# Monetary-Fiscal Policy Interactions

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Chairman Barr, Ranking Member Moore, subcommittee members, thank you for inviting me to talk with you.

The title of this hearing, "Monetary vs. Fiscal Policy," frames the issue in an unfortunate way. That title harks back to the unproductive Keynesian-monetarist debates of the 1960s and 1970s. As I hope my comments make clear, a more constructive way to think about this is as "monetary *and* fiscal policy." This is not merely a semantic point—it is fundamental economics. I commend the subcommittee for delving into this underappreciated topic.

## 1 Policy Interaction Basics

Research over the past 25 years emphasizes that monetary and fiscal policy *jointly* determine the economy-wide level of prices and the rate of inflation.[1] Out of that literature has emerged the understanding that two distinct combinations of monetary and fiscal policy behavior—policy regimes—can determine the price level and stabilize the level of government debt.

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[1]Early contributors include Leeper (1991), Sims (1994), Woodford (1995), and Cochrane (1999). Leeper and Walker (2013) and Leeper and Leith (2017) are recent overviews.

## 1.1 Policy Regimes

Table 1 summarizes the policy mixes that determine inflation and stabilize debt.

The first regime reflects the conventional view that monetary policy actively adjusts the policy interest rate to lean against inflation, while fiscal policy passively adjusts primary budget surpluses—revenues less expenditures, not including interest payments on government debt—to stabilize the long-run debt-GDP ratio. Taylor's famous rule falls into this regime: the central bank raises the policy interest rate more than one-for-one with the inflation rate and raises the interest rate more modestly when the output gap increases [Taylor (1993)]. Because monetary policy focuses on stabilizing inflation and the real economy, fiscal policy must ensure that government debt remains well behaved. When fiscal policy makes taxes rise with the level of real government debt by more than enough to cover interest payments and some of the principal, the debt-GDP ratio will be stable in the long run. Many economists believe this regime prevails during "normal" economic times.

| **Policy Authority** | **Monetary-Fiscal Policy Regimes that Determine Inflation and Stabilize Debt** | |
|---|---|---|
| | ***Conventional View*** | ***Alternative View*** |
| Monetary | Aggressively raises interest rate with inflation | Weakly raises interest rate with inflation |
| Fiscal | Raises primary surplus with real debt | Pursues other objectives besides debt stabilization |

Table 1: Monetary-Fiscal Policy Mixes

A second, alternative, regime can also determine inflation and stabilize debt. In this regime, fiscal policy pursues other objectives by setting primary surpluses independently of debt and the price level. Monetary policy chooses the interest rate so that it responds only weakly—or not at all—to inflation, which permits expansions in government debt to raise the price level. Higher price levels reduce the *real* value of debt to make the debt-GDP ratio stable. Since the United States left the gold standard in April 1933, there have been several

instances in which the Federal Reserve seems to have followed this alternative behavior: from April 1933 until about 1936; throughout World War II until the Treasury-Fed Accord in March 1951; much of the 1970s; the 2008 financial crisis and its aftermath.[2] And there have been times when fiscal policy pays scant attention to debt in order to pursue other objectives: despite extremely high war debt, in 1948 Congress overrode President Truman's veto and cut taxes; the Economic Recovery Plan of 1981 increased primary deficits even as the debt-GDP ratio was rising from its post-war low in the early 1980s; both the Economic Growth and Tax Relief Reconciliation Act of 2001 and the Jobs and Growth Tax Relief Reconciliation Act of 2003 cut taxes at times of rising debt; the American Recovery and Reinvestment Act of 2009 increased spending and cut some taxes despite rising debt.[3]

### 1.2 Fiscal Consequences of Monetary Policy

To keep this discussion focused, in what follows I consider only the conventional mix of monetary and fiscal policy behavior. That policy combination embeds the Taylor rule as one example of monetary policy behavior.

