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Nominal GDP: Target or Benchmark?

By Robert L. Hetzel

Some observers have argued that the Federal Reserve would best fulfill its mandate by adopting a target for nominal gross domestic product (GDP). Insights from the monetarist tradition suggest that nominal GDP targeting could be destabilizing. However, adopting benchmarks for both nominal and real GDP could offer useful information about when monetary policy is too tight or too loose.

Congress has mandated that the Federal Reserve System pursue the dual goals of maximum employment and stable prices, the latter currently specified to mean 2 percent average inflation. However, during the Great Recession, both employment and the rate of inflation fell sharply. In 2007, the unemployment rate averaged around 4.5 percent, while inflation (as measured by core personal consumption expenditures, or core PCE) averaged just over 2 percent. In 2009, the unemployment rate reached 10 percent, while core PCE inflation fell to 1 percent.

Some observers have argued that the Fed could have better fulfilled its mandate over this period by targeting stability in nominal gross domestic product (GDP). Nominal GDP is the broadest measure of economic activity in nominal terms, that is, not adjusted for inflation from year to year. Its components are real output and prices, and thus nominal GDP encapsulates both sides of the Fed's mandate. In line with the performance of both real GDP and inflation, nominal GDP growth fell from around 5 percent in 2007 to -2.5 percent in 2009.

The idea behind nominal GDP targeting is a simple feedback rule in which the Federal Open Market Committee (FOMC) would move its policy instrument, the federal funds rate, in response to observed deviations of nominal GDP growth from a target rate, or alternatively, of nominal GDP from a target path in level form. Advocates of nominal GDP targeting argue that a feedback rule of this sort would succeed in stabilizing nominal GDP, and that stability would be helpful in achieving both price stability and maximum employment over the long run.

At the same time, nominal GDP targeting is subject to criticisms, some of which stem from the monetarist tradition. This *Economic Brief* argues that nominal GDP targeting ultimately would be destabilizing. However, benchmark growth paths for both nominal and real GDP would offer useful information about when monetary policy is undesirably expansionary or contractionary.

Nominal GDP Targeting: Origin of an Idea

Milton Friedman, the Nobel Prize-winning monetarist, criticized monetary policy that was "activist," that is, policy that attempts to actively control macroeconomic variables. His two most famous statements are contained in the essays *A Program for Monetary Stability* in 1960 and "The Role of Monetary Policy" in 1968.[1] The first essay

expressed the idea that policymakers lack the model of the economy required to understand how their individual policy actions affect macroeconomic variables. This problem is exacerbated by the fact that monetary policy affects the economy only with a lag. The phrase "long and variable lags" came to summarize the argument. The second essay expressed the idea that policymakers could not successfully base an activist policy on observed past correlations between output and inflation, known as the Phillips curve. These correlations were not structural: they would not remain invariant if policymakers attempted to target one variable and use the empirical correlations to predict the impact on the other variable. The phrase "policymakers cannot exploit the Phillips curve" came to summarize this argument.

Friedman's 1960 essay proposed an alternative to activist policy: that the Fed make a monetary aggregate grow steadily. When he formulated this rule, the monetary aggregates M1 and M2 were stably related to nominal GDP, such that steady growth in money would have produced steady growth in nominal GDP. Moreover, at the time, because both labor force growth and productivity growth (output per worker) were stable, trend growth in real GDP was stable. Three percent growth in M2 would have produced 3 percent growth in nominal GDP. With 3 percent trend growth in real GDP, trend inflation would have been zero.

In the late 1980s and early 1990s, Bennett McCallum of Carnegie Mellon University proposed rules for making nominal GDP grow along a steady path.[2] Under one version, the central bank would make the monetary base (currency plus bank reserves) grow at a rate consistent with the trend growth rate of the target path for nominal GDP. It also would adjust the monetary base in response to deviations of nominal GDP from its target path.

