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ADJUSTING THE INDIVIDUAL INCOME TAX FOR INFLATION

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In 2022, the Internal Revenue Service announced a large inflation adjustment to parts of the federal tax code in response to unusually elevated price levels. This brief reviews the history of the Consumer Price Index (CPI) and the individual income tax, including conditions leading to the tax code being indexed in the early 1980s. It also describes the chained CPI, which is currently used for indexing the tax system, why it usually grows more slowly than the 'headline' CPI, and why that did not happen during the COVID-19 pandemic. It reviews factors contributing to increased inflation and discusses the outlook for 2023. An appendix lists selected provisions of the tax code and whether or not they are indexed for inflation.

During 2022, inflation in the United States spiked higher than any time since 1981. As a result, the Internal Revenue Service announced that some provisions of the tax code will be adjusted by 7.1 percent—the largest adjustment in decades. Parts of the tax code were indexed for inflation during the early 1980s when annual inflation peaked at 13 percent. Since then, lawmakers have from time to time considered the implications of indexing. In the 1990s, some members of Congress were concerned that inflation measures were overestimating inflation, which would have reduced federal revenue by enabling excessive increases in tax deductions and credits. In 2017, the Tax Cuts and Jobs Act mandated the use of a so-called chained index that typically, but not always, indicates less inflation.

Since then, the extraordinary economic disruption caused by the COVID-19 pandemic has led to the chained index and the old index nearly coinciding. This happens when prices change because of demand shifts, rather than demand changing in response to price changes. In this brief I review the intertwined history of inflation measures and the individual income tax system, including legislation to index taxes by inflation, and describe how the US Department of the Treasury adjusts inflation. I also discuss improvements to the consumer price index (CPI), including the creation of the chained CPI, and, since the TCJA, its use in inflation adjustments for the tax code; how the pandemic affected these indexes; and evidence about future inflation.

THE BEGINNING OF THE CPI AND THE INDIVIDUAL INCOME TAX

The modern federal income tax system and the CPI both arose in the second decade of the 20th century after the public and Congress had expressed concern for many years over the costs imposed on US residents by the system of tariffs responsible for most federal revenue at the time.[1] These concerns were amplified by the ease with which industrialists, who consumed only a small fraction of their income, were able to avoid taxes, whereas those with lower incomes, who consumed most or all of their income, were not. The Bureau of Labor, later renamed the Bureau of Labor Statistics (BLS), first studied the cost of living in the 1880s as Congress considered whether to raise or lower some of the revenue-generating tariffs. In the end, the McKinley Tariff of 1890 significantly raised tariffs, leading to additional Bureau studies on wages and prices. The Wilson–Gorman Tariff Act of 1894 attempted to lower tariffs while imposing an income tax, but the Supreme Court overturned it the following year.

Alarm over the rising cost of living grew louder until, in 1913, the House Ways and Means Committee stated that "probably the most striking economic change since 1897 has been the tremendous increase in the cost of living—a situation which has attracted the anxious attention of the economists the world over" (Buenker 1981). These worries continued through the decade, leading the BLS to establish the CPI in 1919, with indexes for food going back to 1913, which the agency established as the base year in which the CPI would equal 100. Following passage of the 16th Amendment to the US Constitution (also in 1913), which established the legality of the federal income tax, income taxes became the primary revenue source for the federal government and the CPI the most widely used gauge of inflation.

THE 1978 REVISION OF THE CPI AND INDEXING THE INDIVIDUAL TAX SYSTEM

The CPI was initially designed to be a price index, meaning that a 5 percent increase in the index showed that overall prices had risen by 5 percent. In 1940 it received its first comprehensive revision, with additional such revisions taking place every 9 to 14 years until 1998.

Some of these revisions were preceded by legislative scrutiny. For example, in 1957, after years of very low or negative inflation, prices started to rise, and by 1958 inflation was as high as 3.6 percent while the economy fell into a recession. In response, the Joint Economic Committee held a series of hearings that ultimately led to an important report by the so-called Stigler Committee (Reinsdorf and Triplett 2009; Stigler et al. 1961; US Congress, Joint Economic Committee 1958; Joint Economic Committee 1961), which made many recommendations for improving the CPI.

Unfortunately, the report was released too late for its findings to be included the CPI's comprehensive 1964 revision, and the next revision was not done until 1978. That revision expanded the coverage of the CPI from solely wage earners to all urban dwellers. This new CPI was named the Consumer Price Index for All Urban Consumers (CPI-U) and the original CPI was renamed the CPI-W.

The 1978 revision also established a cost-of-living index (COLI) as the measurement objective of the CPI (Reinsdorf and Triplett 2009). In a COLI, a 5 percent increase means that consumers would need a 5 percent increase in their income to fully keep pace with higher prices. A crucial difference between a COLI and a price index is that a COLI is designed to account for households changing their purchases to mitigate price increases.

The major concern of that era was the very high levels of inflation the indexes were reporting. The costs of financing the Vietnam War and the effects of the 1973 oil embargo pushed inflation up to 6.2 percent in 1973 and 11 percent in 1974. Although inflation then fell for several years, loose monetary policy and the second energy crisis pushed inflation to 11.3 percent in 1979 and 13.5 percent in 1980.

[1] This discussion follows Buenker (1981), Goldberg and Moye (1985), and Rippy (2014).

These dramatic price increases led to worries about "bracket creep," because at that time, tax brackets, deductions, and exemption amounts were set at fixed dollar levels and thus remained the same regardless of how fast prices rose. For example, in January 1979 the 30 percent bracket for a single taxpayer began at $15,000, and in December 1981 it was still $15,000 even though the CPI-U had increased more than 37 percent.[2] As prices rose, wages and salaries increased to keep up with price increases, and many taxpayers found themselves facing higher marginal tax rates because the increases placed them in higher tax brackets. This was particularly problematic because, whereas there were seven brackets for single filers in 2022, in 1978 there were 26 brackets with a top tax rate of 70 percent for single taxpayers with incomes above $102,200. Thus, pay increases that kept up with inflation often resulted in taxpayers facing larger tax bills, which brought the federal government greater revenues without explicitly raising taxes (Baye and Black 1984).

The Economic Recovery and Tax Act of 1981, passed that August, addressed the problem by indexing tax brackets and the personal exemption (Altig and Carlstrom 1991). To index those provisions for a given tax year, the average level of the CPI-U of the prior year ending September was divided by the average level of the CPI-U in a base period (Guenther 2022). That fraction was then compared with the fraction calculated for the prior tax year. The base period was initially 1983, but later ones have been separately updated, typically when the tax code is changed. Note that this method is essentially retrospective, in that it increases provisions for the current tax year using an unusual measure of annual inflation ending in the previous September. Nevertheless, it allows for enough time to calculate the inflation adjustment, print and publish tables, and adjust programs individual taxpayers use to calculate their taxes.

The Tax Reform Act of 1986 (TRA86) made several changes to the inflation adjustment. First, it shifted the 12-month period from the prior October 1 through September 30 to the prior September 1 through August 31. Second, it changed the base period to September 1, 1986, to August 31, 1987. Third, it added the standard deduction to the list of features that are indexed (Altig and Carlstrom 1991). Since then, many additional features of the tax code have become indexed (see appendix A for a selected list of features and how they are indexed).