Basic economic reasoning tells us that monetary policy actions have fiscal consequences. Let's start with something routine: the Federal Reserve raises the federal funds rate in order to reduce inflation. This isn't the end of the story: a higher funds rate tends to raise all interest rates, including those on government debt, so interest payments on outstanding debt increase.

Now fiscal policy comes into play. Those higher interest payments require higher taxes or lower expenditures in the future to service the debt. The message is: to successfully reduce inflation, *tighter monetary policy* necessarily requires *tighter fiscal policy* at some point. That fiscal response is essential for the Fed to be able to control inflation.

What happens if the fiscal response is not forthcoming because the fiscal authority never

[2]See Taylor (1999), Clarida, Galí, and Gertler (2000), Lubik and Schorfheide (2004), and Davig and Leeper (2006).

[3]See Davig and Leeper (2006), Bhattarai, Lee, and Park (2016), and Bianchi and Ilut (2017).

adjusts taxes or spending? The dollar value of government debt grows to finance interest payments. Bond holders see their interest receipts rise, but don't anticipate higher offsetting taxes. They feel wealthier and demand more goods and services. Higher demand *raises* prices, *counteracting* the Fed's original intention to lower inflation.

Appropriate fiscal backing for monetary policy is critical for the Fed to achieve price stability.

## 2 U.S. and International Examples

It is helpful to consider actual instances when policy behavior departed from the conventional monetary-fiscal regime.

### 2.1 An Important U.S. Historical Case

Recovery from the Great Depression illustrates that the alternative monetary-fiscal policy mix has been an explicit policy choice.[4] President Franklin D. Roosevelt took office in March 1933 at the lowest point of the Great Depression. Compared to the third quarter of 1929, real GNP was 36 percent lower, industrial production had been cut in half, unemployment rose from almost nothing to a quarter of the workforce, and the price level had fallen 27 percent. The new president committed to raise the price level by achieving "...the kind of a dollar which a generation hence will have the same purchasing power and debt-paying power as the dollar we hope to attain in the near future" [Roosevelt (1933b)]. The first step toward permanently raising the price level was to abandon the gold standard in favor of what Roosevelt called a "managed currency" [Roosevelt (1933a)].

Abandoning convertibility of the dollar to gold, which included abrogating the gold clause on all future and past public and private contracts, changed the nature of government debt. Under convertibility, even though government bonds paid in dollars, the Treasury was required to convert those dollars into gold on demand. When the Treasury didn't have the gold

[4]This draws on Jacobson, Leeper, and Preston (2017).

on hand, it had to acquire the gold, possibly through higher taxes. The new fiat currency standard broke the automatic link between new bonds and future surpluses: government bonds were simply promises to pay dollars, which the U.S. government could freely create without adjusting taxes.[5]

Roosevelt used three strategies to convince the public that higher debt would not necessitate higher future taxes. First, he made policy state-dependent, saying he would run bond-financed deficits until the economy recovered. Second, he emphasized the temporary nature of the policy by distinguishing between the "regular budget," which he balanced, and the "emergency budget," whose deficits were driven by relief spending. Finally, Roosevelt raised the political stakes by pitching economic recovery as a "war for the survival of democracy" [Roosevelt (1936)]. The strategies appeared to work because expected inflation began to rise by spring 1933 [Jalil and Rua (2016)].

Monetary policy behaved passively through the recovery. After the United States left gold, the Fed no longer needed to keep interest rates high to staunch the outflow of gold and the New York Fed reduced its discount rate to 1.5 percent in February 1934, where it remained until August 1937, when it was lowered to 1 percent. From November 1933 to February 1937, the Fed conducted no open-market purchases of Treasury securities. One contemporary observer wrote that the Federal Reserve "served merely as a technical instrument for effecting the Treasury's policies" [Johnson (1939, p. 211)]. Clearly, the Fed did not follow anything resembling a Taylor rule, which permitted the expansion in government debt to stimulate the economy, as it does in the alternative policy mix.

