

**Meeting of the Federal Open Market Committee on  
April 29–30, 2008**

A joint meeting of the Federal Open Market Committee and Board of Governors of the Federal Reserve System was held in the offices of the Board of Governors in Washington, D.C., on Tuesday, April 29, 2008, at 2:00 p.m., and continued on Wednesday, April 30, 2008, at 9:00 a.m. Those present were the following:

Mr. Bernanke, Chairman  
Mr. Geithner, Vice Chairman  
Mr. Fisher  
Mr. Kohn  
Mr. Kroszner  
Mr. Mishkin  
Ms. Pianalto  
Mr. Plosser  
Mr. Stern  
Mr. Warsh

Ms. Cumming, Messrs. Evans, Lacker, and Lockhart, and Ms. Yellen, Alternate Members of the Federal Open Market Committee

Messrs. Bullard, Hoenig, and Rosengren, Presidents of the Federal Reserve Banks of St. Louis, Kansas City, and Boston, respectively

Mr. Lyon, First Vice President, Federal Reserve Bank of Minneapolis

Mr. Madigan, Secretary and Economist  
Ms. Danker, Deputy Secretary  
Mr. Skidmore, Assistant Secretary  
Ms. Smith, Assistant Secretary  
Mr. Alvarez, General Counsel  
Mr. Baxter, Deputy General Counsel  
Mr. Sheets, Economist  
Mr. Stockton, Economist

Messrs. Connors, English, and Kamin, Ms. Mester, Messrs. Rosenblum, Slifman, Sniderman, and Wilcox, Associate Economists

Mr. Dudley, Manager, System Open Market Account

Ms. J. Johnson,<sup>1</sup> Secretary, Office of the Secretary, Board of Governors

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<sup>1</sup> Attended portion of the meeting relating to the implications of interest on reserves for monetary policy implementation.

Ms. Roseman,<sup>1</sup> Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Mr. Frierson,<sup>1</sup> Deputy Secretary, Office of the Secretary, Board of Governors

Ms. Bailey, Deputy Director, Division of Banking Supervision and Regulation, Board of Governors

Mr. Clouse, Deputy Director, Division of Monetary Affairs, Board of Governors

Messrs. Hammond<sup>1</sup> and Marquardt,<sup>1</sup> Deputy Directors, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Mr. Blanchard, Assistant to the Board, Office of Board Members, Board of Governors

Mr. Struckmeyer, Deputy Staff Director, Office of Staff Director for Management, Board of Governors

Ms. Edwards,<sup>1</sup> Associate Director, Division of Monetary Affairs, Board of Governors

Ms. Shanks,<sup>1</sup> Associate Secretary, Office of the Secretary, Board of Governors

Messrs. Reifschneider and Wascher, Associate Directors, Division of Research and Statistics, Board of Governors

Mr. Gagnon, Visiting Associate Director, Division of Monetary Affairs, Board of Governors

Ms. Martin,<sup>1</sup> Associate General Counsel, Legal Division, Board of Governors

Mr. Carpenter,<sup>1</sup> Assistant Director, Division of Monetary Affairs, Board of Governors

Mr. Dale, Senior Adviser, Division of Monetary Affairs, Board of Governors

Mr. Oliner, Senior Adviser, Division of Research and Statistics, Board of Governors

Ms. Allison,<sup>1</sup> Senior Counsel, Legal Division, Board of Governors

Mr. Gross,<sup>1</sup> Special Assistant to the Board, Office of Board Members, Board of Governors

Ms. Weinbach, Adviser, Division of Monetary Affairs, Board of Governors

Mr. Small, Project Manager, Division of Monetary Affairs, Board of Governors

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<sup>1</sup> Attended portion of the meeting relating to the implications of interest on reserves for monetary policy implementation.

Mr. Luecke, Section Chief, Division of Monetary Affairs, Board of Governors

Ms. Beattie,<sup>1</sup> Assistant to the Secretary, Office of the Secretary, Board of Governors

Ms. Low, Open Market Secretariat Specialist, Division of Monetary Affairs, Board of Governors

Ms. Hughes,<sup>1</sup> Staff Assistant, Office of the Secretary, Board of Governors

Mr. Fuhrer, Executive Vice President, Federal Reserve Bank of Boston

Messrs. Hilton, McAndrews,<sup>1</sup> Rasche, Rudebusch, Steindel, Sullivan, and Weinberg, Senior Vice Presidents, Federal Reserve Banks of New York, New York, St. Louis, San Francisco, New York, Chicago, and Richmond, respectively

Messrs. Clark and Meyer,<sup>1</sup> Vice Presidents, Federal Reserve Banks of Kansas City and Philadelphia, respectively

Mr. Weber, Senior Research Officer, Federal Reserve Bank of Minneapolis

Mr. Roberds, Policy Adviser, Federal Reserve Bank of Atlanta

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**Transcript of the Federal Open Market Committee Meeting of  
April 29-30, 2008**

**April 29, 2008—Afternoon Session**

CHAIRMAN BERNANKE. Let's formally begin the meeting. Let me start by welcoming our new colleague, Jim Bullard from St. Louis, over there in the heartland section of the table. [Laughter] We welcome you, and we look forward to your contribution and to working with you.

I want just to note that there has been some interest in doing more work collectively—Board members and Presidents—on various issues relating to bank supervision and regulation. We have some work streams planned, Governor Kohn will talk about this a bit tomorrow during our lunch, and we will discuss some of those things. Let me now turn to Bill Dudley to discuss Desk operations. Bill, if you would, also talk about some of the proposals for expanding liquidity support. Thank you.

MR. DUDLEY.<sup>1</sup> Certainly. Thank you, Mr. Chairman. The financial market environment has improved markedly since mid-March. However, concern about the circumstances that led to the demise of Bear Stearns may have provided added impetus to the ongoing deleveraging process. The result has been improvement in the broader equity and fixed-income markets but heightened term funding pressure within the financial system.

Turning first to the broader markets, improvement is evident across most broad asset classes both in the United States and abroad. As shown in exhibit 1 of the handout in front of you, the broad U.S. equity indexes have recovered much of their earlier losses. Although the financial sector still lags behind, financial share prices have, in the aggregate, recovered more than 10 percent off their mid-March trough. Credit markets have also improved. As shown in exhibit 2, corporate credit spreads in both the investment-grade and the high-yield sectors have narrowed somewhat. Moreover, global credit default swap spreads—as shown in exhibit 3—have fallen significantly. As shown in exhibit 4, measures of implied volatility in the Treasury, equity, and foreign exchange markets have declined.

Signs of a recovery in risk appetite can be seen very clearly in the subprime mortgage-backed securities market and the municipal securities market, both which

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<sup>1</sup> The materials used by Mr. Dudley are appended to this transcript (appendix 1).

had earlier experienced significant distress. Exhibit 5 shows the price performance of the AAA-rated tranches of the last four ABX subprime vintages. As can be seen, the AAA-rated tranches have recovered even though housing activity and home prices have continued to decline at least as fast as anticipated. In the municipal market, crossover buyers have entered, attracted by municipal bond yields that exceed those available on Treasuries of comparable maturities. As seen in exhibit 6, although the ratios of tax-exempt to Treasury yields of comparable maturities remain elevated, there has been considerable improvement during the past two months. This improvement has occurred even though the outlook for the monoline financial guarantors remains poor. Ambac's announcement last week of a \$1.7 billion loss in the first quarter made—thus far—barely a ripple in the broader market.

The introduction of the primary dealer credit facility (PDCF) seems to have helped to stabilize the repo markets. That improvement, in turn, has caused the equity prices of the four remaining large investment banks to recover somewhat and their credit default swap spreads to fall sharply (exhibits 7 and 8). The PDCF backstop facility also appears to have helped break the negative dynamic of higher haircuts, forced asset sales, lower prices, higher volatility, and still higher haircuts that was in place in the weeks leading up to the Bear Stearns liquidity crisis. Although the collateral haircuts set by the major dealers for their hedge fund clients in our April 9 survey—shown in exhibit 9—are considerably higher than in the previous month, our contacts indicate that this rise occurred mostly around the time of Bear Stearns's demise. Over the past few weeks, haircuts have stabilized.

Despite the improvement in the broad market indexes and in the equity prices and credit default swap spreads of most major financial firms, term funding pressures have intensified rather than subsided. As shown in exhibits 10 and 11, the pressures have been evident at both the one-month and the three-month tenures in the United States, the euro area, and the United Kingdom. The additional deleveraging by the investment banks following the demise of Bear Stearns may have intensified the pressure on commercial bank balance sheets or the urge for banks to delever.

The LIBOR indexes took a jump upward following a *Wall Street Journal* article that alleged that some of the 16 LIBOR panelists were understating the rates at which they could obtain funding. The British Bankers Association reacted by threatening to throw out any panelist that was not wholly honest in its daily posting of its costs of obtaining funds at different maturity horizons. The BBA announcement appears to have provoked an outbreak of veracity among at least some of the panelists. As shown in exhibit 12, the LIBOR fixing rose nearly 20 basis points in the few days immediately after the article. The dispersion in offered rates between the highest and lowest posting banks also increased. There is considerable evidence that the official LIBOR fixing understates the rates paid by many banks for funding. For example, as shown in exhibit 13, the all-in cost of FX swap financing into dollars out of euros has recently climbed to more than 30 basis points above the cost of LIBOR funding.

The term funding pressures appear to be mainly the consequence of the deleveraging process that is still firmly under way. Balance sheet capacity has become strained in three ways. First, pressures to carry more assets on the balance sheet have increased in a number of ways. For example, some types of assets can no longer be securitized, and balance sheet assets are created when lines of credit are drawn upon. Second, loan-loss provisions and mark-to-market losses have cut into capital, at least until recently, faster than banks have been able to raise new capital. Third, desired capital ratios have undoubtedly risen as financial markets have become more volatile and the macroeconomic outlook has worsened. These pressures have sharply pushed up the shadow price of balance sheet capacity, and term funding spreads undoubtedly reflect that pressure. As evidence, note how the spread between jumbo and conforming fixed-rate mortgage yields in exhibit 14 has mostly tracked the trajectory of term funding spreads shown in exhibit 13. Because banks can securitize conforming mortgages but not jumbo mortgages, this widening spread likely reflects the rise in the shadow price of balance sheet capacity. The term funding pressures have also been evident in the strong demand exhibited in our biweekly TAF auctions. As shown in exhibit 15, the spread between the stop-out rate and the minimum bid rate has risen sharply since late January, despite the large rise in the size of the TAF auctions over this period.

In contrast, the demand by primary dealers to borrow Treasury securities in our term securities lending facility (TSLF) has been less intense. It is unclear whether this reflects the large and immediate scale of these auctions (\$175 billion offered over four weeks) or less need by primary dealers, who rely heavily on secured repo borrowing for their short-term funding needs. As shown in exhibit 16, two of the five auctions have not been fully covered. Besides providing liquidity to the primary dealers, the TSLF auctions have helped to generate a dramatic improvement in Treasury market function. As shown in exhibit 17, before the first TSLF auction, overnight Treasury repo rates were unusually low, and the Treasury market was distorted by a growing number of security failures (that is, dealers were unable to deliver promised securities) and a large number of securities trading special (that is, with a repo rate below the rate on general Treasury collateral).

So have the TAF and TSLF auctions been helpful in improving market function? Although it is impossible to know what the counterfactual would have been without the auctions, most evidence suggests that these auctions have improved market function. Although a recent study by John Taylor and John Williams found no statistical evidence that the TAF auctions have had an effect on term funding, the choices in terms of econometric design made it very difficult for this study to have found an effect. Interestingly, minor changes in the specification used by Taylor and Williams produce statistically significant results with the expected sign—in other words, the TAF auctions reduced the spread.

