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# Adverse Effects of Automatic Cost-of-Living Adjustments to Entitlement and Other Payments

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## EXECUTIVE SUMMARY

Benefits from Social Security, Supplemental Security Income, federal civilian and military pensions, and dozens of other programs have received automatic cost-of-living adjustments (COLAs) to compensate for inflation annually since 1975. The COLAs are calculated from consumer price indexes (CPIs). In addition, eligibility for major transfer programs such as food stamps and Medicaid have been determined by family income compared with federal poverty levels, which are also adjusted annually by changes in CPIs.

The CPIs used for these adjustments systematically overstate inflation by approximately 1 percent per year from two distinct biases—substitution bias and new-item bias. As a result of these upward biases, benefits not only have kept pace with inflation, they also have increased faster than inflation, raising the standard of living for the beneficiaries and unnecessarily increasing the cost to taxpayers. In addition, these upward biases applied to the federal poverty level also make more Americans eligible for means-tested benefits, which unnecessarily increases the cost of those programs.

Since 1975, taxpayers have paid $5.6 trillion more in benefits for six major federal programs than would have been required to compensate for inflation, adding that much more to the standard of living for beneficiaries. Policymakers should use the existing official price indexes—the Chained Consumer Price Index for All Urban Consumers (C-CPI-U, or Chained CPI) and the Personal Consumption Expenditure Price Index (PCEPI)—to fix a little less than one-half of this overpayment immediately, and they should support research and development to eliminate the entire $397.6 billion annual overpayment within three years.

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## INTRODUCTION AND BACKGROUND

Beneficiaries of some government payments receive an automatic annual cost-of-living adjustment (COLA) in their benefits. The intent of these adjustments is to offset the losses beneficiaries suffer in the purchasing power of the dollar as the result of inflation. This policy analysis shows that the price indexes used to make these adjustments have overstated the true inflation rate by between 0.8 percent and 1.5 percent per annum for more than 50 years.

Social Security is the largest single entitlement transfer payment, dispensing $1.14 trillion in 2021. It is facing a serious financial crisis. The program's actuaries expect the Social Security Trust Fund to be fully depleted by 2035 and possibly as early as 2031.[1] Under current law, if the Trust Fund were exhausted, Social Security benefits would drop to the level that can be financed by Social Security taxes alone on a current basis—an initial decline of about 20 percent, which would become larger over time.[2] Social Security actuaries calculate that to avoid complete depletion of the Trust Fund, Congress could "immediately and permanently" raise the Social Security tax by 26 percent, cut benefits by 20 percent, or some intermediate combination of both.[3]

> "Price indexes used to make cost-of-living adjustments have overstated the true inflation rate by between 0.8 percent and 1.5 percent per annum for more than 50 years."

While the COLA escalations are part of this problem, fixing COLA would, in the long run, solve only about one-third of the total shortfall. But the COLA fix would procedurally be quick and easy. It should also be noncontroversial because such a fix merely requires replacing a less accurate measure of price change with a more accurate one, not changing anybody's taxes or base benefits. Plus, a quick improvement to the Social Security COLA will buy a little more time for phasing in a comprehensive solution for Social Security and can be replicated to all federal COLAs, delivering more healthy fiscal performance all around. The Social Security Administration has developed a list of more than 150 proposals for increasing taxes, reducing benefits, and other reforms that might improve Social Security's financial integrity. The list includes two proposals that would replace the price index currently used to calculate COLAs with better indexes similar to those discussed below.[4]

By law, Social Security began automatic COLAs with 1975 benefits for the Old-Age and Survivors Insurance (OASI) and Disability Insurance (DI) components. Individual benefits in the first year of eligibility are computed primarily from individuals' earnings history, adjusted for the rate of change in wages and salaries reported to the IRS for all workers from the year earned to the year in which the beneficiary is first eligible. But in subsequent years, the initial value is increased by the same percentage as the percentage increase in the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

The CPI-W is used to calculate the COLA for Social Security, Supplemental Security Income (SSI), civilian pensions, and military pensions. It is a continuation of the original CPI, which began in 1913. It measures price changes for the market basket of items purchased by households that account for about 32 percent of the population. The Consumer Price Index for All Urban Consumers (CPI-U) is a more comprehensive measure of the price change for the market basket of goods and services purchased by 87 percent of the population.[5]

The CPI-W population does not include households headed by retirees or other nonworking adults, so it may seem odd that the CPI-W, rather than the CPI-U, is used to calculate COLAs for Social Security and government pensions. While persons receiving survivors' benefits and disability benefits under these programs may fall into the CPI-W universe, at least 90 percent of beneficiaries do not. Part of the reason for this odd choice is simply timing. The automatic COLAs began with the 1975 benefits, using the price change from 1974 to 1975. The more comprehensive CPI-U population coverage did not begin until 1978.[6] Whereas many uses of the CPI switched to the more comprehensive CPI-U when it became available, the federal COLA did not.[7] Powerful political groups advocated for retaining the more limited and less appropriate CPI-W because they believed it would rise faster and thus increase benefits payments. There was no factual basis for that belief, and, in fact, the CPI-W has risen slightly less.[8]

The COLA percentage increase is computed between the third-quarter average for the CPI-W in the current year

and in the previous year. It is first applied to the December benefit for the current year, but the beneficiary does not receive this "December" benefit until the middle of January, so this analysis will look at the benefits received during the calendar year.

The COLAs for Social Security are applied only after the initial benefit is determined from individual earnings history, with adjustment for historical trends based on wage and salary reports to the IRS. Beneficiaries who became eligible in 1975, when automatic COLA increases began, would have, on average, received about 16 annual COLA increases. More recent retirees would have averaged about 18 annual COLA increases, owing to their longer life expectancy.[9] The benefits in the following analysis also include the Railroad Retirement System, which is administered in coordination with Social Security. The initial benefits are calculated somewhat differently, but the COLAs are the same. Benefit payments through the Railroad Retirement System constituted about 4 percent of the two programs in 1975 and 1 percent in 2021.[10]

The Social Security Administration also administers SSI, but it is financially separate from Social Security's Old-Age, Survivors, and Disability Insurance (OASDI) and is paid from general revenue. SSI benefits are needs-based additional payments for disabled and blind individuals, both adults and children, and for individuals over age 65. In 2021, there were 7.6 million individuals receiving $54.0 billion in federal government SSI benefits.[11] The federal SSI program also administered supplemental SSI benefits for some states, accounting for an additional 4.6 percent in benefits. Since the state supplements are not necessarily subject to the entitlement COLA for the federal government, they are not included in the following analysis.

The initial SSI benefit levels were established for single individuals and married couples, with higher benefits for those individuals and couples living in their own households than for those living with other adults. New beneficiaries receive payments that have been escalated by COLAs since 1975 and receive the same adjustments as Social Security in subsequent years.

Retirement benefits for civilian federal employees and their survivors are also adjusted with COLA provisions. The two classes of civilian retirements are the Civil Service Retirement System (CSRS), which covers only employees hired before 1984, and the Federal Employees Retirement System (FERS), which covers more recent hires and some earlier hires who voluntarily opted into the new system when it was initiated. About two-thirds of current annuitants are under CSRS. New retirees are about evenly divided between the two systems.[12]

"Some government entitlement transfer payments are not increased directly with a COLA, but eligibility to participate in the programs is tied to the federal poverty level for a family applying for benefits."