Over time, however, monetary aggregates have ceased to be reliably related to nominal GDP. With the elimination of interest rate ceilings on bank deposits in the early 1980s, money demand became interest-sensitive and, as a result, money began to move countercyclically.[3] That is, money growth weakened when the economy strengthened and interest rates rose and strengthened when the economy weakened and interest rates fell. The kind of monetary-aggregate targeting espoused by Friedman became impractical because instability in money demand made an interest rate instrument rather than a reserve-aggregate instrument desirable. For economists in the monetarist tradition, however, the ideal of a nonactivist rule remains. First, it would provide a nominal anchor, that is, determine the value of money. Second, it would turn the determination of real variables like real output and employment over to the marketplace and the unhindered operation of the price system.

A Critique of Nominal GDP Targeting

As highlighted by Friedman's stable-money rule, in order for the FOMC to control trend inflation, it must control the difference between nominal and real output growth. Would nominal GDP targeting not then possess the characteristics of a rule desired by Friedman? It would not if implemented with a simple feedback rule running from deviations in nominal GDP from target to changes in the policy instrument. Because such a rule would be activist, it would be subject to Friedman's long-and-variable-lags critique.

Note that the well-known Taylor rules also are activist. Taylor rules decompose nominal GDP into its real and nominal components—real output and prices. In the growth-gap version, the central bank would move its instrument in response to deviations of the growth rate of real GDP from its potential value and to deviations of inflation from target. In the output-gap version, the central bank would respond to deviations of real GDP from an estimated full-employment level and to deviations of inflation from target. In that sense, Taylor rules are an even more ambitious class of activist rules than nominal GDP targeting.

A new school of thought that has been branded "market monetarism" represents one attempt to promote a nonactivist rule in the monetarist spirit while recognizing the infeasibility of monetary-aggregate targeting. (Scott Sumner at Bentley University and George Mason University's Mercatus Center and Lars Christensen at Danske Bank are the most prominent exponents of this movement.[4] Nominal GDP target-

ing also has received attention from New Keynesian economists such as Michael Woodford at Columbia University.[5]) In a way consistent with the Friedman critique of activist monetary policy, as well as modern macroeconomic models with forward-looking households, market monetarists emphasize the guidance that financial market expectations can provide to policy. For example, Sumner advocates the creation of a market for futures contracts where investors place bets on the future realization of nominal GDP.[6] The spirit of the proposal is to implement a rule that does not require the central bank to forecast the economy. Whenever market expectations for nominal GDP fall below the target, the Fed would infer that policy is too tight and vice versa.

However, there are challenges with using market expectations as a target variable. Outcomes would jointly depend upon what markets expect the central bank to do and what the central bank expects markets to do, introducing the possibility of multiple equilibria.[7] For example, as a consequence of credibility, if markets expect that the future action of the central bank will maintain nominal GDP on its target path, then expectations will offer no guidance to the current appropriate action of the central bank.

Alternative Nonactivist Rules

Previous work by the author in 2008 and 2012 argues that former Fed chairmen Paul Volcker and Alan Greenspan followed a nonactivist rule during the period known as the Great Moderation, the years following the Volcker disinflation through the Greenspan era. Although the FOMC does not explain the rationale for its policy actions within the framework of a rule, since this era, policymakers have recognized the need to behave in a consistent, committed way to shape the expectations of financial markets.[8] For monetary policy to avoid being a source of instability, news about the economy (unanticipated strength or weakness) must cause the term structure of interest rates (that is, interest rates across the maturity spectrum) to move in a counterbalancing way with all of the movement in the real term structure and none in expected inflation. To achieve this result, in the author's view, the FOMC must follow a rule that conditions the way in which financial markets expect the FOMC to respond to news not only in the present but also at future dates.