They say that a picture is worth a thousand words. Exhibit 18 documents the Federal Reserve's major initiatives over the past eight months relative to the LIBOR–OIS spread. Note that virtually all the Federal Reserve initiatives aimed at improving

market function have been associated with a decline in the LIBOR–OIS spread. Perhaps this just represents an announcement or placebo effect. More study is obviously needed. However, it is interesting that those market participants who are the patients have been clamoring for more medicine in the form of both an increase in the size of the TAF auctions and auctions with longer maturities.

As the equity and credit markets have improved, market participants have reduced their expectations of the magnitude of further monetary policy easing. As shown in exhibit 19, the federal funds rate futures curve has shifted upward and is virtually flat around 2 percent from May through September—implying that market participants expect that tomorrow will likely be the last easing in this cycle. The Eurodollar futures curve, which is shown in exhibit 20, has shifted up even more sharply since the last FOMC meeting. In part, this reflects the rise in term funding spreads and, most important, the view that these spreads are likely to remain elevated relative to the target federal funds rate for the foreseeable future.

Our Survey of Primary Dealers undertaken about ten days before each FOMC meeting shows more stability in dealer expectations (exhibits 21 and 22). Note that the dealer forecasts now anticipate somewhat greater easing than implied by the federal funds rate futures market and the Eurodollar futures market. This is quite different from the pattern in previous months. The average of the dealer modal forecasts has a trough in yields of about 1.50 percent, about ½ percentage point below the market forecast. In terms of this week's meeting, there is little disagreement between the dealer survey and market participants. All 18 of the primary dealers that responded to our survey anticipate a rate cut at this meeting, with nearly all in the 25 basis point rate cut camp. As shown in exhibit 23, this is slightly more aggressive than the expectations embodied in federal funds rate options, which are pricing in a probability of a 25 basis point easing of almost 80 percent. The shift in interest rate expectations cannot be explained easily by developments on the inflation front. Although the continued surge in crude oil prices has pushed aggregate commodity indexes, such as the GSCI, higher, agricultural and industrial metal prices have been much more stable in recent weeks (exhibit 24). Despite the rise in energy prices, market-based measures of long-term inflation compensation have fallen in recent weeks. For example, as shown in exhibit 25, both the Board's and Barclays' five-year, five-year-forward measures have declined about 40 basis points from the peak reached in early March.

Turning to the Desk's operations, we get mixed grades over the intermeeting period. On the one hand, we have done a pretty good job of hitting the target on average (through yesterday, the daily effective rate since the last FOMC meeting was a miraculous 2.25 percent). On the other hand, this average conceals considerable intraday and day-to-day volatility. This can be seen in exhibit 26, which charts the daily federal funds rate range and the daily average effective rate. Notice how wide the daily range of trading has been. This reflects three factors: (1) the demand by European banks for federal funds, which has often caused the federal funds rate to be elevated early in the day before Europe closes; (2) stigma associated with primary

credit facility (PCF) borrowing—the PCF rate is not a firm cap on federal funds rate trading; and (3) large unanticipated shifts in the autonomous factors that affect the level of reserves in the banking system—especially shifts in the level of PCF and PDCF borrowing. Note the big rise in PCF and PDCF borrowing since mid-March and the large daily shifts in the level of this borrowing shown in exhibit 27. We have little ability to forecast these daily shifts in borrowing. Thus, these shifts are mostly unexpected and do increase the volatility of the federal funds rate.

Finally, let me briefly outline a number of policy recommendations for which we seek your approval. First, I will need approval for domestic operations. There were no foreign operations. Second, as noted in the memo that was circulated to you last week, we are recommending that the outstanding swap lines with Canada and Mexico be renewed for another year. Third, the staff is recommending approval of an increase in the size of the foreign exchange swap facilities with the European Central Bank and the Swiss National Bank. This recommendation is discussed in more detail in a memo that was distributed to the FOMC last Friday. For the ECB, the recommendation is to increase the size of the swap line to \$50 billion from \$30 billion, and for the SNB, to \$12 billion from \$6 billion, with maximum draws on these facilities of \$25 billion and \$6 billion, respectively. We also recommend extending the term of these swap facilities to January 30, 2009, from September 30, 2008. As before, these swap lines will be used in conjunction with our TAF auctions to increase the amount of 28-day term dollar funding available to banks with operations in the euro area and in Switzerland. At the same time, we understand that Chairman Bernanke intends to use his delegated authority from the Board to increase the size of the TAF to \$150 billion from \$100 billion.

Fourth, we recommend that eligible collateral for the TSLF be broadened to include AAA-rated asset-backed securities (ABS). Currently, as you know, this facility accepts only AAA-rated residential-mortgage-backed securities and commercial-mortgage-backed securities. We believe that broadening the eligibility to AAA-rated ABS will help support the availability of consumer credit, including credit card, auto, and student loan credit. Spreads in AAA-rated ABS backed by auto loans and credit card receivables have risen sharply over the past six months even though the deterioration in the underlying performance of the assets in terms of delinquency and loss has been well within the bounds of past cycles. We do not recommend increasing the collateral eligibility by greater breadth than this. As we noted in last Friday's memo, including additional classes of securities could increase operational costs to an extent that is not likely to be warranted by the marginal benefits. It could also expose the System to the risks associated with a range of complex structured finance products and, in the case of AAA-rated corporate securities, would not provide much benefit because the amounts of such securities outstanding are relatively small. Under this proposal, the maximum size of the TSLF would remain unchanged—at \$200 billion—as would the other terms of the facility.

I also want to inform the Committee of a small technical change that the staff plans to make in the TSLF program. We plan to eliminate the requirement that



eligible AAA-rated securities not be on watch for downgrade. We plan to make this change because we have found that enforcing this rule has been very difficult operationally because the two clearing banks that manage the triparty repo system have a limited ability to perform this monitoring function on our behalf. In addition, I would point out that the added risks from this change are very small. If securities were downgraded, the primary dealer would have to substitute new eligible collateral. Also, it should be pointed out that the PDCF accepts most investment-grade securities—thus, we already have a broader collateral regime in place for our other primary dealer facility.

CHAIRMAN BERNANKE. Thank you. Let's have questions for Bill on financial markets, and then we will come back to a full discussion of the proposed actions. Questions for Bill? No questions? That is unusual. Yes, President Lacker.

MR. LACKER. About consumer-loan-backed securities, spreads have widened and delinquencies and defaults have increased, but not out of line with past experience. You seem to have inferred that spreads have widened more than is warranted by the return on those securities. I would be interested in what computational exercises or what other analytics you and your staff have undertaken to document the hypothesis that these spreads are not warranted by the fundamentals.

MR. DUDLEY. I am not so much saying that they are not warranted. I am saying that the spreads have widened a lot relative to the actual experience, given that we are in a period of weaker economic growth. The stress seems to be more on the spreads that the market is demanding for these assets as opposed to a deterioration in the underlying credit card loans or auto loans that back those assets.

CHAIRMAN BERNANKE. Other questions? If not, let me just say a word or two about the proposed liquidity measures. First, as Bill noted, the interbank and short-term funding markets remain under some stress. In particular, as you know from the picture, the spreads in the dollar interbank market have gone above the U.K. and ECB markets. Although it is certainly

difficult to identify precisely the size and the significance of the effect of our liquidity facilities, not just the banks and the market participants have been in favor of them. We have received very good reviews from international agencies such as the IMF, the OECD, and others, and I do think that it is worth continuing these efforts to try to strengthen liquidity availability.

Therefore, with respect to interbank markets, first, as mentioned, I propose to use my delegated authority to increase the size of the term auction facility. Second, I would like to ask the FOMC to approve increases in our swap lines and an extension of the duration of the swap lines with the European Central Bank and the Swiss National Bank. As now, they would be auctioning money at the same time that we do in our TAF. The swaps with Canada and Mexico are routine. We have done these for a number of years. As I promised you at an earlier meeting, I checked with the Treasury, and they are all in favor of maintaining these facilities. I think it would be rather odd to end them at this particular juncture, so I ask for renewal of those swap lines as well.

On the TSLF, the auctions that we have had have been undersubscribed, which may be good news. On the other hand, it may have something to do with narrowness of the collateral that is accepted. The TSLF is intended to help the functioning of the Treasury market because it puts more Treasuries into circulation. We do have some evidence that Treasuries are trading at lower spreads and with less volatility since we began these activities. In addition, there is some support for the collateral that is taken and general liquidity support for the market, although, again, it is really both sides of this equation that we are looking at. The current collateral that is accepted at the TSLF is basically RMBS and CMBS. The proposal is to increase the range of collateral to include AAA asset-backed securities, which include credit cards, auto loans, and student loans—basically mostly consumer-oriented credit. I think it makes a lot of sense in the

context of what we have been doing. It would make the range of collateral more similar to that in our other facilities. It also would reduce the credit allocation aspects by broadening the range of collateral that we accept. On the other hand, as Bill mentioned, unless the situation becomes radically different, we probably don't want to extend beyond this because of difficulties in assessing the credit quality of other assets.

I put this item on the meeting agenda for your discussion because there are some political and public relations complications, and I wanted just to be up front and let you know what they are and get your response and your views. As you know, the student loan market has been dysfunctional, and we have received requests—perhaps you have as well—to do “something” about this problem. We received letters, probably about a month ago, from some House members, including Congressman Kanjorski, who asked us to extend our lending authority beyond the current institutions to others. I assume Sallie Mae, for example, would have been a possibility. We wrote back a very clear letter saying that we could not do that; that our 13(3) authority was reserved for unusual and exigent circumstances, which we interpreted as being systemically relevant circumstances; that the bar was very high for the use of that authority; and that, although we certainly want to strengthen the liquidity in the general markets, we didn't see this as being a possibility.

We received a second set of letters a couple of weeks ago, really one letter signed by a number of senators, mostly from the Senate Banking Committee, asking specifically that we expand the collateral in the TSLF to include student loans. Now we have the problem that this would do that, along with other much more significant, in terms of size, consumer loans. We wrote back to Senator Dodd and his colleagues last week and told them that, although we of course are always looking to improve the liquidity of markets and, in particular, we think student

loans are a very worthy type of credit, we didn't see the argument. First, student loans are already accepted as collateral in our other three facilities—the TAF, the window, and the PDCF. Second, we argued that the real problem with the student loan situation is on the legislative side. In particular, recent legislative changes have reduced the spreads that private-sector lenders can get from student loans. Given the increase in funding costs, they have become unprofitable, and so many lenders have withdrawn from that market. So we didn't give any encouragement in that letter.

That being said, if we take this action—which was suggested by the staff and which is, I believe, fully justified on its own merits—it would be part of a broader package, and I think we would get two different reactions. On the one hand, we would get, I would call it for short, a *Wall Street Journal* editorial that the Federal Reserve is once again the craven cur and the spineless—boy, I am getting good at this—[laughter] lackey of the Congress by accommodating this request. I take that seriously. I'm sure we all take seriously even the perception that we are catering to this request. On the other side, I suppose that there would be what I could call the *USA Today* editorial, which is, “Why won't the Fed, which is bailing out Wall Street left and right, include asset-backed paper in their facilities, even though it is consistent with all of their other practices and they take it in all of their other facilities?” and so on. So I think there are PR and political risks on both sides of this. I am not going to try to downplay those, but I do think that on the substance this is a good move, and I will just put this on the table for your questions or comments. If a significant number of members of the Committee are uncomfortable with proceeding—and what we would do if we proceed is to put this all together in a package to be announced with the Europeans and the Swiss on Friday morning—then I would certainly be willing to table this last item. So let me open the floor for any comments. President Lacker.

MR. LACKER. I think the political concern you raised and described is a very, very serious one for this institution. Even if we thought of this ourselves before Senator Dodd and others wrote to us—and apparently it is true that we did—we are never going to be able to convince a broad array of observers that this was not a direct response to a senatorial request. Given that, I think the perception that we included this and maybe added some other securities as a fig leaf sets just a disastrous precedent. It would be the use of our balance sheet to circumvent the checks and balances of the constitutional process for legislating about fiscal matters. I think that the integrity of our independence as an institution relies, to a substantial degree, on our lack of entanglement or our distance from the political fray.