In addition to differences in calculating the initial retirement benefit, the two programs have different COLA arrangements. The CSRS is adjusted by the percentage increase between third-quarter values of the CPI-W for the two previous years, using the same calculation as for Social Security beneficiaries. The FERS starts with the same CPI-W calculation. For CPI-W increases of 2 percent or less, the FERS COLA benefit is the same as CSRS and Social Security. For increases between 2 and 3 percent, the FERS COLA is 2 percent, and for increases greater than 3 percent, the COLA is the CPI-W percentage increase minus 1 percentage point.[13]

Most retirees under the Military Retirement System receive the same COLA percentage increase as Social Security. The exceptions are those retirees who elected an optional career status bonus in exchange for an additional five-year service obligation and reduced retirement pay. Their COLAs are reduced by 1 percentage point; however, at age 62 their pension receives a one-time catch-up increase equal to the sum of the COLAs foregone, and in subsequent years, the COLAs continue at the reduced rate. This bonus arrangement is no longer offered, largely because it was a bad deal for the enrollee and, consequently, ineffective at improving retention. Retirees who had formerly elected it, however, continue to work their way through the system.[14]

Some government entitlement transfer payments are not increased directly with a COLA, but eligibility to participate in the programs is tied to the federal poverty level (FPL)

for a family applying for benefits. The official poverty level is measured based on the number of people in the family. The baseline income that determines poverty for each family size was originally established for 1963 and has been adjusted for inflation each year since using the annual percentage change in the CPI-U.

The income levels to qualify for food stamps (officially the Supplemental Nutrition Assistance Program, or SNAP) are updated each year using the FPL. To qualify for food stamps, a family must have less than 130 percent of the FPL for its size. The actual amount of the benefit is based on the cost of the "thrifty food plan" for the family size and family income as a proportion of the FPL. In 2021, food stamps delivered $114.2 billion in benefits.

Medicaid is a joint state-federal program with some variations among states. Qualification for other welfare programs such as SSI generally automatically qualifies a family for Medicaid. In addition, any family with income less than or equal to 133 percent of the FPL qualifies. The Children's Health Insurance Program (CHIP) complements Medicaid by providing benefits to children in families that do not qualify for Medicaid, up to 150 percent of the FPL. This analysis follows the common convention of reporting Medicaid and CHIP as a single program.

These six programs paid $2.8 trillion in transfer payments in 2021. There are other programs with similar COLAs or FPL-based criteria for qualification, but these six are the largest and have sufficient data available to calculate the fiscal effect of the inflation adjustments.

## PRICE TRENDS

Most people have an intuitive sense for the meaning of inflation and why government benefits should be adjusted to prevent loss of standard of living. Young adults in 2021 might have paid $4.00 a pound for ground beef, $40.00 for a shirt, $24,000 for a new car, and $3.40 per gallon for gasoline. Their parents, at the same age, might have paid $1.30, $30.00, $5,000, and $1.00, respectively; and their grandparents, $0.45, $5.00, $2,000, and $0.30. Most of these differences in prices are what we call inflation, and the intent of COLAs is to counteract inflation so that the beneficiaries of the transfer payments suffer no reduction in their standard of living.

But these raw differences in cost may not be entirely the result of pure price changes. For example, today's ground beef may be low-fat and the shirt no-iron, but two generations ago, those features were not common. Today's cars last almost twice as long, are nearly four times safer, get more miles per gallon, and pollute less. Most cars also have air conditioning, power steering, power brakes, and power windows. Today's Ford Mustang is not the same as the 1965 model, and a Tesla did not even exist then. Price measures used to set COLAs need to be unbiased measures that accurately identify pure price changes without erroneously counting quality improvements in goods and services as price changes.

"This overstatement of inflation is a well-known problem that has been extensively documented for years by the same people who calculate the CPI and by researchers both inside and outside government."

Unfortunately, the price indexes used for COLAs do not fully meet that standard. As a result, they overstate the true amount of inflation. These overstatements are not arithmetic mistakes. This paper describes the methods and procedures that were adopted over many years that inherently produce this result. Some of the faulty methods and procedures have since been corrected, but many have not. When price indexes that overstate price increases are used to calculate COLAs, the benefits paid not only compensate for higher prices, but they also increase, rather than maintain, the standard of living for beneficiaries from one year to the next, which was not the intent for the original policy.

This overstatement of inflation is a well-known problem that has been extensively documented for years by the same people who calculate the CPI and by researchers both inside and outside government. From its inception with data for 1913, the CPI has been best understood, according to the Bureau of Labor Statistics (BLS), the agency that compiles it, as "an upper bound on a cost-of-living index."[15] In other words, a true cost-of-living measure will never rise any faster than the CPI and is likely to rise more slowly.

George Stigler, Nobel laureate and one of the 20th century's top economists, chaired the 1961 Price Statistics Review Committee that found a "systematic upward bias in the price indices." In 1996, Michael Boskin, former chair of the Council of Economic Advisors, headed another blue-ribbon commission that concluded the CPI was still overstating inflation by some 1.1 percentage points per year, despite improvements. Alan Greenspan, then chair of the Federal Reserve, agreed and called on Congress to correct the overstatement. And in 2010, Erskine Bowles, former chief of staff to President Clinton, cochaired the Commission on Fiscal Responsibility and Reform and recommended a more accurate measure of inflation to improve government fiscal policy.[16] Subsequent academic literature has validated the continuing problem and made recommendations for improvements.[17] The overstatements come from two technical biases in the CPIs used for the adjustments. The first bias is the substitution bias, and the second arises from the introduction of new and improved items.

## Upward Substitution Bias in the CPI

Accurate price indexes require more than comparing apples to apples and avoiding comparing apples to oranges. They require that price changes be measured by comparing the price of an apple in one time period to an apple of the same variety, grade, and size in another time period. Following that principle, a price index for a single variety, grade, and size of apple would be straightforward.

But when adjusting income for inflation across all consumption, we must combine the price changes of thousands of things in addition to apples—ground beef, sneakers, rent, airfare, and heart surgery, to name a few. That is where things start to get more complicated. The BLS combines all these different items into the CPI by weighting the percentage change in prices for each item by the dollar amount consumers spent on that item in some initial reference time period as measured by the Consumer Expenditure Survey. In concept, this calculation also would be straightforward—just a lot of number crunching. The result would be a price index that measured the change in the cost of an unchanging market basket of goods and services—the same number of apples, pounds of ground beef, pairs of sneakers, months of rent, airline tickets, and heart bypass surgeries. The fixed market basket would also contain the same size home with the same amenities, the same gas mileage for cars, and the same recovery time from heart surgery as it did before.

If consumers purchased exactly the same things in the same quantities forever, this calculation would be easy, and there would be no overstatement of inflation. But consumers are always changing what they buy. For example, over the past several decades, consumers have purchased more packaged prepared foods, more meals in restaurants, and less raw foods for preparation at home. They have flown more and ridden trains less. When those changes occurred, the consumer expenditure weights used to combine the price changes of raw food components, prepared dishes, restaurant meals, airfares, and train tickets became outdated—the weights for raw food and train ticket items became too large and the weights for prepared food, restaurant food, and airfares became too small.

"As a result, the market baskets that are priced to determine what has happened to consumer prices are based on what was purchased in the past, not what is being bought currently."

For most of the postwar period, the relative weights representing the amount spent by American consumers for the various goods and services they purchased were as much as 10 years out of date. In recent years, the expenditures for what consumers are buying have been updated more often, improving the price indexes' accuracy. But even recently, when the market basket has been updated, the new weights for what is being bought have been as much as three years out of date before they are actually used, and, once introduced, they continue to become more out of date. As a result, the market baskets that are priced to determine what has happened to consumer prices are based on what was purchased in the past, not what is being bought currently.

The CPI fixed-market-basket approach creates more serious problems than just a matter of timeliness. Changes in relative prices among items induce consumers to change the mix of goods and services they buy. For example, the prices for landline phone services have risen faster than those for

wireless phone services. As a result, consumers have shifted more of their consumption to wireless phones, many even dropping their landlines altogether. A true cost-of-living price index would account for consumers maximizing their standard of living by shifting more of their telephone spending from landlines to relatively less expensive wireless services. But the traditional CPI has made no allowance for the increase in the standard of living created by this substitution of one service for another. It has continued to apply a fixed higher expenditure weight to the faster-rising landline prices and a fixed lower expenditure weight to the slower-rising, or even falling, wireless rates. As a result, it has overstated the true average price increase for telephone services that are chosen and experienced by consumers. This type of overstatement in the CPI is well known in the economic literature and is called "substitution bias."

