

Federal Reserve Bank of Cleveland

Money Growth and Inflation: Does Fiscal Policy Matter?

by Charles T. Carlstrom and Timothy S. Fuerst

The determinants of inflation have long interested both economists and central bankers. This interest has taken on renewed importance in light of a growing consensus that central banks should—first and foremost—pursue price stability. The roots of this argument date back to Milton Friedman’s famous dictum that “inflation is always and everywhere a *monetary* phenomenon.” Yet recently this view has come under attack. As figure 1 illustrates, there has been virtually no correlation between money growth and inflation since at least the early 1980s.

Is inflation “always and everywhere a monetary phenomenon,” as postulated by Friedman? Many doubt this premise, arguing instead that inflation is not the sole province of the central bank, but is also controlled by the fiscal authority. This argument has become known as the *fiscal theory of the price level (FT)*. If fiscal policy drives the inflation rate, inflation targeting becomes problematic.

This *Economic Commentary* examines two versions of the FT—*weak-form FT* and *strong-form FT*. Weak-form FT posits that inflation is indeed a monetary phenomenon, but that money growth is dictated by the fiscal authority. Strong-form FT, on the other hand, argues that even if money growth is unchanged, fiscal policy independently affects the price level and inflation rate. Both versions imply that the central bank may be unable to commit to an inflation target, either because the central bank does not control the money supply (weak form), or because inflation is not necessarily a monetary phenomenon (strong form).

■ Weak-Form Fiscal Theory: Fiscal Dominance

On a basic level, the FT argues that the price level is determined by the budgetary policies of the fiscal authority. The interrelationship of fiscal and monetary policy is, in one sense, obvious. Governments have two possible revenue sources at their disposal: taxes and fees of all forms, and seignorage. Seignorage is defined as the revenues obtained from money creation.

The central bank creates money by exchanging dollar bills for government bonds. Money creation increases revenues by decreasing the liabilities of the fiscal authority, and also decreases the liabilities of the Treasury by increasing prices, thus lowering the real value of government debt. Both enable the fiscal authority to tax less or to increase government spending.

Long-run monetary and fiscal policy are jointly determined by the fiscal budget constraint. The FT involves an assumption about which policymaker moves first, the central bank or the fiscal authority. In other words, who is responsible for seeing that the government’s long-term budget constraint is satisfied? This relationship between the monetary and fiscal authority (that is, Congress) has been described as a “game of chicken.”

Traditional versions of the FT (which we call weak-form FT) assume fiscal dominance. That is, the fiscal authority moves first by committing to a path for primary budget surpluses, forcing the monetary authority to generate the seignorage necessary to maintain solvency. Using the

Is inflation “always and everywhere a monetary phenomenon,” as Milton Friedman postulates in his famous dictum? Some say no, arguing instead that inflation is not the sole province of the central bank, but is also controlled by the fiscal authority. This *Economic Commentary* explores this argument, known as the fiscal theory of the price level.

game-of-chicken analogy, the FT assumes that the monetary authority loses and is forced to “blink.”

The central bank thus reacts to changes in fiscal policy by changing either current money or future money growth (inflation). Holding future inflation constant, an increase in current and future budget deficits necessitates increasing current (nominal) money. If current money, however, is held constant, then the monetary authority must increase future inflation. Thus, an increase in future deficits must result in either a one-time increase in money (a one-time jump in the price level) or an increase in future money growth (future inflation). Monetary revenues to finance deficits can be raised by increasing the tax on money today or tomorrow.

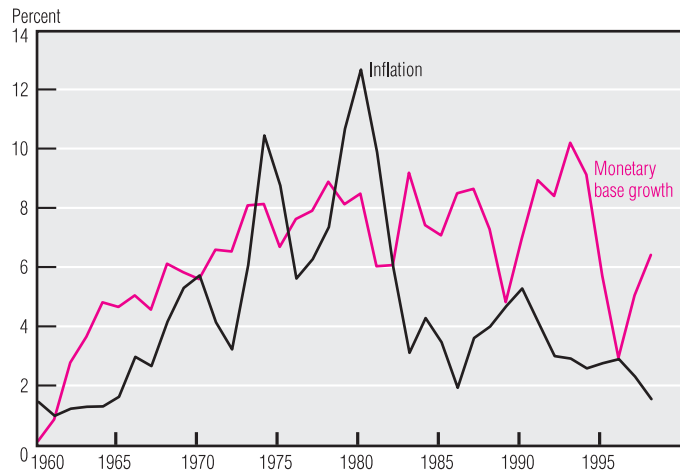
The implication of fiscal dominance, or the weak-form FT, is not that monetary movements do not determine the price level. Instead it's a theory about the determinants of these monetary movements; weak-form FT argues that monetary policy is dictated by fiscal policy.

