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# Understanding the Relationship Between Changes to Federal Fiscal Policy and Near-Term Real GDP Growth

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# ABSTRACT

We introduce two measures which highlight the relationship between changes in federal fiscal policy and economic growth. First, we conduct a growth decomposition exercise to compute the short-run direct effects of changes in policy on real GDP growth, which we call the Federal Fiscal Impulse (FFI). Second, we build on this measure to develop the Federal Fiscal Impulse Index (FFII) which interprets changes in the components of fiscal policy relative to the growth rate of real GDP over recent history. Finally, we project these measures through 2026 using CBO's June 2024 baseline and discuss the measures' benefits and limitations.



*Keywords:* Fiscal Policy, Fiscal Impetus, Economic Growth

*JEL Classification:* E17, E66, H30

# CONTENTS

# INTRODUCTION

The relationship between federal fiscal policy changes and economic growth is of interest to policymakers, forecasters, and academics. In this paper we examine that relationship in the framework of the fiscal impetus literature.[1] We first conduct a simple growth decomposition exercise to compute the short-run direct effects of changes in federal fiscal policy on real GDP growth. Building on this framework, we develop the Federal Fiscal Impulse Index (FFII) that captures whether changes in policy are boosting or dragging down real GDP growth over the next few years. Specifically, we use CBO's most recent economic projection to capture how fiscal policy—under current law—will affect the US economy through fiscal year 2026.

Using the growth decomposition framework, we find that federal fiscal policy accounted for 2.8 percentage points of GDP growth in 2020 while non-fiscal sources accounted for -3.9 percent of q4-to-q4 growth (-1.1 percent).[2] In CBO's projections, federal fiscal policies account for between -0.1 and 0.2 percentage points of GDP growth annually from 2024 to 2026, a modest impulse relative to the fiscal expansions that occurred over the 2020 to 2022 period.

The FFII—which measures the impulse from federal fiscal policy relative to the growth rate of real GDP in recent quarters—does not indicate that changes in policy are generating either a significant boost or drag to real GDP growth over the next few years. However, the FFII does indicate a boost to growth beginning in 2025 when it projects a decrease in revenues relative to 2024.[3] The projected values of the FFII from 2024 to 2026 are in line with historical magnitudes after experiencing unprecedented fluctuations in the wake of the pandemic crisis that began in 2020.

The analysis in this paper reflects only the direct short-run effects of changes in federal fiscal policy through its effect on aggregate demand—what we label the *impulse*—similar to approaches taken in the fiscal impetus literature. Consistent with the literature, these measures do not include any indirect effects—such as multiplier effects and effects on incentives to work,

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[1] The fiscal impetus literature focuses on estimating the direct effects of changes in fiscal policy on aggregate demand. Key works include the seminal paper by Follette and Lutz (2011) and the influential Fiscal Impact Measure from the Hutchins Center at Brookings (Sheiner, Belz, Campbell, & Kovalski, 2021). This paper differs from existing measures in its focus on federal fiscal policy rather than total fiscal policy in the U.S.; additionally, our choice of the fiscal policy counterfactual is different from other works.

[2] Here, growth decomposition is concerned with specifying how much of GDP growth in a given period arises from each of its subcomponents, e.g. consumption, investment, government spending, and net exports. For an example, see Table 2-2 of CBO's June 2024 report *An Update to the Budget and Economic Outlook: 2024 to 2034*. We make use of this framework by examining some analogous results using changes in those subcomponents arising from direct effects of fiscal policy changes.

[3] The Internal Revenue Service postponed certain payment deadlines for taxpayers in areas affected by natural disasters and provided penalty relief for the corporate alternative minimum tax. CBO estimates those temporary factors boosted receipts in 2024 relative to subsequent years.

save, or invest—as these are beyond the scope of short-term growth decomposition.[4] The advantage of this approach is that it allows for a simple measure that can easily be updated in response to incoming data. As a result of that structure, these measures should not be used to assess the effects of any specific change in fiscal policy, but rather the general trend of recent and projected changes on near-term real GDP growth.

### Existing Fiscal Impulse Measures

This paper builds on existing measures of fiscal policy's impulse to GDP growth, applying similar techniques to examine how *federal* fiscal policies relate to contemporaneous economic growth. Existing fiscal impulse measures rely on the seminal paper by Follette and Lutz (2011), which lays out a "Fiscal Impetus" measure focused on discretionary policy changes. Cashin et. al. (2018) build on this measure by introducing a "Fiscal Effect" (FE) measure that records the impact to GDP growth of all changes to fiscal policy, including an isolation of the effects of automatic stabilizers using the methods of Cohen and Follette (2000). These papers include both federal and state and local policies in their respective measures.

One of the most prominent such measures is the Fiscal Impact Measure (FIM) developed by the Hutchins Center at Brookings (Sheiner, Belz, Campbell, & Kovalski, 2021). The headline FIM includes changes in government spending, taxes, and transfers at the federal and state and local level; the FIM can also be broken down into spending and tax and transfer components, with spending on goods and services further broken down between federal and state and local spending. Other applied researchers—such as Goldman Sachs Economics Research (Krupa & Phillips, 2023)—publish similar fiscal impulse measures on a regular basis, though many of these measures focus only on new legislation. Our measure differs by restricting its focus to federal policy; additionally, we use a different set of parameters and a slightly different comparison growth rate than the FIM.

## FISCAL POLICIES

Federal fiscal policy is complex and covers a wide array of activities. To simplify the matter, we subdivide fiscal policy into three broad categories according to how they directly contribute to aggregate demand and ultimately real GDP growth:

1) Federal government purchases,
2) grants to state and local governments, and

[4] The government spending multiplier is defined as the total change in gross domestic product (GDP) for each dollar of direct effect on demand. This is different than the direct effect because the direct effects of government spending can result in increased incomes which increase demand even further. An example of incentive effects includes infrastructure investment: government spending on infrastructure can affect the productivity of private-sector capital and affect GDP beyond its initial effect on aggregate demand. Estimating these indirect effects would require a more complex modeling framework.

3) taxes and transfers to individuals.

### Federal Government Purchases

Federal government purchases affect aggregate demand directly and enter real GDP dollar-for-dollar. As a result, growth in government purchases adds directly to real GDP growth. In CBO's baseline projections, real federal government purchases grow by an average of 0.8 percent annually from the fourth quarter of 2023 to the fourth quarter of 2026. That growth does not add materially to GDP growth annually in any year during that period.

### Grants to State and Local Governments

In addition to direct government purchases, federal government spending also provides funding for state and local government purchases.[5] In this paper, those state and local government purchases affect aggregate demand directly and enter real GDP dollar-for-dollar. While state and local governments could shift spending in response to grants—by changing their fiscal policy—for this purpose we assume that state and local governments shift their spending to other purchases which affect aggregate demand dollar-for-dollar.[6] CBO projects real grants to state and local governments to contract by 8.4 percent per year from the fourth quarter of 2023 to the fourth quarter of 2026. That contraction in grants subtracts from GDP growth over that period, though most of the contraction occurs in 2024.