As an example of how the inflation adjustment is calculated, consider the inflation adjustment for tax year 1991. The average CPI-U for the base period is 111.98 (figure 1). The average CPI for the 12-month period ending in the previous August is 128.06. The ratio of those two figures is 1.144, indicating that the inflation adjustment is 14.4 percent. The standard deduction for a single taxpayer was $3,000 in tax year 1988 and $3,400 in 1991, representing the 14.4 percent increase of $3,431 rounded down to $3,400.

FIGURE 1

Dollar Value of Personal Exemption for Tax Year 1991
Relative to Tax Year 1988: 128.06/111.98 = 1.14

Source: Bureau Labor Statistics series CUUR0000SA0 and author calculations.
Note: CPI-U = Consumer Price Index for all Urban Consumers.

[2] Tax Foundation, "Historical U.S. Federal Individual Income Tax Rates & Brackets, 1862–2021," August 2021, https://taxfoundation.org/historical-income-tax-rates-brackets.

THE 1998 REVISION OF THE CPI

The next interval of congressional scrutiny of the CPI originated not from public discontent over inflation but from BLS research. In the early 1990s, BLS researchers began to publish findings on measurement problems with the CPI (Reinsdorf 1993) and their solutions (McClelland 1997). Several articles in the December 1993 issue of *Monthly Labor Review* discussed problems whose solutions would eventually be incorporated in the CPI (Rippy 2014). Two of the articles related directly to the COLI concept, but first it is useful to review how the CPI-U is calculated.

The all-items national CPI-U is constructed in two steps. In the first step, price changes for individual goods, such as changes in the price of a specific book sold at a specific bookstore, are combined into item indexes. Examples of these item indexes include the index for fruits and vegetables and the index for unleaded regular gasoline. The percentage change in an item index from one month to the next represents the one-month inflation or deflation for that item. These item indexes are then combined into the all-items CPI-U using weights created from two prior years of expenditures, so that the weights represent how much households spend on the various items, although with a lag. The item indexes are also combined into numerous subindexes, including All Items Less Food and Energy (commonly called the core CPI), and groups of indexes that collectively span all items, One combination of sub-indexes that spans all items is Shelter, and All Items Less Shelter. Another is Durable Goods, Nondurable Goods, and Services.

In one article, a BLS researcher (Moulton 1993) discussed a method for creating item price indexes that would better represent how consumers substitute among similar goods. At the time, price changes were aggregated into an item index using an arithmetic mean. This approach was initially taken when the measurement objective of the CPI was to provide a price index, but it also serves as a COLI for households that do not substitute among similar goods. However, that type of behavior is unrealistic for many consumer products. To see this, imagine a household that buys two apples for each pear (e.g., eight apples and four pears) each week and does not substitute apples for pears or vice versa. If the price of apples increased dramatically, the household might reduce their purchases to six apples and three pears, but the ratio would remain the same, no matter how expensive apples became relative to pears. If the household's income rose enough to make up for the price increase, the household would go back to buying eight apples and four pears, again no matter how much more expensive apples are relative to pears. This seems very unrealistic.

Instead, Moulton (1993) described the use of a geometric mean to aggregate price changes rather than an arithmetic mean. This approach leads to a COLI for households that buy more items as they become relatively cheaper, but in a particular way. To see how they would behave, imagine a household that spends $1.50 on apples for every $1.00 they spend on pears, such as $6 per week on apples and $4 per week on pears. If the price of apples increased dramatically while the price of pears remained the same, they might reduce their spending to $3 per week on apples and $2 per week on pears, but the ratio would remain the same. However, they would substitute pears for apples, because pears became relatively less expensive. If the household's income rose enough to resume spending $6 per week on apples and $4 per week on pears, they would still buy relatively more pears than apples, again because pears are relatively less expensive.

Of course, most households don't act exactly like either of these examples. Some may tend toward one or the other; still others may be even more responsive to prices, such as by switching to $6 of pears and $4 of apples when apples become more expensive. It's easier for people to substitute among similar items, and because the item indexes group similar items, the geometric mean approach better matches how consumers adjust their purchases than the arithmetic mean approach.

In the other article, BLS economists (Aizcorbe and Jackman 1993) described a method that incorporates how consumers substitute among items, such as among uncooked ground beef, uncooked beef roasts, uncooked beef steaks, or

uncooked other beef and veal. This approach is now referred to as the chained CPI-U (C-CPI-U), which uses weights representing expenditures in both months of a monthly price change, to allow for spending on the items to change as their relative prices change. This formula recognizes that households buy more of items that become relatively cheaper, even if their income rises enough to make up for the price increases. For example, C-CPI-U recognizes that if the prices of ground beef and beef steaks both rise, but that of ground beef rises more, households will tend to buy more steak and less ground beef. Unlike the use of an arithmetic mean or geometric mean, this approach creates a COLI that can match the behavior of a broad range of consumers.

The authors of both articles concluded that the methods then in use to create the CPI-U overestimated inflation (Aizcorbe and Jackman 1993; Moulton 1993). Because large shares of federal revenues and expenditures were directly tied to the CPI, Congress became concerned by the 1990s that if the CPI-U was being over-estimated, the federal debt would be growing faster than it should.[3] This led the Senate Finance Committee to appoint the Advisory Commission to Study the Consumer Price Index (aka the Boskin Commission) (US Congress, Senate Finance Committee 1996). In 1996, the Commission recommended in its final report that the geometric mean be used and that a chained version of the CPI-U replace the CPI-U.

In the 1998 revision, the BLS incorporated the use of the geometric mean for item indexes. Rather than replace the CPI-U, the BLS chose to supplement it with a chained index, the C-CPI-U, still being published today. Because of the unavoidable delay in acquiring expenditure data to be used in weights, the C-CPI-U is published in three versions: initial, interim, and final. The initial version uses expenditures from only one month, similar to the CPI-U, but it uses a formula designed to predict the values of the final version. This is updated by interim versions that use more data as they become available, until, after about one year, the final version, which uses expenditures from the same months as the prices, is published. Although the initial and interim versions usually differ from the final version, the BLS takes steps to make them accurate predictors of it.

[3] Most federal spending and revenue that was indexed was tied to the CPI-U. Social Security payments were and are tied to the CPI-W.

Because the C-CPI-U reflects how households purchase less of items that become relatively less affordable, it generally indicates that inflation is lower than the CPI-U suggests. Figure 2 shows the difference between the annual rate of change for the two indexes. When the difference is positive, annual inflation calculated by the CPI-U is higher than that calculated by the C-CPI-U; when it is negative, inflation calculated by the C-CPI-U is higher. Although the average difference between the two annual measures of change for the period depicted is 0.27 percentage points, the difference varies over time. In particular, there are two intervals when the final C-CPI-U grew more quickly than the CPI-U did: in 2008, during the Great Recession; and in 2021, during the COVID-19 pandemic.[4]

FIGURE 2

Difference between Annual Growth of CPI-U and the C-CPI-U

Source: Bureau of Labor Statistics, BLS.gov.

Note: CPI-U = Consumer Price Index for all Urban Consumers. C-CPI-U = Chained Consumer Price Index for all Urban Consumers. Solid line denotes use of final values in C-CPI-U. Dashed line denotes use of initial and interim values in C-CPI-U.