Besides the large, obvious substitution of relatively less expensive mobile phone service for relatively more expensive landlines, there are thousands of other, often less dramatic, substitutions that the traditional CPI fails to reflect. For example, between 2010 and 2011, ground beef prices rose by 40 cents per pound and chicken prices rose by only 3 cents per pound. Consumers were worse off because both prices had risen. But relative to beef, chicken became cheaper because a consumer could buy a pound of chicken by foregoing only 0.47 pounds of beef, compared with foregoing 0.53 pounds of beef in 2010.[18] As a result, consumers improved their standard of living by buying 12.9 percent more chicken and 12.4 percent less beef.[19]

Table 1 illustrates this example of ground beef and chicken price changes between the base time period of 2010 and the current time period of 2011. In 2011 the average household spent slightly more on the total of beef and chicken ($310.36 versus $292.69). This increased total expenditure on the combination of ground beef and chicken is not a necessary result but occurs in this case because income rose between the two years, enabling greater expenditures.

The column "Official CPI (Laspeyres)" in Table 1 shows the calculation for the average price increase for a market basket of ground beef and chicken between the two periods as calculated for the official CPIs used in COLA calculations. Laspeyres is the statistical name for an index of this kind. The 13.4 percent increase is the percent change from $292.69, the cost of the market basket of base 2010 quantities priced at base 2010 prices, and $310.36, the cost of the base 2010 quantities at the current 2011 prices.

The column "Alternative CPI (Paasche)" in Table 1 shows an alternative computation that uses a Paasche index formula. The 12.6 percent increase is the percent change between $275.60, the cost of the market basket of current 2011 quantities at base 2010 prices, and $310.36, the cost of the market basket of current 2011 quantities at 2011 current prices. The official method using a Laspeyres formula gives a result that is 0.8 percentage points larger than the alternative Paasche formula. The difference between the two indexes occurs because ground beef prices rose faster than chicken prices and had 60.5 percent of the weight from 2010 in the official index. But ground beef had only 54.2 percent

Table 1
**Illustration of substitution effect on the Consumer Price Index**

| Item | Base time period (2010) | | | Current time period (2011) | | | | Official CPI (Laspeyres) | Alternative CPI (Paasche) |
|---|---|---|---|---|---|---|---|---|---|
| | Base quantity | Base price | Base expense | Current price | Price percent increase | Current quantity | Current expense | Base quantity at current price | Current quantity at base price |
| Ground beef | 91.7 | $2.37 | $217.00 | $2.77 | 17.3% | 80.4 | $223.00 | $254.51 | $190.14 |
| Whole chicken | 59.9 | $1.26 | $75.69 | $1.29 | 2.2% | 67.7 | $87.36 | $77.38 | $85.46 |
| **Total** | 151.6 | | $292.69 | | | 148.0 | $310.36 | $331.88 | $275.60 |
| | | | | | | | **Price index percent change** | 13.4% | 12.6% |

Sources: Author's calculations from Bureau of Labor Statistics, "CPI Average Price Data, U.S. City Average (AP)," unweighted annual averages of monthly data; and Bureau of Labor Statistics, "Consumer Expenditure Survey."
Notes: Displayed numbers rounded. Calculations from unrounded source numbers. CPI = Consumer Price Index. Quantity is in pounds.

of the weight in the Paasche calculation using weights from 2011. The relative weight of beef in the market basket fell as the result of lower demand, owing to beef's higher relative price. Although the magnitude will vary, the direction of this difference will always be for the official CPI to be greater than an index calculated with the alternative Paasche formula because items with prices that rise faster will generally have some reduction in their relative quantities consumed and, thus, lower weights in the alternative Paasche index.[20]

Table 2 shows what happens when the official Laspeyres CPI is used to create a cost-of-living adjustment. The first seven data columns are taken from Table 1. The last two columns show the result of the 13.4 percent COLA based on the official index. The 13.4 percent COLA creates a $39.19 increase in expenditures for beef and chicken from 2010 to 2011. The new total expenditure is distributed between beef and chicken in the same proportions as consumers' choices in 2011 with the new relative prices. Note what happens: the COLA enables consumers to consume 158.3 pounds of beef and chicken—6.7 pounds more than in 2010, an increase in the standard of living. This upward bias in the official CPI is inherent in its design, and a COLA based on the official CPI always increases benefits by more than the increase in the true cost of living.

Fortunately, the BLS has developed, and for 20 years has published, an index called the Chained Consumer Price Index for All Urban Consumers (C-CPI-U, or Chained CPI) that largely solves the substitution bias problem. It uses the same price data collected for the basic CPI, but it makes significant improvements. First, it revises the consumption expenditure weights to reflect what was actually bought at the time the price data were collected. The additional time required to collect and process the final consumption data means that the published values may be revised about 12 months after their initial release. These revisions are relatively small, typically 0.2 percent or less.[21]

Second, the computation explicitly accounts for the effects of changes in relative expenditures from one time period to the next. The traditional CPI weights price changes by the estimated expenditure for the item in the first time period only. The Chained CPI averages the price change calculated by applying the first period's expenditure weights with the price change calculated by applying the second period's weights. This corrects for the overstatement that would otherwise result from failing to account for the higher standard of living created when consumers substitute relatively cheaper items for relatively more expensive items.[22]

The Chained CPI does not exist for periods before December 1999, but the similar Personal Consumption Expenditure Price Index (PCEPI) calculated by the Bureau of Economic Analysis in the Department of Commerce covers the earlier time periods.[23] The combination of these two price indexes is accepted by economists and the government agencies that compile them as a more accurate measure of consumer price change than the traditional CPI. Since the automatic COLA began with the 1974–1975 change in the CPI-W, the COLAs have raised benefits for Social Security and other government transfer payments by 434 percent through 2021. But had the government used the more accurate Chained CPI (C-CPI-U combined with PCEPI), the benefit adjustment would have been only 341 percent. That means that in the course of 47 years, the substitution bias in the traditional CPI-W added 21 percent to the benefits being paid out.

Table 2

**Illustration of a COLA effect on the standard of living**

| Item | Base time period (2010) | | | Current time period (2011) | | | | Current time period (2011) with 13.4% COLA | |
|---|---|---|---|---|---|---|---|---|---|
| | Base quantity | Base price | Base expense | Current price | Price percent increase | Current quantity | Current expense | Quantity | Expense |
| Ground beef | 91.7 | $2.37 | $217.00 | $2.77 | 17.3% | 80.4 | $223.00 | 85.94 | $238.46 |
| Whole chicken | 59.9 | $1.26 | $75.69 | $1.29 | 2.2% | 67.7 | $87.36 | 72.34 | $93.42 |
| **Total** | 151.6 | | $292.69 | | | 148.0 | $310.36 | 158.30 | $331.88 |

Sources: Author's calculations from Bureau of Labor Statistics, "CPI Average Price Data, U.S. City Average (AP)," unweighted annual averages of monthly data; and Bureau of Labor Statistics, "Consumer Expenditure Survey."
Notes: Displayed numbers rounded. Calculations from unrounded source numbers. COLA = cost-of-living adjustment. Quantity is in pounds.

Robert Gordon, a professor of economics at Northwestern University and member of the original Boskin commission, evaluated progress on the commission's recommendations 10 years after the report was issued. Among other findings, he confirmed that the C-CPI-U index fulfilled some of the commission's strong recommendations to reduce the substitution bias. He also observed that the C-CPI-U demonstrated that the substitution bias in the traditional CPI was even greater than estimated in the commission's report.[24]

Unfortunately, this breakthrough of improved accuracy from the C-CPI-U has been largely ignored. Cost-of-living adjustments have continued to use the upwardly biased traditional CPI-W, and official government measures of well-being, such as real hourly earnings, real median household income, and the incidence of poverty, have continued to use traditional CPI measures that overstate price change and understate the improvements in real well-being as a result.[25] The only place the government has applied the improved C-CPI-U has been in the 2017 Tax Cuts and Jobs Act, which changed the adjustment of personal income tax brackets for inflation from using the CPI-U to using the C-CPI-U. This improvement was reasonable, but the overall effect is perverse. Using an index that will increase tax bracket limits more slowly will cause taxpayers to pay more taxes, while keeping the upward-biased CPI-U to adjust transfer payments will spend more taxpayer money.