One of the most surprising implications of this theory is the possibility that tight money today could increase *today's* price level! That is, a low money supply today necessitates increased inflation tomorrow, implying—if money demand is sufficiently elastic—a high price level today. The intuition is as follows: Low money today directly lowers current prices. But there is an additional, indirect effect—the higher future inflation necessary for budget balance increases the nominal interest rate, lowering real money demand today. The latter effect drives up today's prices and overwhelms the former if money demand is sufficiently interest-elastic (greater than one).

■ Monetary or Fiscal Dominance?

The assumption behind the weak-form FT is that fiscal theory is dominant. But is it likely that the central bank bases its decisions on the actions of the fiscal authority? Throughout history there have been some clear examples of fiscal dominance. For instance, Germany's hyperinflation from 1921 to 1923 was set in motion by the country's need to make reparations and reconstruct its economy following World War I. Instead of paying for this by increasing taxes, Germany chose the more politically

FIGURE 1 ANNUAL MONETARY BASE GROWTH AND INFLATION



SOURCES: U.S. Department of Labor, Bureau of Labor Statistics; and Board of Governors of the Federal Reserve System.

expedient route of money creation. This resulted in a hyperinflation where the inflation rate in 1923 exceeded 1,000,000 percent!

As a result, the U.S. and other governments around the world have attempted to insulate central bankers from such political pressures. The independence of the U.S. central bank exists in order to reduce the bank's incentives to bow to political pressures and use money creation to pay for government spending programs. The fact that seignorage accounts for only 2 percent of annual budgetary revenues is evidence of its (at least partial) success, leading many economists to conclude that fiscal dominance is highly unlikely. Instead, they maintain that the monetary authority is dominant and the fiscal authority is responsible for maintaining budgetary solvency.

Yet, as any student of politics knows, raising taxes is extremely difficult. Fiscal authorities try to postpone the day of reckoning by borrowing. This leads one to ask whether it is possible for *both* the fiscal and monetary authorities to be dominant. Can both monetary and fiscal policies be chosen irrespective of budgetary considerations (that is, can both be exogenous)? To continue with the game-of-chicken analogy, what happens if neither player blinks?

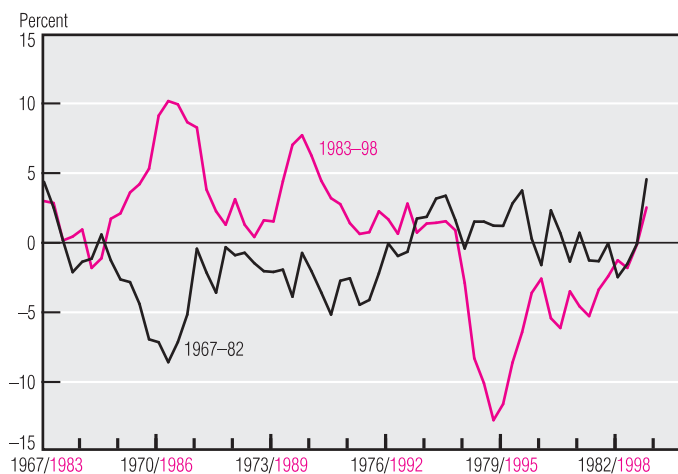
The game-of-chicken analogy is predicated on the assumption that if neither player blinks some calamity will occur. This calamity would be a sharp increase in interest rates as the public realized that the government would eventually be unable to pay its bills, and perhaps would even lead to a complete collapse of government borrowing (government debt is not accepted and becomes worthless). Is this necessarily the case?

The question behind the strong-form FT is this: Under what conditions, if any, can *both* monetary and fiscal policy be dominant? If dual dominance is possible, then movements in fiscal policy must independently affect the price level. For example, for a fixed money stock, an increase in the deficit might cause prices to rise, deflating the real value of government debt outstanding, thus maintaining budgetary solvency.

■ Sunspots: Price-Level Indeterminacy

In most monetary models, a fixed money stock implies that prices are uniquely determined by the public's willingness to hold cash—that is, their real demand for cash balances. The strong-form FT, however, argues that (without the fiscal budget constraint) real cash balances—and hence prices—are not uniquely determined. The strong-form FT eliminates this multiplicity and pins down prices by assuming that, over the long-term, the government's budget must balance. As a corollary, changes in fiscal

FIGURE 2 ERRORS IN REAL MONETARY BASE FORECASTS



NOTE: Forecasts are based on a regression that includes the monetary base, the constant-maturity 10-year Treasury rate, and real GDP.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis; and Board of Governors of the Federal Reserve System.

policy alter the price level even though current and future money growth remain unchanged. This is a sharp contrast with the weak-form FT, where fiscal policy changes prices only because of its effect on current or future money growth.

