendar year 2018, the median of workers' individual earnings (the value at the 50th percentile of the earnings distribution) was $40,000. Earnings at the 90th percentile of

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[6] See Congressional Budget Office, *Federal Mandatory Spending on Means-Tested Programs, 2009 to 2029* (June 2019), www.cbo.gov/publication/55347. The other outlays for means-tested programs are for Medicare Part D, child nutrition and family support, veterans' pensions, and Pell grants.

the distribution were more than $100,000, and earnings at the 98th percentile were more than $200,000.[7] In the recent past, real (inflation-adjusted) labor earnings have tended to rise at different rates depending on the year and position in the distribution.[8] As an example, median earnings grew more slowly than earnings at the 98th percentile over the 2000–2009 decade.

Each scenario CBO analyzed reflected an alternative distribution of labor earnings with either a large or small change in earnings inequality, and either an increase or a decrease in that inequality. Analyzing a range of changes allowed CBO to determine whether budgetary effects for the scenarios examined in this report could be reasonably extrapolated to other scenarios.

To create each alternative scenario, CBO adjusted the observed earnings distribution in 2018 by applying multiplicative factors to individual earnings, with the factors varying by earnings percentile and scenario. For example, applying multiplicative factors greater than 1 to low earnings values and multiplicative factors less than 1 to high earnings values would lower earnings dispersion. The adjustments are constrained to hold aggregate earnings constant so that each scenario varies the distribution but does not change the total amount of earnings. The adjustments only affect people with positive earnings, so they do not alter the number or characteristics of those people.

The adjustments in the four scenarios that CBO analyzed increased or decreased earnings at different points in the earnings distribution depending on whether the scenario increased or decreased earnings inequality (see Figure 2). The adjustments shown switch from increasing earnings to decreasing earnings at a point above the median. Accordingly, the decreases in earnings inequality that CBO analyzed redistribute earned income from percentiles above that point to percentiles below that point.[9] Under the scenario with a large decrease in inequality, the standard deviation of the logarithm of earnings would be 14 percent lower. That scenario would result in an official poverty rate of 9.8 percent, which is lower than any previous poverty rate, including the 2018 value of 11.8 percent. The standard deviation of the logarithm of earnings would be 14 percent greater under the scenario with a large increase in inequality. The smaller

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[7] Figure 1 shows earnings at the 98th percentile rather than the more conventional choice of the 99th percentile, which in this instance is subject to measurement error arising from imputations designed to preserve privacy for individuals with high earnings.

[8] All values are expressed in 2018 dollars using the price index for personal consumption expenditures.

[9] The adjustments shown in Figure 2 were chosen to alter earnings in parts of the earnings distribution especially relevant to tax receipts, health insurance coverage choices, and eligibility for the means-tested programs CBO analyzed. The adjustments leave earnings unchanged for some workers. The percentile in which earnings are unchanged is determined by the earnings distribution and the form of the adjustments. In 2018 CPS data, that point is at approximately the 70th percentile of the distribution, corresponding to $60,000 per year in labor earnings for an individual. The adjustment factors that would increase inequality are reciprocal values of the adjustment factors for the scenarios that reduce inequality, with a final adjustment to guarantee aggregate total earnings are held fixed. For example, in the scenarios with small changes, the adjustment factors for 25th percentile earnings in Figure 2 are 1.10 for a decrease in inequality and 0.91 for an increase in inequality.

adjustments are about one-third the size of the larger adjustments in terms of their effects on inequality.

The scenarios represent a substantial deviation from recent historical values (see Figure 1).[10] The scenario with a large decrease in inequality would return earnings in the top decile to values observed around 2014 and would raise earnings in the bottom half of the distribution to levels higher than those observed in the 1987–2018 period. Even under the scenario with a smaller decrease in inequality, real earnings at the 10th percentile would be 14 percent larger than their value in 2018. In comparison, the average annual growth rate of earnings at the 10th percentile was 2.7 percent over the 1987–2018 period. The two scenarios that increase inequality would lower earnings substantially in the 10th percentile of the earnings distribution—as if erasing either 5 or 15 years of growth, depending on the scenario.

Revenues

CBO analyzed how changes in the distribution of earnings would affect revenues received from income and payroll taxes. CBO estimates revenues would be higher under scenarios with increased inequality and lower under scenarios with decreased inequality.

In 2020, individual income taxes were $1.6 trillion, and payroll taxes were $1.3 trillion, together accounting for 85 percent of all revenues.[11] Income tax revenues include the nonrefundable portions of the Earned Income Tax Credit (EITC) and child tax credits. (A portion of certain refundable tax credits are reported in the federal budget as outlays; the paper adheres to this budget convention.)[12] Revenues also encompass tax subsidies for employment-based health insurance and the nonrefundable portion of subsidies to eligible people who purchase coverage through the health insurance marketplaces.

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[10] The range of scenarios considered here are represented in Figure 1 as vertical lines at the end of each series. Under the scenario with a large decrease in inequality, the earnings percentiles above the median correspond to the lowest points on the respective vertical line, and earnings percentiles at or below the median correspond to the highest points on each respective vertical line.

[11] See Congressional Budget Office, *The Budget and Economic Outlook: 2021 to 2031* (February 2021), www.cbo.gov/publication/56970. The tax effects shown below are the changes in tax liability associated with changes in income for calendar year 2018. Those changes would affect government receipts in both fiscal year 2018 and fiscal year 2019.

[12] If the amount of a refundable tax credit exceeds a family's tax liability, the government pays the excess to that family. In the federal budget, the portion of refundable credits that reduces the amount of taxes owed is treated as a reduction in revenues, and the portion that exceeds people's tax liabilities is treated as an outlay; the total budgetary cost of a refundable credit is the sum of those two components. Almost all of the budgetary cost of the EITC is from the outlay portion of the tax credit.