### Taxes and Transfers to Individuals and Businesses

In contrast to federal purchases and grants to state and local governments, tax revenues and transfers to individuals enter final demand by less than dollar-for-dollar on average because people tend to adjust their savings in response to changes in their income.[7] We next make assumptions about the size and timing of those effects, also known as the marginal propensities to consume, or MPCs.[8] An MPC of less than one means that an extra dollar of income is split into both consumption and savings. Specifically, we split taxes and transfers into eight categories, each of which affects demand less than dollar-for-dollar, spread out over several quarters, such that the change in demand in each quarter reflects fiscal policy changes over the past few quarters. Those eight categories are:

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[5] Grants which provide funding for Medicaid is not considered in this category.

[6] CBO has estimated that one dollar of federal infrastructure grants to state and local governments result in 0.74 dollars of increased infrastructure spending (Campbell & Shirley, 2021). Our assumption equates to assuming that the other 26 cents is used on government consumption or investment in other categories. While further effort is needed to estimate how grants pass through to final demand in general, we expect that parameter to be close to but less than 1.

[7] In this analysis, the transfers category includes federal spending which is given to states for transfers to individuals, such as Medicaid.

[8] In treating the contributions of taxes and transfers to growth this way, we follow the fiscal impetus literature exemplified in Cashin et. al. (2018).

1) unemployment insurance,
2) Medicaid,
3) SNAP,
4) other transfers excluding UI, Medicaid, and SNAP,
5) income taxes,
6) payroll taxes,
7) excise taxes, and
8) business taxes.[9][10]

These tax and transfers categories include both legislated and non-legislated changes to revenues and transfers.

## ANALYTICAL FRAMEWORK

To analyze how federal government spending, federal taxes and transfers to individuals, and federal grants to state and local governments affect GDP growth, consider the standard GDP equation:

$$Y = C + I + G + NX, \qquad (1)$$

where $C$ is consumption, $I$ is investment, $G$ is government purchases, $NX$ is net exports, and $Y$ is output. This yields the growth equation:

$$\frac{\Delta Y_t}{Y_{t-1}} = \frac{\Delta C_t + \Delta I_t + \Delta G_t + \Delta NX_t}{Y_{t-1}}. \qquad (2)$$

In this equation, $\Delta G_t = \Delta G_t^{federal} + \Delta G_t^{sl}$, where $\Delta G_t^{federal}$ is the change in federal government purchases and $\Delta G_t^{sl}$ is the change in state and local government purchases. To broaden our measure of the change in federal fiscal policy on $\Delta G_t$, we define:

$$\Delta G_t^{sl} = \Delta T_t^{sl} + \Delta G_t^{sl,other}, \qquad (3)$$

where $\Delta T_t^{sl}$ represents federal grants to state and local governments and $\Delta G_t^{sl,other}$ is the change in state and local government spending not attributable to transfers. The key implication of this

[9] In the analysis presented here, business subsidies---which include recent policies such as the Paycheck Protection Program and Employee Retention Tax Credit--- are not included. This is an area of ongoing refinement.

[10] The "MPC" applied to business taxes also includes effects on investment. For ease of notation, and because this category is treated similarly to the individual categories, we simply refer to MPCs throughout the paper.

assumption is that all federal grant dollars to state and local governments convert one-for-one into state and local government purchases such that:

$$\Delta G_t = \Delta G_t^{federal} + \Delta T_t^{sl} + \Delta G_t^{sl,other} \qquad (4)$$

where $\Delta G_t^{federal} + \Delta T_t^{sl}$ is the portion of $\Delta G_t$ that is due to federal fiscal policy.

Changes in federal taxes and transfers affect consumption—and investment, in the case of business taxes—though less than dollar-for-dollar and with a lagged timing structure:

$$\Delta C_t + \Delta I_t = \sum_i \sum_s MPC_s^i * \Delta T_{t-s}^i + \Delta C_t^{other} + \Delta I_t^{other}. \quad (5)$$

Here, the first term on the right-hand side applies marginal propensities, $MPC \in [0,1]$, to $i \in \{1, \dots, I\}$ tax and transfer categories with $s \in \{1, \dots, S\}$ lags. Consequently, $\Delta C_t^{other}$ and $\Delta I_t^{other}$ represent the changes in consumption and investment from sources other than the direct fiscal impulse. These other sources include multiplier effects from government purchases, supply side factors, and other equilibrium effects. Consistent with other papers in the literature, the fiscal impulse measures are not intended to capture these effects beyond the immediate MPC effect. Plugging all this back into the GDP growth equation gives:

$$\frac{\Delta Y_t}{Y_{t-1}} = \qquad (6)$$

$$\frac{\Delta C_t^{other} + \Delta I_t^{other} + \Delta G_t^{sl,other} + \Delta NX_t + \Delta G_t^{federal} + \Delta T_t^{sl} + \sum_i \sum_s MPC_s^i * \Delta T_{t-s}^i}{Y_{t-1}},$$

and the federal fiscal impulse (FFI) arising from changes in fiscal policy is given by the last three terms,

$$FFI_t = \frac{\Delta G_t^{federal}}{Y_{t-1}} + \frac{\Delta T_t^{sl}}{Y_{t-1}} + \frac{\sum_i \sum_s MPC_s^i * \Delta T_{t-s}^i}{Y_{t-1}}. \qquad (7)$$

Here the operator $\Delta$ is defined in the standard way:

$$\Delta X = X_t - X_{t-1}, \qquad (8)$$

for any variable $X$.

The Fiscal Effect (FE) measure of Cashin, Lenney, Lutz, & Peterman (2018) takes this approach, though they restrict the analysis to legislated policy changes. Researchers at the Hutchins Center at Brookings (Sheiner, Belz, Campbell, & Kovalski, 2021) developed the Fiscal Impact Measure (FIM) which defines:

$$\Delta X = X_t - \left(1 + g^{potential}\right)X_{t-1}, \qquad (9)$$

such that "fiscal impact" is only positive if a given category of fiscal policy—e.g., government purchases—grew faster than the rate of growth of potential output ($g^{potential}$) during that quarter.

## Constructing the Federal Fiscal Impulse

When analyzing the short-term economic effects of changes in fiscal policy, we break taxes and transfers into five categories (Table 1).

**TABLE 1**: **Policy Categories and their Associated MPCs over Time**

| Category | MPC in Quarter 1 | MPC in Quarter 2 | MPC in Quarter 3 | Total MPC |
|---|---|---|---|---|
| Transfers to low-income households | 0.595 | 0.170 | 0.085 | 0.85 |
| Transfers to middle-income households | 0.282 | 0.141 | 0.047 | 0.47 |
| Transfers to high-income households | 0.174 | 0.087 | 0.029 | 0.29 |
| Unemployment benefits transfers | 0.840 | 0 | 0 | 0.84 |
| Business taxes | 0.350 | 0 | 0 | 0.35 |

Note: This table describes the MPCs associated with each type of transfer and tax used to construct the Federal Fiscal Impulse (FFI) and Federal Fiscal Impulse Index (FFII). The MPC values are chosen to be consistent with CBO's policy analysis models. Source: Congressional Budget Office.