Those intervals seem to contradict the intuition that the C-CPI-U should grow more slowly than the CPI-U, but that intuition is based on how consumers react to price changes. In fact, consumers shift their purchase of goods and services for many reasons, such as when their income or employment status changes, or they anticipate large changes in future inflation. Sudden shifts in demand can also occur in reaction to economic disruptions such as financial crises and pandemics. If demand shifts up, prices can increase in response. In this case, price increases are associated with consumers buying more, not less, of an item. If demand shifts down, prices can fall. In both cases, the positive (rather than negative) relationship between demand and prices can lead to the C-CPI-U showing more inflation than suggested by the CPI-U.[5]

[4] Figure 2 also shows that at the time this brief was published the growth rate of the initial and interim values again slipped below that of the CPI-U. Why that is happening is beyond the scope of this brief.

[5] Equilibrium prices and quantities sold are formed from a combination of demand responding to price changes and demand shifts causing price changes. Most of the time, the former effect dominates the latter. Regardless of which effect dominates, by using contemporary weights the C-CPI-U better represents consumers' inflation experiences than the CPI-U does.

THE TAX CUTS AND JOBS ACT AND THE C-CPI-U

The TCJA, passed in December 2017, significantly changed major parts of the individual and corporate tax code. It lowered tax rates for most taxpayers, raised the standard deduction, and set the personal exemption to $0. It raised the exemption for the estate tax to $5.6 million for a single taxpayer and $11.2 million for taxpayers that are married and filing jointly. It also put a $10,000 ceiling on the allowable deduction for state and local taxes and did not index this amount for inflation. (More changes under the TCJA to specific items of the tax code are discussed in appendix A.) Most of the changes to the individual income tax expire on December 31, 2025.

The TCJA also changed the index used to adjust the tax code for inflation from the CPI-U to the C-CPI-U, and unlike many other changes to individual taxes, this does not expire in 2025. The method for calculating the inflation adjustment—averaging the CPI for a one-year period and comparing it to a similar average from a prior year—was not changed. Because the final values of the C-CPI-U are only available with a lag of about a year, however, some initial and interim values must be used in the calculation. Moreover, the base year (now 2016) in which final values can be used plays no real part in the calculation: the 2023 adjustment of 7.1 percent can be calculated simply as the ratio of the average of C-CPI-U values from September 2021 to August 2022 (available as of September 2022) and September 2020 to August 2021 (available as of September 2021).[6]

This raises two potential problems. First, the BLS replaces the initial and interim values with the final values as soon as they are available. This means that, unlike the CPI-U, reproducing the C-CPI-U inflation adjustment for previous years requires locating archival websites rather than using the BLS website.[7] Second, the use of initial and interim values means that provisions of the tax code are not indexed by the final version of the C-CPI-U but by a mixture of initial and interim values available at particular moments in time.

To measure how well this mixture performs, I calculated the inflation adjustment for tax years 2012 through 2022 using the CPI-U, the C-CPI-U with initial and interim values available at the time, and the final values of the C-CPI-U (figure 3). The first two represent the indexing method before and after the TCJA. The third reflects an ideal version of the C-CPI-U that would be used if the final values were available. I also calculated the inflation adjustment for tax year 2023 using the CPI-U and the initial and interim values of the C-CPI-U available in September 2022.

[6] Mathematically, $(I_{2022}/I_{2016})/(I_{2021}/I_{2016}) = I_{2022}/I_{2021}$

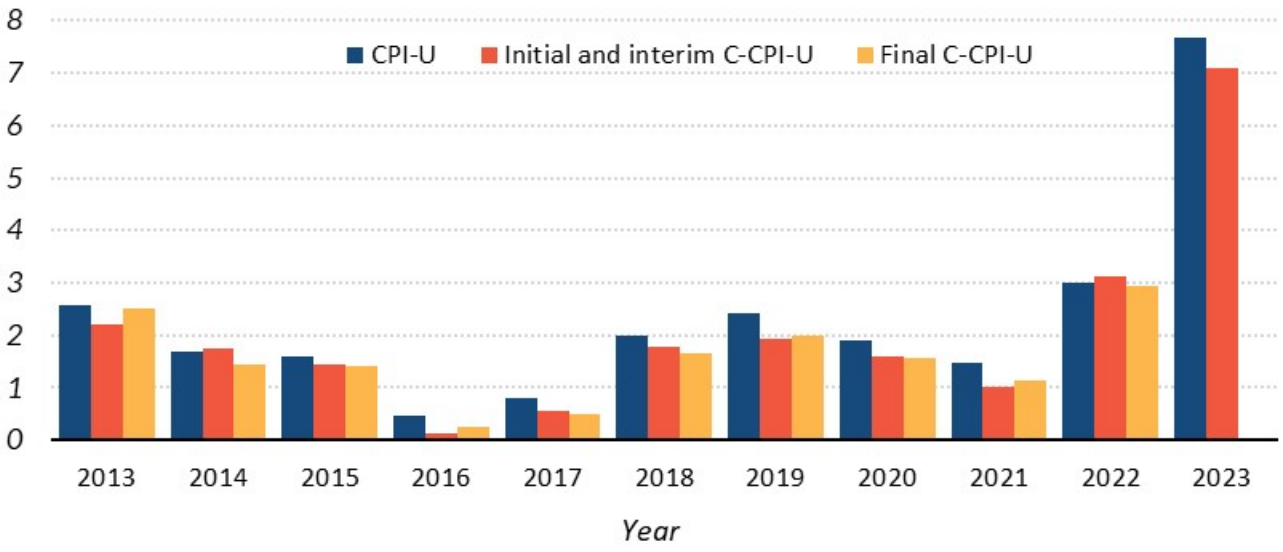
[7] Historical values are available at https://alfred.stlouisfed.org/series?seid=SUUR0000SA0.

Overall, the post-TCJA version that uses initial and interim values is close to the ideal version using only final values. For example, in 2017 the official adjustment was 0.47 percent and the ideal adjustment was 0.49 percent. Using the CPI-U, the adjustment was 0.80 percent. Across all the years shown here, the average difference between the official version and the ideal version is only 0.01 percentage point. The average difference between the CPI-U and the ideal version is much larger: 0.25 percentage points.

FIGURE 3

Annual Inflation Adjustment by Tax Year

Using Various Measures of Inflation



Source: Bureau of Labor Statistics, BLS.gov; Archival FRED, alfred.stlouisfed.org.
Note: CPI-U = Consumer Price Index for all Urban Consumers. C-CPI-U = Chained Consumer Price Index for all Urban Consumers.

For some years, however, such as 2013, the inflation adjustment using the CPI-U is much closer to the ideal C-CPI-U version than is the official C-CPI-U version. In both 2014 and 2022, the C-CPI-U using initial and interim values indicated higher inflation than the CPI-U, whereas the C-CPI-U using final values indicated lower inflation.