How Tax Rates Differ Across the Income Distribution

The rates of taxation on different levels of income determine the amount of revenues collected through income and payroll taxes; therefore, the effect of inequality on revenues depends on how marginal tax rates differ.

Marginal tax rates generally increase monotonically with income, except for low earners and high earners (see Figure 3). At the low end of the income distribution, the marginal tax rate first declines with income and then rises with it. That pattern is driven by the design of the EITC and child tax credits. The EITC is sensitive to the labor earnings of low-income families because it phases out as income increases. In contrast, the child tax credit increases with earned income for low earners.

At the high end of the earnings distribution, the relationship between marginal tax rates and earnings is also U-shaped, and that pattern is driven by the design of payroll taxes. Payroll taxes are composed of Social Security and Medicare taxes. The Medicare tax rate is a constant share of earnings except at very high levels of earnings; at that point, a high-earner surtax applies.[13] The Social Security tax rate is a constant share of earnings up to a maximum level of earnings and is zero beyond that level. In 2018, that level was $128,400, which was at approximately the 93rd percentile of the earnings distribution.[14] As a result, the marginal tax rate for Social Security payroll taxes drops to zero when earnings are above the taxable maximum.

Accordingly, income tax revenues would be lower if earnings were more equally distributed. Conversely, payroll taxes would be higher if earnings were more equally distributed because a greater share of earnings would fall below Social Security's taxable maximum. The increase in payroll taxes would be partly offset by lower revenues from Medicare taxes that are collected through the high-earner surtax. Because combined income and payroll tax rates rise with wage and salary earnings (with some exceptions), net revenues would be lower if earnings were more equally distributed.

How CBO Estimated Changes in Tax Revenues

CBO simulated both income and payroll taxes by applying the rules of the 2018 tax system to each member of a representative sample of taxpayers. The simulations use individual-level data, which can be adapted to reflect hypothetical changes to people's earnings. Furthermore, those data can easily be used to examine subgroups of the population, such as low-income families or

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[13] An additional Medicare tax of 0.9 percent applies to households with wages, self-employment income, and railroad retirement compensation that together are above a certain threshold. In 2018, that threshold was $250,000 for married persons filing jointly.

[14] For further detail about how various features of the tax system affect marginal tax rates, see Congressional Budget Office, *Marginal Federal Tax Rates on Labor Income: 1962 to 2028* (January 2019), www.cbo.gov/publication/54911.

families with children.[15] CBO simulated taxes for the unadjusted 2018 earnings distribution as well as for earnings distributions under each scenario.

CBO estimates that the scenario with a large decrease in inequality would have shifted approximately $300 billion in adjusted gross income (AGI) from high-income filers to lower-income filers in calendar year 2018 (see Figure 4).[16] As a result, families with AGI above $75,000 would have lower AGI under the scenario because people in those families would, on average, experience downward adjustments to labor earnings.

That analysis accounts for changes in the deductions and credits accruing to families because of changes in earnings. In estimating revenue responses to changing earnings, CBO judged that certain deductions vary directly with earnings but others do not.[17] The analysis also incorporates tax filers' incentive to itemize deductions rather than take the standard deduction. On average, higher-income families have a greater incentive than lower-income families to itemize deductions. Accordingly, CBO determined that under each scenario, some tax filers would change their decision about whether to itemize.

How Changes in the Distribution of Earnings Affect Revenues
Under the scenario with a large decrease in inequality, income tax revenues would have been lower by $74 billion, representing 4.8 percent of all income tax revenues (see Table 2). That overall decrease in income taxes incorporates changes in nonrefundable tax credits and tax preferences associated with employment-based health insurance coverage. Decreased inequality would raise the value of the child tax credit for some filers with very low or very high incomes, which would reduce revenues.[18] By contrast, decreased inequality would reduce the value of the EITC for families with modest incomes. The effects from the changes in the EITC on revenues would be relatively small, but the amount by which revenues would be reduced as a result of the

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[15] See Congressional Budget Office, *An Overview of CBO's Microsimulation Tax Model* (June 2018), www.cbo.gov/publication/54096. As part of the simulations, CBO determined how changes to individual earnings would affect family incomes.

[16] Adjusted gross income is a taxpayer's total income for a given tax year, less certain exemptions and deductions allowed under the tax code.

[17] Deductions related to state and local income taxes and charitable deductions were adjusted in proportion to earnings. Medical expenses were not changed but under the 2018 tax code they could only be deducted from income if they totaled more than 7.5 percent of adjusted gross income. State and local taxes that were not related to income were left unchanged, as were filers' deductions for interest payments on their home mortgages.

[18] Those findings are based on 2018 tax laws; the laws related to the child tax credit were changed for the 2020 tax year.

child tax credit would be $8 billion.[19] The decrease in revenues attributable to subsidies for employment-based health insurance coverage would be $9 billion.[20]

A large portion of the income tax change, $25 billion, would be offset by an increase in payroll tax revenues under the scenario with a large decrease in inequality. Some income from very high earners would shift to workers with earnings below the Social Security taxable maximum, resulting in more revenue from Social Security payroll taxes. That effect would be partly offset by a decline in Medicare's Hospital Insurance surtax.

The scenario with a large increase in inequality would raise federal revenues by $48 billion. The budgetary effect of scenarios with a small change in inequality is parallel to the scenarios with larger changes in inequality in the sense that the revenue effects are very close to proportionate to the magnitude of changes in inequality. The scenarios with smaller changes in inequality would have redistributed approximately $100 billion of labor earnings and resulted in revenue changes of $16 billion to $17 billion.[21]

Outlays

CBO analyzed how changes in the distribution of earnings would affect refundable tax credits, federal subsidies for health insurance, and outlays for several means-tested programs (including SSI, SNAP, Medicaid, and CHIP). In 2019, federal expenditures on those programs were $680 billion, or 88 percent, of the $773 billion in federal expenditures on all means-tested programs.[22]

Outlays tend to change more in the scenarios in which inequality decreased than in the scenarios in which inequality increased (see Table 3). The outlay portion of the EITC contributed to that pattern, as did outlays associated with health insurance coverage.