Hetzel termed these procedures "lean-against-the-wind (LAW) with credibility." With these procedures, in response to sustained changes in the economy's rate of resource utilization, the FOMC moved the federal funds rate away from its prevailing value in a persistent LAW manner. While doing so, the FOMC watched the behavior of the term structure of interest rates for evidence that bond market participants believed that those federal funds rate changes would continue to whatever extent required to prevent a change in trend inflation. In episodes in which bond yields rose in a sharp, discrete way, which came to be known as inflation scares, the FOMC increased the funds rate by an additional amount to maintain its credibility for the control of inflation.[9] With Friedman's stable-money rule, the nominal anchor was stable money growth; under Volcker and Greenspan, the nominal anchor was a rule that provided for stability in expected inflation.

In their quest to restore price stability, Volcker and Greenspan rejected the prior policy based on Phillips curve trade-offs. That is, they rejected the idea of controlling inflation through the management of output gaps. Instead, the LAW with credibility procedures they developed constituted a search procedure for discovering the real interest rate (the price of obtaining resources today in terms of forgone resources tomorrow) that would reconcile the desire of households to smooth consumption across time with the inability to move production across time. In the event of optimism about the future, a relatively high real rate of interest would restrain the desire of households to increase consumption today by bringing future consumption into the present. In the event of pessimism about the future, a relatively low real rate of interest would restrain the desire to move present consumption into the future.

Consider, for example, a case in which the economy is growing persistently faster than potential so that rates of resource utilization are increasing (the unemployment rate is falling). As an empirical matter, such periods are associated with optimism about the

future. LAW procedures imply an increase in the funds rate above its prevailing value. However, the FOMC continually assesses a wide range of information to verify that markets share this optimistic assessment of the state of the economy. Reserve Bank presidents, for example, interact with the business community and get a sense, either optimistic or pessimistic, about the future. FOMC meetings for which transcripts are available indicate the importance in the economic go-around of this kind of information.

The FOMC similarly assesses financial markets for changes in sentiment. As noted, the FOMC likes to see "news" that the economy is growing faster than had been anticipated translate into an increase in the term structure of interest rates with all of the increase in the real term structure. When the FOMC does raise the federal funds rate, it would expect little reaction in financial markets except at the short end to the extent that uncertainty exists over the timing of the increase. What would contradict its reading of market sentiment would be a decline in long-term rates indicating the belief that the Fed is tightening too aggressively. An increase in long-term rates accompanied by an increase in inflation premia, in contrast, would provide evidence that markets believe the Fed has fallen behind the curve in raising rates.

If trend real GDP growth is stable and policy is credible so that the expectation of inflation is aligned with the FOMC's inflation target, as it was for most of the 1990s, these procedures translate into stable trend nominal GDP growth. Note, however, that this fact does not imply that the FOMC had a target for nominal GDP.

A Role for a Nominal GDP Benchmark

Even if it is undesirable to adopt a target path for nominal GDP accompanied by a feedback rule for achieving it, the FOMC might still usefully announce a benchmark path for the level of nominal GDP. Such a benchmark would not automatically trigger policy moves but rather would provide useful information about whether monetary policy is too tight or too loose.