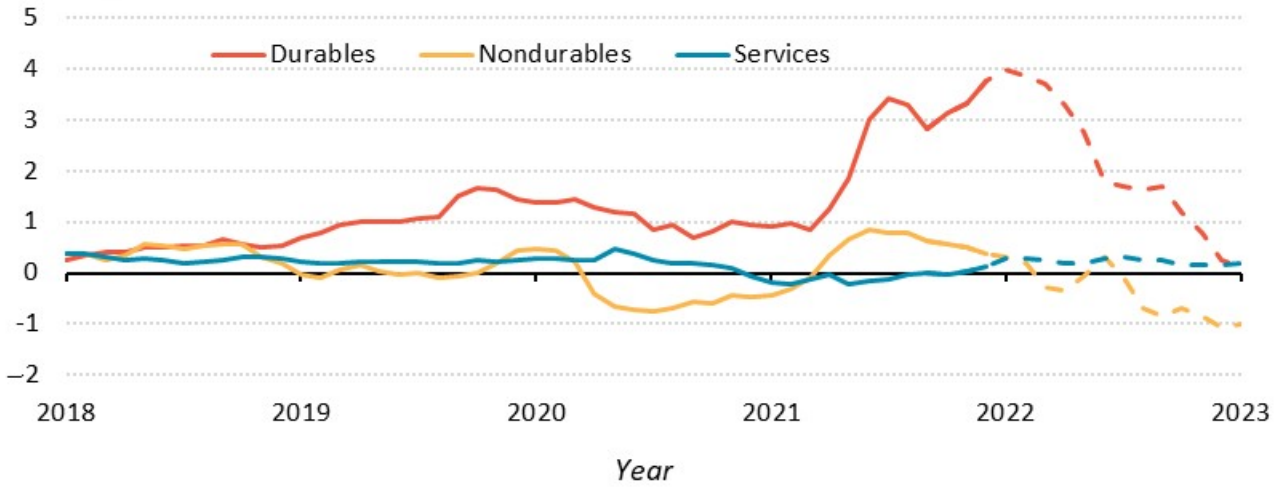
THE C-CPI-U, INFLATION, AND THE COVID-19 PANDEMIC

In figure 3, the inflation adjustment for 2022 using the official method that called on the C-CPI-U is larger than the adjustment would have been if the CPI-U had been used. The reason for this can be seen in figure 2, which shows that from September 2020 through March 2021, the C-CPI-U indicated a higher level of inflation than did the CPI-U. Those are the first seven months of the September-through-August period used to determine the inflation adjustment for 2022, so it is not surprising that the inflation adjustment using the C-CPI-U is larger.

Two overlapping occurrences caused this difference. First, in the early days of the pandemic, demand for many goods shifted down, lowering prices, as many people stayed home and stopped spending. Some of these reductions were more important than others. Figure 4 plots the difference between the CPI-U and the C-CPI-U for three large categories of consumer purchases: services, durable goods, and nondurable goods.[8] For durable goods, annual inflation as measured by the CPI-U always exceeds that of the C-CPI-U. For nondurable goods, however, inflation measured by the C-CPI-U exceeds annual inflation in the CPI-U from April 2020 through March 2021. This interval started before September 2020, when the growth rate of the overall C-CPI-U exceeded that of CPI-U (figure 2).

FIGURE 4

Difference between CPI-U and C-CPI-U, Durable, Nondurable, and Services Indexes



Source: Bureau of Labor Statistics, BLS.gov.
Note: CPI-U = Consumer Price Index for all Urban Consumers. C-CPI-U = Chained Consumer Price Index for all Urban Consumers. Solid line for C-CPI-U denotes use of final values in C-CPI-U. Dashed line denotes use of initial and interim values in C-CPI-U.

Why did the C-CPI-U for nondurables grow more quickly? Figure 5 shows that from April-2020 through the end of that year both indexes were deflating, but the C-CPI-U fell faster, suggesting demand declined and prices fell in response. One of the primary reasons for this was a 40 percent decline in consumer purchases of gasoline from January 1 to March 13 as the population responded to the initial wave of COVID-19 by minimizing travel outside the home.[9] In response that decline without a matching decline in production by OPEC, motor fuel prices fell by 11 percent between January and March 2020, and by 26 percent from January to May 2020. Prices did not fully recover until the following January.[10]

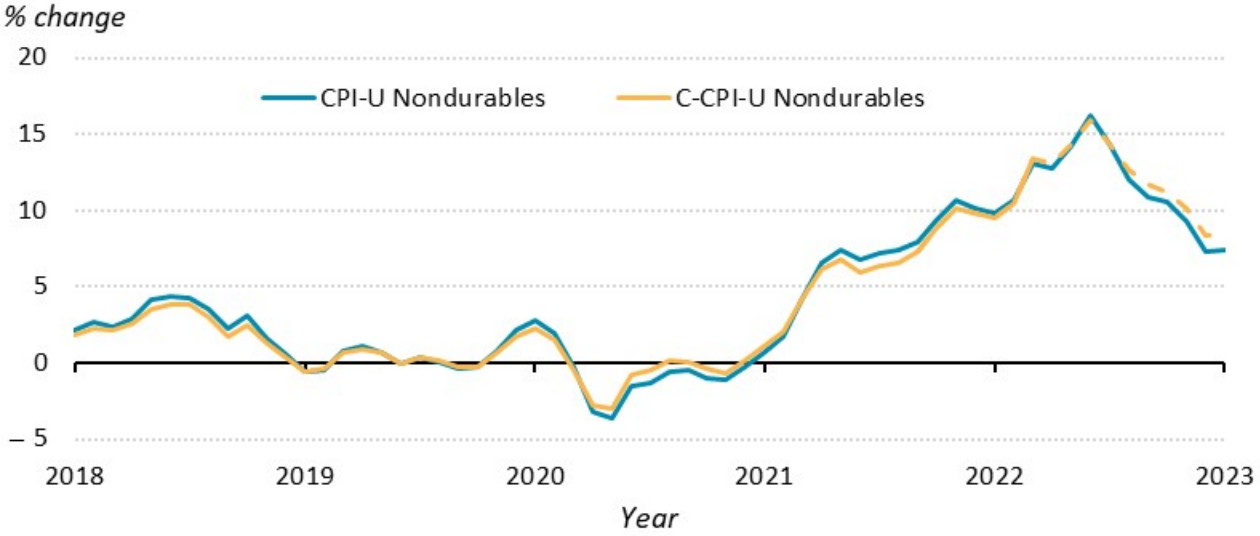
[8] All goods in the CPI market basket fit into one of these three categories.

[9] "COVID-19 Mitigation Efforts Result in the Lowest U.S. Petroleum Consumption in Decades," Energy Information Administration, December 30, 2020, https://www.eia.gov/todayenergy/detail.php?id=46141.

[10] "OPEC shift to maintain market share will result in global inventory increases and lower prices, " Energy Information Administration, March 11, 2020, https://www.eia.gov/petroleum/weekly/archive/2020/200311/includes/analysis_print.php