Transfers for Unemployment Insurance and business subsidies are assigned their own average MPCs, while we further sub-divides taxes and transfers into six categories for each income tercile (Table 2). We assign MPCs to each of those six categories based on a weighted average of the MPCs in Table 1, weighted by the respective income shares in Table 2. As a result, categories that primarily affect low-income households are assigned larger MPCs, while categories that primarily affect high income households are assigned smaller MPCs. Therefore, our measures of fiscal impulse will respond more strongly, per dollar, to changes in low-income categories—such as SNAP and other social benefits—than to changes in high-income categories like income taxes.

We use values for each category's MPCs that are consistent with those used in CBO's fiscal policy models.[11] Though the literature on empirically estimated MPCs generates a range of estimates, the values used in our measures were selected to reflect the middle of the range of likely outcomes.[12] In Appendix A, we show how different values for these MPCs affect the FFII measure. We find that while MPCs occasionally affect the magnitude of the fiscal impulse, the qualitative pattern is robust.

**TABLE 2: Federal Transfer Program Across the Income Distribution**

| Transfer Program | Low-Income Share | Middle-Income Share | High-Income Share |
|---|---|---|---|
| Medicaid and CHIP | 0.608 | 0.270 | 0.113 |
| SNAP | 0.715 | 0.213 | 0.064 |
| Social benefits to persons, *less Medicaid, CHIP, SNAP, and unemployment benefits* | 0.748 | 0.175 | 0.067 |
| Income Taxes | -0.041 | 0.089 | 0.951 |
| Payroll Taxes | 0.119 | 0.275 | 0.604 |
| Excise Taxes | 0.242 | 0.306 | 0.449 |

Note: This table presents CBO's 2019 estimates of the income shares of various tax and transfer categories.
Source: Congressional Budget Office.

## REAL GDP GROWTH DECOMPOSITION

Using the framework described in the previous section, we estimate the FFI in CBO's baseline projections and express them as a component of near-term real GDP growth. As fiscal policies change, their contribution to GDP growth changes; over the near term such changes in policies act as an impulse to aggregate demand that can either boost or dampen real GDP growth.

From the fourth quarter of 2023 to the fourth quarter of 2026, real GDP—that is, GDP adjusted for price changes—is projected to grow at an average annual rate of 2.1 percent, in CBO's most recent projections. Over that period, the impulse to aggregate demand from changes in federal fiscal policy will account for varying amounts of real GDP growth, from 0.4 percentage points of

[11] See Mark Lasky, *The Congressional Budget Office's Small-Scale Policy Model,* Working Paper 2022-08 (Congressional Budget Office, August 2022), www.cbo.gov/publication/57254. For an example of MPCs that differ by policy, see John Seliski, Aaron Betz, Yiqun Gloria Chen, U. Devrim Demirel, Junghoon Lee, and Jaeger Nelson, *Key Methods That CBO Used to Estimate the Effects of Pandemic-Related Legislation on Output*, Working Paper 2020-07 (Congressional Budget Office, October 2020), www.cbo.gov/publication/56612.

[12] See Carroll et. al. (2017) for a summary table of empirically estimated MPCs.

growth in 2025 to -0.1 percentage points in 2026, when key elements of the 2017 tax legislation expire (Table 3).

In this framework, contemporaneous growth in aggregate demand is affected by changes in taxes and transfers in recent history. Our estimates suggest that the impulse from changes in taxes and transfers account for 0.3 percentage points of GDP growth in 2025 and -0.1 in 2026. The larger contribution in 2025 is driven primarily by other transfers (0.2 percent). These categories are projected to contribute less to or subtract from GDP growth by 2026. In general, from 2019 to 2026, changes in taxes and transfers to low-income households contribute more to GDP growth than do changes in taxes and transfers to other households. This occurs in large part because of the higher MPCs assigned to low-income taxes and transfers, but also results from sizeable movements in these categories.

## TABLE 3: Components of the Federal Fiscal Impulse and Real GDP Growth

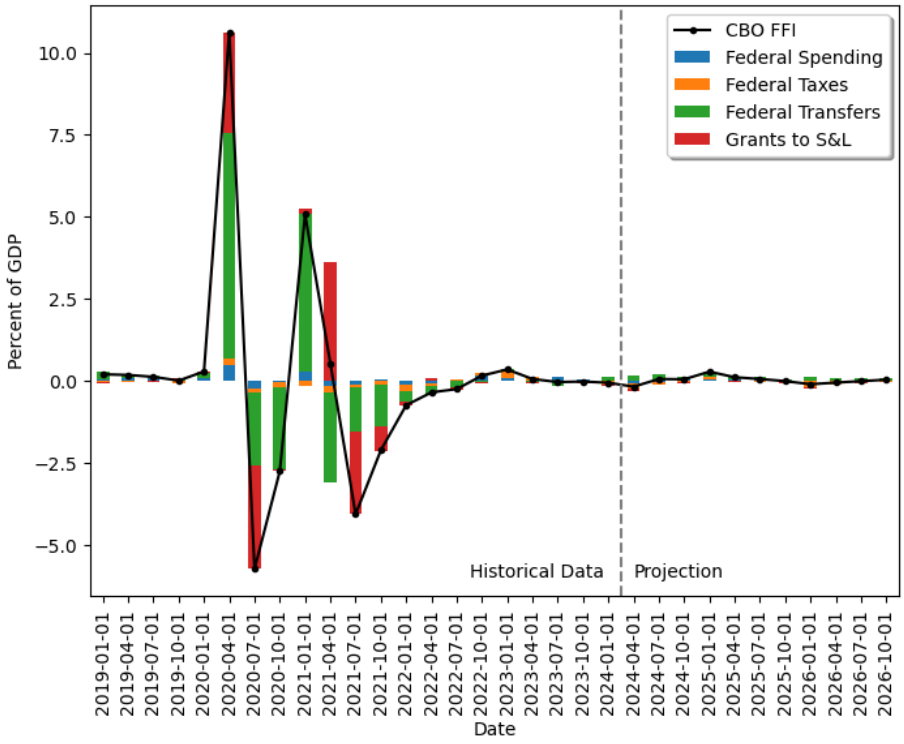
| | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|
| **Real GDP Growth** | 3.2 | -1.1 | 5.4 | 0.7 | 3.1 | 2.0 | 2.0 | 1.8 |
| Growth from Federal Fiscal Policy | 0.5 | 2.8 | -0.8 | -1.2 | 0.3 | -0.1 | 0.4 | -0.1 |
| Growth from Non-Federal-Fiscal Sources | 2.7 | -3.9 | 6.2 | 1.9 | 2.8 | 2.1 | 1.6 | 1.9 |
| Federal Government Purchases | 0.3 | 0.3 | * | * | 0.3 | -0.1 | 0.1 | 0.1 |
| Federal Grants to S&L | * | 0.2 | 0.5 | -0.2 | -0.1 | -0.1 | -0.1 | -0.1 |
| Taxes and Transfers | 0.2 | 2.4 | -1.3 | -1.0 | 0.2 | 0.1 | 0.4 | -0.1 |
| *By Type of Policy* | | | | | | | | |
| UI | * | 0.8 | -0.8 | * | * | * | * | * |
| Medicaid | 0.1 | 0.2 | 0.1 | * | * | -0.1 | * | 0.1 |
| SNAP | * | 0.2 | 0.1 | -0.1 | -0.1 | * | * | * |
| Other Transfers | 0.3 | 1.3 | -0.1 | -0.7 | * | 0.6 | 0.4 | 0.2 |
| Income Taxes | 0.1 | 0.1 | 0.4 | 0.1 | -0.4 | 0.3 | * | 0.3 |
| Payroll Taxes | 0.1 | * | 0.1 | * | 0.1 | 0.1 | 0.1 | 0.1 |
| Excise Taxes | * | -0.1 | 0.1 | * | * | * | * | * |
| Business Taxes | * | * | 0.1 | 0.1 | 0.1 | * | * | * |
| *By Income Tercile of Recipient* | | | | | | | | |
| Low Income | 0.3 | 1.7 | -0.2 | -0.7 | -0.2 | 0.5 | 0.3 | 0.3 |
| Medium Income | * | 0.5 | -0.4 | -0.1 | * | * | * | * |
| High Income | -0.1 | 0.2 | -0.8 | -0.3 | 0.3 | -0.3 | * | -0.4 |