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[19] The outlay portion of refundable tax credits is reported below.

[20] That estimate, which CBO produced, excludes people over age 65 and includes effects stemming from the tax exclusion for employer-paid health insurance under the Federal Insurance Contributions Act. Estimated subsidies for employment-based health insurance are typically produced by the Joint Committee on Taxation (JCT). For more information on how CBO and JCT analyze budgetary costs of health insurance, see Congressional Budget Office, *How CBO and JCT Analyze Major Proposals That Would Affect Health Insurance Coverage* (February 2018), www.cbo.gov/ publication/53571.

[21] Although the scenarios CBO analyzed hold aggregate wage and salary earnings constant, they allow aggregate compensation to vary, including employers' share of payroll taxes and their contribution to premiums for health insurance plans. CBO also analyzed scenarios that would change the distribution of labor compensation and hold aggregate compensation constant. Those scenarios yield similar implications for tax revenues as the scenarios shown here, but the effects are of slightly larger magnitude.

[22] See Congressional Budget Office, *Federal Mandatory Spending on Means-Tested Programs, 2009 to 2029* (June 2019), www.cbo.gov/publication/55347.

Federal Subsidies for Health Insurance

The federal government subsidizes health insurance for many Americans through a variety of programs and tax provisions. In order to estimate the net effects those subsidies have on the federal budget, CBO and the staff of the Joint Committee on Taxation (JCT) estimate the number of people with different types of health insurance coverage and the resulting federal expenditures resulting from that coverage. The cost of health insurance subsidies for people under 65 was estimated to total $819 billion in 2020.[23]

Overview of Federal Subsidies for Health Insurance. Most Americans under age 65 obtain health insurance coverage through their employers. The reliance on employment-based coverage arises in part from its tax treatment. For purposes of determining income and payroll taxes, employers' contributions for health insurance are not treated as part of employees' salary. Further, most employees pay their share of employment-based coverage costs out of pre-tax income. The preferential tax treatment of employment-based coverage makes this avenue of obtaining health insurance cheaper, especially for workers facing higher marginal tax rates. Additionally, higher-income families demand more health services, on average. For those and other reasons, families with higher income are more likely to be offered health insurance by their employers, and they are also more likely to take up such offers. Federal subsidies for employment-based coverage were estimated to total $291 billion in 2020. (Those subsidies are included in the revenue estimates presented above.)

The next-largest source of health insurance coverage among people under age 65 is Medicaid. Medicaid provides coverage to low-income families and is jointly funded by states and the federal government. Under the Affordable Care Act, states are permitted to expand Medicaid eligibility to adults under age 65 whose incomes are up to 138 percent of the federal poverty level.[24] In aggregate, the federal government provides roughly three-fifths of all Medicaid funding. In 2020, federal spending on Medicaid was $459 billion, of which $349 billion was estimated to be spent on beneficiaries under age 65.

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[23] See Congressional Budget Office, *Federal Subsidies for Health Insurance Coverage for People Under 65: 2020 to 2030* (September 2020), www.cbo.gov/publication/56571. The cost of subsidies includes $14 billion in taxes and penalties related to health insurance coverage. Almost everyone age 65 or older is covered by Medicare, and a small share of people under 65 receive Medicare because of a disability. People receiving disability benefits under Social Security for 24 months are automatically eligible to receive Medicare benefits. Under disability rules, Medicare beneficiaries under age 65 generally do not work. The scenarios CBO analyzed do not alter federal expenditures associated with nonelderly Medicare beneficiaries. Those expenditures were estimated to be $118 billion in 2020.

[24] A family's modified AGI is used to determine eligibility for Medicaid, CHIP and tax credits and other savings for coverage through the nongroup health insurance marketplaces. Modified AGI adds untaxed foreign income, nontaxable Social Security benefits, and tax-exempt interest to the family's AGI.

CHIP provides low-cost health coverage to children in families that earn too much money to qualify for Medicaid. CHIP eligibility extends to families with incomes as high as 400 percent of the federal poverty level.[25] Federal spending on CHIP was estimated to be $17 billion in 2020.

The federal government provides tax credits to eligible people who purchase coverage through the health insurance marketplaces established by the Affordable Care Act.[26] Those premium tax credits are refundable and so can exceed people's tax liability, resulting in outlays in addition to the reduction in revenues. In addition, the Basic Health Program provides some federal funding for states to establish an alternative to marketplace coverage, primarily for people with income between 138 percent and 200 percent of the federal poverty level.[27] In 2020, net subsidies for nongroup coverage obtained through the marketplaces and payments for the Basic Health Program totaled $58 billion, CBO and JCT estimate.

Because of the differences in eligibility criteria and the availability and attractiveness of employment-based coverage, insurance coverage for those under age 65 varies with household income (see Table 4 for 2019 estimates). People in households with income below 138 percent of the federal poverty level obtain coverage primarily through Medicaid and CHIP (59 percent of people in such households did so in 2019), and 14 percent of people in that income group were uninsured in that year. At higher levels of income, coverage shifts toward employment-based coverage. The share of people with coverage purchased through the health insurance marketplaces was highest for households with income between 138 percent and 400 percent of the federal poverty level.