FIGURE 5

Annual Percent Change in Nondurables Indexes, CPI-U and C-CPI-U



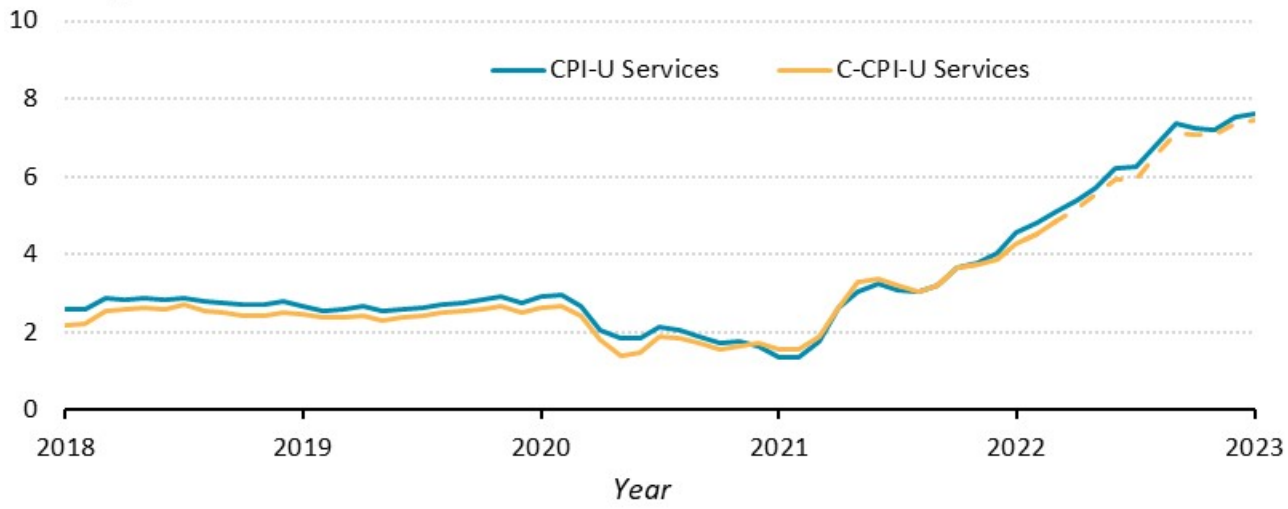
Source: Bureau of Labor Statistics, BLS.gov.

Note: CPI-U = Consumer Price Index for all Urban Consumers. C-CPI-U = Chained Consumer Price Index for all Urban Consumers. Solid line for C-CPI-U denotes use of final values. Dashed line denotes use of initial and interim values.

In the second occurrence, inflation for services, as measured by the C-CPI-U, was higher than that of the CPI-U from December 2020 through November 2021 (figure 6). Because the difference between the two annual inflation measures was so small over this period, averaging 0.1 percent, it had only a small effect on the difference between the all-items C-CPI-U and the CPI-U. Nevertheless, after years of stable prices in which the C-CPI-U measured inflation lower than the CPI-U, price increases started to accelerate and the C-CPI-U indicated higher inflation than the CPI-U. Unlike for nondurable goods, price changes for services were more widely dispersed. This includes the Shelter index, which makes up about one-third of the CPI market basket and more than half of the Services market basket. In November 2020, annual inflation for Shelter, as measured by the CPI-U, was 1.9 percent. By November 2021, annual inflation for Shelter had doubled to 3.8 percent.

FIGURE 6

Annual Percent Change in Services Indexes, CPI-U and C-CPI-U



Source: Bureau of Labor Statistics, BLS.gov.

Note: CPI-U = Consumer Price Index for all Urban Consumers. C-CPI-U = Chained Consumer Price Index for all Urban Consumers. Solid line for C-CPI-U denotes use of final values. Dashed line denotes use of initial and interim values.

Annual inflation as measured by the CPI-U increased throughout the first half of 2022, peaking at 9.1 percent in June. This was the highest rate of inflation since the early 1980s, and even measures of inflation that filter out volatility are showing very high rates for this month. The annual All Items Less Food and Energy inflation rate (also known as core inflation) was 5.9 percent in June 2022, and annual inflation calculated from the Cleveland Federal Reserve Board's Median CPI was 6.1 percent. Annual inflation as measured by the CPI-U has moderated since then, but it was still 6.1 in January 2023.

The degree to which the current burst of inflation is being caused by high demand or by supply constraints is still being discussed and debated (Ball, Leigh, and Mishra 2022), but it is easy to understand how attempts by the federal government to prop up the economy by injecting large amounts of money into it might have created a surge of demand. According to the Congressional Budget Office (CBO; 2020, 2021), legislation passed to help the economy during the COVID-19 pandemic will increase the federal budget deficit by more than $5 trillion over the period 2020 through 2030 (appendix B, table 1).

Part of these expenditures were "economic impact payments" made via the tax credits applied through the individual income tax system (appendix B, table 2). The Coronavirus Aid, Relief, and Economic Security Act, signed into law on March 27, 2020, provided up to $3,400 in credits for a family of four. The Coronavirus Response and Relief Supplemental Appropriations Act, signed into law on December 27, 2020, provided up to an additional $2,400 for a family of four. The American Rescue Plan Act, signed into law on March 11, 2021, provided the largest of the three payments: up to $5,600 for a family of four. These payments were distributed extremely quickly. For example, the American Rescue Plan Act became law on March 11, 2021, and by that April 1 about $335 billion had been disbursed.[11]

[11] Internal Revenue Service, "Internal Revenue Service Data Book, 2020: Table 1. Collections and Refunds, by Type of Tax, Fiscal Years 2019 and 2020," 2021, https://www.irs.gov/pub/irs-soi/20dbs01t01co.xlsx.

Overall, according to the Internal Revenue Service, $273 billion was disbursed in fiscal year 2020, and an additional $539 billion in fiscal year 2021.[12]

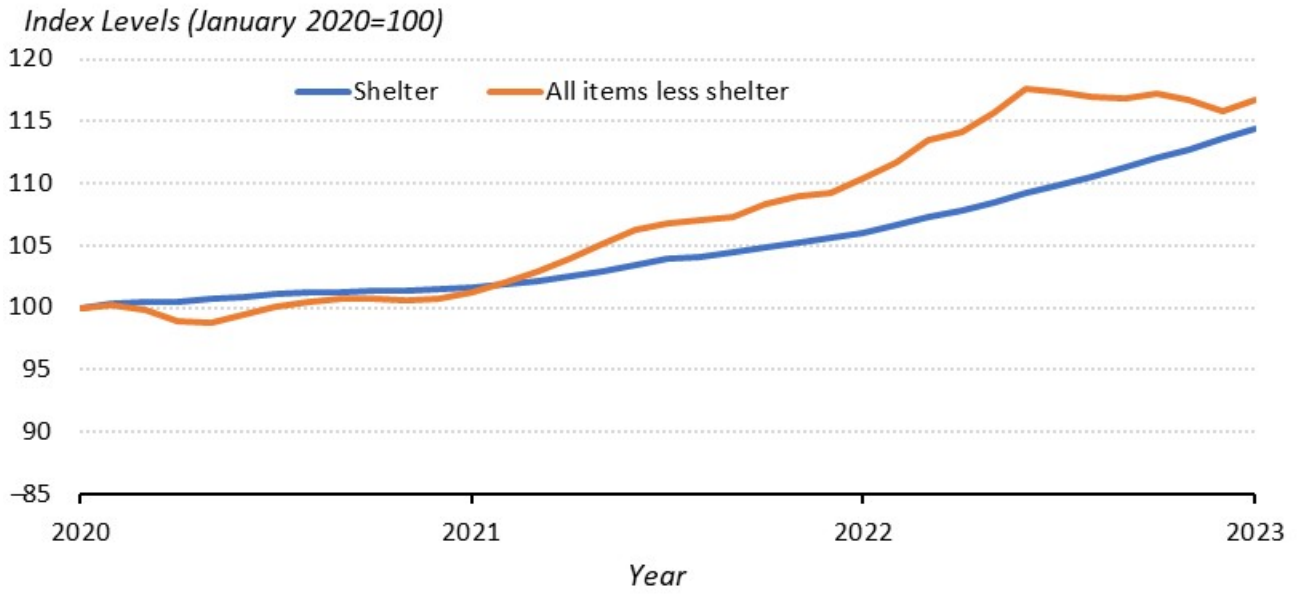
THE INFLATION ADJUSTMENT FOR 2023 AND FUTURE YEARS

As shown in figure 3, the C-CPI-U inflation adjustment for tax year 2023 is slightly more than 7 percent. This is the largest adjustment in years, but had the CPI-U been used, the adjustment would have been about 0.6 percentage points higher. The standard deduction for single filers will increase from $12,950 to $13,850, and for married couples filing jointly it will increase from $25,900 to $27,700. The top tax bracket for single filers will start at incomes of $578,125, up from $539,900 ($693,750 for married couples filing jointly, up from $647,850).