Note: This table presents estimates of the portions of GDP growth assigned to various subcategories in the FFI estimate. Source: Congressional Budget Office. All numbers are expressed in terms of percentage points.

* Indicates the number is between -0.05 and 0.05 percentage points.

The FFI can also be computed at a quarterly frequency. Figure 1 plots the quarterly FFI along with its major subcomponents from 2019 to 2026. Most of the variation in this measure comes from variation in transfers, weighted by their contemporaneous impulse to aggregate demand. In the second quarter of 2020 and the first quarter of 2021 the FFI is large and positive, reflecting high growth in spending and low growth in revenues relative to growth in GDP. Those periods correspond to pandemic-related legislation such as the CARES act of 2020 and ARPA in 2021, which included large transfer packages to individuals, businesses, and state and local governments. In the following quarters, FFI is negative as transfers to individuals, businesses, and governments return to levels more consistent with historical averages. Changes in fiscal policy added to GDP growth in early 2023, subtracted from growth in late 2023, and is projected under current law to not substantially grow or shrink in most quarters from 2024 to 2026.

**FIGURE 1: Components of CBO's Federal Fiscal Impulse, Quarterly**

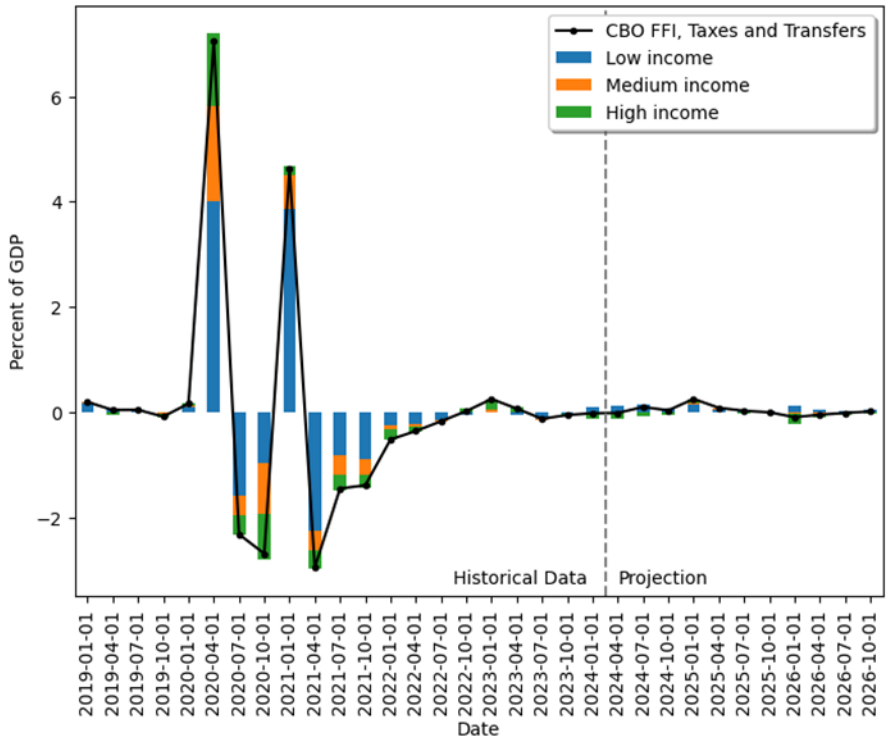



Note: This figure represents the quarterly Federal Fiscal Impulse (FFI) measure and its subcomponents from 2019 to 2026 in CBO's June 2024 forecast. The overall FFI estimates the direct effects of changes in fiscal policy on quarterly GDP growth.
Source: Congressional Budget Office.

The taxes and transfers components of the FFI can be broken down by income terciles (Figure 2). In 2020 and 2021, the lowest third of the income distribution accounted for most of the FFI

from changes in taxes and transfers, followed by the middle third, reflecting the pandemic-related legislation passed during that period. However, the FFI for taxes and transfers to the lower third varied more over the business cycle than it did for the upper third. In 2023 and 2024, the upper third accounts for most of the impulse from changes in taxes and transfers.

**FIGURE 2: Distribution of Tax and Transfer Federal Fiscal Impulse, Quarterly**




Note: This figure represents the taxes and transfers subcomponent of the quarterly Federal Fiscal Impulse (FFI) measure and its breakdown by income categories from 2019 to 2026 in CBO's June 2024 forecast. The FFI estimates for the taxes and transfers categories reflect the direct effects of changes in taxes and transfers on quarterly GDP growth. Source: Congressional Budget Office.

## FEDERAL FISCAL IMPULSE INDEX

While the FFI framework provides a breakdown of real GDP growth arising from the changes in various components of federal fiscal policy, it does not necessarily indicate whether those changes in fiscal policy are boosting or dragging down real GDP growth. For example, if government purchases grew, but at a rate slower than the economy writ large, then the changes in purchases had a positive impulse to growth and exerted downward pressure on the average growth rate of real GDP.

To examine more specifically whether federal fiscal policy is boosting or dragging down real GDP growth relative to real GDP over the last four quarters, we developed a "Federal Fiscal Impulse Index" (FFII). In the FFII, a change in fiscal policy is computed not relative to its value in the previous year as is done in the growth decomposition, but to its value in a counterfactual scenario in which it grew at the four-quarter moving average of real GDP growth:

$$\Delta^* X_t = X_t - (1 + g_t^*) X_{t-1} \qquad (10)$$

where $g_t^*$ is the four-quarter moving average of the growth rate of real GDP.[13] The FFII is then given by:

$$FFII_t = \frac{\Delta^* G_t^{federal}}{Y_{t-1}} + \frac{\Delta^* T_t^{sl}}{Y_{t-1}} + \frac{\sum_i \sum_s MPC_s^i * \Delta^* T_{t-s}^i}{Y_{t-1}}. \qquad (11)$$

The FFII is based on the FFI described above but by construction has a different interpretation. The FFII is positive if the growth rate of the fiscal policy components is larger than the growth of real GDP in recent history. When the FFII is positive we say that fiscal policy is putting upward pressure on the growth rate of real GDP. If the FFII equals zero, then the impulse from changes in federal fiscal policy is putting neither upward nor downward pressure on real GDP growth relative to growth over the previous four quarters.