Economic recovery was rapid. Real GNP returned to its pre-depression level in 1937. Price levels—consumer and wholesale price indexes and the GNP deflator—rose but fell short of regaining their levels in the 1920s. Historians like Friedman and Schwartz (1963) and Romer (1992) attribute recovery to money supply growth brought about by gold inflows from a politically unstable Europe, inflows which the Treasury chose not to sterilize. But

[5]Today all but the 10 percent of Treasury debt that is indexed to inflation is also merely a promise to pay future dollars.

that explanation overlooks the significant expansion in government debt that took place. The dollar value of federal debt outstanding doubled in the 6 years after leaving the gold standard, reflecting the substantial fiscal stimulus associated with Roosevelt's relief programs.

Remarkably, this expansion in nominal debt did not raise the debt-GNP ratio. Figure 1 plots the par and market values of gross federal debt as percentages of GNP from 1920 to 1940. The vertical line marks departure from gold in April 1933. After bottoming out in September 1929 at 15.6 percent, the debt-GNP ratio rose steadily while the United States was still on gold, reaching 44.7 percent in March 1933. It then remained below 45 percent through the end of 1937. Economic recovery raised both the price level and the real level of economic activity, ensuring that the debt-GNP ratio was stable.

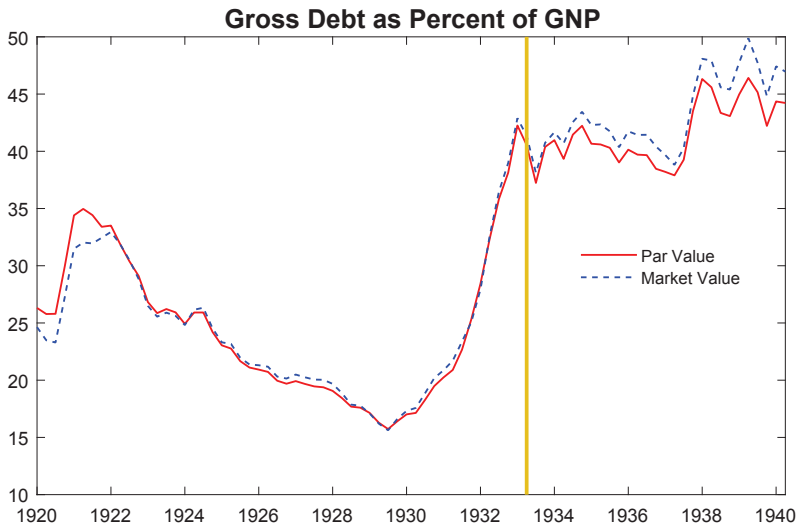


Figure 1: Par and market value of gross federal debt as a percentage of GNP. Source: Hall and Sargent (2015), Balke and Gordon (1986), and authors' calculations. Vertical line marks departure from the gold standard.

In this alternative policy mix, the Federal Reserve behaved passively, permitting the fiscal expansion to raise aggregate demand and with it, prices and output. With this policy mix, there need not be any conflict between fiscal expansion and fiscal sustainability, as the data in figure 1 neatly illustrate.