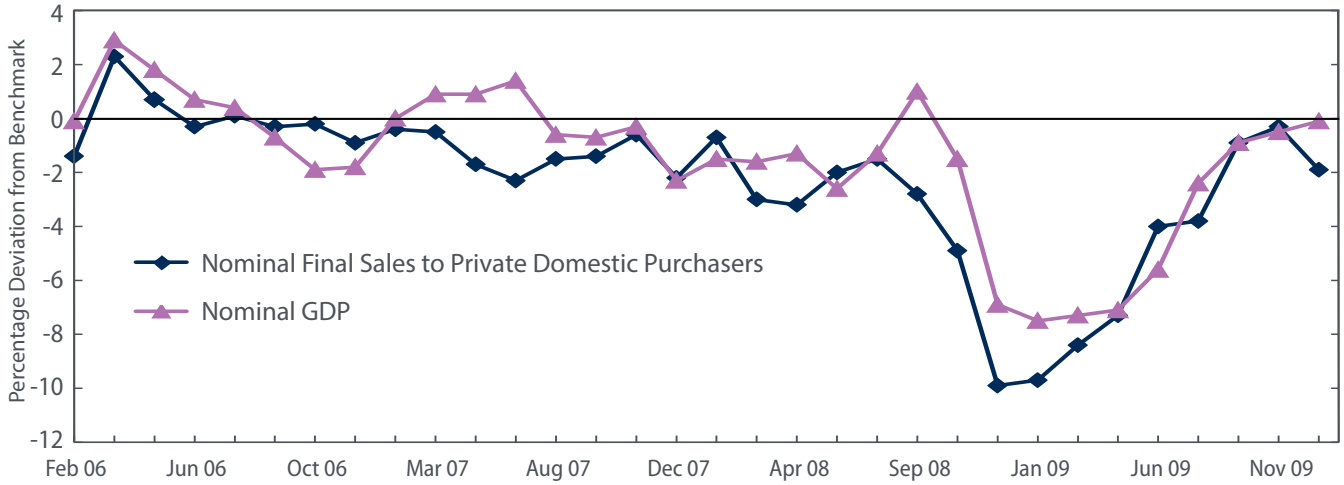
The benchmark would grow from a base in a way that would be determined by an estimate of potential output growth plus targeted inflation. At the same time, the FOMC would publish its near-term forecast of nominal GDP growth based on core inflation (a measure that removes transitory movements in inflation).[10] The FOMC would vote on the forecast, which would then represent a majority opinion of the FOMC. To promote accountability, in the event of persistent deviations from the benchmark path, the FOMC could then explain why those deviations did not signal expansionary or contractionary monetary policy. Figures 1, 2, and 3 offer an idea of how such a benchmark would have worked in 2008, the first year of the Great Recession.

Figure 1 (on the following page) shows observations, corresponding to FOMC meetings, of discrepancies in growth rates measured as the differences between contemporaneously available estimates of nominal output growth and a benchmark measure. The benchmark measure is constructed as the sum of the Greenbook estimates of potential output growth plus 2 percent, the assumed inflation target. (The Greenbook, now called the Tealbook, contains the Board of Governors' staff forecasts of economic activity.)[11] The near-term forecasts are for growth in rates of nominal GDP and of nominal final sales to private domestic purchasers. The latter is constructed as the sum of the forecast for the real growth rate plus forecasted inflation. As a way of removing transitory factors that affect inflation, the forecast uses the core PCE deflator.

As shown in Figure 1, in 2008, growth in nominal GDP was boosted by the high headline inflation produced by the commodity price shock. Growth in the proxy for nominal final sales to private domestic purchasers, which was constructed using a core measure of inflation, does not possess this bias.[12] This proxy displayed sustained weakness starting in May 2007.

Using quarterly observations, Figures 2 and 3 (on page 6) display, respectively, deviations of estimates of real and nominal GDP from a benchmark. The vertical scale measures percent increases in the benchmark from the base quarter of 2005:Q2. For Figure 2, the benchmark for potential real GDP grows from its base value at the rate given in the Greenbook

Figure 1: Percentage Deviations from Benchmark for Two Contemporaneously Available Estimates of Nominal Output Growth



Notes: Observations correspond to FOMC meeting dates. Percentage deviations from zero represent differences between contemporaneously available estimates of nominal output growth and a benchmark. The benchmark is the Board of Governors' staff estimate of potential output growth plus 2 percent (for targeted inflation). Estimated values are from the Greenbook. If the FOMC meeting occurred in the first month of a quarter, estimated values are for the prior quarter. If it occurred in the second or third month of a quarter, they are for the contemporaneous quarter. Final sales to private domestic purchasers, which is reported only as real growth, is the real growth rate plus core personal consumption expenditures inflation.

as potential output growth. For Figure 3, this series adds 2 percent inflation. In both figures, the actual GDP values are those available contemporaneously for the prior quarter. For example, it was known in 2008:Q3 that as of 2008:Q2, the value of real GDP had increased 1.7 percentage points less than the benchmark. Likewise, it was known in 2008:Q4 that as of 2008:Q3, the value had increased 3 percentage points less than the benchmark.