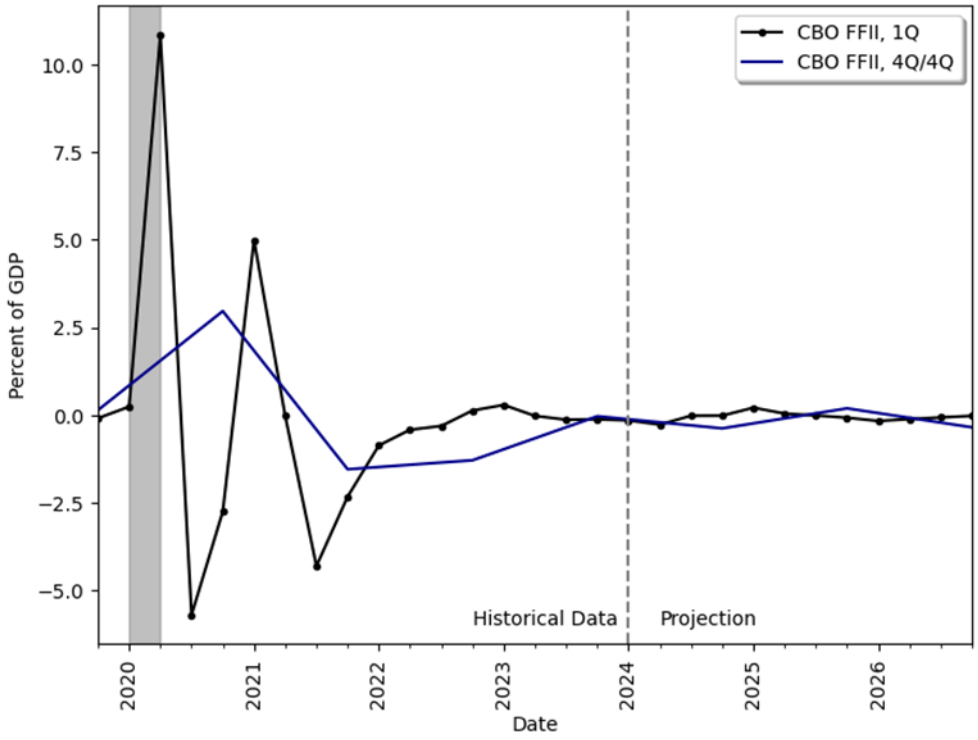
### Analyzing the Federal Fiscal Impulse Index

The FFII is computed at a quarterly frequency using CBO's most recent baseline projection from 2019 to 2026 (see Figure 3). As with the FFI, in the second quarter of 2020 and the first quarter of 2021 the FFII is large and positive, reflecting high growth in spending and low growth in revenues relative to recent economic growth. In the last two quarters of 2020 and 2021, these elements of fiscal policy grow much less than the economy as a whole, reflecting a drag on growth. Fiscal policy pulled GDP growth up in early 2023, pulled it down in late 2023, and is projected to grow at about the same rate as the economy as a whole in 2024 and afterward.

The quarter-to-quarter nature of the FFII causes some periods, such as 2020q3 and 2020q4, to reflect a drag on growth despite higher-than-normal levels of spending. This is because those higher levels of spending have decreased relative to the previous quarter, when spending was even higher. Such results highlight that the FFII captures the contemporaneous impulses to aggregate demand and their effect on near-term GDP growth. This contrasts with the more complete fiscal policy analyses found in CBO's usual reports that analyze the effects of policy changes relative to an economic baseline.

[13] This formulation is similar in spirit to the Brookings FIM, which uses the growth rate of potential GDP.

**FIGURE 3: Federal Fiscal Impulse Index, Quarterly**



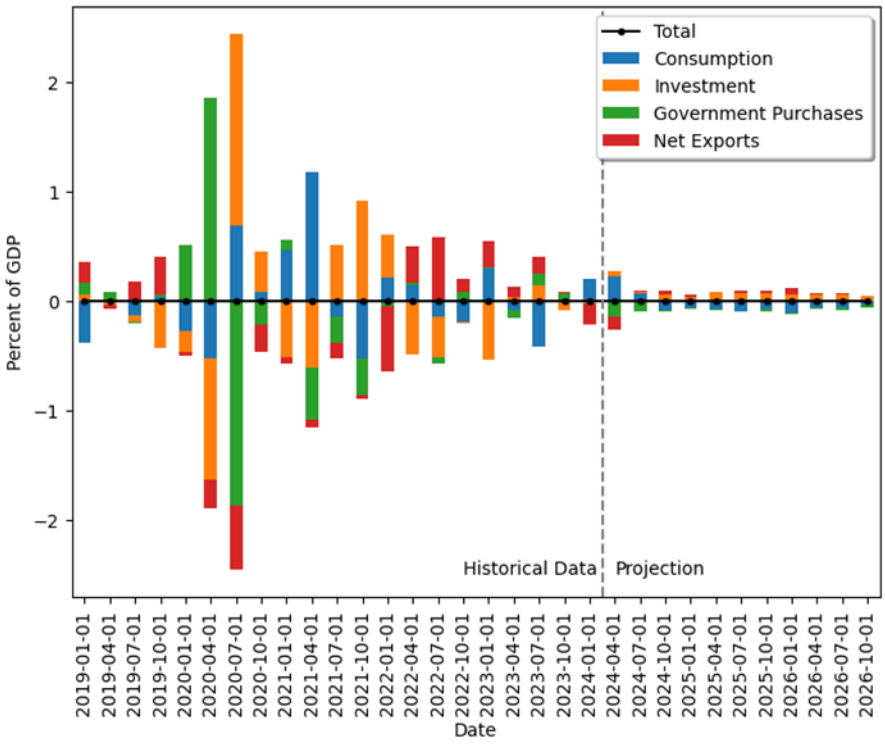

Note: This figure plots the overall quarterly Federal Fiscal Impulse Index (black line) and its annual counterpart (blue line) from 2019 to 2026 in CBO's June 2024 forecast. The FFII measures the impulse to growth of changes in federal fiscal policy relative to the average rate of GDP growth over the past year. Source: Congressional Budget Office.

*Comparison to Components of GDP.* To put the magnitude of the FFII into context we construct a similar measure for the four main components of GDP: consumption, investment, government spending, and net exports (Figure 4). Here we define:

$$\Delta^{**}X_t = X_t - (1 + g_t)X_{t-1}, \qquad (12)$$

where $g_t$ is the growth rate of real GDP and $X \in \{C, I, G, NX\}$. While this decomposition is useful to characterize the magnitude of federal fiscal policy's direct effect on real GDP growth, it should be noted that the FFII reflects subcomponents of consumption, investment, and government spending (Table 5).

## FIGURE 4: Impulse of Major GDP Categories




Note: This figure depicts an index analogous to the FFII for each of the four main components of GDP from 2019 to 2026 in CBO's June 2024 forecast. See "Comparison to Components of GDP" for details. Source: Congressional Budget Office.