How Changes in the Earnings Distribution Affect Federal Subsidies for Health Insurance. CBO models federal subsidies for health insurance coverage for people under age 65 using data from a large representative sample of households, taking into consideration the options and preferences of each household.[28] To evaluate insurance choices under alternative earnings distributions, CBO adjusted workers' earnings in accordance with each scenario and determined how those earnings would have affected employer-subsidized insurance as well as eligibility for Medicaid, CHIP, and nongroup marketplace subsidies. Other relevant factors affecting coverage were also allowed to change with earnings. For example, changes in earnings would have

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[25] The upper limit of eligibility for CHIP varies by state, ranging from 170 percent to 400 percent of the federal poverty level. In most states, the federal poverty level for a family of three was $21,330 in 2019.

[26] Those tax credits are generally available to people with income between 100 percent and 400 percent of the federal poverty level, but only if those people are lawfully present in the United States, are not eligible for public coverage (such as Medicaid or CHIP), and do not have access to affordable employment-based coverage.

[27] Minnesota and New York have implemented Basic Health Programs.

[28] Estimates for federal subsidies for health insurance coverage in this report are based on CBO's Spring 2020 baseline. For additional information on the model, see Congressional Budget Office, *HISIM2—The Health Simulation Model Used in Preparing CBO's Spring 2019 Baseline Projections* (April 2019), www.cbo.gov/publication/55097.

affected marginal tax rates and the costs of employment-based coverage for people and firms, and therefore the offer and acceptance of employment-based coverage.[29] Laws were held constant, including 2018 tax rules and state decisions regarding Medicaid expansion.

In the scenario with a large decrease in earnings inequality, overall health insurance coverage for those under age 65 would have changed modestly, with the uninsured population falling by 0.5 million people, out of a total population of 272.1 million (see Table 5). However, the source of health insurance coverage would differ substantially. CBO estimates that an additional 4.7 million non-elderly people would be covered through employment-based coverage, an increase of 3 percent over CBO's baseline projections. The increased earnings for low-income households would reduce Medicaid eligibility and coverage substantially, by 6.4 million people, or 10 percent. Some people who would have become ineligible for Medicaid because of greater household earnings would still be eligible for subsidies via CHIP and coverage obtained through the health exchanges. Coverage through CHIP would rise by 1.4 million people, and coverage through nongroup coverage and the Basic Health Program would increase by 0.7 million people.

The lower subsidies under the scenario with a large decrease in inequality reflect both the partially offsetting shifts among different types of coverage and the relative costs of subsidizing them for the federal government. As a result, outlays related to health insurance would decline by $18 billion (see Table 3). Federal outlays for Medicaid would be less by $24 billion, in part because of proportionately large changes in the number of people who would have coverage as a result of Medicaid expansions under the Affordable Care Act. Outlays for CHIP, nongroup coverage, and Basic Health Program coverage would be higher by $5 billion, partially offsetting the changes to Medicaid spending.

Results for the other scenarios are generally consistent with the patterns for the scenario with a large decrease in inequality; however, when inequality increases, the effects on coverage and federal subsidies are smaller. CBO estimates that the scenarios with small or large increases in income inequality would result in less substitution between employment-based health insurance and other forms of coverage. That difference is driven by the specific changes made to the earnings distribution under those scenarios. In particular, the change in the number of people eligible for Medicaid coverage is greater under the scenarios with decreasing inequality than under the scenarios with increasing inequality. For example, Medicaid coverage would increase by 3.5 million people under the scenario with a large increase in inequality compared with a decline of 6.4 million people under the scenario with a large decrease in inequality. Accordingly, spending on Medicaid under the scenario with a large decrease in inequality would decrease by much more than it would increase under the scenario with a large increase in inequality.

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[29] In CBO's HISIM2 model, firms face adjustment costs in changing the options for health insurance coverage they offer their workers. For the purposes of this analysis, CBO interpreted changes to the earnings distribution as reflecting long-run changes and modeled firms' coverage offers absent such adjustment costs.

However, the offer of and demand for employment-based coverage would remain strong even if earnings changed for people with high incomes.[30]

The Supplemental Nutrition Assistance Program

SNAP provides benefits to low-income households to help them buy food. Total federal expenditures on SNAP amounted to $86 billion in 2020, of which approximately $74 billion was dispersed as benefits. On average, 40 million people (or 12 percent of U.S. residents) received SNAP benefits each month.[31]

Most people receiving SNAP benefits live in households with very low incomes, and SNAP benefits represent a substantial addition to their household resources. CBO estimates that in 2018, 82 percent of SNAP recipients were in households with income at or below the federal poverty level and that 92 percent of SNAP outlays went to those households (see Table 6). SNAP benefits depend on the cost of food, and the household's size and income. The maximum SNAP benefit for a household of three in 2020 was $509 per month, or about $5.60 per person per day. SNAP benefits are generally reduced by 30 cents for each additional dollar of increase in income above a certain threshold.[32]

CBO analyzed changes to the federal government's SNAP expenditures by first applying the alternative earnings adjustments to determine how the population in various income groups would change among families with positive labor earnings on the basis of a representative sample of households in 2018.[33] (Households with zero income would not be affected by the alternative earnings distributions because those households do not have earnings from labor.) CBO then determined how expenditures would change by multiplying the new number of people in each income group with the average SNAP expenditures per recipient for each income group. That method holds fixed the average monthly benefit for people in each income group under each scenario.

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[30] That pattern, however, does not extend to federal subsidies of employment-based coverage (see Table 2). Although the increase in employment-based coverage under the scenario with a large decrease in inequality would be greater than the decrease under the scenario with a large increase in inequality (an increase of 4.7 million people versus a decrease of 3.4 million people), the changes in federal subsidies would be similar under the two scenarios, in the range of $9 billion to $10 billion.

[31] See Food and Nutrition Service, Department of Agriculture, "Supplemental Nutrition Assistance Program Participation and Costs" (accessed September 6, 2021), https://go.usa.gov/xHswA. SNAP estimates are subject to revision.