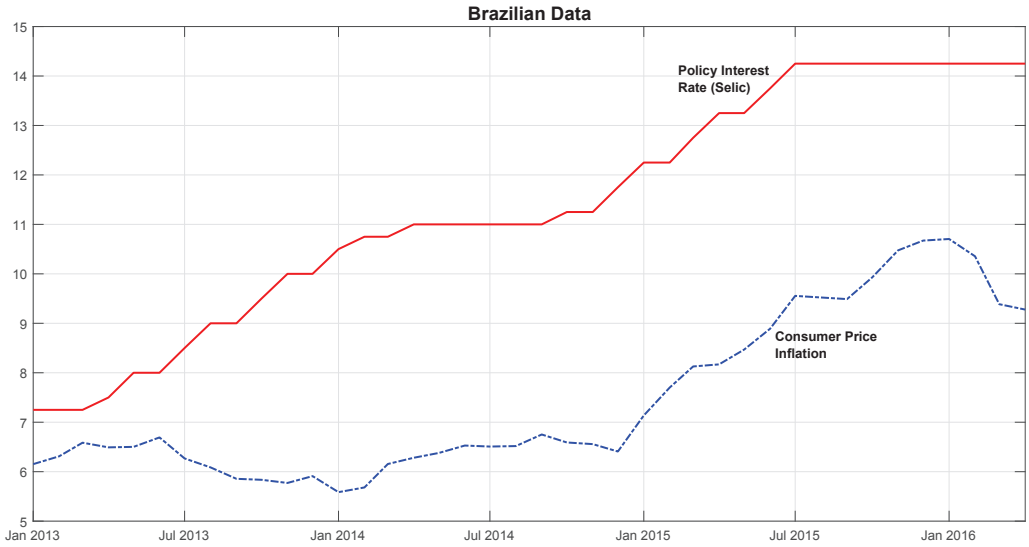


Figure 2: Brazilian monetary policy interest rate and consumer price inflation rate. Source: IHS Global Insight.

## 2.2 Recent International Cases

Countries have not always provided appropriate fiscal backing.[6] In recent years, Brazil followed a fiscal policy that was unresponsive to debt, while its central bank sought to target inflation. The 1988 constitution indexed government benefits to inflation, which placed 90 percent of expenditures out of legislative control. At the same time, tax increases were politically infeasible, leading to growing primary deficits with no prospect of reversal. When inflation began to rise, the central bank aggressively raised interest rates, just as the Taylor principle instructs. Debt service rose, driving up aggregate demand and inflation. In December 2015, the primary deficit was 1.88 percent of GDP, but the gross deficit—primary plus interest payments—was 10.34 percent of output. Figure 2 plots Banco Central do Brasil's policy rate, the Selic, along with the consumer price inflation rate from 2013 through 2015. Despite a doubling of the policy rate, the inflation rate rose by nearly 5 percentage points: monetary policy does not appear to be controlling inflation.

It is tempting to infer that Brazil's problems stemmed from dysfunctional fiscal policy. Surely, if fiscal policy follows well-specified guidelines that ensure "responsible" fiscal

[6]Leeper (2017) discusses these and other examples in detail.

behavior, monetary policy will be able to control inflation.

Two European countries have had fiscal rules for some years and take those rules seriously. By "seriously" I mean the governments actually follow the rules.[7] Sweden's *Fiscal Policy Framework* lays out the general principles that guide fiscal policy [Swedish Government (2011)]. Each elected government then adopts the particular rules it will follow to be consistent with the framework. Currently, Sweden aims for a 1/3 percent of GDP target for net lending (the surplus inclusive of interest payments) and is now considering also imposing a 35 percent of GDP "debt anchor." This anchor is akin to a target around which debt will fluctuate within prespecified bounds.

Since a nationwide referendum in 2001, Switzerland has followed a debt brake, which limits spending to average revenue growth over several years. If spending differs from this limit, the difference is debited or credited to an adjustment account that has to be corrected in coming years. Debt brakes have a built-in error-correction mechanism intended to restrict the size of government debt.[8]

The top panel of figure 3 suggests that Swedish and Swiss fiscal rules have worked to limit debt growth. In both countries, debt has steadily fallen over the past 15 years and now is about 35 percent of GDP. Remarkably—and these two countries may be the sole exceptions—debt either continued to fall or was flat during the financial crisis. This stunning outcome is a testament to the effectiveness of fiscal rules that are followed.

But this prudent fiscal policy may have come at a cost in terms of inflation targeting. Both countries have 2 percent inflation targets that have been missed. In Switzerland, inflation has been persistently below target since the beginning of 2009. Swedish inflation has been below 2 percent for the past five and a half year. Low inflation rates are not the result of inadequate efforts by monetary policy: policy interest rates have been negative since the beginning of 2015.