It is striking that nominal GDP remained close to the benchmark through 2008. (See Figure 3.) In particular, the number for 2008:Q3 available in 2008:Q4 is still close to the benchmark. Especially in 2008, because of the large, persistent commodity price shock, headline inflation far exceeded core inflation. That transitory rise in inflation boosted nominal GDP growth. The fact that nominal GDP remained close to the benchmark path throughout 2008 while real GDP fell below the path (Figure 2) suggests that the FOMC allowed a negative output gap to develop in order to restrain high headline inflation.[13] In hindsight, such policy would appear inappropriate. That is, monetary policy should have allowed the inflation shock to pass through to the price level because of its transitory nature.

Conclusion

The discussion has raised a number of reservations about the proposed practice of nominal GDP targeting. Implemented as an activist rule, nominal GDP targeting could be destabilizing. Even if it were feasible, keeping nominal GDP on a preset path in the face of an inflation shock could initiate a recession, while keeping nominal GDP on a target path left unrevised periodically would force changes in inflation if persistent changes in productivity occurred. Less activist versions of nominal GDP targeting proposed by market monetarists also face challenges.

At the same time, articulation of a benchmark path for the level of nominal GDP would be a useful start in formulating and communicating policy as a rule. An explicit rule would in turn highlight the importance of shaping the expectations of markets about the way in which the central bank will behave in the future.

A benchmark path for the level of nominal GDP would encourage the FOMC to articulate a strategy (rule) that it believes will keep its forecasts of nominal GDP aligned with its benchmark path. In recessions, nominal GDP growth declines significantly. During periods of inflation, it increases significantly.

The FOMC would then need to address the source of these deviations. Did they arise as a consequence of powerful external shocks? Alternatively, did they arise as a consequence either of a poor strategy (rule) or from a departure from an optimal rule? ■

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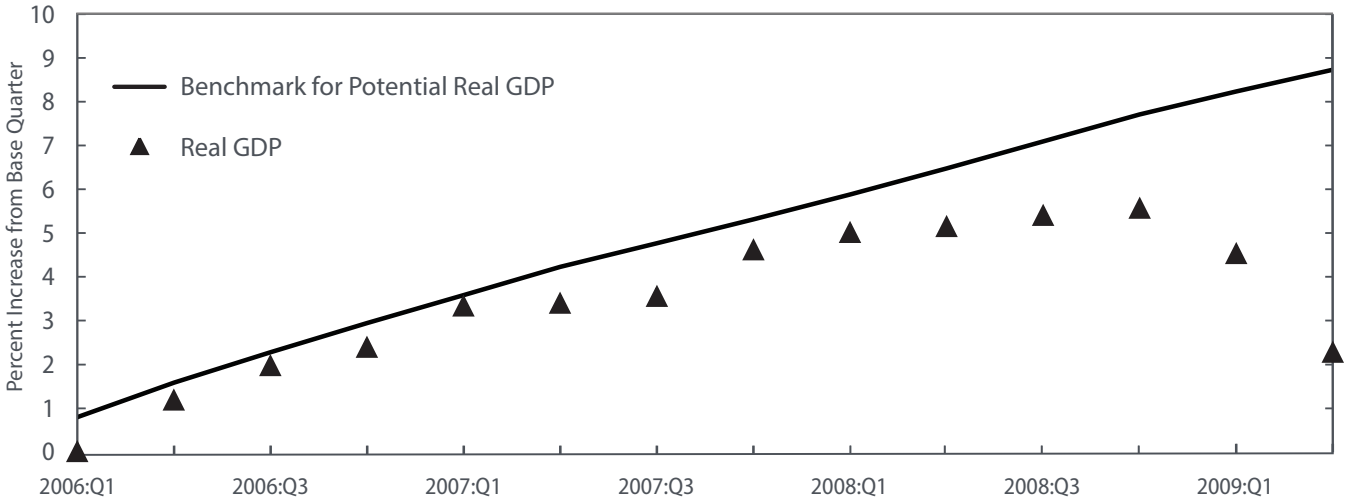
Endnotes