[32] See Congressional Budget Office, *The Effects of Potential Cuts in SNAP Spending on Households with Different Amounts of Income* (March 2015), www.cbo.gov/publication/49978.

[33] Calculations are for annual wage and salary earnings in calendar year 2018 among people with positive earnings using data from the Annual Social and Economic Supplement to the Current Population Survey.

Most of the budgetary impact of the alternative scenarios derives from population shifts between income groups, with different levels of average benefits per recipient. CBO estimates that average monthly SNAP benefits in 2018 were $162 per recipient for households with incomes between zero and 50 percent of the federal poverty guideline and $113 per recipient for households with incomes between 51 and 100 percent of the poverty guideline. Under the scenarios with less earnings inequality, people would shift toward higher-income groups, and total spending on SNAP would therefore be lower.

SNAP expenditures would change substantially with changes in the distribution of earnings. The scenario with a large decrease in earnings inequality would result in $7 billion less in SNAP spending, or 11 percent of total SNAP benefits (see Table 3). The scenario with a small decrease in earnings inequality would result in $3 billion less in SNAP spending. Scenarios with increases in inequality would raise expenditures on SNAP in a roughly symmetrical manner. The scenario with a large increase in inequality would boost SNAP expenditures by $8 billion, and the scenario with the small increase would boost them by $3 billion.

The Supplemental Security Income Program
The SSI program provides monthly cash assistance to people with limited income and assets who are disabled, blind, or age 65 or older. To qualify for SSI, a disabled beneficiary must have a physical or mental impairment that meets the definition of disability under Social Security law. Federal SSI benefits are funded by the Treasury Department's general fund, not by one of the Social Security trust funds. Several states provide supplemental payments to some or all residents who receive federal SSI benefits.[34] Outlays for SSI amounted to $56.5 billion in 2020. CBO estimates that 7.9 million people were receiving federal SSI benefits at the end of 2020.[35]

Federal SSI benefits are calculated by using the maximum benefit set each year by law as a starting point for individual beneficiaries, and then reducing that maximum benefit on the basis of their earned and unearned income. A small portion of SSI recipients have earned income. The maximum SSI benefit for an individual in calendar year 2020 was $783 per month. SSI benefits are generally reduced by 50 cents for each additional dollar of earned income above a certain level.[36]

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[34] For details on the SSI program, see Social Security Administration, *SSI Annual Statistical Report, 2019* (August 2020), www.ssa.gov/policy/docs/statcomps/ssi_asr.

[35] See the March 2020 projections for SSI at https://www.cbo.gov/data/baseline-projections-selected-programs.

[36] In 2019, SSI benefits were reduced for people with earned income of more than $65 a month. Benefits were also reduced for unearned income that exceeded a certain amount. In 2019, that amount was $20. In December 2019, 41 percent of SSI recipients had unearned income, and 3 percent had earned income.

Because few SSI recipients have earned income, SSI expenditures would not change substantially under the different scenarios that CBO analyzed. Under each scenario, SSI expenditures would have changed by less than $0.5 billion (see Table 3).

Refundable Tax Credits

Decreased inequality would lower outlays of refundable tax credits, primarily by reducing EITC outlays to families with modest incomes. Under the scenario with a large decrease in inequality, EITC outlays would have been $9 billion less than they were (see Table 3). A large increase in inequality would increase outlays, $5 billion. The child tax credit mostly affects revenues, as discussed previously; the effects on outlays would be small under any of the four scenarios.

Conclusion

One implication of CBO's analysis is that the agency's projections of the federal deficit are relatively insensitive to forecasts about the distribution of labor earnings among households. Individual items in the federal budget would change significantly under the scenarios CBO considered, but those effects would be largely offset by changes in other items. In the scenario with a large decrease in inequality in 2018, tax revenues would decline, and outlays on federal subsidies for health insurance coverage and certain means-tested programs also would decline. The net effect of those declines would be to increase the deficit by $13 billion. The analogous net effect under the scenario with a small decrease in inequality would be to increase the deficit by $4 billion. The two scenarios with an increase in inequality would have larger net effects on the deficit. The difference in magnitude reflects smaller changes in EITC outlays and smaller changes in Medicaid outlays under the scenarios with increasing inequality.

There are several caveats to CBO's analysis. The analysis addresses the direct effects of earnings on revenues and on spending for programs in which the eligibility criteria or benefit calculation explicitly includes labor income in the covered period. CBO's analysis does not incorporate changes in other federal costs, such as salaries for federal workers or future Social Security benefits, which depend on workers' past earnings.

Additionally, changes to labor earnings may affect outlays associated with health insurance coverage. For instance, health insurance costs partly reflect the cost of medical care, which in turn partly reflects the labor costs associated with employing health care workers. To the extent that changing the distribution of earnings affects the average labor costs of health care workers, there may be indirect effects on the costs of federal health insurance subsidies.

Finally, CBO's analysis does not incorporate dynamic effects that may occur as broader economic variables change. For example, were earnings inequality to change because the labor market placed a higher premium on workers' skills, low-skilled workers might work less, and

more highly skilled workers might work more. The current analysis holds both earnings and labor force participation fixed. As another example, shifting resources from high earners to low earners might raise consumption and lower savings because low earners on average save a smaller fraction of their income. The resulting changes could affect price levels, interest rates, capital income, or other factors in the broader economy and therefore could affect the deficit estimates analyzed in this paper.