The Swedish and Swiss cases illustrate that fiscal backing for monetary policy must be

[7] This draws on Leeper (2016).

[8] See Danninger (2002) and Bodmer (2006) for additional details and analyses.

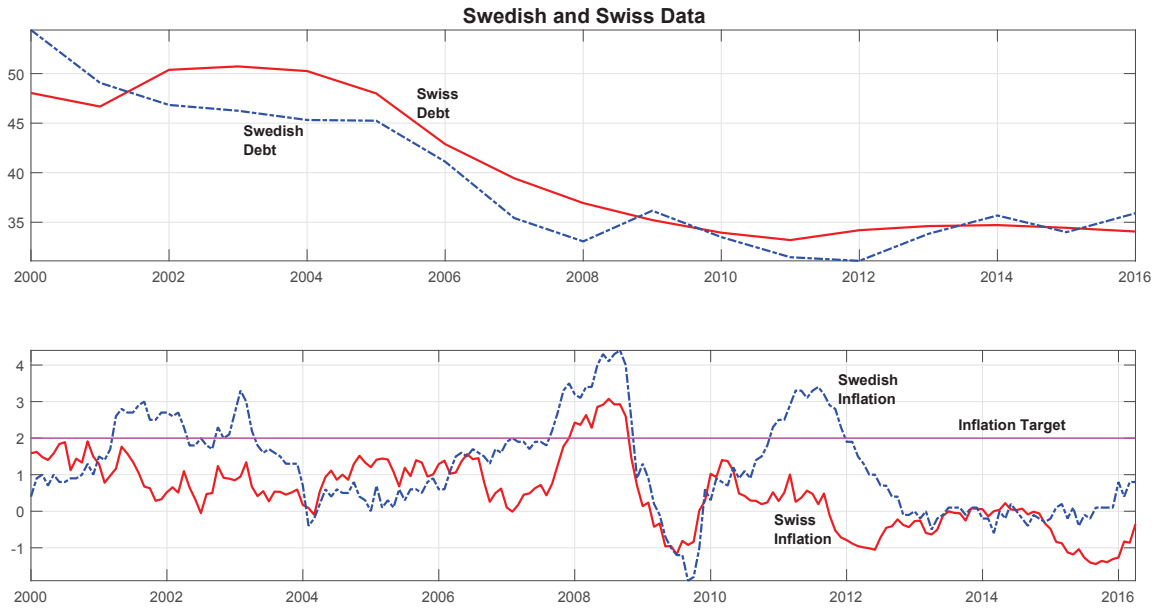


Figure 3: Debt-GDP ratio and CPI inflation rates in Sweden and Switzerland. Sources: Statistics Sweden, Swedish National Debt Office, and Swiss National Bank.

symmetric. When monetary policy reduces interest rates and interest payments on government debt, fiscal policy needs to reduce taxes. Fiscal rules designed primarily to reduce government debt may interfere with the symmetry of fiscal backing.

These international examples offer suggestive evidence of how monetary and fiscal policies that are inconsistent with each other can produce undesirable economic outcomes. Each is a case in which monetary and fiscal authorities independently pursue their objectives and fiscal authorities fail to provide the fiscal backing needed for the central banks to control inflation.

## 3 Current U.S. Situation

Economic developments in the United States today underscore the need to understand the joint impacts of monetary and fiscal policies.

### 3.1 Recent Data

For almost a decade, U.S. monetary policy has been highly stimulative and federal government debt has grown rapidly, yet inflation has remained benign. A few facts from table table 2 and figure 5:

- Short-term interest rates have been below 1 percent for the past nine years.
- Over that period, bank reserves increased by a factor of 52.
- Inflation, by any measure, has averaged less than 2 percent since 2008.
- Longer-term Treasury yields have been trending down, suggesting that markets do not expect inflation to pick up.