[1] See the following works by Milton Friedman: *A Program for Monetary Stability*, New York: Fordham University Press, 1960; and "The Role of Monetary Policy," *American Economic Review*, March 1968, vol. 58, no. 1, pp. 1–17.

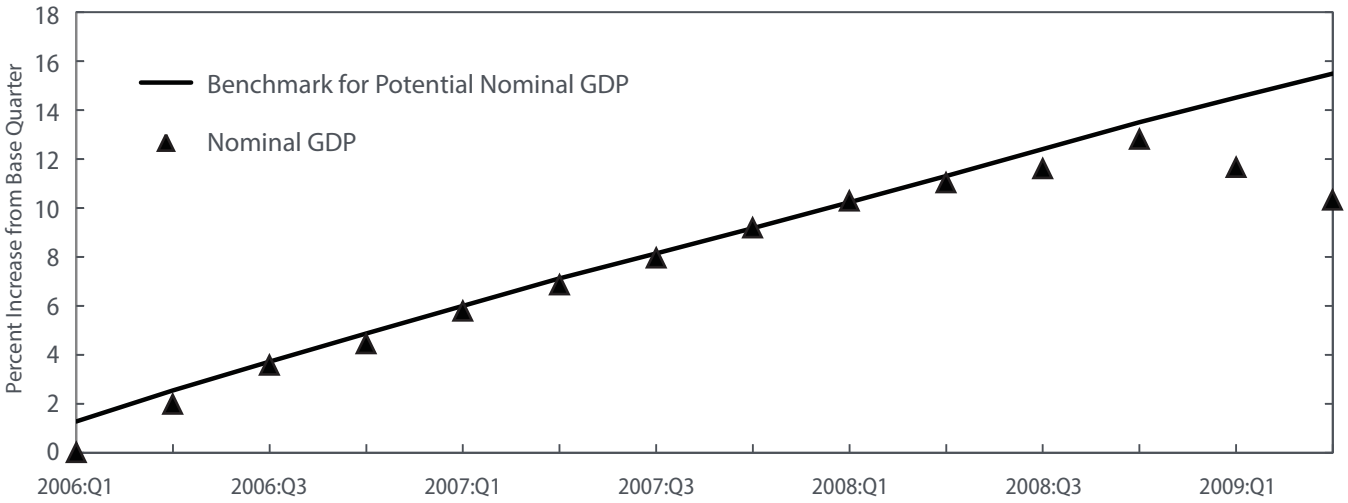
[2] See the following works by Bennett T. McCallum: "The Case for Rules in the Conduct of Monetary Policy: A Concrete Example," Federal Reserve Bank of Richmond *Economic Review,* September/October 1987, vol. 73, pp. 10–18; "Robustness Properties of a Rule for Monetary Policy," *Carnegie-Rochester Conference Series on Public Policy*, Autumn 1988, vol. 29, pp. 173–203; and

Figure 2: Estimates of Potential Real GDP and Contemporaneously Available Real GDP



Notes: The benchmark for potential real GDP uses as its base the contemporaneously available values of real GDP for 2005:Q4. Potential real GDP then is assumed to grow at the Greenbook's estimate of potential real output growth. The contemporaneously available values for real GDP are for the quarters prior to the dates shown and are from the Philadelphia Fed real-time data set. The vertical scale measures percent increases from the base quarter of 2005:Q2.