## Upward Bias from New and Improved Items in the CPI

A second factor that causes the CPI-U and CPI-W to be overstated is the treatment of new and improved items in constructing the indexes. When a new item enters the marketplace or an existing item is changed, it is impossible to continue pricing exactly the same item. Price indexes attempt to address this problem by splitting the listed prices of new or modified items into changes resulting from the market value of quality differences and changes that represent only pure price changes. For example, the price tag for a new variety of streaming service might be $15 more per month than the preceding version. If its wider catalog of shows had a market value of $8 and its larger capacity for virtual storage had a market value of $4, there would be a total of $12 of quality improvements in the new version, and the pure price change would be an increase of $3. The key to making these adjustments is obtaining accurate estimates of the market value of the quality changes. Substantial technical advances have been made in calculating accurate estimates of market value, but there are still significant gaps even with the improvements, and the historical data have not been corrected for the improved estimates.

"Unfortunately, this breakthrough of improved accuracy from the C-CPI-U has been largely ignored. Cost-of-living adjustments have continued to use the upwardly biased traditional CPI-W."

Part of the new-item bias has come from delays in capturing new items. For example, the cell phone first came on the market in 1984, but it was not included as an identifiable item in the CPI until 1998, 14 years later. Because of that delay, the index did not reflect the 75 percent price decline and the quality improvements that occurred over those 14 years as phones became smaller and lighter and the batteries lasted longer. While the CPI is now able to capture new items much more quickly, the historical indexes are permanently biased upward because they have not been revised to correct for the known biases.

Despite the improvements in the CPI, technical research has demonstrated that current methods of separating quality and pure price changes for new and modified items still consistently overstate inflation because they continue to count some quality improvements as price increases. Examples of overstated price changes for new and improved products abound.

Today 224 million Americans have at their fingertips more than 2 million apps that aid them in thousands of tasks, from forecasting the weather anywhere in the world to showing them how to get to wherever they want to go. Americans communicate immediately without stationery, stamps, or driving to the post office. They get medical advice without going to the doctor's office and obtain instantaneous access to more knowledge than is in the local library. People shop from their armchairs and sometimes work for companies thousands of miles away. Improved quality of

medical care has provided more than increased convenience and pleasure, it has added eight years of life itself to the average American life span between 1970 and 2017.[26] Yet government CPIs do not come close to adjusting for all the value embodied in these and many other innovations.

In addition to Robert Gordon's evaluation of the 10-year progress on implementing the Boskin commission recommendations, a more recent 2013 technical paper by Bruce Meyer and James Sullivan, professors of economics at the University of Chicago and the University of Notre Dame, respectively, evaluated and adopted the Boskin approach for use in their improved measures of poverty. Another recent 2018 study by Brent Moulton, former chief of Price and Index Number Research at the BLS, confirmed the continuing size of the price index biases and their adverse effects on measures of economic well-being. The assessments incorporated more than 50 studies documenting overstatements for specific sets of items in the CPI-U. For example, studies of various personal electronic devices showed overstatements in price changes of between 3.6 and 5.8 percent annually because new or improved features were treated as price increases rather than as additional value for the consumer. Annual price increases for medical care were 3 percent too high because they did not account for the greater efficiency and improved outcomes of new drugs and procedures. Inflation for shelter was shown to be overstated by 0.25 percent annually because government statistical agencies ignored some of the consistent improvements in greater living space and added modern conveniences in homes.[27]

"Annual price increases for medical care were 3 percent too high because they did not account for the greater efficiency and improved outcomes of new drugs and procedures."

There are known solutions for these problems, but they have been implemented in official price indexes slowly, and they have not been applied to revise overstated historical price indexes. For example, the BLS began implementing better methods for pricing feature changes in mobile phones in January 2018. It is now using advanced statistical techniques to calculate the market value of new features, applying an approach illustrated above with a streaming service. Since the beginning of 2018, the BLS has been able to apply these methods to adjust for 83.8 percent of changes in mobile phone features and to separate more effectively value changes from price changes. These more extensive quality-adjustment methods were applied to only 4.5 percent of the new features that were adjusted for quality changes before 2018.[28] Although these adjustments for new items and quality changes will be made in estimating price changes in the future, the BLS has not gone back to correct for the overstatement of price increases in the past. As a result, historical data on price changes remain significantly overstated.

## Inflation Bias in CPI for Medical Care

Pricing of medical care has also presented significant challenges, with its vast advances in both technology and methods of medical practice. Medical care price indexes in the CPI have been based on prices for the components used in providing the care—a doctor visit, an outpatient procedure, days in the hospital, a bottle of pills, and so forth. In recent years, the CPI has priced services delivered within a hospital using methods that are more consistent with the way care is delivered and paid for—first using Diagnosis Related Groups and then in more comprehensive episodes of care.[29] But additional improvements are still needed.

Consumers purchase medical care as a treatment for a health condition. So, when the quality of care improves, the CPI calculation often misses the improvement in the quality of care and improved outcomes. For example, in the 1960s, patients with peptic ulcers, for whom changes in diet and antacids were not sufficiently effective, were often treated with surgery that would open the abdomen and stomach to repair the damage. Surgery required hospitalization for several days and more days to recuperate at home.

Later, more advanced prescription medications were invented that often eliminated the need for surgery. Those medications finally became routinely available over the counter. For many patients, the cost went from tens of thousands of dollars to less than $20 per month. Their risk from surgery disappeared, and their quality of life was better. But the improvements did not stop there. In the 1980s,

a significant proportion of cases was determined to arise from a unique bacterium that could usually be treated inexpensively with an antibiotic, again at lower cost and with better outcomes. And for those who still required surgery, the invention of laparoscopic surgery meant their procedure was less invasive and their recovery time in the hospital was shorter and cheaper. The cost of treating peptic ulcers went down dramatically and medical outcomes improved exponentially, but the CPI continued to price the extensive market basket of hospitals, doctors, and drugs.[30]

"Replacing the current medical care portion of the CPI-W with an index like the Disease-Based Price Index would eliminate 52 percent of the upward bias in the CPI-W from new and improved items."

Hundreds of other medical conditions also benefited from these types of improvements. Joint replacement has gone from rare with long recovery times and high cost to relatively common with almost miraculous recovery at lower relative cost. Perhaps most important are the diseases that can now be treated effectively, such as HIV, and those that can be cured rather than merely treated, such as hepatitis C.

The failures of the CPI to account fully for all these better medical outcomes at lower prices are well known. The BLS, in cooperation with the Bureau of Economic Analysis, has developed and published Disease-Based Price Indexes that implement the best methods for measuring price changes in medical care. These improved indexes price the total cost of treating a specific condition, including the presence of any complicating comorbidities. The Disease-Based Price Indexes account for improvements in both efficiency and outcomes and report only pure price changes. The BLS has published these disease-based indexes going back to 1999, but no statistical agency has incorporated them into other official CPI statistics, and COLA calculations continue to reflect the traditional methods. The differences are stunning. The CPI-W for Medical Care rose 122.5 percent from 1999 to 2021, but the aggregate Disease-Based Price Index rose just a little more than half as much, 65.9 percent.[31] Even when official price index research conducted by the BLS has shown that the medical care price indexes at the consumer level overstate medical inflation by almost a factor of two, the indexes used to calculate COLAs for transfer payments have never been corrected to incorporate this improvement.

This CPI-W overstatement of inflation in medical care has, in turn, produced a substantial overstatement of COLAs. Medical care constituted 4.71 percent of the CPI-W market basket in 1999. Over the subsequent 22 years for which data for the superior aggregate Disease-Based Price Index were available, it rose a substantial 56.6 percent less than the CPI medical care index (122.5 percent minus 65.9 percent). Simply replacing the medical care portion of the CPI with the calculations from the existing, officially published Disease-Based Price Index would reduce the measure of overall inflation as measured by the CPI-W by 2.7 percentage points (4.71 percent times 56.6 percent).