I would also question the value of this on the substance. What we are doing with the TSLF, as Bill's chart showed, looks as though it has had a big effect on the GC repo rate. It is hard to see how some additional amount of Treasuries in the market, given the size of the Treasury market, is going to have a gigantic effect. It is also hard to see that there is much strain or dislocation caused by the most recent observation in his graph on the gap between the funds rate and the GC repo rate—which is actually, what, like 10 or 20 basis points or about what it has historically been. So I would question whether we really need this on the substance as well.

On the other measures, the TAF is dominated by European institutions. Term funding spreads seem dominated by the term funding demands of European institutions. I don't see why we don't try to shift to European institutions the public policy responsibility for managing those situations. We already have an apparently well-functioning mechanism for supplying dollar balances to foreign official institutions to allow them to do that. I don't see why we don't limit our expansion of funding in that direction—to the swap lines—rather than expanding the TAF. Thank you.

CHAIRMAN BERNANKE. President Hoenig.

MR. HOENIG. A question—and just remind me—if we bring the student loans and these other assets in under this facility, do we have the right to swap out if the rating changes or questions come up?

MR. DUDLEY. Yes. They are priced every day; and if they are downgraded, there will be an automatic substitution. So you are protected both on price and on the ability to substitute.

MR. HOENIG. That was my first question. The second is that we have been entangled before in appearance issues. If we feel that we are doing the right thing, that doesn't give me much concern. On the substance, do you judge that the tightness in the market is such that this action is necessary to facilitate liquidity, or will this only marginally improve things? If it is marginal, the appearance issue becomes more entangled, I think. If it is pretty clear that we have some liquidity issues and that this will address them, then I would feel much more comfortable with it.

MR. DUDLEY. Well, I think the honest answer is that we don't really know exactly where it is on the continuum of very modest to substantive. One thing we can say is that this should increase the demand at the TSLF auction, so it should increase the likelihood that more of the Treasuries are actually put into the market in exchange for such collateral because we are broadening the eligible collateral. But I don't think the notion that this is a panacea is true.

CHAIRMAN BERNANKE. Vice Chairman.

VICE CHAIRMAN GEITHNER. I want to say just one thing in this context. The Chairman alluded to this, too. I think there is some value in taking this opportunity now to try to get a better balance in the relative attractiveness across these facilities. So in the scheme of things, it is better for us for the auction type of facilities to be relatively attractive compared with

the open facilities for which demand is unknown and we can't calibrate it—those are much bigger reserve-management things. I think our exit strategy from these things is easier if we evolve in that direction. One virtue of the package that the Chairman presented is that it is worth taking another shot at trying to get those interbank term premiums down in dollars because—to use a technical term—they are screwing up the transmission mechanism of U.S. monetary policy now. We are not quite sure how much effect we can have. There is a plausible case that increasing the size of the swaps will help on that front. It is worth doing now. Second, the broader package will buy a little more insurance against the risk that these liquidity pressures reignite and we have another wave of the adverse dynamic margin-spiral-downward-self-feeding thing. It is better to do that when other things are improving rather than wait until we are again at the edge of the abyss, although that is a tactical judgment. It is hard to know for sure.

I think that Bill is absolutely right. It is not clear how much incremental benefit the expanded collateral in the TSLF will offer. We can't be sure. But, Jeff, it won't come because we are increasing the size of the TSLF. That would increase the amount of Treasuries we are putting in, and we are not increasing the size. It would come only through what effect it might have on the broader range of asset-backed securities we have there. Remember, at the beginning we framed this as an effort to address some unique constraints operating on securitization markets, particularly in ABS. So there is a possibility of some additional benefit in those markets—some greater insurance against another downward spiral in that case—but not that high. It is hard to judge the merits of that against the appearance risk you presented, but I think this is designed pretty carefully to be robust to that perception problem. Our job is to do what makes sense and what we can defend as sensible in this context, and we have to be prepared to

do that even if people have made it awkward for us to do the right thing because of the perception problem.

CHAIRMAN BERNANKE. President Rosengren.

MR. ROSENGREN. Well, I certainly agree with the last statement that we should do what makes sense, and in this case, differentiating between kinds of collateral that are all AAA doesn't make sense to me. We should broaden it out. I would say that in your presentation you didn't have the asset-backed commercial paper market, but those rates actually have been quite elevated. Some rollovers for some of the large banks have not been working all that well, and the assets that tend to be in those conduits are the very assets we are talking about expanding. They are the student loans, the auto loans, and the various other things that go into these conduits. So I don't know how big an effect it would be, but if you look at the asset-backed commercial paper rates, they would look a lot like the LIBOR rates. I think that there might be some net benefit, and it certainly does make sense to me that we would expand. There is no reason to differentiate among AAA collateral that has many similar attributes.

CHAIRMAN BERNANKE. President Lacker, a two-handed comment?

MR. LACKER. Yes. Mr. Chairman, you motivated the expansion of the term securities lending facility by the effect it would have by increasing the amount of Treasuries in the market. Vice Chairman Geithner, you appealed to the effect it would have on the asset-backed securities that would be offered on the market. We didn't discuss the asset-backed securities market, except that I had this exchange with our Manager. I am not aware of any evidence that there is something wrong with the fundamentals of those markets. Now, admittedly, it is not clear that many of our arguments for some of these facilities have been based on some careful diagnosis of



fundamentals. If this is about those asset-backed securities markets, that is another thing entirely. I was a little confused about that and wondered about the rationale.

CHAIRMAN BERNANKE. I may have misspoken, but I think I had in mind both sides of the equation. The Treasuries have certainly responded. It's harder to judge on the asset side, but I guess that the premise is the same—that all of these markets are suffering from withdrawal of the normal liquidity provision of money market mutual funds and other, less sophisticated investors. Banks and others are finding it hard to finance those assets, and that's the liquidity backstop that we provide. So I think on both sides.

MR. DUDLEY. If I may come back to the issue of the AAA securities and the spreads, those are AAA-rated securities for which the spread has widened hundreds of basis points. If the loss experienced is not unusual relative to the cycle, then it's hard to understand why AAA-rated securities would be selling at several hundred basis points over Treasuries. It is impossible to square that circle.

CHAIRMAN BERNANKE. Yes.

MR. LACKER. If the payoff for those securities is unexpectedly low, it is likely to happen in a circumstance in which the economy is doing awfully poorly. Risk premiums are about variances and risk aversion, but they are also about correlation with aggregate states. Arguably, that would rationalize a widening of the risk premiums attached to a wide range of securities, mortgage-backed included. We have yet to see any evidence from our staff refuting that interpretation of the widening spreads we have seen. Mr. Chairman, with all due respect, what you describe is a lack of demand. I am not sure how that squares with viewing the market as somehow malfunctioning.

CHAIRMAN BERNANKE. Well, we have seen the breakdown of a particular structure of lending that was based on the credit ratings. The credit ratings have proven to be false. Therefore, there is an informational deficit—an asymmetric information problem, would be my interpretation—which has, in turn, triggered a massive change in preferences. But I don't think we are going to settle this at the table here. President Evans.

MR. EVANS. Thank you, Mr. Chairman. The question that I have gets to the appearance issue, and it is not really about the immediate concerns. To the extent that the markets are not functioning that well, this could be useful, and so I don't really have any disagreement with that. But the facilities that we are talking about currently have a temporary nature to them. The term auction facility is temporary, although of course the Board could make it permanent. The term securities lending facility is an expansion of a program. What's the permanence of that and the primary dealer credit facility as well? As we allow other forms of collateral to be taken, what implications might that have for the future if we try to make these more permanent? This is simply a question; I don't know what the answer is. Do we feel comfortable with these forms of additional collateral on a permanent, ongoing basis, if we were to do that; or do we think it would be possible to turn that off? How costly would it be?

CHAIRMAN BERNANKE. The TSLF and the PDCF are emergency measures, and barring congressional action, we cannot maintain them. Presumably, they will be phased out as markets improve. If we are doing these things, I don't see the argument for one set of collateral versus another. President Fisher.

MR. FISHER. Along those lines, Mr. Chairman, I viewed these facilities as a liquidity bridge, an aqueduct, to getting over this credit crunch that we have had. I am not as concerned about having this facility accept the same collateral as the other facilities. I do have a question

about the permanence, and it is a different kind of question, which is whether or not the Congress will encourage us to make these permanent. I think that is a risk, and we need to think about it. I don't have an answer. I have been on the receiving end, as you may know, of enormous pressure from the Texas delegation on the student loan business, and we have talked about it with the staff quite a bit. I quoted you in my response, by the way, in your first series of letters. It doesn't bother me to have egg on my face if we are doing the right thing—again, having the same collateral regime as we have for our other facilities. I am more worried, however, about whether it encourages them in interfering with the temporary nature of these facilities. That is just one point to think about. I have a question about the TAF—just to make sure that I understand. We are talking about taking it to \$150 billion in outstandings—is that correct?

CHAIRMAN BERNANKE. Yes.

MR. FISHER. So \$75 billion auctions. Okay. The third point, which is about optics, is a little different. I don't know what we're going to come out with in terms of policy. I know what my preferences are, and I sense what some other people's preferences are. I'm a little concerned that we have to be able to express this in a way that doesn't look as though we see something that no one else sees. So we need to think about that and the way we articulate it. The last time we had a disconnect between an action on the fed funds rate and agreeing to something and announcing it internationally, it didn't really work well. They read more into it than was there. We all understood why we were having that time disconnect—it was because we needed to line up our ducks with our foreign counterparts. Maybe we should think about that as well—whether we should move it up to the same time that we announce the action of this Committee on the fed funds rate. I don't know if that is physically possible. But I wouldn't want in any way to convey that we see something that other people don't see, that there is a problem in these particular

markets. Everybody knows that GE is trying to sell a \$40 billion credit card portfolio and they are not getting any bidders. So I can see the devious minds, or the minds of those who don't necessarily think well of us, linking all these little pieces together and saying that we're reacting or overreacting to something that may not be there. I just wanted to put that on the table for you to think about. I am not against the concept, since we have already gone down this path, of making this subject to the same collateral regime. But I do think—and I am glad you raised the subject—that, though I have interpreted it differently, we have to be concerned about the optics here.

CHAIRMAN BERNANKE. President Fisher, the timing is dictated by the preference of the Europeans not to be tied into our monetary policy decision and the fact that Thursday is a European holiday. The problem you were alluding to earlier had to do with the very strong market expectation that we were going to act on liquidity measures. We disappointed both on that and on the rate. That was why we got the strong reaction, and there's no such expectation to my knowledge here. At the same time, our press release, which we have already looked at in draft, and market expectations are very focused on the LIBOR issue and the interbank issue. Given that we have done so many steps in this direction, I don't think that this would be misinterpreted as anything particularly overdramatic.

MR. FISHER. Mr. Chairman, may I just raise one other point? I think President Lacker touched on this. I am concerned, in terms of the eventual optics, about the fact that the TAF is being drawn on predominately by foreign banks. My numbers here are that the last one was 78 percent foreign bank participation and the previous one was 91 percent. I think there we may have some political vulnerability. Again, I just put it on the table for us to consider. I am almost more worried about a backlash on that eventually than what we are talking about currently.

CHAIRMAN BERNANKE. The problem is that European banks are structurally deficient in dollars and they have a time zone shift. It is a dollar market.

MR. FISHER. It has been well presented. It's hard to explain to a politician. That's my point.

CHAIRMAN BERNANKE. Governor Kohn.

MR. KOHN. Thank you, Mr. Chairman. On the last point, I think it is helpful to expand both the swaps and the TAF at the same time. People understand that there are pressures in these funding markets, and we can address them both at home and abroad. They do feed back on our market, so I guess I am not too worried about that one. Also, it is quite logical to do the swaps and the TAF. I don't see any issue.