**TABLE 4: Four-Quarter Impulse of GDP Components Compared to FFII**

| Impulse Category | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|
| Consumption | -0.5 | -0.1 | 1.0 | * | -0.2 | 0.4 | -0.3 | -0.3 |
| Investment | -0.5 | 0.6 | 0.3 | -0.5 | -0.5 | 0.1 | 0.3 | 0.2 |
| Government | 0.2 | 0.6 | -1.0 | * | 0.1 | -0.2 | 0.0 | -0.1 |
| Net Exports | 0.7 | -1.1 | -0.3 | 0.4 | 0.5 | -0.3 | 0.1 | 0.1 |
| FFII | 0.1 | 3.0 | -1.5 | -1.3 | 0.0 | -0.4 | 0.2 | -0.3 |

Note: This table depicts an index analogous to the FFII for each of the four main components of GDP from 2019 to 2026 in CBO's June 2024 forecast. Source: Congressional Budget Office.

All numbers are expressed in terms of percentage points.

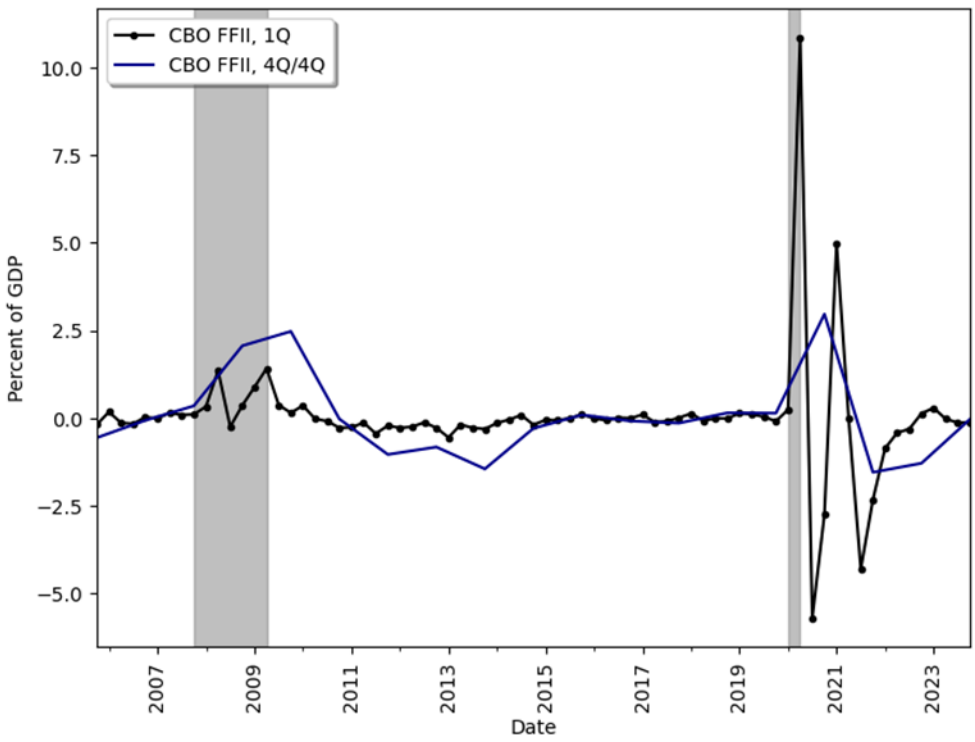
Values generated using equation 12 (above) for each of the components of GDP.

* Indicates the number is between -0.05 and 0.05 percentage points.

Note that, since $\Delta^{**}Y_t = Y_t - (1 + g_t)Y_{t-1} = Y_t - Y_t = 0$, these components add up to zero in each period. In general, the FFII experiences larger swings, both positive and negative, than the larger components of GDP. This is especially true in the years following the COVID pandemic crisis, due primarily to fluctuations in transfers and grants to state and local governments.

**Historical analysis.** While the projected FFII reflects the impulse to the economy coming from changes in fiscal policy under current law, the historical values reflect the realized impulse of fiscal policy on the economy (Figure 5). Moreover, the FFII at the one-quarter and four-quarter frequency can help us understand the role of fiscal policy during economic downturns, such as the pandemic crisis and the 2008 recession.

**FIGURE 5: Historical Federal Fiscal Impulse Index, Quarterly**




Note: This figure plots the overall quarterly Federal Fiscal Impulse Index (black line) and its annual counterpart (blue line) from 2006 to 2024 in CBO's June 2024 forecast. The FFII measures the impulse to growth of changes in federal fiscal policy relative to the average rate of GDP growth over the past year. Source: Congressional Budget Office.

The quarterly FFII suggests that federal fiscal policy responded differently to the pandemic crisis than it did during the 2008 recession. While the quarterly FFII peaked at 1.4 percent in the second quarters of 2008 and 2009, it reached 10.8 percent in the second quarter of 2020 and 5.0 percent in first quarter of 2021, with large negative values in between.[14] However, the annual FFII, measured from fourth quarter to fourth quarter, was similar in magnitude over both periods, indicating that fiscal policy contributed similarly to annual growth in 2009 and 2020 despite the extreme quarterly dynamics during 2020. The annual FFII peaked at 2.5 percent in 2009 and 3.0 in 2020.

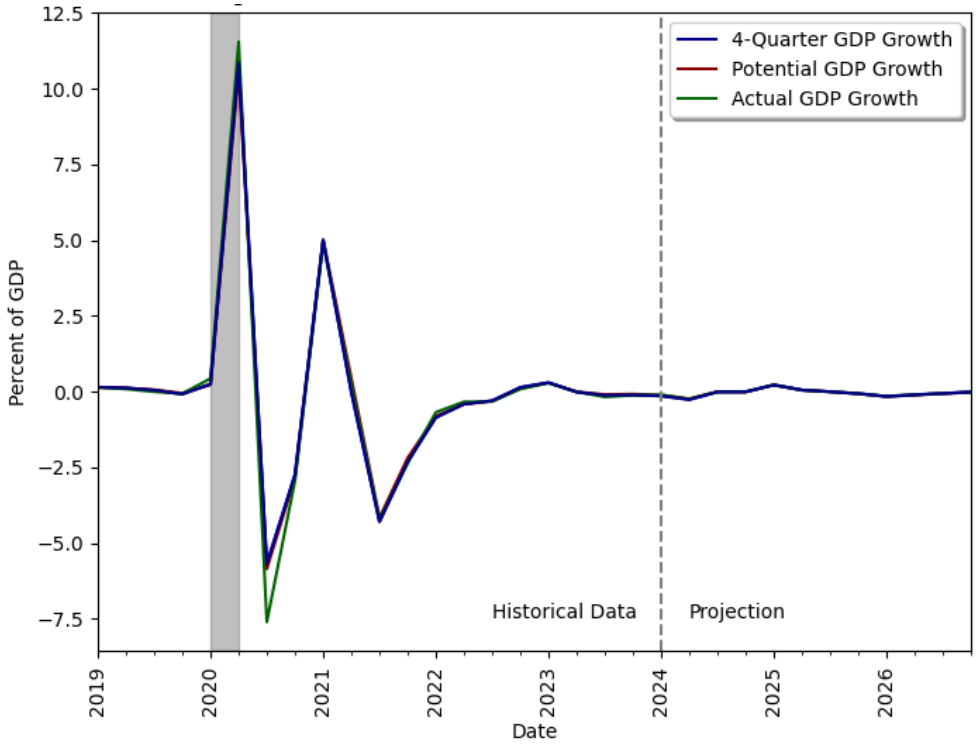
Comparing the FFII over these two periods highlights the importance of the time horizon used when constructing the FFII. While the annual FFIIs were similar during the pandemic and the 2008 recession, the changes in fiscal policy at the quarterly frequency, relative to the rest of the

[14] Appendix B discusses the pandemic period in more detail by comparing the realized FFII values with CBO's pre-pandemic projections.

economy, exhibited quite different dynamics. For periods of rapid changes such as those during the pandemic, an annual measure might miss important movements in fiscal policy from quarter to quarter. On the other hand, quarterly measures may include more noise and exhibit counterintuitive swings, such as when—despite above average federal spending—FFII is large and negative in the third quarter of 2023 mainly due to the historically high spending in the previous quarter.