How can the public be equally content with different levels of real money holdings? Real cash balances, and hence prices, are not uniquely determined in the presence of what economists refer to as “sunspot” behavior. Sunspots are purely extraneous information that leads to self-fulfilling changes in public beliefs. The hallmark of sunspot equilibria is the presence of this self-fulfilling behavior. If the public believes that prices should be higher today, it sets in motion a series of forces that actually *cause* prices to become higher. If such a circle is possible, then sunspot events, or anything that changes households’ beliefs about the price level, would be self-fulfilling.

The bank runs of the Great Depression are perhaps the most obvious example of sunspot behavior. Because of the first-come, first-served rule for bank deposits (and no deposit insurance), it was in depositors’ best interest to run on a bank and withdraw their money whenever they thought the bank might be in financial jeopardy. But here’s the rub: If everyone thought the bank was in financial trouble, then the bank run, in and of itself, would cause the bank’s trouble. Banks’ portfolios are largely tied up in

assets that cannot be easily liquidated, so a bank run—or even a rumor that a bank was in trouble—would be a self-fulfilling prophecy. Deposit insurance was instituted to eliminate this kind of behavior.

Are there similar monetary examples? Consider the following: Suppose the public anticipates an increase in the nominal interest rate (between today and tomorrow) and thus lowers its demand for real cash balances today. This would raise prices today and lower inflation between today and tomorrow. Since money facilitates economic activity, this reduction in real cash balances would lower current consumption. In order to smooth their consumption stream over time, households would react to this temporary decline by decreasing savings and, therefore, increasing real interest rates. If this effect is strong enough, nominal interest rates will increase despite the decline in inflation. This completes the circle that began with an assumed increase in the nominal interest rate. Hence, the nominal interest rate and real money balances (that is, prices) may not be uniquely determined.

The strong-form FT assumes that in order to uniquely determine prices, the additional restriction of government budget constraint is needed. Prices adjust so that the real value of government debt can adjust to a level consistent with the fiscal budget constraint. Pinning down the price level eliminates the pos-

sibility of sunspot equilibria. But the implication is that changes in the fiscal position can change prices and the path of future inflation—even if monetary policy is unchanged.

■ Empirical Evidence

Strong-form FT presents serious empirical problems. In order for this self-fulfilling circle to occur, unrealistically large elasticities are required. Sunspots occur because a decline in current real balances—that is, an increase in current prices—will, other things constant, lower expected inflation between this period and next period. For the nominal interest rate to rise (and complete the self-fulfilling circle), this decline in expected inflation must be offset by an even larger increase in the real rate. But a large real rate increase requires three large elasticities: (1) a large interest-elasticity of money demand; (2) a large response of output to a decline in real balances; and (3) a large response of the real rate to a decline in current output. Empirical evidence on these elasticities suggests that this self-fulfilling behavior is highly unlikely.

Can either version of the FT explain the lack of correlation between money and prices since the early 1980s? Analysis of the disinflationary episode of the early 1980s reveals that inflation began its descent before the monetary aggregates started to decline. The weak-form FT predicts that prices will begin falling in anticipation of lower future money growth and inflation. The strong-form FT, on the other hand, predicts that prices will begin falling in anticipation of lower future inflation, independent of present or future money growth. But are changes in fiscal policy during this period consistent with either form of the FT?

The answer appears to be no. The FT would have predicted a sharp increase in inflation during the 1980s, given the huge increases that occurred in both current and future budget deficits. Yet inflation fell sharply. Furthermore, the *reduction* of money growth after the huge *increases* in budget deficits casts doubt on the assumption that the fiscal authority is dominant, and thus casts doubt on the weak-form FT.

The breakdown between money and inflation is also not likely to be due to either form of the FT because both theories are predicated on the assumption that the usual real money demand

relationship continues to hold. Real money demand is a function of nominal interest rates and output, not fiscal policy. Yet as figure 2 illustrates, there seems to have been a fundamental breakdown in real money demand during this period—which is likely responsible for the breakdown in the correlation between money and inflation, not the FT.

■ Conclusion

The FT argues that the price level is largely determined by fiscal considerations. This *Commentary* has noted that this theory comes in two forms, weak-form FT, in which the central bank is driven by the fiscal authority, and strong-form FT, in which prices are affected directly by fiscal policy (independent of any monetary response). Both versions suggest that a central bank cannot target the inflation rate, as it would be targeting something that, ultimately, it does not control.

The evidence for the FT appears quite weak in the United States. The Federal Reserve appears to maintain an enormous degree of independence from the fiscal authority, implying that weak-form FT is not a plausible assumption. As for strong-form FT, the large elasticities it would require suggest it is little more than an intellectual curiosity.

However, the FT does provide an important cautionary tale: Weak-form FT is predicated on the assumption of fiscal dominance. To the extent that this is true, it occurs because the central bank has no clear objectives. By definition, with clear objectives that are independent of fiscal policy, monetary policy cannot be passive. Thus, if the FT belies the central bank's ability to achieve inflation targeting, then it is only because the mandate is not clear enough and because the central bank may not have the credibility to follow through on such an objective.



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