On the TSLF, I have been thinking about it less on the Treasury side than on the other side. I don't think the TSLF will increase the demand for holding these securities in any major, direct way. My hope is that, sort of around the margin, it would make dealers more willing to make markets in them and to be on both sides of the market, including the buy side from time to time, because then they would see that they had a place to finance those securities if, at the end of the day, they had more. So if it helps, it will help the liquidity of those markets rather than increasing the ultimate demand for the securities. I think it is an indirect thing. My guess is that it might help at most around the margins. I don't see how it can hurt. There is a certain logic to it. I don't think it will help the student loans at all. The structural issues are just overwhelming any of the other issues in that line. If somebody asked you, Mr. Chairman, whether this was aimed at student loans, I think you could say that they just were along for the ride in the sense that they were part of the AAA ABS market and that we didn't have any expectation that expanding that market would help them. Thank you.

CHAIRMAN BERNANKE. Okay. President Bullard.

MR. BULLARD. I am the new guy, but I will just put in my two cents here. Everyone seems to agree that there is no quantitative impact. I can't see any quantitative impact. There are political implications. I don't see why we are doing it.

CHAIRMAN BERNANKE. To repeat what Bill said, I think it is hard to measure the quantitative impact, but my guess is that there is some. But the point is well taken. What I would like to do is go through the first votes, and then we will take a straw vote on the TSLF, and then decide what to do. Okay? First, we have to ratify domestic open market operations.

MR. KOHN. So move.

CHAIRMAN BERNANKE. No objection? Okay. Now the swap agreements with Canada and Mexico.

MR. KOHN. So move.

CHAIRMAN BERNANKE. Is there anyone who wants a roll call on this? Okay. If not, then no objection. Extend and expand the swap agreement with the ECB.

MR. KOHN. So move.

CHAIRMAN BERNANKE. Is there anyone who wants a roll call on this? Okay. Then, without objection. Expand and extend the swap agreement with the Swiss National Bank.

MR. KOHN. So move.

CHAIRMAN BERNANKE. Without objection. Okay. Now, on the TSLF, the proposal is to include this as part of the package. There will be no change to the facility except for the increase in the collateral range, to include AAA asset-backed securities. Are there any further comments on this? I am going to ask for a straw vote, just to get a sense. Abstentions are fine. If there are no further comments, how many people are in favor of this? I see 10, I think.

MS. YELLEN. Are you asking voters only?

CHAIRMAN BERNANKE. I'm sorry?

MR. FISHER. Are you asking voters only or the entire table?

CHAIRMAN BERNANKE. I would like to get a sense of all participants, if that is okay.

Thirteen participants are in favor. All right. All participants against? Okay. Let's go ahead and take a vote on this, then. Is there anyone who wants a roll call vote? If not, then no objection.

MR. KOHN. So move.

CHAIRMAN BERNANKE. No objection. Thank you. Let's turn now to the economic situation. Dave Stockton.

MR. STOCKTON. Nathan and I thought that we would alter slightly the structure of our briefing today so as to focus a bit more closely than usual on the global and domestic outlooks for inflation. I'll start with a brief review of recent economic developments and our outlook for economic activity in the United States. Nathan will then discuss trade and foreign activity before turning to global commodity markets and our forecast for import prices. I will then explain how both foreign and domestic influences are shaping our outlook for U.S. inflation. Brian will conclude by presenting your forecasts.

Let me turn first to the domestic economy. From a forecasting perspective, this intermeeting period turned out to be reasonably tranquil, at least by the standards of the past nine months. The incoming data were very close to our expectations and required few adjustments to either top-line GDP or to the individual components of spending. As we noted in the Greenbook, we continue to think it likely that the economy is in recession; and, with the data evolving pretty much as we had expected, we have seen little reason to back away from that call.

Readings from the labor market support the view that, at the very least, a pronounced deceleration in aggregate activity is under way. Private payrolls fell about 100,000 in March, the third consecutive month with a drop of that magnitude, and the unemployment rate moved above 5 percent. Moreover, a notable weakening of labor markets is signaled by most of the indicators that we monitor. Surveys of hiring plans have continued to move lower; there are fewer job vacancies; businesses report that jobs are easier to fill; and household attitudes have continued to sour, including their views of the labor market. In the past, such a configuration of readings has been a reasonably reliable indicator of cyclical downturn.

The spending data also have been consistent with our forecast of a marked weakening in aggregate demand and activity. After posting modest gains last year, consumer outlays and business equipment spending appear to have been at a near standstill since the turn of the year. Meanwhile, housing continues its steep descent and looks to be on track to subtract about 1½ percentage points from the growth of real GDP in the first half of the year—close to our March projection. Moreover, while we had anticipated a sharp deceleration in nonresidential construction in response to more-difficult financing conditions, that sector now appears to be turning down earlier and more sharply than we had projected. Finally, much as we had been expecting, weak domestic demand is receiving some offset from ongoing solid gains in exports.

All told, we estimate that real GDP rose at an annual rate of ½ percent in the first quarter, just a few tenths above our March forecast. As you know, tomorrow morning, the BEA will release its advance GDP estimate for the first quarter. For the second quarter, we are projecting real output to decline at a 1½ percent annual rate, a few tenths weaker than our March forecast. On net, the outlook for activity in the first half is basically unchanged from the time of the last meeting. Looking further ahead, our medium-term forecast also hasn't changed much over the past six weeks. The stock market is more than 5 percent higher than we had anticipated. But the favorable effects of that development on activity are nearly offset by the adverse effects of lower house prices and higher oil prices. Consequently, the GDP gap at the end of next year is unchanged from the March forecast.

Our basic story remains the same. The contraction in activity that we are projecting over the first half of the year is expected to be relatively mild because of the boost to spending and activity from the tax rebates and because export demand remains solid. In the second half, real GDP turns up, but I wouldn't really term this a recovery. After all, real GDP is projected to grow less than 1 percent at an annual rate, employment continues to decline, and the unemployment rate runs up to 5¾ percent. But we see a number of factors fostering a more noticeable acceleration of activity to a pace above its potential by 2009. First, the contraction in residential investment abates. Second, the drag on consumption growth from the rise in oil prices wanes. Third, financial conditions stabilize and then begin to improve, gradually reducing restraint on household and business spending. Finally, we assume that monetary policy remains accommodative. With the growth in real GDP running 2¾ percent next year, about ½ percentage point above the pace of potential, the unemployment rate drops slowly to 5½ percent.

Obviously, there are large risks on both sides of our projection. On the upside, we could just be flat-out wrong about an imminent contraction in aggregate activity. Claims were running about 360,000 at the time of the March FOMC and are now averaging about 370,000. While that increase suggests some further softening in the labor market, the level of claims seems lower than would comfortably fit our forecast of payroll employment declines averaging about 160,000 over the next few months. Likewise, industrial production has weakened but hasn't dropped off much. Because



we don't expect manufacturing to be at the epicenter of this business cycle, we aren't looking for a plunge, but we are forecasting more noticeable declines than we've seen to date. In addition, although last week's numbers for shipments of nondefense capital goods in March were close to our forecast, the orders figures were firmer than we had expected. In sum, while the data have not pushed us away from our recession forecast, they haven't convincingly confirmed it yet either.

More broadly, with bond spreads down, the stock market up, and market expectations for the path of policy revised higher, the situation certainly looks less menacing than at the time of the March meeting. But while we would agree that the risk of a very bad tail event seems to have declined, we are not ready to join others in heaving a sigh of relief just yet about the modal outlook. For one, we still see no signs of a bottom in housing. New homes sales—we received the numbers after the projection was completed—declined more than 8 percent last month to a level that we thought would be the bottom in the second half of this year. A second concern centers on consumption. With oil prices running around \$115 per barrel, consumers will be facing sizable further increases in gasoline prices over the next few months from already elevated levels. Also, given the steep declines in employment that we are projecting, incomes and income uncertainty will be taking a hit. We've taken those factors on board as best we can, and we are counting on the tax rebates to provide a powerful offset, but we can't rule out a more adverse reaction to what will be an accumulation of bad news. Furthermore, while there has been improvement in the general tenor of financial markets, I suspect that we've only begun to see the effects of tighter credit conditions on borrowing and spending. That restraint could prove larger and more persistent than is implicit in our baseline forecast. Finally, the mild downturn in activity that we are projecting also suggests some downside risk. Our projected rise in the unemployment rate of 1¼ percentage points from its low point last year to its high point at the end of this year is small—smaller than occurred in either the 1990–91 recession or the 2001 recession. This time could be different, but as I noted in March, that argument should always give you pause. Nathan will now continue our presentation.

MR. SHEETS. Much as Dave just described for the domestic economy, our forecast for economic activity abroad also is little changed from the last Greenbook. Recent data have come in consistent with our view that the slowdown in U.S. activity and the ongoing financial turbulence will leave an unmistakable imprint on economic growth abroad. But the extent of this imprint appears to be somewhat less pronounced than was the case in the high-tech-led recession earlier this decade, particularly for the emerging market economies. Thus we continue to see foreign growth stepping down from last year's 4 percent pace to near 2 percent during the second and third quarters of this year, as foreign activity is constrained by the weakening U.S. economy and headwinds from the ongoing financial turmoil. With these factors projected to abate, we see growth abroad rising back to near its trend rate of around 3½ percent in 2009.

Suffice it to say, the risks around this forecast remain significant. On the upside, China's surprisingly strong first-quarter GDP growth—which we estimate was nearly 11 percent at an annual rate—highlights the possibility that growth in emerging Asia, and perhaps elsewhere as well, may remain more resilient than we anticipate. On the downside, the softer-than-expected German IFO data last week and the negative tone of the Bank of England's recent credit conditions survey suggest that growth in Europe may slow more than we now project.

The exchange value of the dollar, after falling sharply in the month before the March FOMC meeting, has rebounded somewhat during the intermeeting period. Against the major currencies, the dollar is up almost 2½ percent, with a particularly sizable gain against the yen. Going forward, we continue to see the broad real dollar depreciating at a 3 percent pace, reflecting downward pressures associated with the large (albeit narrowing) current account deficit. This depreciation is expected to come largely against emerging market currencies (including the Chinese renminbi), which have moved less since the dollar's peak in early 2002.

Turning to the U.S. external sector, we now see the arithmetic contribution from net exports to first-quarter U.S. real GDP growth as likely to be around 0.3 percentage point, down a few tenths from the last Greenbook. Recent readings on exports have continued to point to strength, but imports in February bounced back from their December and January weakness more vigorously than we had expected. For 2008 as a whole, we continue to believe that the demand for imports will be significantly restrained by the weak pace of U.S. activity and, to a lesser extent, by the depreciation of the dollar and rising prices for imported commodities. We thus see imports contracting nearly 2 percent this year. In contrast, exports are expected to post 7 percent growth this year, supported by the weaker dollar. The projected contraction of imports, coupled with still-strong export growth, suggests that net exports will contribute nearly 1¼ percentage points to U.S. GDP growth this year—the largest positive contribution from net exports to annual growth in more than 25 years. In 2009, import growth is expected to bounce back to around 4 percent as the U.S. economy recovers, and the positive contribution from net exports should accordingly decline to just under ½ percentage point.

Oil prices have continued their apparently relentless march upward, with spot WTI now trading at \$115 per barrel. Since your last meeting, the spot price of WTI has increased \$6 per barrel, and the far-futures price has moved up almost \$5 per barrel. Over the past year, spot oil prices have risen a staggering 80 percent. While the high level of oil prices appears to be taking a bite out of oil demand in the United States and other industrial countries, the demand for oil in the emerging market economies—particularly in China and India—has been supported by the resilience of GDP growth there. In addition, fuel subsidies in some countries (including India) have sheltered consumers from the effects of higher oil prices. In line with these observations, India's state-owned oil company recently released projections indicating that oil demand in the country will increase 8 to 10 percent this year.