The most conservative estimate of the combined effects of substitution bias and new-item bias is 0.8 percent per year, which results in a 15.4 percent bias for those 22 years. Replacing the current medical care portion of the CPI-W with an index calculated like the Disease-Based Price Index would eliminate about 52.0 percent of the upward bias in the CPI-W from the introduction of new and improved items.[32]

While the remaining 48.0 percent of the new-item bias has not been addressed in official indexes like the Disease-Based Price Index, the studies described above from Boskin, Gordon, Meyers, Sullivan, and Moulton show that existing research results from more than 50 respected technical papers provide data that can be used to calculate reasonable best-practice estimates of the minimum effects from eliminating new-item bias. Combining these improved methods of valuing new and improved items with the official indexes that eliminate the substitution bias (C-CPI-U and PCEPI) produces a consumer price change of only 242 percent for the automatic COLA years from 1974 to 2021. The CPI-W used for calculating most COLAs rose 434 percent, almost twice as much.

## Correcting Inflation Bias Affects Poverty Measures and Eligibility for Means-Tested Benefits

The effect of using a more accurate measure of inflation on the poverty rate is a bit more complicated. The poverty

rate counts the number of people who live in families with incomes that fall below a defined poverty threshold for their family size. The poverty thresholds that define poverty were intended to identify the minimum income necessary to escape poverty, and poverty was specified by official policy as "the inability to satisfy minimum needs. The poor are those whose resources—their income from all sources, together with their asset holdings—are inadequate."[33] Those resource levels that define poverty, of course, require adjustment for inflation over time, and the Bureau of the Budget (now the Office of Management and Budget) issued a memorandum on August 29, 1969, directing all agencies to use the poverty thresholds developed for 1963 and adjust the thresholds by the percentage change in the CPI in subsequent years.[34] When the improved, but still flawed, CPI-U began publication in 1978, it, rather than the CPI-W, was adopted for adjusting poverty thresholds.

"Congress should require that the COLAs for Social Security, federal SSI, federal civilian and military pensions, and any other transfer payments to individuals be calculated and applied using the official price indexes C-CPI-U and PCEPI."

Adhering to this directive for inflation adjustment, the Census Bureau has increased the official poverty thresholds by 770 percent from 1963 to 2021. But if a more accurate price index that avoids substitution bias, such as the Chained CPI or the PCEPI, had been used to adjust for inflation, then the thresholds would have risen only 581 percent. And if the new-item biases outlined above had also been eliminated, then the thresholds would have risen only 391 percent. Consequently, using the CPI-U, which overstates inflation, to calculate poverty thresholds has overstated by 77 percent the standard of living below which families are defined as being poor.

If the federal poverty thresholds had been calculated using a CPI with the substitution bias removed (such as the C-CPI-U), 19.5 percent fewer people would qualify for food stamps in 2021, and if a CPI adjusted for the best estimates of new-item effects were used, then 34.6 percent fewer would have qualified. These expansions in coverage were not the result of a policy set by elected officials but were simply the unintended consequence of an ill-advised statistical choice almost 50 years ago.[35]

## SPENDING EFFECTS FROM CPI BIAS AND ELIGIBILITY CREEP

Table 3 shows the dollar value of COLAs for benefits in 2021 for the four largest programs with automatic COLAs and the two largest programs with eligibility determined by the FPL. In 2021, those six programs made a total of $2.2 trillion in payments to beneficiaries, of which more than $1.1 trillion were determined by a price-indexed COLA.

The 2021 COLA effects for Social Security and federal pensions are additional payments to beneficiaries above their initial monthly benefit based on their earnings history. Thus, for new Social Security retirees at age 67, there is no COLA, but for 85-year-olds in 2021, there are 20 years of COLAs since their full retirement age at age 65. These are payments in 2021, but the amount of the COLA is the cumulative increase since retirement. SSI benefits are fixed at an initial level unrelated to beneficiary earnings history, so the effects accumulate from 1975. As a result, the COLA effects are proportionately larger for SSI.

For SNAP, Medicaid, and CHIP, the effect of COLA is the cost of paying the benefit to the number of people who qualify for benefits based on the FPL computed using the indicated price index. The actual levels of benefits for each beneficiary are not affected by the choice of price index. Medicaid and CHIP savings for 2014 and subsequent years would be partially offset because beneficiaries with incomes above 133 percent of the corrected FPL would become eligible for premium tax credits under the Affordable Care Act. But because those credits are available to all households with incomes below 400 percent of the FPL, the correction of the FPL threshold would provide additional savings.

The deficit described next and in Table 3 is the difference between all federal government receipts and all expenditures, stated as a positive number. The 2021 amount is slightly less than the 2020 amount, which was the highest ever. Both

were extraordinarily large owing to the extra spending justified as responding to the economic effects of the COVID-19 pandemic. Had the government used the best available official price indexes that eliminate the substitution bias (C-CPI-U combined with PCEPI), the deficit in 2021 would have been $203.9 billion smaller, and 7.2 percent of the deficit would have been eliminated. If the adjustments had been made using estimates from the best-practices research combined into an index (best-practices research index) that eliminates both substitution and new-item biases, the 2021 deficit would have been $397.6 billion smaller, and 14.0 percent of the deficit would have been eliminated. The payments to beneficiaries would still have been increased to maintain the value of benefits adjusted for the true cost of living.

Table 4 shows the long-term effects of excessive COLAs on federal financial health from 1975, the first year of automatic COLAs, to 2021. Had COLAs and eligibility been calculated during that entire period using existing official price indexes that were free of substitution bias and nothing else was changed, the total debt held by the public would have been

Table 3

**Cost-of-living adjustments to major federal government payment amounts and eligibility using alternative price indexes, 2021**

| | | | COLA adjustments to benefit levels and eligibility, using alternative price indexes, 2021 ($ billions) | | | Savings from alternative price index, 2021 ($ billions) | |
|---|---|---|---|---|---|---|---|
| **Program** | **Total 2021 federal payments ($ billions)** | **Price index used for official adjustment** | **Official** | **C-CPI-U and PCEPI** | **Best-practices research index** | **C-CPI-U and PCEPI** | **Best-practices research index** |
| **Size of benefit adjusted for inflation** | | | **COLA adjustment to benefit** | | | | |
| Social Security (OASDI and railroad) | 1,157.8 | CPI-W | 219.2 | 190.6 | 137.6 | 28.6 | 81.6 |
| Supplemental Security Income (federal only) | 54.0 | CPI-W | 34.0 | 26.6 | 21.4 | 7.4 | 12.6 |
| Federal civilian pensions | 91.6 | CPI-W | 26.6 | 23.2 | 16.9 | 3.4 | 9.7 |
| Federal military pensions | 62.6 | CPI-W | 14.6 | 13.5 | 11.3 | 1.1 | 3.2 |
| **Eligibility for benefit adjusted for inflation** | | | **Cost of eligibles for benefits** | | | | |
| SNAP | 114.2 | CPI-U | 114.2 | 91.9 | 74.6 | 22.3 | 39.5 |
| Medicaid and CHIP | 735.6 | CPI-U | 735.6 | 594.5 | 484.7 | 141.1 | 250.9 |
| **Total** | 2,215.7 | | 1,144.1 | 940.2 | 746.6 | 203.9 | 397.6 |
| **Deficit (negative of net federal government saving)** | 2,835 | | | | | | |
| **Total percentage of deficit** | | | 40.4% | 33.2% | 26.3% | 7.2% | 14.0% |

Sources: "Annual Statistical Supplement to the Social Security Bulletin, 2022," Social Security Administration Publication no. 13-1170, December 2022, Table 4.B3, Table 5.A1, Table 5.A4, Table 5.C1, Table 5.G8, Table 7.C, Table 7.D, and Table 7.E; "National Income and Product Accounts Table 3.12," Bureau of Economic Analysis, September 30, 2022; Barry F. Huston, Paul S. Davies, and Tamar B. Breslauer, "Social Security: The Effects of Wage and Price Indexing on Benefits," Congressional Research Service Report no. R46819, June 16, 2021; Katelin P. Isaacs, "Federal Employees' Retirement System: Summary of Recent Trends," Congressional Research Service Report no. 98-972, January 10, 2020; and Office of the Actuary, "Statistical Report on the Military Retirement System: Fiscal Year Ended September 30, 2021," Department of Defense, September 2022.