Figures

Figure 1.
Earnings Distribution from 1987 to 2018 and the Range of Earnings in 2018 Under Alternative Scenarios, by Percentile

Thousands of Dollars   Percentile of Earnings
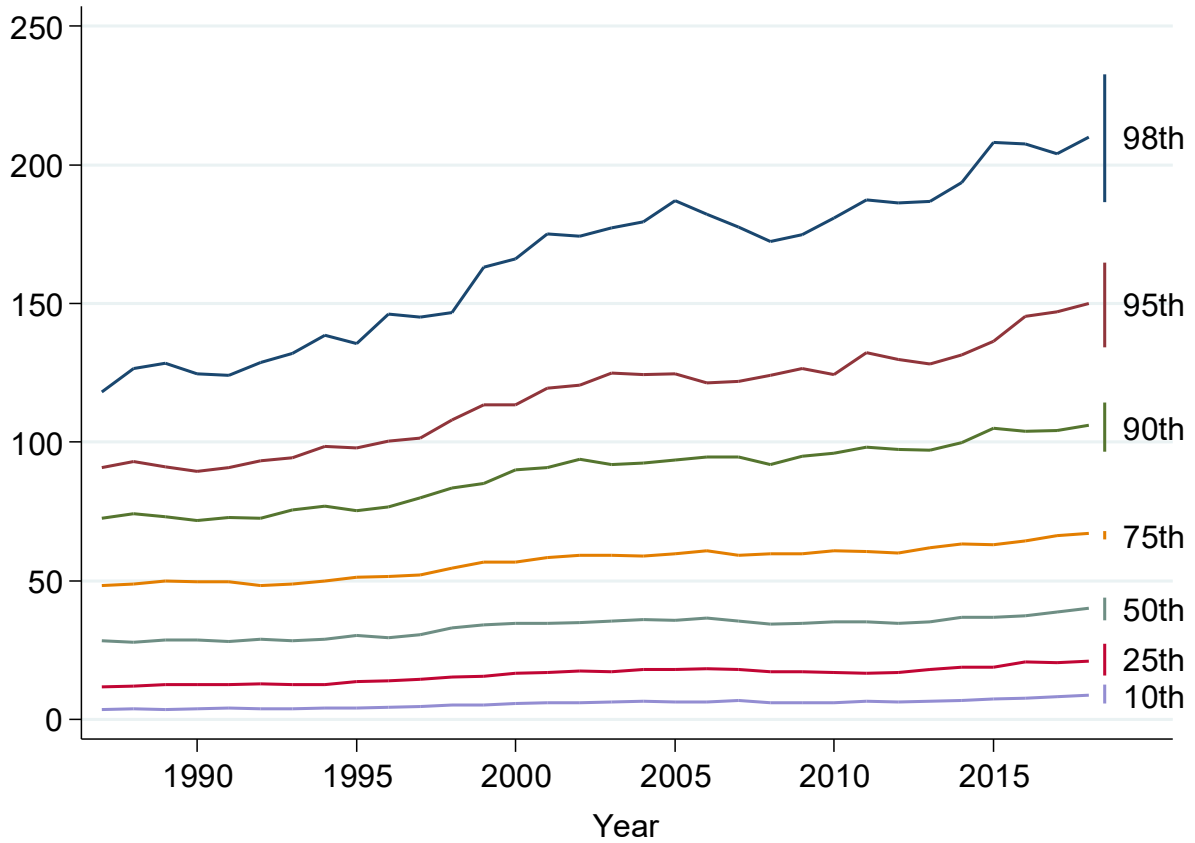
Data source: Congressional Budget Office, using Census Bureau data.

The alternative scenarios are constructed by multiplying wage and salary earnings at a given percentile of the earnings distribution by the adjustment factors shown in Figure 2.

All dollar amounts are in 2018 dollars. To convert amounts, the Congressional Budget Office used the Bureau of Economic Analysis's price index for personal consumer expenditures.

The figure shows actual earnings in each percentile from 1987 to 2018. The vertical bars on the right side of the graph show the range of earnings in each percentile under the alternative scenarios.

Figure 2.
Adjustment Factors for Earnings in Alternative Scenarios

Factor
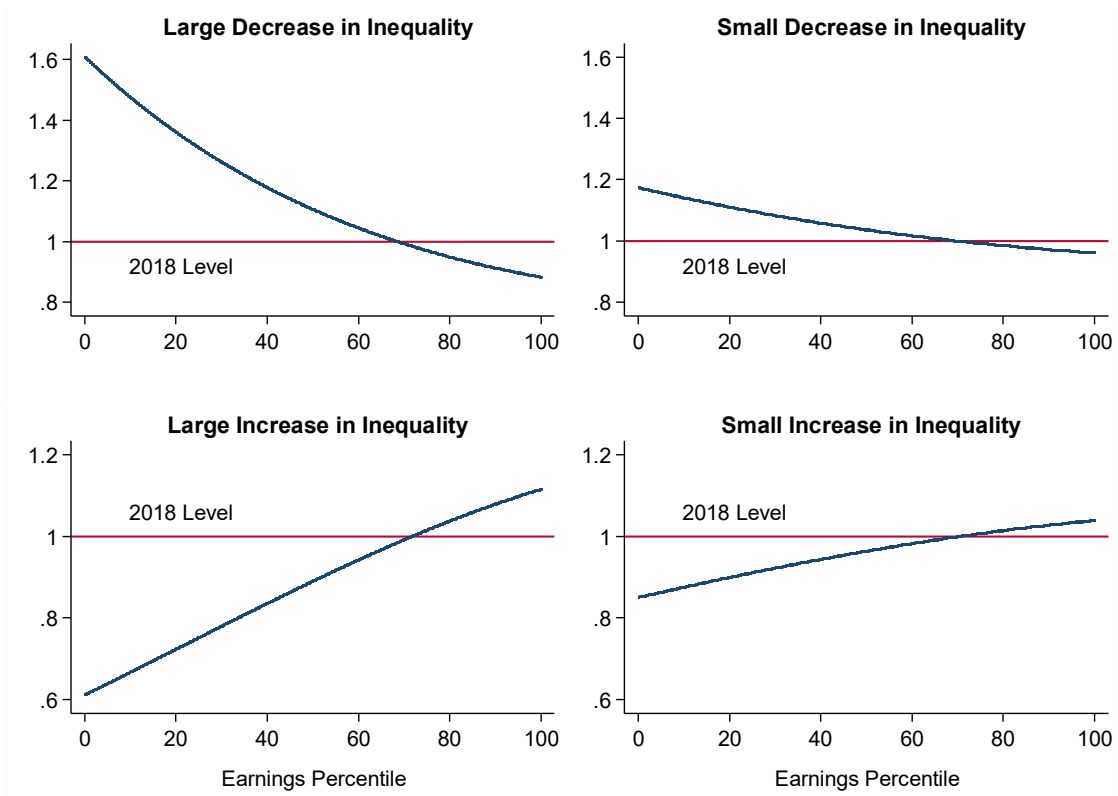
Source: Congressional Budget Office.