The supply-side response to the rising demand for oil has been only tepid. Stated bluntly, OPEC remains unwilling—or unable—to increase its supply to the market. Indeed, OPEC has actually cut its production over the past two years. In addition, oil production in the OECD countries has been on a downward trajectory, primarily reflecting the decline in the North Sea fields and in Mexico's giant Cantarell field. Mexico's state-owned oil company recently indicated that, for the sixth consecutive year, additions to its reserves had failed to keep pace with production. The grim outlook for Mexico's oil industry has prompted the government to consider allowing foreign investment in the country's energy sector, a move that would require constitutional reform. Finally, although the potential supply from non-OECD non-OPEC countries is substantial, production continues to be hampered by inadequate infrastructure and by uncertainties about property rights and the stability of tax regimes. In the absence of any better approach, we continue to base our forecast on quotes from futures markets, which see oil prices as likely to remain high—at or above \$110 per barrel—through the end of the forecast period. But the confidence bands around this forecast are exceptionally wide given uncertainties surrounding the outlook for oil supply and demand.

Nonfuel commodity prices have also been on a wild ride of late. The prices of many of these commodities increased particularly sharply in January and February, before peaking in early March. On balance, our index of nonfuel commodity prices rose at a hefty annual rate of 50 percent during the first quarter. We project a further 13 percent rise in the second quarter, but—again in line with quotes from futures markets—we see these prices flattening out thereafter. The underlying drivers of the sustained run-up in the prices of nonfuel commodities have been broadly similar to those for oil—sharp increases in demand (particularly from emerging-market economies) coupled with typically lagging and often muted supply responses. Notably, however, moves in nonfuel commodity prices since the March FOMC meeting have been quite varied. For example, copper and aluminum prices are up whereas nickel and zinc prices are down. For foods, corn, rice, and soybean prices have risen while wheat prices have declined substantially.

The overall strength of commodity prices continues to put upward pressure on inflation in many countries and to complicate life for central banks. Notably, in the euro area, 12-month headline inflation in March rose further, to 3.6 percent, well above the ECB's 2 percent ceiling. In the United Kingdom, inflation pressures stemming from rising utility, gasoline, and food prices are likely to push inflation toward 3 percent during the summer, raising the risk that Mervyn King will be required to write another letter to the Chancellor of the Exchequer explaining why inflation has deviated from the 2 percent target. Concerns about the inflation outlook have limited the willingness of both the ECB and the Bank of England to cut policy rates to address slowing growth. Perhaps even more striking, faced with upward pressures on inflation from rising food and energy prices coupled with still-solid economic growth, central banks in a broad array of emerging market economies tightened policy over the intermeeting period. This group included China, Singapore, India, Brazil, Russia, Poland, Hungary, and South Africa. In addition, some countries

have recently responded to social unrest and other strains brought on by higher food prices by restricting exports of foodstuffs, particularly rice, and this has exacerbated upward pressure on the global prices of these commodities.

The run-up in commodity prices, coupled with the weaker dollar, has pushed up U.S. core import price inflation of late. Core import prices are now estimated to have increased at a  $7\frac{1}{2}$  percent annual rate in the first quarter, more than twice the pace of increase in the second half of last year. Prices of material-intensive imports (including industrial supplies and foods) are seen to have surged at a surprisingly rapid pace of 20 percent in the first quarter, on the back of the rapid rise in commodity prices. Prices of imported finished goods (including consumer goods, capital goods, and autos) are estimated to have risen at a comparatively muted rate of  $3\frac{3}{4}$  percent, but this also was up sharply compared with recent quarters. The acceleration in finished goods prices seems well explained by recent moves in the dollar, however, and does not suggest any notable increase in the extent of exchange rate pass-through. Going forward, we see core import price inflation remaining elevated in the second quarter, at around 6 percent. Thereafter, core import price inflation should abate, given the projected flattening out of commodity prices and the slower pace of dollar depreciation.

MR. STOCKTON. Before explaining how the global developments that Nathan just described intersect with our domestic inflation forecast, I should briefly review some of the incoming information on prices. For the most part, the recent consumer price data have been running below our expectations. At the time of the March Greenbook, we were estimating that core PCE prices had increased at an annual rate of  $2\frac{3}{4}$  percent in both the fourth quarter of last year and the first quarter of this year. We now are projecting increases of  $2\frac{1}{2}$  percent and 2 percent in the fourth and first quarters, respectively. Although we are estimating that core PCE prices rose 0.2 percent in March—just a couple of basis points below our previous forecast—there were noticeable downward revisions to the data stretching back to late last year, principally for medical services and nonmarket prices.

Just as we had discounted some of the earlier elevated increases in core PCE prices, we are now inclined to discount the recent more favorable readings. The small increases in medical service prices are not likely to persist. Moreover, some of the recent slowdown is attributable to nonmarket prices, which we view as both noisy and mean-reverting. Still, we don't think all of the good news on core PCE prices of late should be written off; and all else being equal, we would have taken down our forecast for the year as a whole in response to the incoming data. But, of course, all else was not equal. As Nathan has noted, there has been another sizable increase in crude oil prices; the prices of non-oil imports have increased more rapidly than we had expected; and more broadly, both imported and domestically produced materials prices have risen sharply thus far this year. In reaction, we have marked up our forecast for core PCE inflation for the remainder of the year, and that upward revision basically offsets the effects of the recent good news.

For now, inflation this year looks likely to repeat the pattern of the past four years. Since 2004, headline PCE prices have risen at about 3 percent per year, and core prices have been up at a rate of about 2¼ percent. Due to a further steep rise in energy prices, large gains in import prices, and another above-trend increase in food prices, we are projecting headline PCE prices to rise 3¼ percent this year and core prices to increase 2¼ percent—similar to the averages over the preceding four years. Moreover, our forecast for 2009 bears a striking resemblance to the out-year forecasts that we have continued to make over the past four years. By now, in answer to the question of why inflation is expected to slow in the forecast, most of you could easily recite the staff's catechism of disinflation. Based on readings from the futures markets, we expect consumer energy prices to flatten out next year and food prices to slow to a rate close to core inflation. With the dollar not expected to fall as much as it has over the past year and other commodity prices expected to move sideways, import prices are projected to slow. Those more favorable developments in combination with a noticeable increase in projected slack cause headline inflation in 2009 to slow to 1¾ percent and core PCE inflation to edge back to 2 percent. Both of those figures are 0.1 percentage point higher than our March forecasts, reflecting the indirect effects of higher prices for energy and other imports. As we have noted many times, a key element in our projection is the assumption that oil and non-oil commodity prices will flatten out as suggested by the futures markets. To put it mildly, that has not been a winning forecast strategy in recent years, but I'm not sure that we have a superior one to offer you.

Obviously, there are some big upside and downside risks to our forecast of domestic inflation. Nathan has already covered some of those related to prices for oil and other imports, so let me say a few words about the outlook for retail food prices. Our outlook for food prices remains relatively sanguine, but there would appear to be more pronounced risks to the upside than the downside. Although most of the value of what's in your morning cereal bowl is advertising, packaging, and transportation, some corn and wheat are in there also, [laughter] and those prices have been rising rapidly. Futures markets are predicting a leveling-out in crop prices, and that expectation is built into our forecast. But worldwide stocks of grains remain tight, and any serious shortfall in production could result in sharply higher prices. In that regard, while the growing season here is just getting under way, corn production is off to a slow start because unusually wet conditions have hampered plantings. Elsewhere, increasing supplies of livestock products and poultry have been a moderating influence on retail food prices in recent months. Again, while futures markets suggest relatively subdued prices going forward, there are a few worrying signs. Although cattle on feedlots have remained near record levels, new placements have fallen off of late, reportedly because of the higher cost of feed. In addition, the portion of feedlot placements composed of females was high last fall and through the winter, which points to a reduction in the size of the breeding herd this year and thus suggests some potential supply risks ahead.

In recognition of the upside risks posed by both food and energy prices, we included in the Greenbook an alternative simulation in which oil prices climb to

\$150 per barrel next year and food prices continue to run at the elevated pace of the past three years. In this scenario, we also assume that another year of elevated headline inflation results in a further erosion of inflation expectations of about  $\frac{1}{4}$  percentage point. Under these conditions, headline PCE price inflation posts another year north of 3 percent, and core inflation moves a bit higher to  $2\frac{1}{2}$  percent this year and next. It strikes me that this type of persistent upward creep to inflation, which would be difficult to positively identify in real time, is a more likely risk than a sudden upward surge in price inflation.

There are, however, some downside risks to the inflation outlook as well. As you know, we upped our price forecast a bit in the last round because we saw the incoming readings on inflation expectations as suggesting that there had been some modest upward movement over the preceding few months. Some of that increase may have resulted from your aggressive easing of policy early this year. But going forward, the situation may be turned around. If our forecast over the next few quarters is in the right ballpark, and on our assumption that the easing of policy is coming to an end, you will be standing pat on policy even as payroll employment falls throughout the remainder of the year, the unemployment rate trends higher, and headline inflation begins to back down. It doesn't seem a stretch to me that in that environment, inflation expectations could come down somewhat, a development not embodied in the baseline forecast.

More broadly, one place that inflation expectations might be expected to manifest themselves in a way that would be most damaging to inflation would be in labor compensation. Despite the elevated headline inflation of the past four years, there is little evidence of any noticeable step-up in wage inflation. If that was the case when the unemployment rate was  $4\frac{1}{2}$  percent, it seems less likely that larger nominal wage gains will be secured when the unemployment rate rises to  $5\frac{3}{4}$  percent. Indeed, increases in hourly labor compensation have been running well below our models for some time, pointing to some additional downside risks to our inflation outlook. For now, we see substantial risks to the inflation outlook, but those risks still seem two-sided to us. Brian will complete our presentation.

MR. MADIGAN.<sup>2</sup> I will be referring to the package labeled "Material for Briefing on FOMC Participants' Economic Projections." Table 1 shows the central tendencies and ranges of your current forecasts for 2008, 2009, and 2010. Central tendencies and ranges of the projections published by the Committee last February are shown in italics. Regarding your monetary policy assumptions (not shown) about three-fourths of the participants envisage a moderately to substantially higher federal funds rate by late next year than assumed in the Greenbook, a path perhaps similar to the one incorporated in financial market quotes. Most of you conditioned your projections on a path for the federal funds rate that begins to rise either in late 2008 or sometime in 2009, in contrast to the Greenbook path, which remains flat through 2009. Many of you were less clear whether you differed from the Greenbook path

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<sup>2</sup> The materials used by Mr. Madigan are appended to this transcript (appendix 2).

over the near term; but with a little reading between the lines, it seems fair to say that most of you assumed a slightly higher funds rate over the near term.

As shown in the first set of rows and first column of table 1, the central tendency of your real economic growth forecasts for 2008 has been marked down nearly 1 percentage point since January. Most of you pointed to weak incoming data, tight credit conditions, falling house prices, and rising energy prices as factors that prompted you to lower your growth expectations for this year. About half of you forecast a decline in economic activity over the first half of the year (not shown), with another quarter of you seeing a flat trajectory over that period. However, only four of you used the word “recession” to describe the current state of the economy. None of you has a more negative first-half outlook than the Greenbook. The downward revisions to your growth forecasts are roughly equal across both halves of 2008, and so the contour remains one of a rising growth rate over the year. Members’ projections for the speed of the recovery in late 2008 exhibit considerable dispersion, with some calling for a quick return to near-potential growth supported by monetary and fiscal stimulus, and others seeing a prolonged period of weakness owing partly to persisting financial headwinds. Most of you appear to expect growth to return to near its trend rate in 2009 (column 2) and to move slightly above trend in 2010 (column 3). The Greenbook forecast for real growth in 2008 is near the low end of the central tendency of FOMC members’ projections, but it is at the high end in 2009 and 2010.

The second set of rows indicates that you have revised up your projections for the unemployment rate throughout the forecast period. Of those of you who provided estimates of the natural rate of unemployment, most expect unemployment to remain above the natural rate in 2010 with the others seeing a return to the natural rate.