Notes: COLA = cost-of-living adjustment; CPI-W = Consumer Price Index for Urban Wage Earners and Clerical Workers; C-CPI-U = Chained Consumer Price Index for All Urban Consumers; PCEPI = Personal Consumption Expenditure Price Index; OASDI = Old-Age, Survivors, and Disability Insurance; SNAP = Supplemental Nutrition Assistance Program; CHIP = Children's Health Insurance Program.

$2.8 trillion smaller, a reduction of 12.0 percent. If the best-practices research index had been implemented to eliminate new-item biases in addition to the substitution bias, the nation would have saved $5.6 trillion and cut the debt held by the public by 24.0 percent.

COLAs for Social Security's OASDI have had an additional significant fiscal effect. Until recently, the payroll taxes paid for Social Security each year have usually exceeded the cost of benefits paid in that year. This balance was transferred to the general fund of the U.S. Treasury, which in turn issued special Treasury bonds to the Social Security Trust Fund to be redeemed later when taxes collected were less than the benefits paid. The fund balance reached $2.9 trillion at the end of 2020. Then in 2021, the Social Security Trust Fund had to redeem $56.3 billion of those bonds to pay OASDI benefits. Social Security actuaries have calculated that

Table 4

**Cost-of-living adjustments to major federal government payment amounts and eligibility using alternative price indexes, 1975–2021**

| | | | COLA adjustments to benefit levels and eligibility, using alternative price indexes, cumulative amounts 1975–2021 ($ billions) | | | Savings from alternative price index 1975–2021 ($ billions) | |
|---|---|---|---|---|---|---|---|
| **Program** | **Total 1975–2021 federal payments ($ billions)** | **Price index used for official adjustment** | **Official** | **C-CPI-U and PCEPI** | **Best-practices research index** | **C-CPI-U and PCEPI** | **Best-practices research index** |
| **Size of benefit adjusted for inflation** | | | **COLA adjustment to benefit** | | | | |
| Social Security (OASDI and railroad) | 22,249.9 | CPI-W | 5,488.8 | 4,860.5 | 3,880.2 | 628.4 | 1,608.6 |
| Supplemental Security Income (federal only) | 1,336.4 | CPI-W | 530.3 | 424.6 | 331.6 | 105.6 | 198.6 |
| Federal civilian pensions | 2,089.4 | CPI-W | 732.3 | 646.6 | 526.4 | 85.6 | 205.9 |
| Federal military pensions | 1,455.0 | CPI-W | 389.4 | 356.0 | 312.0 | 33.4 | 77.4 |
| **Eligibility for benefit adjusted for inflation** | | | **Cost of eligibles for benefits** | | | | |
| SNAP | 1,452.2 | CPI-U | 1,452.2 | 1,236.6 | 1,062.2 | 215.5 | 390.0 |
| Medicaid and CHIP | 11,151.9 | CPI-U | 11,151.9 | 9,445.6 | 8,067.1 | 1,706.3 | 3,084.7 |
| **Total** | 39,734.9 | | 19,744.8 | 16,969.9 | 14,179.6 | 2,774.9 | 5,565.2 |
| **Debt held by public** | 23,143.7 | | | | | | |
| **Total percentage of debt held by public** | | | 85.3% | 73.3% | 61.3% | 12.0% | 24.0% |

Sources: "Annual Statistical Supplement to the Social Security Bulletin, 2022," Social Security Administration Publication no. 13-1170, December 2022, Table 4.B3, Table 5.A1, Table 5.A4, Table 5.C1, Table 5.G8, Table 7.C, Table 7.D, and Table 7.E; "National Income and Product Accounts Table 3.12," Bureau of Economic Analysis, September 30, 2022; Barry F. Huston, Paul S. Davies, and Tamar B. Breslauer, "Social Security: The Effects of Wage and Price Indexing on Benefits," Congressional Research Service Report no. R46819, June 16, 2021; Katelin P. Isaacs, "Federal Employees' Retirement System: Summary of Recent Trends," Congressional Research Service Report no. 98-972, January 10, 2020; and Office of the Actuary, "Statistical Report on the Military Retirement System: Fiscal Year Ended September 30, 2021," Department of Defense, September 2022.

Notes: COLA = cost-of-living adjustment; CPI-W = Consumer Price Index for Urban Wage Earners and Clerical Workers; C-CPI-U = Chained Consumer Price Index for All Urban Consumers; PCEPI = Personal Consumption Expenditure Price Index; OASDI = Old-Age, Survivors, and Disability Insurance; SNAP = Supplemental Nutrition Assistance Program; CHIP = Children's Health Insurance Program.

increasingly larger withdrawals will continue until the Trust Fund is fully depleted in early 2035.[36] Under current law, once the Trust Fund balance is fully depleted, payments to beneficiaries must be reduced to the level supported by current Social Security taxes.

If Social Security COLAs had been calculated using the combination of C-CPI-U and PCEPI, then the Trust Fund balance in 2020 would have been $3.5 trillion, and full depletion of the Trust Fund would have been delayed two more years to 2037. If the price indexes had also been improved to minimize new-item bias (the best-practices index), the balance in 2020 would have been $4.4 trillion, and full depletion of the fund would have been delayed until 2039 (see Figure 1).