Factors are earnings multipliers for each percentile of annual wage and salary earnings.

Figure 3.
Marginal Tax Rates by Percentile of Earnings, 2018

Percent
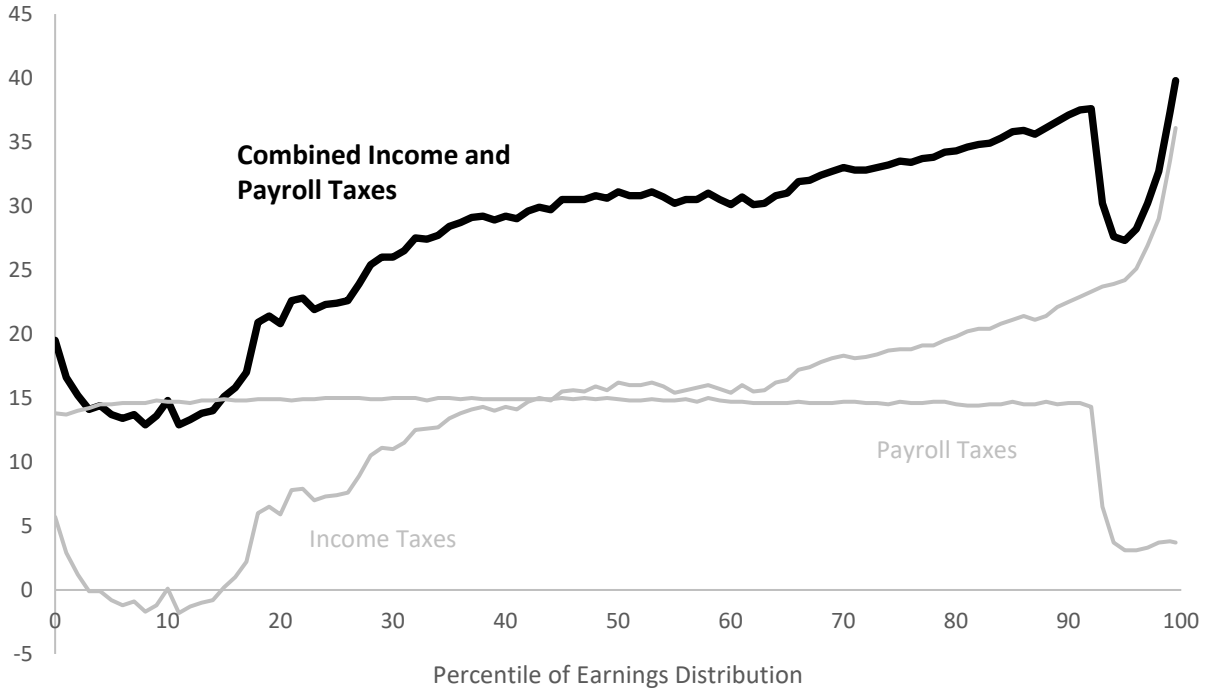
Source: Congressional Budget Office.

The marginal tax rate is the percentage of an additional dollar of income from labor or capital that is unavailable to an individual because it is paid in taxes or offset by reduced benefits from government programs. Marginal tax rates shown here are the average of people's tax rates within a given percentile of wage and salary earnings. Payroll taxes include employers' and employees' taxes for Social Security and Medicare.

Figure 4.

Changes in Adjusted Gross Income Under Alternative Scenarios, 2018

Billions of Dollars

Data source: Congressional Budget Office.

Adjusted gross income (AGI) is the amount of a taxpayer's total income for the tax year, less certain exemptions and deductions allowed under the tax code. Changes in AGI are calculated by comparing actual data with alternative data.

The alternative scenarios are constructed by multiplying wage and salary earnings at a given percentile of the earnings distribution by the adjustment factors shown in Figure 2. Income groups are defined using the taxpayer's baseline AGI.

Tables

Billions of Dollars

	Difference Under Alternative Scenarios[a]			
	Large Decrease in Inequality	**Small Decrease in Inequality**	**Small Increase in Inequality**	**Large Increase in Inequality**
Revenues	−49	−17	16	48
Outlays	−36	−12	9	22
Deficit	13	4	−7	−26

Data source: Congressional Budget Office.

a. The alternative scenarios are constructed by multiplying wage and salary earnings at a given percentile of the earnings distribution by the adjustment factors shown in Figure 2.

b. The effects on revenues incorporate the budgetary effects of nonrefundable tax credits and tax preferences associated with employment-based health insurance. Refundable tax credits are outlays.