As shown in the third set of rows, your projections for headline PCE inflation in 2008 have been revised up a full percentage point, largely due to the surge in the prices of energy and other commodities. Incoming information has also prompted a small upward revision to your projections of core PCE inflation this year (the fourth set of rows). The rate of decline of core inflation in 2009 is essentially unchanged from that in the January projections, presumably reflecting the offsetting effects of the higher unemployment rates in the April projections, on the one hand, and the lagged pass-through of this year’s higher food and energy prices, on the other. By 2010 the prolonged period of economic slack pushes down core inflation to around the same rates that were projected in January. Although the central tendencies for headline inflation, the third set of rows, also decline markedly over the forecast period, overall inflation is projected to be about  $\frac{1}{4}$  percentage point higher next year than you anticipated in January. Nonetheless, by 2010, headline inflation is expected to be in essentially the same range of around  $1\frac{3}{4}$  to 2 percent that you forecasted in January. Your inflation projections for 2010 are close to their values in January, but more than half of you raised your projections for the unemployment rate in 2010 significantly more than 0.1 percent. To the extent that the higher unemployment rate projections are viewed as implying an economy operating below its potential in 2010,

outside analysts may infer that you expect inflation to edge down further beyond 2010.

Turning to the risks to the outlook, as shown in the upper left-hand panel of exhibit 2, a large majority of you regard uncertainty about GDP growth as greater than normal. The upper right-hand panel shows that most of you perceive the risks to GDP growth as weighted to the downside. Correspondingly, the risks to unemployment, not shown, are seen as weighted to the upside. You typically attributed the downside growth risks to the potential for sharper declines in house prices and persisting financial strains. Overall, the distributions of your views on the uncertainties and skews regarding growth are little changed from January. However, as shown in the lower panels, your perceptions of the risks regarding inflation have changed noticeably since January. As shown in the lower left panel, only half as many participants now see the degree of uncertainty regarding the inflation outlook as historically normal, and twice as many see the uncertainties as larger than usual. As indicated to the right, fewer see the risks to their outlook for overall inflation as balanced, and more see the risks as skewed to the upside. Your narratives indicate that you see the upside risks to inflation as deriving from the potential for continued increases in commodity prices, further depreciation of the dollar, and an upward drift in inflation expectations. That concludes our remarks.

CHAIRMAN BERNANKE. Thank you very much. Are there questions for our colleagues? President Evans.

MR. EVANS. Thank you, Mr. Chairman. The Greenbook is aggressive and effective at portraying the U.S. economy as being in a mild recession. They've overcome the statistical evidence, which often prevents us from forecasting a recession since they are mostly surprises. There's a nonlinear step-down in the second quarter that begins this recession. So I'm a little curious as to why you didn't follow this up by forecasting a jobless recovery. In the last two recessions, that has been an important element of what followed. I wonder if it is now a feature of the Great Moderation business cycle. If you look at equilibrium real funds rates, they tend to bottom out during the period of most troubling joblessness in the aftermath of the recession. So if we're going to be relying on a period in which we're doing something we haven't done before, like buying a bit of additional inflation credibility, it will be unusual. I guess my question is why you made that choice.



MR. STOCKTON. This year certainly is pretty close to a jobless year in terms of a full year of nothing but employment declines and then fairly modest employment gains next year. But the principal reason we didn't predict a pattern like the one we saw in the earlier part of this decade is that we don't think we're going to get the kind of productivity surprises that were such an important feature of that recovery. As you may recall, we were stunned by the extent to which, even in a period of cyclical weakening, we kept getting much stronger productivity. I think it will be years before research is actually able to shed a lot of light on why that occurred. The part of the story that we still think was probably in play was that there had been an accumulation of technological advances that businesses were able to draw on over this period and that led to a period in which, even as growth was picking up, employment wasn't. We don't see that happening again—although we didn't see it happening the last time either, so it's possible.

MR. EVANS. Thank you. That's a fair point.

CHAIRMAN BERNANKE. President Stern.

MR. STERN. Dave, I have a couple of questions. One is technical, and one is a little more substantive. The technical one is that you have a very sharp decline in consumer spending on services in the fourth quarter of this year and then not much of a recovery in the first quarter of next year. I assume something special is going on there, but I don't know what it is.

MR. STOCKTON. What was going on there was probably—I don't know if it was rational or irrational—inattention. But in looking at that over the weekend, it seemed like something that should not be considered as an analytical feature of the forecast. Just in terms of the falloff in consumption that we expect to follow from the end of the tax rebates, my guess is that the consumption folks were trying just to put it somewhere and some of it showed up in services.

MR. STERN. "Services" seems like the least likely spot actually.

MR. STOCKTON. I think I'm raising the white flag here. [Laughter]

MR. STERN. Well, sorry. The more fundamental question is that I have been trying to get comfortable with an outlook that would have core inflation leveling off and maybe declining a bit, and that's the forecast I have. But I took your presentation, which I think was certainly on the right topic, to say that the risks around the core inflation forecast seem to be symmetric at this point. Is that a fair characterization?

MR. STOCKTON. I think that is a fair characterization. You know, one thing that we're struggling with—and I assume you are as well in giving your own views about the uncertainty and the skewness around your forecast—is whether things have changed. Is the skew large enough for us to argue that, in fact, the risks look unbalanced? We thought about that and about the potential upside and downside risks. Clearly, as I indicated, upside risks would be associated with ongoing increases in underlying prices for oil and other commodities that would probably feed through indirectly into core inflation over time. On the downside, we have been struck with how little upward pressure there has been on labor compensation and labor costs. Now, if you pinned me down and said draw a fine line on this, I'd probably say that, given the pattern of the past few years, it would look to me as though there's probably a little more upside risk than downside risk, but I don't see that skewness as being material in the forecast.

MR. STERN. Thank you.

CHAIRMAN BERNANKE. President Fisher.

MR. FISHER. Nathan, both you and Dave expressed the frustration that I think all of us have about relying on futures markets in terms of our forecast of lower prices. It just hasn't been very helpful. Do we know or have a sense of how OPEC itself forecasts? Do they just look at futures markets? Second, to what degree do you impute into your own calculations the income

elasticity of demand for the rapidly growing countries such as China? We know it is above 1 on oil. Third, linking the two, to what degree would, say, the Saudi royal family or the al-Sabahs of Kuwait be thinking about those high income elasticities of demand with those high growth rates offsetting what used to be their fear of a slowdown in their markets? In 1978, for example, they had only three markets to sell into really: the United States, Japan, and what we used to call Western Europe. Now they have hedges against the weaknesses in those markets. So I'm wondering as we think about alternative ways to wrap our arms around this—and it is a very difficult thing as the current indicator we have has been shifting all over the place and has not been very useful—have we tried to learn how the swing producers look at this and how they calculate and think about where prices are likely to go or whether they just look at the futures markets as well?

MR. SHEETS. It is, quite frankly, pretty tough to get a straight and compelling answer out of the OPEC folks about how they think about the oil markets. A number of us have sat in international meetings and listened to various explanations. In fact, at one recent meeting in Basel, the representative from Saudi Arabia indicated that OPEC was not prepared to supply any more oil to the market because the market was already well supplied at the equilibrium price. It is really quite frustrating. Now, what they say in these meetings is that their analysis of supply-and-demand fundamentals would suggest a price of \$70 a barrel, \$80 a barrel, or something like that. Then they blame the residual on speculators and so on, and we spend a fair amount of time looking for such speculative effects in these oil prices, and we wouldn't want to rule anything out. I mean, from what we've seen, there may be an explanation out there that eludes us, but there are a number of things that we would expect to see if it were speculation—for instance, run-ups in inventories—that we don't see. We have also looked at the behavior of noncommercial traders, and it does not seem as though the noncommercial traders are actually predicting prices. Quite the opposite—they seem

to be chasing the price, which is quite different from what we would have expected. Most recently, in a statement just this week, OPEC's president linked the run-up in oil prices to the depreciation of the dollar and indicated that, for every 1 percent decline in the dollar, oil prices would rise \$4.00 a barrel, which strikes us as being just absolutely extraordinary. We can see 1 percent on the dollar moving oil prices 1 percent, but to get a coefficient beyond that just seems—I don't want to say "economically impossible," but I'd like to see the model that generates it. Now, about how they actually talk about oil prices behind closed doors, I don't have any additional insight to provide other than what I've heard them say in some of these international meetings.

Certainly in our analysis we try to think through the outlook for demand from countries like China and India. In fact, quite regularly we do a full-blown supply-and-demand balance exercise in which we say, "Here is the price. What kind of supply-and-demand fundamentals would be necessary to deliver that price?" We use the IEA, the EIA, and others as input, but we actually do our own separate analyses. We try to think very granularly about the demand from these emerging market countries and the implications that that has on the price.

As to the last part of your question, I think certainly it's true, at least until recently, that there was a sense on the part of OPEC that, if they allowed the price to stay too high for too long, there would be a significant supply response that would end up driving the price back down. Now, the fact that they seem quite comfortable to live with the price of \$115 or \$120 a barrel suggests to me that maybe they have come to the conclusion that there is just more demand out there and, in some sense, they are going to ride the wave of this increasing demand in some of these emerging market economies. That said, the prices have risen a lot. They're up 75 percent or 80 percent over the past year. A year ago I'm sure that that's not what my predecessor was forecasting, and it's hard for me to imagine that we're going to see oil at \$200 a barrel. Nevertheless, given the income and price

elasticities of this thing, our view is that 1 percent greater global demand that's not met by supply could very well push prices up at least 10 percent. It isn't going to take a whole lot of surprise on global demand to have a significant impact on prices. As I said, I think that OPEC is aware of that and is willing to run the risk that there may be at some point a large supply response that could put significant downward pressure on the price of oil.

MR. FISHER. Thank you for that long and thoughtful answer.

CHAIRMAN BERNANKE. President Plosser.

MR. PLOSSER. Thank you, Mr. Chairman. I have two questions. One, in comparing the staff's forecast with a lot of the private-sector forecasts—what it looks like and its shape—one thing that is striking about the forecast is the very large adjustment swing that occurs in inventories. My interpretation is that one thing that is occurring in the way you've made adjustments to your forecast—or maybe this is more of a question—is that the spending of the tax rebates appears to be occurring out of inventories. Therefore, there is no production response, or less production response, to the presumably increasing demand that may materialize. Can you give me some feeling about why you chose that way of treating this?

The second question goes back to inflation. I thought your discussion of the uncertainties around inflation was excellent. Part of what you talked about in the Greenbook was the uncertainty about pass-throughs of commodity price increases and oil price increases into various measures of consumer price inflation, which you indicated were imprecise and which we don't really know much about. I was struck that, if there is more pass-through than the baseline says, we're going to get more inflation in the near term, and then disinflation will be more rapid when you assume that commodity prices are going to come down. But if commodity prices only stabilize and don't come down, then it's going to be a more complicated picture. You do have an alternative scenario that

says that commodity prices keep rising, but you allow expectations to move up only fairly modestly in the model. It seems to me that, particularly if expectations become more unanchored than that, the time paths of the funds rate that are implicit in the simulations become much more aggressive on the other side. I just want to make sure that my intuition is correct here.

MR. STOCKTON. Your intuition on that last point is correct. Obviously, in that simulation we have inflation expectations deteriorate a little more from where we think they have deteriorated already over the past year or so. Again, this is really hard to pin down, but we think there has probably been an increase of maybe  $\frac{1}{4}$  percentage point in longer-term inflation expectations over the last couple of years in the context of this step-up in headline inflation and the higher commodity prices that are associated with that increase. So in the simulation, we're basically assuming that the process continues: If you have another year or two of high headline inflation, you may get additional deterioration of inflation expectations on the order of  $\frac{1}{4}$  percentage point. You're right that, if expectations truly became unhinged and people began to view the entire inflation process as generating some greater upward momentum, it would have implications both for inflation and—

MR. PLOSSER. A lot bigger than just the rise in expectations.

MR. STOCKTON. A lot bigger than just the rise in expectations, and the fed funds rate, of course, would have to rise considerably.

