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Monetization of Deficits

New time-series evidence compiled by NBER Research Associate **Alan S. Blinder** indicates a surprisingly systematic link between the size of federal deficits and the growth of bank reserves. The nature of the relationship indicates that the Federal Reserve will monetize less of a deficit if inflation is high or if government purchases are growing rapidly. Blinder's research, reported in **On the Monetization of Deficits**, *NBER Working Paper No. 1052*, also shows that most of the effect from monetizing federal deficits shows up as higher inflation rather than increased real activity.

The first question Blinder sets out to answer is whether the portion of a deficit that the Fed monetizes has any effect on real or nominal variables. This is basically the same question as "Do open market transactions matter?" Elementary macroeconomic models suggest that budget deficits have a greater impact on aggregate demand if they are monetized. Blinder maintains, however, that the monetization is far more complex than these models suggest because the simple models leave out several important considerations. One set of considerations involves the wealth effects of deficits and the resulting dynamics implied by the government budget constraint. Another concerns changes on the supply side of the economy as higher or lower interest rates affect capital accumulation. A third involves the effects of the government's financing decision on expectations and, in turn, the effect of expectations on present behavior.

Blinder discusses those complexities and concludes that they make the monetization issue theoretically ambiguous. The possible effect of monetization on capital accumulation, and the resulting effect on aggregate demand and economic activity, can be handled in principle, but not in practice. The effect of deficits and monetization on expectations, on the other hand, opens up so many possibilities that it may be intractable even in principle. Accordingly, Blinder turns to the data for an answer. He cautions that this approach is hazardous in the absence of a reliable structural model of the economy. The time-series evidence that he compiles merely shows whether knowing how much of a deficit is monetized helps predict movements in nominal GNP, real GNP, and the price level.

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In estimating the relationships between deficits and monetization and other economic variables, Blinder uses fiscal rather than calendar years to get a more accurate measure of the deficit. His measure of monetization is the growth in bank reserves. Blinder's regressions show that, once growth of the national debt is controlled for, the growth of bank re-

serves does help to predict nominal GNP. Thus, monetization does matter. At the same time, growth in the national debt also helps to predict nominal GNP after controlling for growth in bank reserves. From this he concludes that both monetized and nonmonetized deficits are significant predictors of subsequent GNP growth.

One obvious question is whether changes in national debt and bank reserves predict changes in prices or changes in real output. To answer this, Blinder substitutes the GNP deflator and real GNP growth for nominal GNP. Those equations show that the growth in reserves may or may not contribute to the explanation of inflation, depending upon the details of the specification. In contrast, Blinder finds very few significant effects in the equation using real GNP. In other words, the regressions suggest that neither the growth in bank reserves nor the growth in the national debt carry much information that is useful in predicting real GNP. The fact that both variables are significant predictors of nominal GNP seems to stem mainly from their value in predicting inflation.

Next, Blinder examines the relationship between deficits and money growth. Econometric study of the effect of deficits on Fed behavior began some years ago, but the evidence has been decidedly mixed. The studies lead to no firm conclusions about the determinants of monetization, although they do create a skeptical attitude about facile assertions that deficits induce faster money growth. Blinder departs from earlier studies by using the change in bank reserves instead of one of the monetary aggregates as a measure of monetization. He also examines a number of other variables that may affect any relationship between deficits and changes in reserves—including interest rates, the inflation rate, and unemployment. The variables that seem to have the most influence are the rate of inflation and the rate of growth of real government purchases.

Econometric estimates for the period from 1949 through 1981 indicate that the Fed would monetize 7.6 percent of a deficit if there were no inflation and if real government purchases were unchanged from the year before. Both higher inflation and the growth of government purchases tend to decrease the fraction of the deficit that is monetized. The results change substantially, however, when Blinder breaks the period into two subperiods of 1949–60 and 1961–81. The effect of inflation on the rate of monetization is only about one-seventh as large in the later subperiod, suggesting a greater tolerance of inflation. Moreover, the relationship between deficits and money growth in the post-1961 period is much stronger than earlier studies suggest. Blinder emphasizes, however, that the monetization rate is still very low in the post-1961 period. “If deficits are mainly inflationary to the extent that they are monetized,” he writes, “then budget deficits should kindle little in the way of inflationary fears.”

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Are Real Interest Rates Equal across Countries?

If real interest rates (that is, rates adjusted for the inflation rate) on comparable securities are equal across countries, then domestic monetary authorities cannot control their real rate relative to the world rate; the impact of their stabilization policies thus will be limited. Moreover, if real rates are equal, then policies directed at increasing domestic saving cannot increase the domestic rate of capital formation and, hence, productivity. The equality of real rates also provides information on certain basic international parity conditions.

Thus, it is important to determine whether real interest rates are in fact equal across countries; this is the focus of *NBER Working Paper No. 1048* by Research Associate **Frederic S. Mishkin**. In his paper, Mishkin uses quarterly data for the period 1967:1–1979:4 from the United States, Canada, United Kingdom, France, West Germany, the Netherlands, and Switzerland. He compares real rates on three-month euro deposits (offshore securities denominated in different currencies, issued by the same bank, and with similar risk of default).