Figure 3: Estimates of Potential Nominal GDP and Contemporaneously Available Nominal GDP



Notes: The benchmark for potential nominal GDP uses as its base the contemporaneously available values of nominal GDP for 2005:Q4. Potential nominal GDP then is assumed to grow at the Greenbook's estimate of potential real output growth plus 2 percent (for targeted inflation). The contemporaneously available values of nominal GDP are for the quarters prior to the dates shown and are from the Philadelphia Fed real-time data set. The vertical scale measures percent increases from the base quarter of 2005:Q2.

"Could a Monetary Base Rule Have Prevented the Great Depression?" *Journal of Monetary Economics*, August 1990, vol. 26, no. 1, pp. 3–26.

[3] See Hetzel, Robert L., and Yash P. Mehra, "The Behavior of Money Demand in the 1980s," *Journal of Money, Credit, and Banking*, November 1989, vol. 21, no. 4, pp. 455–463.

[4] Both scholars actively blog about their views. Sumner runs the blog The Money Illusion (www.themoneyillusion.com), and Christensen runs the blog The Market Monetarist (www.marketmonetarist.com).

[5] See Woodford, Michael, "Methods of Policy Accommodation at the Interest-Rate Lower Bound," Federal Reserve Bank of Kansas City *Economic Policy Symposium Conference Proceedings*, 2012, pp. 228–231.

[6] See Sumner, Scott, "A Market-Driven Nominal GDP Targeting Regime," Mercatus Center at George Mason University, Research Paper, July 24, 2013.

[7] For a fuller explanation of this possibility, see Bernanke, Ben S., and Michael Woodford, "Inflation Forecasts and Monetary Policy," *Journal of Money, Credit, and Banking*, November 1997, vol. 29, no. 4, Part 2: Dynamic Effects of Monetary Policy, pp. 653–684.

[8] See the following books by Robert Hetzel: *The Monetary Policy of the Federal Reserve: A History*, New York: Cambridge University Press, 2008; and *The Great Recession: Market Failure or Policy Failure?* New York: Cambridge University Press, 2012.

[9] Goodfriend, Marvin, "Interest Rate Policy and the Inflation Scare Problem: 1979–1992," Federal Reserve Bank of Richmond *Economic Quarterly*, Winter 1993, vol. 79, no. 1, pp. 1–23.

[10] To construct a series for nominal output that eliminates transitory movements in inflation, the Board staff again could include forecasts for the "gross domestic business product" and the price deflator "gross domestic business product fixed-weight index excluding food and energy." They were included in Greenbook forecasts from January 1980 through February 1986.

[11] The Greenbook is the Board staff document ("Current Economic and Financial Conditions, Summary and Outlook, Part I") prepared prior to FOMC meetings. Potential real GDP growth is from the table, "Decomposition of Structural Labor Productivity Nonfarm Business Sector." Estimates of output growth are in "Changes in Real Gross Domestic Product and Related Items."

[12] To remove elements of GDP that are volatile from quarter to quarter, the series "final sales to private domestic purchasers" removes from GDP the change in inventories, net exports, and government spending.

[13] In the March 13, 2008, Greenbook, the estimate of growth in real final sales to private domestic purchasers for the entire year 2008 turned negative (-1.6 percent). At the March 18, 2008, meeting, the FOMC lowered the funds rate from 3 percent to 2 1/4 percent and lowered it again to 2 percent at the April 30 meeting. However, the FOMC then kept the funds rate unchanged until October 6, 2008. In the Greenbook prepared for the September 16, 2008, FOMC meeting, the Board staff based its forecast on the 2 percent funds rate rising in 2009. "We now assume that the Committee will hold the federal funds rate steady at 2 percent until the middle of next year, rather than starting to tighten policy just after the turn of the year. With the later onset of tightening, we assume that the federal funds rate reaches 2 1/2 percent by the end of 2009, 25 basis points below the level assumed in the last Greenbook, and that it rises to 3 percent by the end of 2010" (p. I-2).