On the inventory side of the forecast—again, you put your finger on the principal reason that inventories are as weak as they are in the near term, which is that we think there will be a pretty sizable spending response to the tax rebates but we don't see that as showing up fully in activity in large measure because we think firms are going to understand that this will be a one-time increase in demand. So they will be somewhat cautious about responding with higher production to that demand and will, especially in the context of a relatively weak economy, be more content with

having that run down inventories than actually with ramping up production immediately. Now, that's guesswork on our part. Again, I feel pretty comfortable with that basic story, but it is going to require some fairly negative inventory figures shortly. There is a technical factor here as well. We have occasionally cited a residual seasonality in imports, and in the second quarter that residual seasonality pushes down imports a lot. But we see no residual seasonality in GDP, so we take it out of inventories. That has been a standard feature of our forecast for the past few years. Nathan and his crew have communicated quite frequently with the BEA complaining about the fact that they have a seasonal adjustment process that takes a relatively flat series and creates lots of noise. [Laughter] It does not seem as though it is probably the best thing, but it exaggerates the downward movement in inventories. If I had to cite something that would make me nervous about the weakness in our near-term outlook, I do worry that the inventory liquidation in our forecast is large. The decline in the inventory–sales ratio in our forecast looks a lot like the decline in the inventory–sales ratio that we saw in 2001 and 2002. So it's not out of line with past cyclical behavior, but it's an aggressive drop.

MR. PLOSSER. In the theoretical literature there is a lot of discussion about inventory modeling now and what the appropriate way is to think about it.

MR. STOCKTON. I think I can assure you that our models of inventory investment are not very good.

CHAIRMAN BERNANKE. But they don't take information and convert it into noise.

[Laughter] Other questions for our colleagues? President Lockhart.

MR. LOCKHART. Thank you, Mr. Chairman. Just to follow that up, Dave, how do you build your assumption on the spending response to the fiscal stimulus?

MR. STOCKTON. That was based on our reading of the literature, especially of the last episode of fiscal stimulus, which was associated with the rebate package in the earlier part of the decade. We're assuming a marginal propensity to consume out of those rebates of about  $\frac{1}{2}$ —that seems reasonably in line with what the literature suggests—and that they will be spent out over the next few quarters. But, again, that's based on one or two data points. We're trying to draw some strong inferences from those data points, and it's our best guess at this point.

CHAIRMAN BERNANKE. President Plosser.

MR. PLOSSER. Yes, just a follow-up. Another way to ask my question is, Given your assumptions about the fiscal policy stimulus and tax rebates, if I took the view that your estimate of spending was not really 50 cents, 40 cents, or 60 cents but really 10 cents—most of it will get saved and not spent—how would that affect your inventory assumptions and, therefore, the path over the next several quarters?

MR. STOCKTON. Roughly, we're offsetting about half the spending through the inventory drawdown, so you could basically take that. If you took away a significant fraction of the spending, we'd take away a significant fraction of the inventory liquidation, and the GDP effects would be moderated considerably.

CHAIRMAN BERNANKE. Other questions? If not, let's start our go-round. President Evans.

MR. EVANS. Thank you, Mr. Chairman. I was pleasantly surprised that we have not had any major downside surprises since our March 18 meeting. So while I still recognize the economy's downside risks, I've become less comfortable about signing onto the Greenbook's judgment that a nonlinear step-down in activity currently is in train. On balance, our projection still looks for weakness in the near term and then has growth picking up as we move through 2008 and



into 2009. We see a noticeable output gap opening this year but not one as large as in the Greenbook. Under this forecast, it is possible that some portion of 2008 might eventually be labeled a recession, but it is not yet conclusive that it will be. Indeed, given the highly unexpected development that events have proceeded as expected, I think the downside risks to growth have abated some. Some of the stress in financial markets has been mitigated by our new lending policies as well as actions by banks in recognizing losses and raising capital. Neither the incoming data nor the reports from my business contacts seem to be consistent with the bleak downside scenarios that I feared might transpire after we saw the December employment report early this year. In this regard, I will simply note a couple of observations from my contacts. A national shopping mall developer reported that his tenants experienced a small improvement in April retail sales compared with March. He was not expecting that. Similarly, Manpower indicated a small improvement in billable hours for temporary workers over the past month and a half, also unexpected.

Now, I am not saying that I will be surprised if the outlook deteriorates further. I am saying that the likelihood of that event seems to be smaller today than I expected at our last two meetings. Accordingly, I think that current real interest rates are appropriately accommodative relative to the baseline forecast for economic growth and the risk to that outlook. As seen in chart 6 of the Bluebook, the real funds rate is essentially zero. Of course, this uses a core PCE measure of inflation and thus may overstate the true real rate since headline inflation has been consistently running above this core measure. There is the additional accommodation that is being provided by the range of new lending facilities we had put in place. The extra accommodation is appropriate to offset the large degree of restraint still being exerted from financial markets, and our expansion of the swap lines and the TAF adds to this accommodation. Furthermore, in the event of a nonlinear

step-down in economic activity, as in the Greenbook forecast, our policy responses can be adjusted appropriately because we're well positioned now for that.

On the price side, on balance, the recent news has been good. My forecast has core PCE inflation falling to just under 2 percent in 2010 largely because of the increasing resource slack in the economy. However, I think there are substantial upside risks to this outlook. All of my business contacts have noted how high and rising energy and commodity prices are creating cost pressures that many are passing on to their customers. As Dave Stockton mentioned, with his inflation catechism, without reviewing the past transcripts I will speculate that we have been projecting a leveling-out of energy prices since the price of oil was \$70 a barrel. Weak domestic demand may limit the degree to which producers can pass through these higher costs, but it is unlikely to prevent noticeable increases in some downstream prices. The depreciation of the dollar also imposes risks even beyond the effects operating through the commodity price channel. Now, I do agree that labor costs have not been cited as a problem for inflationary pressures, and so that does add somewhat to trimming out the risks there.

Inflation expectations were also an issue. No matter how often we say that core inflation is a more reliable measure of underlying inflationary tendencies, I find it difficult to believe that the public's inflationary expectations will not be affected by large and persistent increases in food and energy prices. The past five years have been unkind on this score. On average over this time, higher food and energy prices have pushed total inflation above core about ½ percentage point, and it is also sizable over the past ten years. Another challenge for inflationary expectations comes from our policy focus on the downside risks to growth during a time of rising headline inflation. Rightly or not, this could make the public question our attitudes toward inflation. We are accepting considerable inflationary risks when we hope that these concerns will disappear quickly with future

adjustments to policy that have not yet been signaled. How we balance these conflicting risks should be an important component of our discussion tomorrow. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Plosser.

MR. PLOSSER. Thank you, Mr. Chairman. In the Third District, there has been little change in economic activity since I reported in March. Business activity remained weak over the intermeeting period but no more or less than anticipated and than we reported in our March meeting. Manufacturing activity, residential construction, and employment remained modestly weak in the District. Retail sales were also sluggish.

Our staff's coincident indicators of economic activity, which summarize our regional data, show a decline in activity in Pennsylvania and Delaware but moderate growth in New Jersey in March and, on average, for the last three months. Overall, our firms are not very upbeat about near-term growth; and like many forecasters, they have revised downward their expectations since the start of the year. For example, in response to a special question in our business outlook survey, the number of manufacturers saying that current demand for their products fell short of what they had expected at the start of the year exceeded those who had underestimated demand. More firms have decreased their capital spending plans, with 10 percent indicating that they either delayed capital spending or postponed it indefinitely. While growth in the District has been weak, price pressures facing our firms and consumers have intensified. Area manufacturers continue to report higher production costs, and the percentage of firms raising prices on finished goods is larger than earlier in the year. The indexes of prices paid and prices received are near 20-year highs for our firms, and firms expect to see prices move higher over the next six months. These firms have a very pessimistic outlook for inflation.

Turning to the national outlook, I have revised down my growth forecast from what I submitted in January, as almost all of us have, but that revision occurred largely between January and March. There has been little or no change in my outlook since our March meeting. Compared with my January forecast, I now see real GDP growth coming in around 1.5 percent for 2008 and close to 2.6 to 2.8 percent in 2009–10. Overall, this is about ½ percentage point weaker for '08 than my January forecast, but there is little difference in my forecast for '09 and '10. The indicators that have come in since our last meeting have generally been in line with my March outlook. Certainly they have pointed to continued weakness, but not worse than I had expected. Although some strains in the interbank markets remain, they do not appear to have intensified, and our alphabet soup of targeted tools seems to be having at least modest beneficial effect, even if only psychologically.

I remain concerned, however, about inflation and our calibration of the appropriate level of the fed funds rate consistent with our goals. Inflation readings have abated marginally since our last meeting; but as the Greenbook suggests, there is reason to believe that this is a temporary reprieve and that the levels remained elevated—year-over-year CPI inflation was 4 percent in March, and year-over-year PCE inflation was 3.4 percent—well above their 2007 levels. As we have been noting, oil and other commodity prices continue to move up, and businesses and consumers continue to stress inflation as a concern. Near-term measures of inflation expectations have risen sharply. In the Michigan survey, one-year inflation expectations rose to 4.8 percent in April, up from 4.3 percent in March and 3.4 percent in December. Clearly, the greater media attention on inflation and the discussion among the public are bound to have some effect on expectations as time goes on.

I have some concerns and difficulty interpreting the measure in TIPS given the disruptions in financial markets right now. So I take those with a little grain of salt. Nevertheless, five-year,

five-year-ahead inflation compensation is 2.8 percent using the Board's measure. This is down a little from early March but is still higher than it was at the end of 2007. In fact, the instability of these measures of inflation expectations itself is a cause of concern for me. It may suggest that markets question our willingness to take actions consistent with sustained and credible price stability.

Now, we have often alluded to the idea that near-term weakness will help mitigate some of the inflation pressures. However, I would just like to remind us that this critically depends on inflation expectations remaining well anchored. I hope that going forward we can reinforce that conditionality of the statement about weakness helping us on the inflation side so that we do not perpetuate the notion that a stable Phillips curve is at work here and that a slowing economy will always lower inflation. I believe that the FOMC's commitment to price stability remains credible at this time, but just barely. I worry that we may be resting too much on our laurels, trying to talk a good game, but unwilling to take the actions necessary to support and sustain that credibility. As I have said before in this group, we must not wait until expectations have broken out because by then it will be too late. Inflation has been well above at least our implicit goal for a sustained period. As the Bluebook points out, core PCE inflation has been above 2 percent since 2004 every year, and is projected to be so again this year, and the projections are even worse for headline numbers, either CPI or PCE. If we continue easing or maintaining a real funds rate well below zero for a sustained period despite inflation well above our goal, can we really expect inflation expectations to remain anchored?

The Greenbook seems to think that we can. It assumes that the fed funds rate falls to 1.75 percent in June and remains there through the end of 2009. Given the inflation forecast, this means a negative or close to negative real funds rate for almost two years. Despite this, Greenbook

baseline inflation expectations remain reasonably contained, and inflation is projected to decline over the forecast period even as growth picks up toward trend. To put it kindly, I have serious reservations about that scenario. The Greenbook discusses an alternative simulation in which there is greater inflationary pressure. The estimated Taylor rule funds path in that is somewhat steeper than in the baseline. Inflation ends up higher at the end of the forecast period—the end of 2011 and 2012—than in the baseline. More progress on inflation will require obviously a steeper path, but even in this alternative simulation, inflation expectations only drift up. They do not become unhinged. If they did, I would expect the policy path to have to be considerably tighter in 2009.

Now, I know that talking about money in the context of monetary policy is not very fashionable these days. But I would like to note that the monetary aggregates as measured by M2 and MZM have exploded. Despite the flight to quality and the associated increase in the demand for money associated with that, M2 grew less than 5 percent during the fourth quarter of 2007. Since then, however, its growth rate has nearly tripled. In January it grew 8 percent on an annualized basis. In February after our rate cuts, it grew 18 percent, and in March it grew 13 percent. Growth rates of MZM are even worse over this interval—for the three months the annual rates were 14, 42, and 26 percent. Such rates suggest to me that there is substantial liquidity in the economy. While I don't really like the old  $P^*$  model and have had a lot of problems with it, at the back of the Greenbook the story it is telling is one of considerable inflation over the next couple of years.