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The results of the tests that Mishkin performs imply that real rates are not equal across countries. He then goes on to test for certain parity conditions, in particular interest parity, purchasing power parity, and equality of the forward exchange rate with the expected future spot rate (or, the absence of a risk premium in forward exchange rates). When jointly observed, these conditions imply that real rates are equal. However, his evidence provides some indication that these parity conditions may not hold.

Based on his statistical evidence, Mishkin concludes that: (1) domestic real rates may vary from world rates; (2) there may be a risk premium in the forward exchange market that varies with time; and (3) deviations from relative purchasing power parity may exist. This evidence leaves open the possibility that policymakers can control domestic real rates relative to world rates, at least to some extent, but it does not rule out the tendency for real rates to equalize over time.

Why Money Announcements Move Interest Rates

Money market participants have become close "Fed watchers." Each week, they make guesses as to how much the nation's money supply will grow—or shrink. When the weekly figures are announced by the Federal Reserve System after the close of the stock market on Friday, if the growth is greater than had been anticipated, then interest rates move up in response. In **Why Money Announcements Move Interest Rates: An Answer from the Foreign Exchange Market**, *NBER Working Paper No. 1049*, **Charles Engel** and **Jeffrey Frankel** note that at first glance this phenomenon might seem puzzling. Standard textbook economics would indicate that the additional supply of money should reduce its cost (the interest rate) unless the demand for money has increased in the meantime. The two authors argue that there is not necessarily an inconsistency. Interest rates may indeed fall during a week in which the Fed increases the money supply. But when the announcement of the increase occurs ten days later, interest rates will change purely because the news alters the market's expectations of future monetary policy.

One explanation for this changed view is that the market perceives the fluctuation in the money stock as an unintended deviation from the Fed's target growth rate that will be reversed later. Money growth that is faster than expected by the market is typically faster than what was expected by the Fed as well. Weekly blips in the money supply are blamed on fluctuations in private money demand or in the banking system that are beyond the monetary authorities' instant control. But the Fed is expected to correct the errors subsequently to bring the money supply back in line with its target growth rates. The anticipation by money market participants of this future tightening drives up interest rates immediately. Interest rates jump on bonds with terms that include the period in which the money markets will be tighter. The fact that rates on even very short-term bonds increase indicates a belief that the Fed wastes no time in beginning to correct errors.

A second explanation is that the market sees the increase in the money supply as signaling a higher target growth rate. Thus, with the Fed deciding to create more money, the money market expects a higher future inflation rate and insists on a higher nominal interest rate to offset that extra loss in the value of money. Or, vice-versa, a decline in money growth below that anticipated might persuade money market participants to accept lower interest rates on the assumption that future inflation will be reduced from that previously expected.

The first explanation, termed the "liquidity effect" by the authors, assumes that the market expects the Fed to stick to its preannounced money growth and correct any aberration, thus causing real interest rates (after removing inflation) to rise. The second explanation, called the "inflation premium explanation," implies that the market does not trust the Fed to keep a steady course.

Engel and Frankel attempt to choose between these two hypotheses by looking at the exchange rate for the U.S. dollar. If tight monetary policy causes the real interest rate to rise (as with the first explanation), then there will be a capital inflow or reduced outflow: foreign investors will want to make more dollar investments. This should cause an appreciation of the dollar against foreign currencies. On the other hand, if expected inflation increases, then the value of the dollar should fall (the exchange rate should rise) as demand for the currency declines. Thus, the authors say, if the inflation premium view is correct, the exchange rate should have the same positive correlation with faster money growth announcements that the interest rate has: both the exchange rate and interest rates should rise. If the liquidity view is correct, the exchange rate should have the opposite correlation with the interest rate: when money is announced to have grown especially fast, the exchange rate should decline because foreigners expect less inflation.

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The authors construct a theoretical model of the exchange rate's dependence on monetary tightness. They then use the exchange rate between the dollar and the West German mark for the period October 1979 to August 1981 to test the two hypotheses. To figure out what the market anticipates in the way of money growth, they use a survey made each Tuesday by Money Market Services Inc. of predictions by 60 money market participants.

Engel and Frankel conclude that there is a statistically significant tendency for the dollar to appreciate following announcements of surprising growth in the money supply. This supports the first explanation: that the money market expects the Fed to reverse its error by reducing future money growth to bring it within target.

In more recent work, Frankel and Gikas Hardouvelis argue that, just like the price of foreign exchange, the prices of commodities should rise if the liquidity view is correct. They examine the prices of six com-

modities (gold, silver, cocoa, sugar, cattle, and feeders) and the price of foreign exchange through November 1982 and find highly significant negative reactions. This finding again supports the liquidity view.

The results of these papers, the authors maintain, also throw light on a second issue: whether goods prices are sticky or flexible. Some argue that fluctuations in the interest rate mostly consist of fluctua-

tions in the expected inflation rate, rather than fluctuations in the real interest rate. If the money supply increases faster than expected, it will boost the expected inflation rate immediately and the price level will also rise rapidly. Thus there will be no effect on the real (after inflation) interest rate. The papers support the opposite view: that prices are sticky and that real interest rates do rise with tighter money.

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