Federal Reserve Bank of New York

Summary of Conference Findings

Inflation-Indexed Securities and Inflation Risk Management

A conference held at the Federal Reserve Bank of New York on February 10, 2009

Summary prepared by Glenn Haberbush and Michelle Steinberg Ezer

Six key themes emerged on the role of inflation-indexed securities and the inflation derivatives market:

- Ex ante analysis presents a more accurate picture of the long-run costs of a Treasury Inflation-Protected Securities (TIPS) program than does ex post analysis.
- TIPS provide significant benefits to society.
- The Treasury can increase the benefits of TIPS issuance by improving secondary-market liquidity.
- Evidence of high realized volatility of real rates derived from TIPS prices may have implications for academics as well as TIPS practitioners.
- Measures of implied inflation embed both risk and liquidity premiums, and therefore do not constitute unbiased inflation expectations.
- TIPS issuance is beneficial from an issuer's perspective.

Compared with ex post analysis, ex ante analysis offers a more accurate picture of the long-run costs of inflation-linked issuance.

Most conference attendees agreed with Federal Reserve Bank of New York President William C. Dudley's remarks on ex ante analysis. President Dudley argued that ex ante analysis is more appropriate for determining whether the strategic decision to implement a TIPS program has been a good idea because it answers the question, Did the Treasury obtain the financing it needed at a lower ex ante cost? He explained that current ex post analysis suffers from the problem of small sample size; therefore, it is highly dependent upon the performance of inflation over the period in question. In a formal paper by Dudley, Roush, and Steinberg Ezer (2009), the ex ante cost of issuing TIPS was found to be about equal to the cost of issuing nominal Treasuries.

Many attendees also agreed that increased issuance of longer dated TIPS would help lower the ex ante costs of the program because inflation uncertainty increases at longer horizons. Investors would therefore be willing to pay more for protection against this type of inflation risk.

TIPS provide society with significant benefits outside the scope of ex ante or ex post analysis.

President Dudley pointed to other benefits of inflation-indexed bond issuance, including:

- the provision of a virtually risk-free investment that offers value to risk-averse investors;
- access to a market-determined measure of inflation expectations that can inform the conduct of monetary policy;
- greater diversification of the Treasury's funding sources, an advantage that presumably has favorable implications for the Department's overall funding costs; and
- the potential for TIPS issuance to reduce the variability of the U.S. government's net financial position and provide an explicit incentive for the fiscal authorities to conduct policy with an eye toward the consequences of inflation.

These benefits were discussed in detail by a panel of leading academics, current and former Federal Reserve and Treasury officials, and TIPS practitioners. James Clouse, Deputy Director of the Division of Monetary Affairs of the Board of Governors of the Federal Reserve System, provided an inside view of how policymakers use information from the TIPS market to formulate monetary policy. Clouse noted that TIPS provide ongoing measures of real rates, inflation expectations, and risk premiums,[1] which are potentially important for gauging the equilibrium real rate and stance of policy, interpreting the market response to economic data and monetary policy events, and preventing the possibility of "falling behind the curve" with respect to the Federal Reserve's price stability objective.

Panelists argued in support of the Treasury's assumption that TIPS issuance helps diversify its funding sources. Joseph Davis of Vanguard analyzed his firm's retail transaction data and found that 89 percent of inflows to Vanguard's TIPS funds come from non-Treasury-only funds, suggesting that TIPS are not viewed as a substitute for Treasuries. His analysis helps to dispel the "crowding-out" argument that TIPS issuance reduces demand for nominal issuance. Representing the institutional investor view, Mihir Worah of PIMCO emphasized that the main TIPS investor groups are endowments and individuals, with pension funds and foundations also desiring hedges against inflation. Worah noted that while investment in TIPS by sovereign wealth funds and defined contribution plans remains low relative to their size, these groups may provide a source of additional demand in the future. John Y. Campbell of Harvard argued that after a period of stable breakeven inflation in the mid-2000s, during which TIPS and nominal Treasury bonds were close substitutes, the current financial crisis has shown investors the value of long-term inflation protection.[2] Campbell explained that although TIPS yields have been highly volatile, spiking in fall 2008 even as nominal Treasury yields declined, TIPS remain the only safe asset for investors in the long run. Going one step further, Noël Amenc, Lionel Martellini, and Volker Ziemann of EDHEC Business School contended that a portfolio including commodities and real estate in addition to TIPS could help long-term investors reduce the cost of inflation insurance.

Former Treasury official Peter Fisher, currently of BlackRock, noted that in addition to the aforementioned benefits, TIPS issuance provides the government with an incentive for fiscal responsibility by encouraging it to consider the consequences of inflation. Fisher also observed that the most compelling argument for the Treasury's commitment to TIPS is the diversification the securities afford. The Treasury already issues in almost every corner of the nominal market; moreover, it now has to raise a substantial amount of new cash. TIPS thus make the overall Treasury debt management program much more resilient by offering an additional avenue to a broader set of investors.