Whether future adjustments will be as large will depend on fiscal and monetary policy and, more generally, worldwide economic conditions. Data now suggests that inflation is moderating, as seen when comparing the indexes for Shelter and All Items Less Shelter (AILS). Shelter consists almost entirely of rent and owner's equivalent rent.[13] Figure 7 shows the index levels for the two components. Prior to June 2022, the price index for AILS was rising faster than the Shelter index. It then plateaued and most inflation since that time has been due almost entirely to the Shelter index. The uptick in January 2023 may be due to a number of factors, including the BLS changing their weighting methodology for the CPI starting in January.[14]

FIGURE 7

Indexes for Shelter and All Items Less Shelter



Source: Bureau of Labor Statistics, BLS.gov.

[12] Internal Revenue Service, "IRS, Treasury Disburse 25 Million More Economic Impact Payments under the American Rescue Plan," News Release IR-2021-77, April 7, 2021, https://content.govdelivery.com/accounts/USIRS/bulletins/2cb99d4; Internal Revenue Service, "Internal Revenue Service Data Book, 2020: Table 1. Collections and Refunds, by Type of Tax, Fiscal Years 2020 and 2021," 2022, Table 1, https://www.irs.gov/pub/irs-soi/21dbs01t01co.xlsx.

[13] Owner's equivalent rent (OER) is an estimate of what homeowners would pay if they rented their home, which is a measure of the value of the shelter services provided by the home. OER is imputed using rents, so shelter consists almost entirely of rent.

[14] Omair Sharif (@fcastofthemonth), "Overall, I think the weight changes will *initially* boost core inflation modestly, at least in Q1. So, I'm that sense, it's not a conspiracy because these new weights are actually likely to raise inflation in the early part of the year," Twitter, January 24, 2023, 2:25 p.m., https://twitter.com/fcastofthemonth/status/1617966860561178627?s=20&t=hYS-JIofQFC7Wig2gzw04A.

However, the continued growth of the Shelter index as the AILS index falls may be an artifact of the BLS methodology for measuring rents. The BLS measures rents paid by all renters, most of whom do not experience rent increases monthly but rather annually, when their lease expires, or when they move. This means that (a) there can be a divergence between inflation as measured by the BLS Shelter index and changes in new rents and (b) the Shelter index lags changes in new rents by about a year.[15] New rents are still increasing faster than rents paid by all renters, which implies that the shelter index will continue to rise for some time.[16] This pattern seems to be moderating: the annual inflation rate on new rents, as measured by private firms such as Zillow, is falling, and if that trend continues, the lowered inflation on rents will eventually become evident in the CPI. This is supported by recent research by economists at the BLS and the Cleveland Federal Reserve that have developed rent indexes for new tenants (Adams et al. 2022). As inflation falls in the future, so will the indexed values of the tax code. Another inflation measure favored by Jerome Powell, chair of the Federal Reserve, currently shows low inflation. Services less shelter and energy (the so-called "super core" measure) rose 4.1 percent from December 2021 to December 2022.[17] Although lower than the all-items CPI-U inflation rate of 6.5 percent, if consumer spending shifts from goods to services, it may rise in the future.

CONCLUSION

Congress faces a tension between under-indexing, which causes effective tax rates to rise on incomes just keeping up with inflation, and over-indexing, which increases the federal deficit. Using the C-CPI-U strikes the right balance between the two. However, rarely, and during times of economic turmoil, the C-CPI-U can rise faster than the CPI-U.

[15] Brett Matsumoto (@BrettMatsumoto), "New BLS working paper on rents in the CPI. Main results: 1) The divergence between private sources and the CPI is due almost entirely to the focus on new tenants (private measures) and all tenants (CPI). 2) CPI lags these measures by about 4 quarters. https://bls.gov/osmr/research-papers/2022/pdf/ec220100.pdf," Twitter, October 7, 2022, 5:21 p.m., https://twitter.com/BrettMatsumoto/status/1578495689159426049.

[16] Ozimek, Adam (@ModeledBehavior), "Breaking news. Authors of the BLS/Fed paper that computed market rents from CPI sample have shared this table. Total increase in market rents is 14.3%, compared to 10.4% for the CPI rents, a 3.9pp gap. This is WAY better gap than the 14pp gap between CPI and private market rents," Twitter, October 13, 2022, 12:54 p.m., https://twitter.com/ModeledBehavior/status/1580603002767159297.

[17] Brian Whitton and Dion Rabouin, "What is Supercore Inflation?" The Wall Street Journal (New York), updated January 31, 2023, https://www.wsj.com/articles/what-is-supercore-inflation-11675195498

APPENDIX A: INDEXING OF SELECTED PROVISIONS OF FEDERAL INDIVIDUAL INCOME TAXES

The Alternative Minimum Tax

Enacted in the Tax Equity and Fiscal Responsibility Act of 1982, the AMT converted an earlier add-on tax for very-high-income taxpayers into a parallel system that required taxpayers to calculate their taxes under both the regular tax system and the AMT and pay the larger figure. As incomes rose over time, more taxpayers became subject to this onerous and duplicative system. The Tax Policy Center estimates that in 1983, about 300,000 taxpayers were affected,[18] but by 2001 that number had grown to about 1.3 million.

Congress began implementing short-term fixes to the AMT in 2001, but the number of taxpayers affected continued to grow until it reached 5 million in 2007, before declining to 4.6 million in 2012, when the newly passed American Tax Relief Act indexed the AMT for inflation.[19] Since then, the affected number slowly grew to 5.2 million in 2017, presumably because real growth in the economy led to higher real incomes.

The TCJA raised the thresholds for the AMT while maintaining the indexing for inflation.[20] In 2021, the Tax Policy Center estimates that this effectively lowered the number of affected taxpayers from 5.2 million in 2017 to only about 200,000 taxpayers.[21]

The Taxation of Capital Gains

Taxes from realized capital gains are not adjusted for inflation. A capital gain is the amount by which the sale price of an asset exceeds its basis (purchase price plus any costs such as commissions and recording fees); that difference, including the part due to inflation, is taxed. So, if an asset is sold for 8 percent more than its basis and inflation is 6 percent, the real gain is 2 percentage points but taxes are owed on the full 8 percent gain. If the asset were sold for 8 percent more than its basis but inflation was 10 percent, the owner realized a real loss but still owes taxes on the 8 percent nominal gain.

In an influential 1984 report on tax policy, the Treasury Department proposed that capital gains be indexed for inflation (US Department of Treasury 1984). Nevertheless, TRA86 did not index gains. Since then, there have been numerous proposals to index capital gains, all of them unsuccessful (Gravelle 2018).