Table 2.
Changes to Revenues Under Alternative Earnings Scenarios
Billions of Dollars

	Alternative Scenarios[a]			
	Large Decrease in Inequality	**Small Decrease in Inequality**	**Small Increase in Inequality**	**Large Increase in Inequality**
Individual Income Tax Revenues	−74	−25	24	74
Payroll Tax Revenues	25	8	−9	−26
Total[b]	**−49**	**−17**	**16**	**48**
Percentage Change				
Individual Income Tax Revenues	−4.8	−1.6	1.6	4.8
Payroll Tax Revenues	2.2	0.7	−0.8	−2.2
Memorandum:				
Effect on Revenues[b] **of Select Tax Credits and Tax Preferences**				
Earned Income Tax Credit	*	*	*	*
Child Tax Credit	−8	−2	2	6
Premium Tax Credits	*	*	*	*
Employment-Based Health Insurance Coverage	−9	−4	3	10

Data source: Congressional Budget Office.

a. The alternative scenarios are constructed by multiplying wage and salary earnings at a given percentile of the earnings distribution by the adjustment factors shown in Figure 2.

b. Tax revenues incorporate the budgetary effects of nonrefundable tax credits and tax preferences associated with employment-based health insurance. Refundable tax credits are outlays.

* = between −$0.5 billion and $0.5 billion dollars.

Table 3.
Change in Outlays Under Alternative Scenarios, 2018

Billions of Dollars

	Large Decrease in Inequality	Small Decrease in Inequality	Small Increase in Inequality	Large Increase in Inequality
Major Health Care Programs				
Medicaid, Made Eligible by ACA	−10	−4	2	3
Medicaid, Otherwise Eligible	−14	−5	3	6
CHIP	3	1	*	−1
Basic Health Program	1	*	*	*
Premium Tax Credit	1	*	*	1
Subtotal	−18	−7	3	10
Other Means-Tested Programs				
SNAP	−7	−3	3	8
SSI	*	*	*	*
Subtotal	−7	−3	3	8
Refundable Tax Credits				
Earned Income Tax Credit	−9	−3	2	5
Child tax credit	*	*	*	−1
Subtotal	−10	−3	2	4
Total Changes in Outlays	**36**	**−12**	**9**	**22**

Data source: Congressional Budget Office.

The alternative scenarios are constructed by multiplying wage and salary earnings at a given percentile of the earnings distribution by the adjustment factors shown in Figure 2.

ACA = Affordable Care Act; CHIP = Children's Health Insurance Program; SNAP = Supplemental Nutrition Assistance Program; SSI = Supplemental Security Income

* = between −$0.5 billion and $0.5 billion dollars.

Table 4.

Health Insurance Coverage Rates for People Under Age 65, 2019

Percent

Modified Family AGI As Percent of FPL	Type of Coverage				
	Employment-Based	Marketplace and Off-Marketplace Nongroup	Medicaid and CHIP	Medicare, Basic Health Program, and Other	Uninsured
Less than 138	21	3	59	9	14
138 to 200	45	9	32	5	14
201 to 300	61	9	17	3	14
301 to 400	74	9	8	2	13
401 to 600	85	1	2	2	9
Greater than 600	88	1	1	2	7

Data source: Congressional Budget Office, using data from the Census Bureau.

Adjusted gross income (AGI) is the taxpayer's total income for the tax year, less certain exemptions and deductions allowed under the tax code. Modified AGI adds untaxed foreign income, nontaxable Social Security benefits, and tax-exempt interest to the family's AGI.

The alternative scenarios are constructed by multiplying wage and salary earnings at a given percentile of the earnings distribution by the adjustment factors shown in Figure 2.

People may have coverage through more than one source, so coverage rates in each row can sum to more than 100 percent. The total population of people under age 65 was 272.1 million in 2019.

AGI = Adjusted Gross Income; CHIP = Children's Health Insurance Program; FPL = Federal Poverty Level.

Table 5.
Health Insurance Coverage for People Younger Than Age 65
Under Alternative Scenarios, 2019

Millions of People

Source of Health Insurance[a]	Coverage	How Coverage Source Changes Under Alternative Scenarios			
		Large Decrease in Inequality	Small Decrease in Inequality	Small Increase in Inequality	Large Increase in Inequality
Employment-Based Coverage	158.1	4.7	2.0	−0.9	−3.4
Medicaid	61.3	−6.4	−2.2	1.4	3.5
CHIP	6.8	1.4	0.5	−0.1	−0.2
Marketplace and Off-Marketplace Nongroup Coverage	14.1	0.5	0.0	−0.2	0.1
Basic Health Program	0.2	0.2	0.1	−0.0	−0.0
Medicare[b]	8.5	0.0	0.0	0.0	0.0
Uninsured	28.4	−0.5	−0.3	−0.2	−0.1

Data source: Congressional Budget Office.

The alternative scenarios are constructed by multiplying wage and salary earnings at a given percentile of the earnings distribution by the adjustment factors shown in Figure 2.

a. Some types of coverage are not listed, including student health plans, coverage provided by the Indian Health Service, and coverage from foreign sources. People may have coverage through more than one source. The total population of people under age 65 was 272.1 million in 2019.

b. Medicare coverage is held fixed in HISIM2 under the alternative scenarios.

CHIP = Children's Health Insurance Program.

Table 6.
SNAP Expenditures, Participants and Average Monthly Benefits, 2018

Household Income as a Percentage of the Federal Poverty Level	Expenditures (Billions of dollars)	Participants (Millions)	Average Monthly Benefit (Dollars per person)
< 0	14.0	6.4	182
0 to 50	19.2	9.9	162
51 to 100	23.0	17.0	113
101 to 130	3.8	5.4	59
131 to 185	0.8	2.0	35
186 to 200	0.1	0.2	22
Total	60.9	40.8	124

Data source: Congressional Budget Office, using SNAP Quality Control data.

SNAP = Supplemental Nutrition Assistance Program.