| | Average Annual Rate 2008Q1-2017Q1 | Ratio of Value in 2017Q1 to Value in 2008Q1 |
|---|---|---|
| Federal funds rate | 0.37 | — |
| 3-month Treasury rate | 0.26 | — |
| Core CPI | 1.82 | — |
| Core PCE | 1.57 | — |
| GDP Deflator | 1.53 | — |
| | | |
| Bank reserves | — | 51.7 |
| Gross debt | — | 2.0 |

Table 2: Core CPI is less food and energy; Core PCE is personal consumption expenditures excluding food and energy; GDP deflator is implicit price deflator; Bank reserves are total reserves of depository institutions; Gross debt is the market value of gross federal debt. Sources: Bureau of Labor Statistics, Bureau of Economic Analysis, Federal Reserve Board, Federal Reserve Bank of Dallas.

How can this happen?

Massive growth in bank reserves hasn't created inflation because banks happily hold idle and safe reserves whose yield exceeds those in the federal funds and short-term Treasury

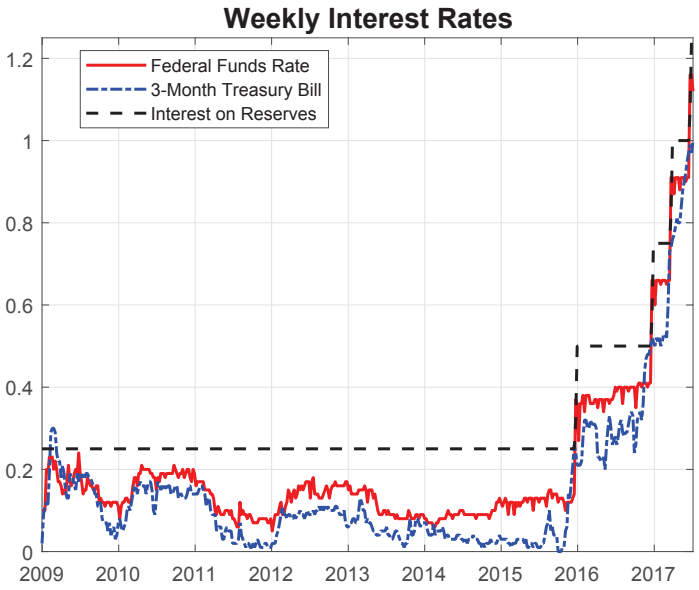


Figure 4: Source: Federal Reserve Board.

markets [figure 4]. By holding onto excess reserves, banks have not expanded deposits and, therefore, broad monetary measures at unusually high rates.

There is another fact with which this committee is familiar:

- Gross federal debt has doubled since 2008 [figure 5].

Why hasn't this been inflationary?

In a phrase: bond-market pessimism.

During the financial crisis, there was a worldwide flight to safety: investors had an insatiable appetite for Treasuries. This demand, perhaps more than monetary policy actions, has kept bond yields low. That appetite continues today, ensuring demand more than absorbs the expanding supply of bonds. As long as people expect future surpluses will adjust to finance the growing debt, the expansion in debt will not significantly raise aggregate demand and the price level.

The question for monetary policy is: what happens to inflation—and the Fed's ability to control it—when the thirst for safety is quenched? The answer hinges very much on the *fiscal* response.