Two related tax provisions on capital income also remain unindexed. First, TRA97 excluded from taxation the first $250,000 of capital gains ($500,000 for a married couple) from the sale of a primary residence. A married couple who purchased their primary residence for $100,000 and sold it for $650,000 would realize a gain of $550,000 and owe taxes on $50,000. This exemption amount does not apply to second homes or vacation homes.

As home prices have increased over time, a larger share of gains have become subject to taxation: in 1998, 238,000 returns listed the sale of a principal residence with $2.26 billion in gains. By 2015 (the last year for which data are available), nearly 500,000 returns listed the sale of principal residences with $6.3 billion in gains. Adjusting the exclusion values for inflation, $250,000 and $500,000 in August 1997 (when TRA97 was passed) are worth about $460,000 and

[18] Tax Policy Center, "AMT Filers and Revenue, 1970 to 2027," May 9, 2017, https://www.taxpolicycenter.org/statistics/amt-filers-and-revenue.

[19] Roberton C. Williams, "How the New Tax Act Affects the Alternative Minimum Tax," *Tax Vox* (blog), Tax Policy Center, January 18, 2013, https://www.taxpolicycenter.org/taxvox/how-new-tax-act-affects-alternative-minimum-tax.

[20] Howard Gleckman, "The Tax Cuts and Jobs Act and The Zombie AMT," *Tax Vox* (blog), Tax Policy Center, October 2, 2018, https://www.taxpolicycenter.org/taxvox/tax-cuts-and-jobs-act-and-zombie-amt.

[21] Tax Policy Center, "Aggregate AMT Projections, 2017–2031," Table T21-0214, September 3, 2021, https://www.taxpolicycenter.org/model-estimates/baseline-alternative-minimum-tax-amt-tables-september-2021/t21-0214-aggregate-amt.

$921,000 in June 2022. If they were instead adjusted by the repeat home sales index calculated by the Federal Housing Finance Agency, those values would be about $840,000 and $1,676,000.

The second provision involves the Net Investment Income Tax, which was passed to help fund the Patient Protection and Affordable Care Act of 2010. This is also known as the Medicare tax, although revenues go into general funds rather than to Medicare trust funds.[22] This provision applies a tax rate of 3.8 percent to investment income (defined as the return from financial assets, such as interest, dividends, and the sale of assets such as stocks and bonds) for single taxpayers with a modified adjusted gross income (MAGI) exceeding $200,000 and married couples filing jointly with an AGI exceeding $250,000.[23] Those amounts in March 2010, when the Patient Protection and Affordable Care Act was passed, would be about $272,000 and $340,000 in June 2022, adjusted for inflation.

Before the TCJA, every tax rate for ordinary income had an associated tax rate for long-term capital gains. The TCJA decoupled tax rates on capital gains from the tax rates for ordinary income.[24] For example, in 2017 single taxpayers faced a top tax rate for the two rates when their taxable income exceeded $418,400; for married taxpayers filing jointly, top rates began when taxable income exceeded $470,700. But in 2018, the top tax rate for single taxpayers on capital gains applied to taxable income above $425,800, whereas for ordinary income the top rate applied for taxable income above $500,000. For married taxpayers filing jointly, the two rates applied to taxable incomes above $479,000 and $600,000, respectively. As before, these brackets are indexed for inflation.

The Taxation of Social Security Benefits

The breakpoints that determine the taxable amount of Social Security benefits are not indexed for inflation.[25] From 1938 through 1983, those benefits were not subject to federal income tax (DeWitt 2001). The Social Security Amendments of 1983 specified that beginning in 1984, Social Security benefits in excess of $25,000 for a single person and $32,000 for a married couple would be subject to tax. The taxable amount was the lesser of 50 percent of the amount above the threshold or 50 percent of total benefits. Although amendments were proposed to index these thresholds, they were defeated in the Senate (Svahn and Ross 1983), which indicates that Congress intends that a larger share of Social Security benefits become taxable over time.

Those thresholds in April 1983, when the amendments were passed, correspond to about $75,000 and $96,000 in June 2022. In 1993, the Omnibus Budget Reconciliation Act added a second set of thresholds ($34,000 for a single person and $44,000 for a married couple) above which 85 percent of benefits were subject to tax. Those values in May 1993, when the act was passed, correspond to about $69,000 and $90,000 in June 2022.

Tax Subsidies for Higher Education

TRA97 introduced several tax benefits for higher education, including the Lifetime Learning Credit, a reinstatement of a deduction for interest on student loans that was repealed as part of TRA86, and the Hope Tax Credit (which was later replaced by the American Opportunity Tax Credit; Crandall-Hollick 2021b).[26] The Lifetime Learning Credit is a nonrefundable credit worth up to $2,000 per year. The credit phases out for single taxpayers with AGI between $80,000

[22] NIIT revenue was intended to go to Medicare trust funds, but it was necessary to move them to general funds to make up for revenue lost by changes to the proposed taxation of high-priced health plans (Kofsky and Schmutz 2019).

[23] The modifications account for certain types of foreign income.

[24] Tax Policy Center, "How Did the Tax Cuts and Jobs Act Change Personal Taxes?," *Briefing Book*, 2018, https://www.taxpolicycenter.org/briefing-book/how-did-tax-cuts-and-jobs-act-change-personal-taxes.

[25] The amount of Social Security benefits is indexed for inflation with the CPI-W, one of the few remaining uses for that index.

[26] It also included two policies related to retirement accounts: an exclusion for income accrued to so-called education individual retirement accounts, and eliminating the penalty for early withdrawals from individual retirement accounts if the funds are used on education (Crandall-Hollick 2021).

and $90,000 and for married taxpayers filing jointly with incomes between $160,000 and $180,000. None of these values are indexed for inflation.

As a result, if the credit had increased with the CPI for college tuition since the passage of TRA97 in August 1997, the maximum value would have more than tripled by June 2022 to about $6,050. If the income limits had been adjusted for overall inflation during that period, the phaseout limit for single taxpayers would be equivalent to AGIs between about $147,000 and $165,000 in June 2022. For joint filers, the phaseout limit would be equivalent to $294,000 to $331,000. Although the deduction for interest on student loans has a maximum value of $2,500 and is not indexed for inflation (if it had been indexed by the CPI for college tuition, it would be worth about $6,060 in June 2022) the maximum allowable AGI to use the deduction is indexed. In 2022 the AGI phaseout region of the deduction runs from $70,000 to $85,000 for single filers and from $145,000 to $175,000 for married taxpayers filing jointly.

The American Recovery and Reinvestment Act of 2009 established the American Opportunity Tax Credit. Initially a temporary measure, this refundable credit was made permanent in 2015 by the Protecting Americans from Tax Hikes Act (Crandall-Hollick 2018a). The maximum amount of the credit is $2,500 per student per year, and the AGI phaseout region for single filers runs from $80,000 to $90,000 and for joint filers from $160,000 to $180,000. None of these values are indexed for inflation, so the value of the credit has declined over time and fewer taxpayers have been eligible.