**Alternative counterfactual specifications.** The construction of the FFII requires the use of a counterfactual fiscal policy. We chose to apply the four-quarter moving average of real GDP growth to the previous quarter's value for each component or fiscal policy. However, that counterfactual is one of several reasonable alternatives, including the quarterly growth of real GDP or the quarterly growth of potential real GDP. While using the quarterly GDP series fully reflects all current business cycle information, potential GDP is designed to eliminate those fluctuations—as well as noise in the data—altogether. To examine how the choice of $g^*$ affects the FFII, we compare its values using these two alternative growth rates (see Figure 6).

**FIGURE 6: FFII, Alternative Counterfactual Growth Rates**




Note: This figure plots the overall quarterly Federal Fiscal Impulse Index (blue line) from 2019 to 2026 in CBO's June 2024 forecast, along with two alternatives for the counterfactual growth rates. Source: Congressional Budget Office.

For the majority of recent history, the three versions of the FFII are nearly identical. The series which uses quarterly GDP growth as the counterfactual diverges from the other two in periods of extreme business cycle fluctuations but are similar in other periods. The two smooth series—the moving average and potential growth—remain within 30 basis points of each other in all periods. The congruent behavior of these three alternatives suggests that the FFII and similar measures are robust to the choice of the counterfactual growth rate.

**Empirical summary and implications.** The FFI and FFII measures yield similar conclusions about the dynamics of fiscal policy and economic growth in recent years. Fiscal policy represented an unusually large portion of quarterly GDP growth in 2020 and 2021 but has returned to a normal level of growth relative to GDP where it is expected to remain in the near future. Fiscal policy's direct effects on quarterly economic growth were smaller during the Great Recession than during the aftermath of the pandemic recession of 2020, but those effects peaked at similar values on an annual basis. These conclusions are robust to the choice of counterfactual growth rate, indicating that changes in fiscal variables are the primary drivers of these results over time.

Though the fiscal impulse measures are not a complete picture of the effects of fiscal policy, they are nevertheless a useful way to compare the stance of fiscal policy against itself over time, such as in the examples above. These comparisons may be useful for policy analysis. For example, the significant differences in the quarterly FFII in the last two recessions may help explain how the economy responded differently in each episode. We expect the FFI and FFII to be useful tools for policymakers and forecasters who are assessing how federal fiscal policy has evolved over time and how it is projected to evolve in the future in relation to the growth of GDP.

## LIMITATIONS AND OPPORTUNITIES FOR FUTURE RESEARCH

Growth-based impulse measures such as the FFII and FIM provide helpful assessments of the relationship between fiscal policy and economic growth. However, they are subject to limitations that researchers should keep in mind. First and foremost, they are limited to short-term analysis of the direct impulse to aggregate demand coming from changes in federal fiscal policy. These measures cannot be used to analyze specific policies and cannot be used for comprehensive policy analysis as they abstract from indirect effects of policy changes---such as multiplier effects---and supply-side implications---such as the effects from changes in incentives to work and save.

Another limitation on these measures results from the short-term nature of growth decomposition. The explicit goal of these impulse measures is to quantify the direct impulse to short-term quarterly growth introduced by fiscal policy and its components. This method necessarily entails comparison to fiscal policy in the most recent quarter; as a result, these measures sometimes record large swings from one period to the next even when the stance of policy remains expansionary. For example, the FFII is large and negative in 2020q3 even though

fiscal policy would not likely be considered contractionary relative to a baseline in which no pandemic policies had been passed; however, fiscal policy was simply less stimulative in that quarter than it was in the previous period relative to quarterly growth. Analysis of these measures should take care not to interpret them in inappropriate ways.

A third set of limitations stems from the limited nature of the data. The quarterly national accounts variables allow for higher frequency analysis than would be possible with annual budget accounts, but that frequency comes at the cost of granular detail. Each individual policy is tailored differently and will have a different effect on consumption and aggregate demand. Using MPCs estimated on one set of policies will not be a perfect measure of the direct effects of a set of policies with a different income or geographical mix.[15]

To mitigate some of these limitations, the simple framework analyzed in this paper could be expanded in several ways. A natural avenue for development would be to account for a more disaggregated set of policy categories or recipients of taxes and transfers. Further disaggregation would require more detailed estimation of MPCs but would provide a more accurate picture of direct fiscal impulses to consumption. Another avenue for expansion would be the inclusion of business subsidies in the measure, which are especially important in the post-pandemic period, as new policies such as the Paycheck Protection Program and the Employee Retention Tax Credit fall under this category.

Other improvements to MPC estimation could also improve the analysis. For the historical measures, large policies can have a noticeable impact on the FFI and FFII. Therefore, it may be appropriate to estimate policy-specific MPCs for large policies such as ARPA; this is an approach taken by the FIM for select policies. Additionally, some categories such as business taxes and transfers for Medicaid may have unique and different lag structures to their payouts than we modeled above; tailoring the lag structures of MPCs in various categories would refine the analysis. Finally, recent evidence suggests that MPCs may vary over the business cycle (Gross, Notowidigdo, & Wang, 2020). Allowing MPCs to differ in recessions and expansions would sharpen the analysis of fiscal impulse measures, which may be of heightened interest during recessionary episodes.

Finally, the assumption that grants to state and local governments pass through dollar-for-dollar to state and local government consumption and investment could be refined further. In this paper, we removed Medicaid grants from those grants, but transfers for TANF remain in the data. To the extent that the MPC for TANF is less than one, the impulse from state and local grants will be slightly less than one. Additionally, if state and local governments offset their grant receipts

[15] We present the FFII using a set of alternative MPCs in Appendix A and find that the qualitative takeaway is very robust.

with lower taxes or additional transfers, then the impulse from those grants will decrease further. Quantifying these effects is a subject for further research.