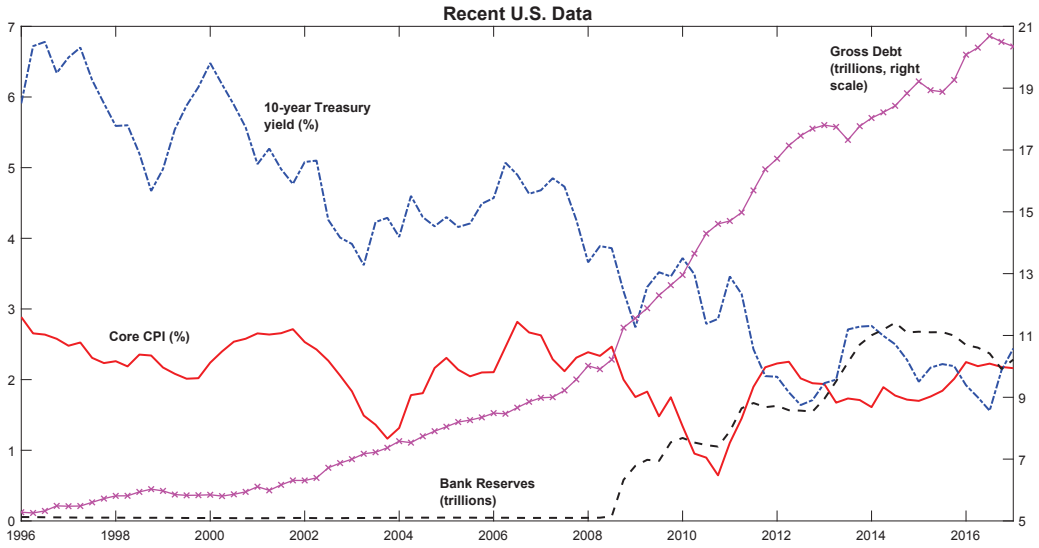


Figure 5: Core consumer price inflation is CPI all items less food and energy and 10-Year Treasury constant maturity rate are both in percentages on the left scale; total reserves of depository institutions are in trillions of dollars on the left scale. Gross federal debt is the market value in trillions of dollars on the right scale. Source: Federal Reserve Board, Bureau of Labor Statistics, Federal Reserve Bank of Dallas.

## 3.2 An Accounting Exercise

What I've described arises naturally from a fiscal policy that aims to stabilize the government debt-GDP ratio. What's important is that the private sector understands and believes that the fiscal response will eventually take place. Of course, when debt levels are low, the changes in debt service and, therefore, taxes, are modest. Debt service has also been modest during the past decade because interest rates have been exceptionally low.

The fortuitous fiscal effects of low interest rates may be coming to an end.

This committee has heard previous testimony about the process of monetary policy "normalization." But there is an important fiscal component to normalization that I want to highlight. Here is a little accounting exercise. The market value of gross federal debt is now a bit higher than nominal GDP. If interest rates on government bonds rise from current levels to 6 percent, roughly the post-World War II average, interest payments will rise over time by about 5 percent of GDP or close to $1 trillion.

Debt service now consumes about 10 percent of federal expenditures. In the late 1980s

and early 1990s, at its post-war peak, debt service was 20 percent of expenditures—and then the debt-GDP ratio was under 60 percent. Evidently, interest-rate normalization carries substantial fiscal implications.

## 4 Policy Rules

Formal economic models posit algebraic rules that govern policy behavior. These rules are necessarily extreme simplifications of actual policy behavior, designed to highlight how specific components of systematic policy behavior affect the economy's operation. They are not intended to be a complete description of how policy behaves in every possible situation.

Policy rules may be *de*scriptive or *pre*scriptive. Moving from describing behavior to prescribing behavior is, to me, a very large leap. At this point, the most we can ever say is that a particular simple rule seems to deliver good economic welfare across some set of formal models. But those models embed a great many stated and unstated assumptions that may or may not apply to the actual economy. Assumptions include formulations of private economic behavior, particularly private-sector expectations, and a range of shocks that may hit the economy.

The studies do have a common thread: *All analyses that conclude beneficial outcomes from Taylor-type rules for monetary policy maintain the assumption that fiscal policy also obeys a rule that appropriately backs the monetary policy behavior.*

Of course, I do not advocate completely discretionary policy untethered by guiding principles. Both monetary and fiscal policy must be guided by broad economic objectives. And both monetary and fiscal policy authorities must be held accountable for achieving those objectives.

Underlying the discussion in this testimony is the need for systematic fiscal backing for monetary policy. Whether the Federal Reserve follows a Taylor rule, some other rule, or no algebraic formulation, so long as its mandate include price stability, its success hinges on stable and reliable fiscal backing.

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