The Treasury can increase the benefits of TIPS issuance by improving market liquidity.

Because TIPS are less liquid than nominal Treasury securities, investors require compensation for holding them. This illiquidity premium tends to drive up TIPS yields and increase the Treasury's borrowing costs. Many conference presenters and participants argued that improving TIPS secondary-market liquidity is a good objective for Treasury debt managers to consider and that progress in this area will heighten the benefits of TIPS issuance. The importance of a liquid secondary market can be seen by the initial ex post costs of TIPS during the early years of the program. In fact, Roush (2008) finds that the large ex post costs of TIPS were largely attributable to market illiquidity in these early years.

Delving into the microstructure of the TIPS market, Michael Fleming and Neel Krishnan of the Federal Reserve Bank of New York and Option Arbitrage Fund, respectively, identify the liquidity differences between on- and off-the-run TIPS securities in the interdealer broker market. They find that, as in the nominal market, liquidity drops off sharply following a security's loss of on-the-run status. However, in contrast to the nominal market, there is very little difference in bid-ask spreads and market depth between on- and off-the-runs, but a marked difference exists in the prevalence of quotes between the two. Thus, an increased prevalence of quotes in the TIPS market would be one sign of improved liquidity to consider in future research, according to Fleming and Krishnan.

In an examination of the dynamics of the TIPS market, Meredith J. Beechey and Jonathan H. Wright of Sveriges Riksbank and Johns Hopkins University, respectively, analyze the impact of macroeconomic news announcements on yields and forward rates of nominal and index-linked bonds and on inflation compensation. Confirming the views of many conference attendees, the study reveals that nominal rates are most sensitive to macroeconomic news announcements, while inflation compensation is most sensitive to announcements on price indexes and monetary policy. Furthermore, Beechey and

[1] For more information on risk premiums, see the conference paper by Hördahl and Tristani.

[2] Campbell's remarks are reflected in Campbell, Shiller, and Viceira (2009).

Wright find that real economic events had the largest impact on expected future real short-term rates and real risk premia rather than on inflation expectations and inflation risk premia.

Most participants agreed that TIPS secondary-market trading conditions will never be as liquid as those of nominal Treasury securities, given the buy-and-hold nature of the product and the use of nominal securities as the prominent hedging tool for credit instruments. However, some improvement might be possible—a worthwhile goal for U.S. debt managers. Various attendees suggested that secondary-market conditions could be improved if the Treasury reaffirmed its commitment to the TIPS program. Yet many questioned that commitment, pointing to statements by Treasury officials and some members of the Treasury Borrowing Advisory Committee indicating that, ex post, TIPS have proven to be costly for the Treasury.

The finding of high realized volatility of real rates derived from TIPS prices may have implications for academics studying the macroeconomy as well as for TIPS practitioners.

Evidence from TIPS research of high variability in real rates may be useful in revisiting macroeconomic models that assume limited or no volatility of real rates. Many conference participants suggested that additional research on the volatility of real rates would be informative. Furthermore, while volatility in TIPS is historically greater than it is in nominal issues, the latest rise largely reflects a further decline in TIPS market liquidity. Market participants acknowledge secondary-market supply and demand factors as having had a much larger impact on real yield levels. Thus, the ability to accurately gauge inflation expectations from changes in breakeven levels can lose some of its usefulness during periods of high financial market stress attributable to severely impaired market liquidity.

The various measures of implied inflation embed both risk and liquidity premiums, and therefore do not constitute unbiased inflation expectations.

Many practitioners were surprised by the number of research studies that used the U.S. inflation swaps curve to measure implied inflation expectations. The practitioners noted that the extremely illiquid trading conditions of U.S. inflation swaps relative to TIPS made related findings less reliable. Furthermore, some pointed out that the indicative prices for U.S. inflation swaps could differ from the rates at which trades are executed. However, research by Joseph G. Haubrich, George Pennacchi, and Peter Ritchken of the Federal Reserve Bank of Cleveland, the University of Illinois at Urbana-Champaign, and Case Western Reserve University, respectively, reveals that inflation swap rates in conjunction with Treasury yields and survey forecasts of inflation could be used to estimate model parameters to derive a term structure of real interest rates. Their paper suggests that TIPS were underpriced prior to 2004 but subsequently were valued fairly.

TIPS issuance makes sense from an issuer's perspective.

The societal benefits of inflation-indexed issuance, combined with ex ante analysis showing that the costs of TIPS issuance are about equal to those of nominal issuance, suggest that inflation-indexed debt issuance provides a net benefit to taxpayers. Furthermore, given the Treasury's current debt management needs, ongoing TIPS issuance would be especially beneficial to the Treasury simply for diversification of the investor base. Thus, the next question to consider is the one posed by President Dudley: What is the optimal allocation of the Treasury's liability portfolio between TIPS and nominal securities?

Glenn Haberbush and Michelle Steinberg Ezer are trader/analysts in the Federal Reserve Bank of New York's Markets Group (glenn.haberbush@ny.frb.org, michelle.ezer@ny.frb.org).