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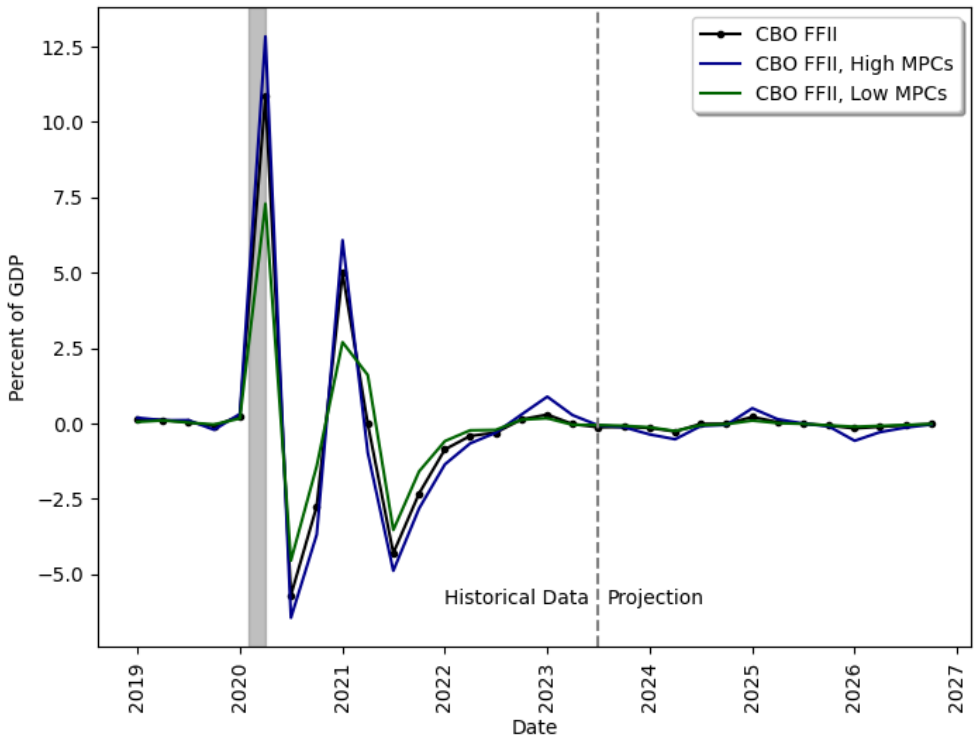
## APPENDIX A: MEASURES UNDER DIFFERENT MPCs

Under our preferred specification, taxes and transfers directly affect demand on a less than dollar-for-dollar basis (the average MPC < 1) when calculating the FFI and FFII (Table 1). In our assessment, this reflects the middle of the range of likely outcomes. However, there is a range of empirically estimated MPCs for different types of policies and in different economic conditions.

In this appendix we examine the robustness of our estimate of the FFII to alternative MPCs. Specifically, we examine two alternative FFII measures in Figure 7 that reflect higher and lower estimates of MPCs than those used in our preferred specification. The "High MPC" index sets MPCs to 1, such that the quarterly MPCs add to 1 in each of the five categories of taxes and transfers (Table 1). Conversely, the "Low MPC" index sets MPCs to half of the value used in our preferred specification.

**FIGURE 7: FFII under Alternative MPC Assumptions**




Note: This figure plots the overall quarterly Federal Fiscal Impulse Index (black line) from 2019 to 2026 in CBO's June 2024 forecast, along with two alternatives for choice of MPCs.
Source: Congressional Budget Office.

While the MPCs affect the magnitude of the FFII, they rarely alter the qualitative takeaway as movements in government purchases and GDP play a significant role in the path of the index (Figure 7). Higher MPCs result in larger fluctuations in the FFII, especially when those fluctuations are being driven by taxes and transfers. For example, the High (Low) MPC FFII

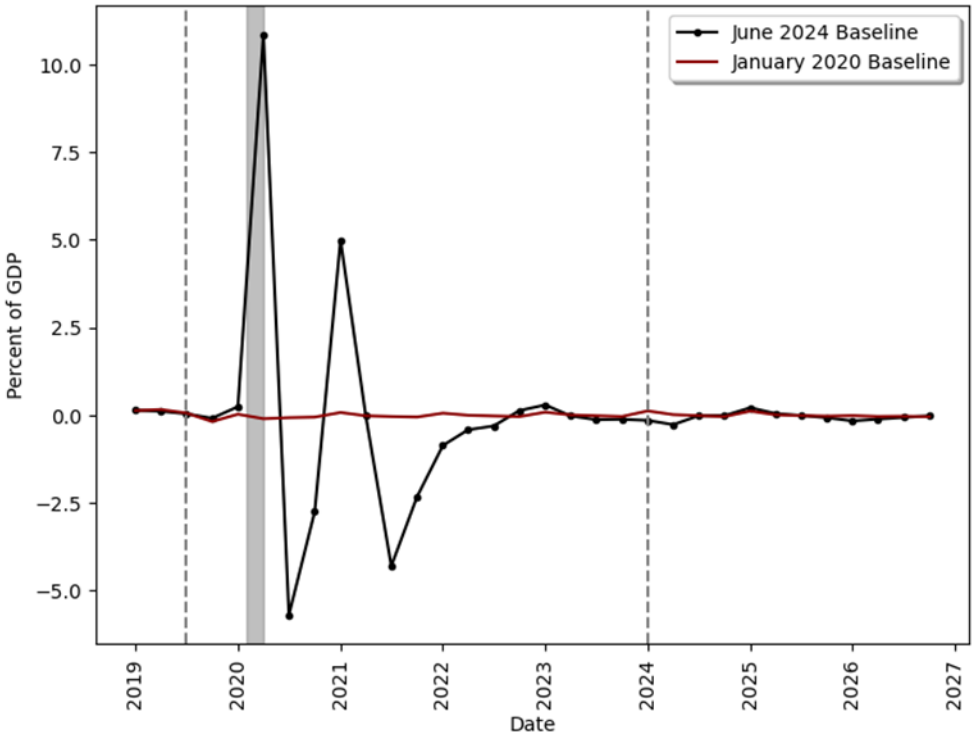
exacerbates (dampens) the drop in FFII at the beginning of 2026, when certain provisions of the 2017 tax act expire.

# APPENDIX B: COMPARING THE REALIZED FFII TO THAT GENERATED BY CBO's PRE-PANDEMIC PROJECTIONS

Fiscal policy's response to the COVID-19 pandemic induced unprecedented fluctuations in government spending, taxes, transfers, and output growth. The FFII reached 10.8 percent of GDP in the second quarter of 2020 and recorded absolute magnitudes of at least 2 percent of GDP in five of the six following quarters. The large positive values in the second quarter of 2020 and the first quarter of 2021 reflect the two largest tranches of direct payments to individuals and the slowdown in quarterly GDP growth. The large negative values occur because outlays decreased in those quarters relative to the previous quarters' higher level, even though they remained at historically high levels.

The historically large policy response to the pandemic is evident if we compare the realized FFII to the FFII produced by CBO's January 2020 baseline projections published just before the onset of the pandemic crisis in the United States (Figure 8). In the January 2020 baseline, the FFII never reached an absolute magnitude of 0.2, indicating that CBO projected a modest impulse from fiscal policy throughout the coming decade. Actual values of the FFII were orders of magnitude higher than what CBO had projected, reflecting large deviations from the pre-pandemic projections both for fiscal policy and the path of output growth. CBO's most recent projections for 2025 and beyond imply an FFII mostly in line with the values it projected in early 2020, implying that fiscal policy's impulse to growth may have moderated from its pandemic peaks.

**FIGURE 8: FFII under Alternative CBO Baselines**




Note: This figure plots the overall quarterly Federal Fiscal Impulse Index from 2019 to 2026 in CBO's June 2024 forecast (black line) and January 2020 forecast (red line). Source: Congressional Budget Office.