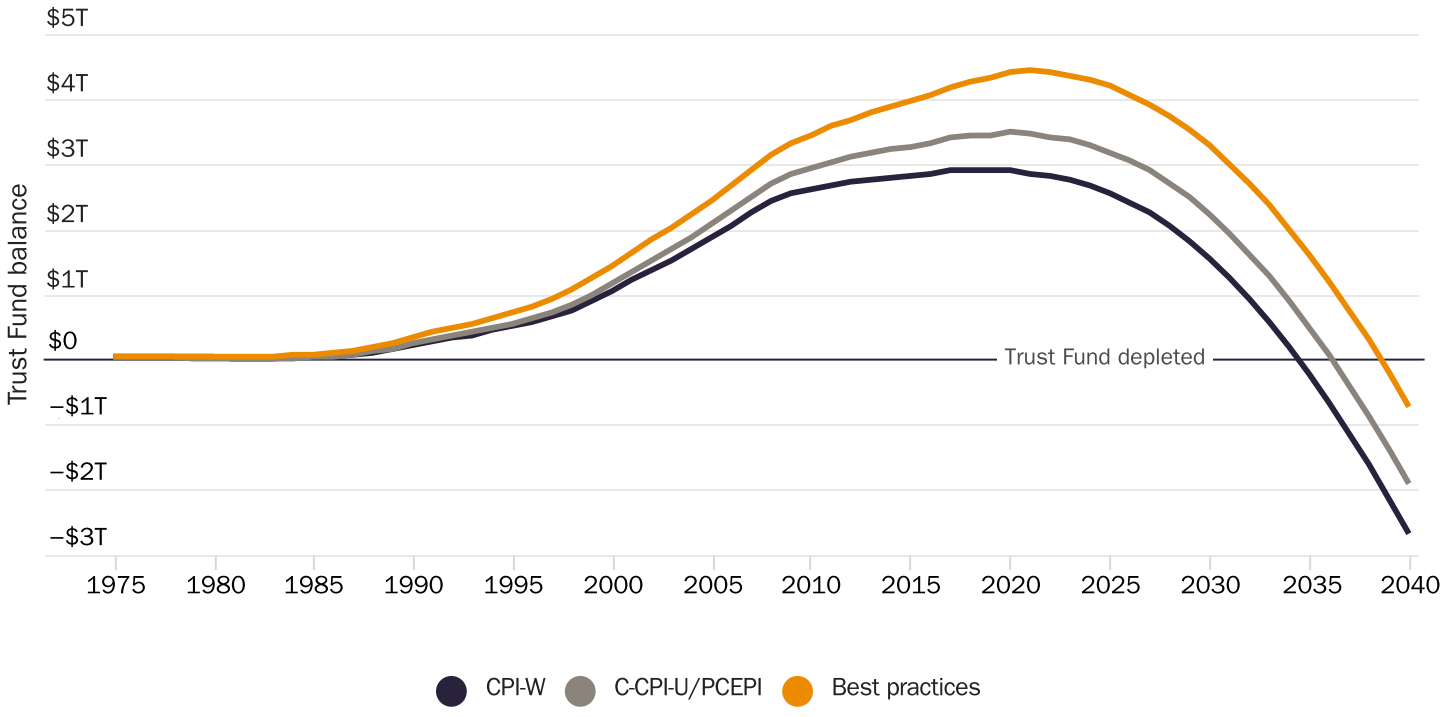
## POLICY RECOMMENDATIONS

Congress should require that the COLAs for Social Security, federal SSI, federal civilian and military pensions, and any other transfer payments to individuals be calculated and applied using the official price indexes C-CPI-U and PCEPI. By eliminating substitution bias, the C-CPI-U combined with PCEPI price indexes would preserve beneficiary standards of living at or above their legislated level while avoiding increased benefits at taxpayer expense that has not been approved by Congress. These superior official price indexes have been available for more than two decades, and there is no reasonable case for not adopting them to calculate COLAs immediately.

Congress should also require that the BLS correct as much of the new-item bias in CPI price indexes as possible, implementing the best-practice econometric methods as they are developed for each index item, including in the C-CPI-U. The improved methods should cover at least 95 percent of the index weight within three years. Historical indexes should be revised to meet the new standards historically, to the maximum extent possible. The methods to make these

Figure 1

**Old-Age, Survivors, and Disability Insurance Trust Fund balance, end of year, with cost-of-living adjustment computed using alternative price indexes**




Source: "Annual Statistical Supplement to the Social Security Bulletin," Social Security Administration Publication no. 13-1170, December 2022, Table 6.A3, Table 6.G4, Table 6.G6, and Table 6.G8.

Notes: CPI-W = Consumer Price Index for Urban Wage Earners and Clerical Workers; C-CPI-U = Chained Consumer Price Index for All Urban Consumers (used beginning 2002); and PCEPI = Personal Consumption Expenditure Price Index (used before 2002). Negative balances are notional because actual benefits would be reduced to prevent negative balances. Best practices = computed from more than 50 published papers correcting for upward biases in various components of CPI.

improvements in the CPI and related measures are well known and have, in fact, already been implemented in limited areas of the CPI.[37] Congress should mandate and fund a project for the BLS to apply the best practices to the CPI that would correct new-item biases on an item-by-item basis. As new methods yield better results for a given item, they should be incorporated immediately into the CPI, including correcting historical data to the maximum extent possible. Medical care should be the first priority for improvement, building on the improved Disease-Based Price Indexes that have already been developed and published along with substantial historical data. Not only do significant data already exist, but also medical care is a highly weighted expenditure class in the CPI. Removing new-item bias will make the benefits closer to the original established standard of living and avoid excessive taxpayer expense.

"Congress should mandate and fund a project for the BLS to apply the best practices to the CPI that would correct new-item biases on an item-by-item basis."

Congress should direct the Census Bureau to use the C-CPI-U and PCEPI to calculate poverty thresholds both currently and retrospectively, and to recalculate rates of poverty incidence based on the revised thresholds. Congress should also explicitly require that the Department of Health and Human Services use the revised thresholds to calculate both current and historical FPLs used in establishing program eligibility.

At least $203.9 billion could be saved within the first year after enactment, with the full $397.6 billion annual savings phasing in over the first three years. The cost of making these improvements would be less than $10 million per year for three years and less than half that annually for maintaining the improvements.[38] The payback for this entire improvement project would be essentially instantaneous and cost less than one hour's worth of savings.

## CONCLUSION

Automatic COLA increases to some federal government benefits and inflation adjustments to eligibility standards for other benefits use price indexes that overstate inflation. Thus, they artificially increase the amount of benefits paid so that they exceed the increase in the true cost of living. Since automatic COLA increases began in 1975, taxpayers have paid a total of $5.6 trillion in excess benefits. Had this problem been fixed, the depletion of the Social Security Trust Fund would have been delayed by four years.

Fixing this problem is straightforward. A little less than half of the problem is caused by the substitution bias in CPIs used for COLAs and for adjusting eligibility based on the FPL. Congress should require that all COLA and FPL computations immediately begin using the Chained CPI-U, an official CPI from the BLS that has been published for more than 20 years and is already used to adjust federal income tax brackets.

The remainder of the overstatement comes from the new-item bias in the existing CPIs. Fixing this bias only requires applying methods that are well known and have already been applied in some areas of the CPI. Congress should now require and fund applying them systematically to all items in CPIs over the next three years. A solution has already been developed for the Medical Care portion of the index, and it should be incorporated quickly.

## NOTES

1. Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2022 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (Washington: Social Security Administration, June 2, 2022), pp. 25–50, 66–74.

2. Barry F. Huston, "Social Security: What Would Happen If the Trust Funds Ran Out?," Congressional Research Service, RL33514, September 28, 2022, p. 11.

3. Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2022 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (Washington: Social Security Administration, June 2, 2022), p. 72.

4. Office of the Chief Actuary, Social Security Administration, *Summary of Provisions That Would Change the Social Security Program* (Washington: Social Security Administration, February 21, 2023). The proposals labeled A3 and A8 recommend using the chained CPI-U for COLAs. (Although the summary listing of A3 incorrectly specifies a chained CPI-W, which does not exist, the source document to which it refers correctly identifies the chained CPI-U.)

5. Bureau of Labor Statistics, "Frequently Asked Questions," *Newsroom*, December 29, 2016.

6. Bureau of Labor Statistics, "Consumer Price Index: History," in *Handbook of Methods* (Washington: Bureau of Labor Statistics Publishing, February 21, 2023).

7. The following are examples of applications that adopted the CPI-U: adjustment of poverty thresholds, real average hourly earnings for all employees, household income (which later switched to the CPI-RS [CPI Research Series], a variation on the CPI-U that revised historical data where possible when improvements were introduced in the current indexes).

8. This belief also drove Congress to appropriate additional funds so the CPI-W could be calculated based on an entirely independent sample of outlets and items. After two years and virtually no difference between the two indexes, Congress dropped the extra appropriations, but the CPI-W continued using the same samples as the CPI-U but just weighting the items in the two indexes by different weights from the Consumer Expenditure Survey.

9. Computed from the Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2022 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (Washington: Social Security Administration, June 2, 2022), p. 100, Table V.A4.

10. Bureau of Economic Analysis, "National Income and Product Accounts Table 3.12" September 30, 2022.

11. Social Security Administration, *Annual Statistical Supplement to the Social Security Bulletin, 2022* (Washington: Social Security Administration, December 2022), Tables 7.A3 and 7.A4.

12. Katelin P. Isaacs, "Federal Employees' Retirement System: Summary of Recent Trends," Congressional Research Service, 98-972, January 10, 2020.

13. Katelin P. Isaacs, "Federal Employees' Retirement System: Summary of Recent Trends," Congressional Research Service, 98-972, January 10, 2020, p. 9.

14. Office of the Actuary, *Statistical Report on the Military Retirement System: Fiscal Year Ended September 30, 2021* (Alexandria, VA: U.S. Department of Defense, September 2022), pp. 6–8, 11, 12, and 15.