The CPI for college tuition has increased by more than 40 percent from February 2009 (when the American Recovery and Reinvestment Act was passed) to June 2022. If the credit had increased by the CPI for college tuition over that period, it would have a maximum value of about $3,570. Adjusting the income limits for overall inflation during that period, the phaseout region for single taxpayers is equivalent to about $111,000 to $126,000 in June 2022. For joint filers, the phase-out would be about $223,000 to $251,000

In 2010, 14.7 million tax filers claimed an education tax deduction (either the American Opportunity Tax Credit or the Lifetime Learning Credit). By 2019, that number had fallen to 9.2 million.

The Child Tax Credit and the Earned Income Tax Credit

The Child Tax Credit (CTC) was enacted as part of TRA97. The CTC was initially set at $400 for children under 17 and increased to $500 the next year, and the credit increased with income until it was fully phased in and then phased out beyond $75,000 for single taxpayers and $110,000 for married taxpayers filing jointly. None of the values were indexed for inflation.

The CTC has a complicated history of temporary increases that were then made permanent (Crandall-Hollick 2021a). In 2001, the credit was raised to $1,000 (but not indexed for inflation) and made refundable for taxpayers with earned income greater than $10,000 (indexed for inflation) with a maximum refundable amount of $1,000. Under the American Recovery and Reinvestment Act, that amount of earned income needed to get the refundable portion of the credit was lowered to $3,000 (not indexed for inflation). This meant that over time taxpayers with lower real incomes became eligible.

More recently, the TCJA dramatically expanded the CTC; the maximum credit was doubled from $1,000 to $2,000 for children under 17, and children and other dependents ineligible for the credit became eligible for a new, nonrefundable $500 credit (often referred to as the other dependent tax credit). Neither credit amount around was indexed for inflation. The amount of the CTC that was refundable was limited to $1,400 of the larger $2,000 credit. The AGI phaseout limit also increased; under the TCJA the CTC starts to phase out at an AGI of $200,000 for single taxpayers and $400,000 for married taxpayers filing jointly. The income threshold where the credit begins to phase out was increased for single and head of household filers from $75,000 to $200,000, and for married taxpayers filing jointly from $110,000 to $400,000. As before, none of these values were indexed for inflation.

The American Rescue Plan Act, passed in March 2021, made further changes to the CTC. For tax year 2021, the maximum credit amount was increased from $2,000 to $3,000 per child under age 18, and to $3,600 for children younger than 6. Up to half of the credit was paid out in monthly increments from July 2021 through December 2021, before a tax return had been filed. The credit was fully refundable in the sense that all eligible low-income families received the maximum credit. The additional amounts began phasing out for single taxpayers and heads of household at $112,000 and for married taxpayers filing jointly at $150,000. The plan also increased the maximum earned income tax credit (EITC) for taxpayers not claiming a child from $538 to $1,502.

As with the CTC, the EITC also has a complicated history (Crandall-Hollick 2018b). Meant to support low-income families with children at home, the benefit was enacted in 1975 as a temporary credit worth up to $400, with phase-ins and phaseouts. The maximum credit was limited to those with incomes below $4,000, and fully phased out once income reached $8,000. The credit became permanent in 1978, when the maximum credit was increased to $500.

TRA86 increased the maximum credit to $800 and the parameters were indexed for inflation, leading to a maximum credit in 1987 of $851. Over time, the amount of the credit was increased beyond inflation and adjusted for family size, and also was made available to workers without children at home. In 2022, the maximum credit for a family with at least three children is $6,935, limited to single filers, heads of household, or widowed filers with incomes below $53,057 and married coupled filing jointly with incomes below $59,187. Smaller families are eligible for smaller credits that phase out at lower incomes.

Tax Subsidies for Retirement Accounts

The two major defined contribution plans with tax advantages are Individual Retirement Accounts (IRAs) and employer-provided 401(k), 403(b), and 457(b) plans. 401(k) plans are retirement plans established by for-profit organizations, 403(b)s by nonprofit organizations, and 457(b)s by nonprofit organizations and state and local governments. IRAs are available as both traditional and Roth IRAs.[27] With a traditional IRA, money placed in the account out of earned income is deductible from taxable income if the taxpayer's income is below a certain threshold, and withdrawals are taxed as ordinary income.[28] With a Roth IRA, money placed in the account is nondeductible, and withdrawals are not taxed.

401(k) plans have no income limits for employee contributions, although in 2022 employers can only consider the first $305,000 of an employee's compensation when calculating its own contributions. In 2022, employees may contribute up to $20,500, plus an additional $6,500 if they are at least 50 years of age. The sum of employee and employer contributions cannot exceed $61,000. The compensation and contribution limits are indexed for inflation.[29] These limits are still indexed by the CPI-U, comparing the third quarter CPI-U in a given year with its value in the third quarter of 2016.

All contribution and income limits for IRAs are adjusted for inflation using the C-CPI-U. Contributions to traditional IRAs in 2022 are tax deductible if a single taxpayer's modified AGI is below $68,000, with a phaseout range ending at $78,000. Contributions for married taxpayers filing jointly are tax deductible if their modified AGI is less than $109,000, with a phaseout range ending at $129,000. Contributions for 2022 are limited to $6,000 per person per year, with an additional $1,000 if the taxpayer is at least 50 years old. Roth IRA have the same contribution limits, but higher income limits: in 2022, single taxpayers may make contributions if their modified AGI is less than $129,000, phasing out at $144,000, and married taxpayers filing jointly can make contributions if their modified AGI is less than $204,000, phasing out at $214,000.

[27] There are also two IRA plans to which employers may contribute: SEP IRAs and SIMPLE IRAs.

[28] Individual contributions may be limited if the taxpayer is covered by their employer's retirement plan.

[29] 403(b) plans have the same limits. 457(b) plans have the same income limits, but total contributions from all sources are limited to $20,500, with an additional $6,500 for employees who are at least 50 years old.

APPENDIX B: LEGISLATION PASSED TO SUPPORT THE ECONOMY DURING THE COVID-19 PANDEMIC

TABLE 1

Names, Dates, and Costs of COVID-19 Pandemic Legislation

Legislation	Signed into Law	Increase in Deficit, 2020–2030 (Billions)
Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020	3/6/2020	8
Families First Coronavirus Response Act	3/18/2020	192
Coronavirus Aid, Relief, and Economic Security Act	3/27/2020	1,721
Paycheck Protection Program and Health Care Enhancement Act	4/24/2020	483
Coronavirus Response and Relief Supplemental Appropriations Act, 2021, plus additional coronavirus response and relief	12/27/2020	868
American Rescue Plan Act of 2021	3/11/2021	1,856
Total		**5,128**

TABLE 2

Names, Dates, and Amount of Income Tax Credits for COVID-19 Pandemic Legislation

Legislation	Signed into Law	Tax Year	Credit Amount ($)			
			Single	Married Filing Jointly	Per Child	Family of 4[a]
The Coronavirus Aid, Relief, and Economic Security Act	3/27/2020	2020	1,200	2,400	500	3,400
The Coronavirus Response and Relief Supplemental Appropriations Act, 2021	12/27/2020	2020	600	1,200	600	2,400
American Rescue Plan Act of 2021	3/11/2021	2021	1,400	2,800	Up to 1,600b	5,600
Total			**3,200**	**6,400**	**2,500**	**11,400**

Note: (a) Family of four assumes an adult couple with one child under 6 years of age and one 6 or older but younger than 17. (b) The credit was increased from $2,000 to $3,000 for children ages six to 17 and from $2,000 to $3,600 for children under 6.

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