15. Bureau of Labor Statistics, "Frequently Asked Questions," *Newsroom*, December 29, 2016.

16. The mentioned reports are Price Statistics Review Committee (George Stigler, chair), "Front Matter to the Price Statistics of the Federal Government," in *The Price Statistics of the Federal Government* (Cambridge, MA: National Bureau of Economic Research, 1961); Advisory Commission to Study the Consumer Price Index (Michael Boskin, chair), *Toward a More Accurate Measure of the Cost of Living: Final Report to the Senate Finance Committee* (Washington: Government Printing Office, December 1996); and the National Commission on Fiscal Responsibility and Reform, *The Moment of Truth* (Washington: The White House, December 2010).

17. See Robert J. Gordon, "The Boskin Commission Report: A Retrospective One Decade Later," National Bureau of Economic Research Working Paper no. 12311, June 2008; Bruce D. Meyer and James X. Sullivan, "Winning the War on Poverty: Poverty from the Great Society to the Great Recession," National Bureau of Economic Research Working Paper no. 18718, January 2013; Brent R. Moulton, *The Measurement of Output, Prices, and Productivity: What's Changed Since the Boskin Commission?* (Washington: Brookings Institution, July 2018); and Phil Gramm, Robert Ekelund, and John Early, *The Myth of American Inequality: How Government Biases Policy Debate*

(Lanham, MD: Rowman & Littlefield, 2022), pp. 83–98.

18. Bureau of Labor Statistics, "CPI Average Price Data, U.S. City Average (AP)," unweighted annual averages of monthly data.

19. Bureau of Labor Statistics, "Consumer Expenditure Survey."

20. In recent years, improvements have been made in the official CPI that reduce the effects of substitution among very similar items—for example, between brands, different sizes of packaging, and some differences in outlets. The historical data, however, do not have those improvements, and the effects of substitution across more distantly related items like those shown here remain. The BLS estimates that these improvements reduce the annual change in the CPI by approximately 0.2 percent per year. See Kenneth V. Dalton, John S. Greenlees, and Kenneth J. Stewart, "Incorporating a Geometric Mean Formula into the CPI," *Monthly Labor Review* 121, no. 10 (October 1998): 3–7.

21. Bureau of Labor Statistics, "Frequently Asked Questions about the Chained Consumer Price Index for All Urban Consumers (C-CPI-U)," December 20, 2019.

22. Robert Cage, John Greenlees, and Patrick Jackman, "Introducing the Chained Consumer Price Index," presented at the Seventh Meeting of the International Working Group on Price Indices, Paris, France, May 2003.

23. The formulas used for the C-CPI-U and PCEPI are both members of a class of price indexes called "superlative" price indexes that avoid the upward bias from substitution. The C-CPI-U uses a Tornqvist formula and the PCEPI uses a Fisher Ideal formula. The practical differences between the two are very small and both are widely recognized. See Bureau of Labor Statistics, "An Introductory Look at the Chained Consumer Price Index." More comprehensive background can be found in Robert Cage, John Greenlees, and Patrick Jackman, "Introducing the Chained Consumer Price Index," presented at the Seventh Meeting of the International Working Group on Price Indices, Paris, France, May 2003.

24. Robert J. Gordon, "The Boskin Commission Report: A Retrospective One Decade Later," National Bureau of Economic Research Working Paper no. 12311, June 2008.

25. Phil Gramm, Robert Ekelund, and John Early, *The Myth of American Inequality: How Government Biases Policy Debate* (Lanham, MD: Rowman & Littlefield, 2022), pp. 83–98, 142–148.

26. Elizabeth Arias and Jiaquan Xu, "United States Life Tables, 2017," *National Vital Statistics Reports* 68, no. 7 (June 24, 2019): 53.

27. See Robert J. Gordon, "The Boskin Commission Report: A Retrospective One Decade Later," National Bureau of Economic Research Working Paper no. 12311, June 2008; Bruce D. Meyer and James X. Sullivan, "Winning the War on Poverty: Poverty from the Great Society to the Great Recession," NBER Working Paper no. 18718, January 2013; and Brent R. Moulton, *The Measurement of Output, Prices, and Productivity: What's Changed Since the Boskin Commission?* (Washington: Brookings Institution, July 2018).

28. Bureau of Labor Statistics, "Measuring Price Change in the CPI: Telephone Hardware, Calculators, and Other Consumer Information Items," Consumer Expenditure Survey, February 10, 2023. Augmented with communications to author from Robert Cage, assistant commissioner, Bureau of Labor Statistics, September 24, 2020. The BLS has not developed an estimate of the effects of this improvement, but other research has shown they are likely significant. See for example, Erik Brynjolfsson et al., "GDP-B: Accounting for the Value of New and Free Goods in the Digital Economy," National Bureau of Economic Research Working Paper no. 25695, March 2019.

29. Elaine M. Cardenas, "Revision of the CPI Hospital Services Component," *Monthly Labor Review* 119, no. 12 (December 1996): 40–48.

30. Over time the expenditure weights in the CPI would reflect this change in resource consumption, but the CPI prices did not show the decline in resources required as a decline in price even though the fewer resources produced a superior outcome. Because peptic ulcer treatment was really the item consumed (not surgery, medicine, nurses, etc.), the drop in the overall cost of treatment should have shown up as a price decline. It did not.

31. Bureau of Labor Statistics, "Disease-Based Price Indexes," Price and Index Number Research, March 25, 2022.

32. The original Boskin commission estimates of the overall upward bias of the CPI (including both substitution and new product) was 1.3 percent per year before 1996 and 1.1 percent per year after that. Meyer/Sullivan and Gordon's conservative 10-year estimate is 0.8 percent per year. Gordon also urged a reexamination that suggested it might be as large as 1.0 percent. Moulton calculates 0.85 percent per year. This analysis adopts the most conservative 0.8 percent per year for recent years to avoid any overstatement of the case.

33. White House Council of Economic Advisors, *Economic Report of the President together with the Annual Report of the*

*Council of Economic Advisers* (Washington: Government Printing Office, January 1964), p. 62.

34. Gordon M. Fisher, "The Development and History of the Poverty Thresholds," *Social Security Bulletin* 55, no. 4 (Winter 1992): 16. The substance of this memorandum was incorporated into Office of Management and Budget Statistical Policy Directive 14, May 1978, and continues as the official basis for the calculation. This definition was administratively determined by OMB.

35. This paper documents the excessive transfer payments that occur as the result of using biased estimates of inflation. The FPL also suffers from another statistical failure. The Census Bureau fails to count 88 percent of the transfer payments that go to households classified as poor. It ignores food stamps, refundable tax credits, Medicaid, most housing subsidies, and more than 100 other sources of income to these families. If, in addition to applying unbiased price index, all the missing income were counted, then the number of people meeting the FPL standards to qualify for benefits would be reduced by more than 98 percent. See Phil Gramm, Robert Ekelund, and John Early, *The Myth of American Inequality: How Government Biases Policy Debate* (Lanham, MD: Rowman & Littlefield, 2022), pp. 37, 95.

36. Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2022 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (Washington: Social Security Administration, June 2, 2022), pp. 67, 163–66, 213–14.

37. See Phil Gramm, Robert Ekelund, and John Early, *The Myth of American Inequality: How Government Biases Policy Debate* (Lanham, MD: Rowman & Littlefield, 2022), pp. 83–98, 142–148, 171; Robert J. Gordon, "The Boskin Commission Report: A Retrospective One Decade Later," National Bureau of Economic Research Working Paper no. 12311, June 2008; Bruce D. Meyer and James X. Sullivan, "Winning the War on Poverty: Poverty from the Great Society to the Great Recession," National Bureau of Economic Research Working Paper no. 18718, January 2013; and Brent R. Moulton, *The Measurement of Output, Prices, and Productivity: What's Changed Since the Boskin Commission?* (Washington: Brookings Institution, July 2018).

38. Author's budget estimates based on previous experience conducting research on this topic and budgeting for similar work as assistant commissioner at the Bureau of Labor Statistics. First three years based on work of 29 in-house economists at federal pay grades between GS-9 and GS-15 and a similar amount of work by contracted outside experts. Ongoing effort based on 19 in-house economists and the equivalent of about 10 contracted outside experts. Estimates include salary, benefits, and overhead support.

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