Combined, the growth in the aggregates, the substantially negative real interest rates, and the fact that most versions of the Taylor rule call for a higher fed funds rate than we have currently heighten my angst about the outlook for inflation and our credibility. Market participants reacted to the incoming data by appreciably tightening their policy expectations—at least as implied by the

futures markets, as Bill Dudley pointed out—and that has had a negligible effect, certainly no negative effect, on markets or the economy more broadly. One interpretation is that the market participants have also become uncomfortable, as I have, with a fed funds rate that remains too low for too long. I take this as a healthy sign actually and one that we shouldn't ignore. Indeed, we may just wish to use it to our advantage. I will stop there, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Yellen.

MS. YELLEN. Thank you, Mr. Chairman. In looking at the latest Blue Chip forecasts for GDP growth, I noted that the range between the highest and lowest is among the largest on record. The 10 most optimistic forecasters are predicting over 2½ percentage points faster Q4-over-Q4 growth than the 10 most pessimistic ones. Such forecast dispersion is indicative of the unusually high degree of uncertainty that we are facing.

The Greenbook presents one of the most pessimistic economic forecasts; yet I find its recessionary projection quite plausible and see downside risks that could take the economy well below that forecast. Although I found it especially difficult this time to decide on the most likely outcome for the economy, I ended up submitting a forecast that shows somewhat more growth in 2008 than the Greenbook, even though we shared the same assumption concerning monetary policy this year. My forecast projects 2008 growth of ¾ percent. This averages no growth in the first half and 1½ percent growth in the second. The unemployment rate increases to just over 5½ percent by the end of this year, a bit lower than the Greenbook. In one critical area—namely, the adverse effects of financial sector developments on the real economy—I remain just as pessimistic as the Greenbook. Although the likelihood of a severe financial panic has diminished, the risks are by no means behind us. Moreover, credit conditions have turned quite restrictive. This credit crunch

reflects the drying up of financing both for markets that were important sources of business and consumer credit and from banks that are contending with capital-depleting losses and illiquid assets.

Among banks, the latest Senior Loan Officer Opinion Survey noted a clear tightening of lending standards, and my own discussions with bankers confirmed this point. They say they are carefully reassessing and significantly curtailing existing home equity lines of credit as well as unsecured consumer loans of all sorts. Banks are also clamping down on the provision of revolving business credit, even to very creditworthy customers. For example, the treasurer of Chevron, a highly rated oil company that, as you can guess given energy prices, has a very strong profit outlook, recently complained to me that banks were reluctant to extend even its credit line. Such reluctance is also evident for lending to students, consumers, and other businesses. The risk of a deepening credit crunch remains as a weak economy—especially with further sharp declines in housing prices—escalates credit losses, harms financial institution balance sheets, and causes them to scale back lending even further. My sense from our business contacts is that their perception of reduced access to credit is causing them to manage their firm's liquidity more carefully and is leading to some deferrals in capital spending projects as a precautionary measure. Certainly the mood is decidedly more pessimistic and cautious.

Amid the gloom of the credit crunch, I do see a possible silver lining in that it may amplify the effects of the fiscal stimulus package, and this is part of the reason that my forecasted downturn is a little milder than the Greenbook's. In particular, because of the credit and liquidity considerations, the latest fiscal package could well provide a bigger bang for the buck than the tax rebates in 2001. First, the current tax rebates are more directly targeted at lower-income households, which are more likely to be credit constrained and to spend the cash once it's in hand. Second, given the current tightening of credit availability, households will likely spend an even



greater fraction of the tax rebates than they did in 2001. Of course, there is considerable uncertainty about assessing the potential size of these effects. But over the next few months as the checks go out and the retail sales reports come in, we should get a pretty quick preliminary read on how things are shaping up.

Regarding inflation, the most worrying developments since we met in March have been the price surges for a wide variety of raw materials and commodities, especially the jump in the price of crude oil. From the U.S. perspective, this run-up in prices represents mainly a classic supply shock, which could threaten both parts of our dual mandate, although the decline in the dollar has slightly exacerbated the severity of the impact. Like the Greenbook, my forecast for inflation does take commodity price futures at face value and foresees a leveling-out of prices going forward. Although I must say, after four years of being wrong, I am beginning to feel like Charlie Brown trying to kick that football. The most recent core consumer price data have shown some improvement, and like the Greenbook, I'm optimistic that core inflation will subside to around 1¾ percent over the forecast period, assuming that the commodity prices do finally level off and compensation remains well behaved.

An interesting analysis by Bart Hobijn of the New York Fed as well as my own staff implies that, in an accounting sense, pass-through from the run-up in oil and crop prices may have boosted core inflation as much as 0.3 percentage point over the past two years. So a leveling-off of these prices could lower not only headline but also core inflation. My core PCE inflation forecast is a tenth or two lower than the Greenbook this year and next also because we assume lower pass-through of the dollar depreciation to non-oil import prices. We have been reexamining the data on this issue and find the evidence quite convincing that pass-through has been quite low recently—lower, for example, than embodied in the FRB/US model.

With respect to inflation expectations, market-based measures have now edged down. We took little comfort from this fact, however, because we had viewed the uptick in inflation compensation in recent months mainly as a reflection of a higher inflation risk premium and not a reflection of higher inflation expectations. I am also somewhat concerned that the median expectation for inflation over the next five to ten years in the Michigan survey has ticked up.

CHAIRMAN BERNANKE. President Fisher.

MR. FISHER. Mr. Chairman, I want to focus my comments today on what I have heard from my CEO contacts. With regard to my District, it continues to do well relative to the rest of the country, but it is not immune to the pathology that is afflicting the overall economy. Although still positive, economic growth and employment creation are slowing, and our manufacturers in the survey we just took are experiencing substantial price pressures. Seventy-one percent of our manufacturers in the survey report higher prices, and 65 percent are expecting input prices to be even higher six months from now.

Setting aside the 11th District, I spoke in depth to 31 CEOs nationwide. You have that list, Mr. Chairman, and I would like to speak to what I deduced from triangulating those conversations with what I read in the Bluebook and the Greenbook. Let me note that the focus of my conversations with these CEOs and CFOs was not what they have seen or what they are seeing now but how their behavior is likely to be affected going forward and how they are budgeting going forward. Distilling the inputs to their essence, it's clear that activity is likely to weaken further. Those 21 miles of 89-foot flat cars that haul lumber, Mr. Chairman, are now up to 22.6 miles. Inventories of unsold homes are clearly building, and that is important against the background that March is almost always a good month in the housing or home sales business. The CEO of Centex reports that this is the first down March he has seen, and he has been in the business since 1974. It

came down hard—20 percent. Consumer confidence is weak. Job insecurity is spreading. Companies are tightening their head counts. Banks are tightening credit standards, as we have discussed. According to the CEO of MasterCard, year-over-year retail sales to date in April—that is, ex-autos and ex-gas—were 2.2 percent, the lowest he has ever seen.

Citibank, Chase, Bank of America, and the other credit card purveyors are experiencing high delinquency rates and a significant slowdown in their revenues from credit cards, and Wal-Mart reports the “cascading” use of credit as a form of payment, as their CEO for U.S. operations put it. In short, the consumer-driven corrective credit cycle is prolonging the economic slowdown and vice versa. Consistent with this sustained headwind, we have revised downward the Dallas forecast and continued for longer our projection of economic “anemia” (we are not among the four that included the word “recession”) not only for '08 but also for '09, and we have revised upward, to the upper end, our sense of projected unemployment. Thus, from what I am hearing, from what I am reading, and from what we are getting from our analysis, I acknowledge the thesis of the presence of a negative feedback loop among GDP growth, employment growth, and credit market conditions.

I find more worrisome the reports I am receiving on expected price developments and behavior, and I see a feedback loop of another kind at work. Page 30 of the Bluebook notes, as I think President Plosser pointed out and President Evans referred to, that core PCE inflation has averaged more than 2 percent in every year since 2004 and is forecasted, as per David's earlier comments, as doing so again in 2008. What concerns me more is the left-hand panel in chart 1 on page 4 of the Bluebook that indicates that the staff's index of inflation expectations and uncertainty is now at the top of its range over the last decade. This is confirmed by my corporate contacts.

Something persistent and pernicious, Mr. Chairman, has been occurring on the inflation front and calling into question the credibility of our continued reliance on core measures.

Here is what I am hearing from my corporate contacts. I'm going to just mention a few because it is fairly consistent across the board. From the CEO of the largest retailer in the country, not to be named but located in Arkansas, [laughter] I reported last time that they are budgeting price increases on 10,000 items of a little over 5 percent in 2008. Yet his comment to me was, "Inflation is our number 1 concern, and it's escalating significantly." He added, "All the information we have points to an intermediate- and longer-term supply–demand problem, especially for food and any energy-dependent articles." By the way, that was verified by the CEO of Frito-Lay, who tells me that they are offsetting their input price escalation of 11 percent in 2008 by raising prices 9 percent effective last Sunday. He added that—and this is interesting in terms of the mindset—"We have to—otherwise we'll disappoint the Street, and in these markets no one can afford at this fragile time to do so."

The price pressures are less for clothing and nonfood items, but they are still there. I would like to use the example of JCPenney. JCPenney sells clothing to one-half of all the families in America, and 60 percent of their sales are apparel. The average price point for an apparel sale at that retailer is \$15. The leading source of apparel is China. According to Penney's CEO, increases in China's labor costs, changes in their labor rules, and the cost of fuel and of cotton fibers have led to significantly escalating price pressures. He says that they can eat some of those costs and drive them down through other offsets and tighter controls, but they are planning a 4 percent increase in apparel costs in 2009. Here is his punch line, and it is not funny—this is a first-rate CEO, one of the best in the country: "We think the customer can take a little more price. After all, what's 40 to 60 cents on \$15? It won't even be noticed."

This is the essence of the accommodation of inflationary expectations, and you are beginning to see this mentality set in in several industries. For example, the airlines. We talked about the increase in the price of crude. If you take what is called the crack spread and figure out what has happened in terms of jet fuel, year over year through mid-April jet fuel was up 70 percent. That's an industry average, mitigated somewhat by the hedging of Southwest Airlines, which has been successful. According to the CEO of American Airlines, "This oil is a tsunami. We will have to get some pricing power, or we'll be left with only one airline, Southwest." Kimberly-Clark, a paper producer, notices that the weaker dollar and oil are driving realized costs increasingly up from, in their case, \$250 million in '07 to an estimated \$600 million in '08. They have raised prices, as I have previously mentioned, but the CEO feels that—and this is a winner—"We are having to learn how to run a business in an inflationary environment. We got used to productivity as the driver, but we can't drive productivity any harder than we can. We will need more pricing."

It even affects semiconductor producers. Texas Instruments reports that the weakness of the dollar and the prices of energy, gold, and copper offset by their hedges added 2½ percent non-annualized to their costs in the first quarter. Asked what he envisions going forward, the CFO said, "Well, that just means we can't spend it elsewhere. We have to take it out of our employees' backs or out of cap-ex." One CEO of a company that is expecting soon to lay off between 12,000 and 15,000 people and is, therefore, carefully surveying the attitudes of their employees because they have a morale problem, is finding out that employees are tapping into their 401(k) plans or not funding them. In their surveys they find the leading complaint is that "the price of gasoline and food is eating into my living standards. I can't afford them." Last but not least, just to bring this home, the Eagle Scout who mows my lawn in Dallas sent me a very nice, beautiful letter. It is clear that he and his mother had prepared it on a printer and put a fancy title on it, but the rest of the letter

was, “Dear Mr. Fisher, I have to levy a 7 percent fuel surcharge.” [Laughter] We gave into it—he is a nice boy.

In summary, Mr. Chairman, while there are many who have voiced concern with the adverse feedback loop that runs from the economy to tighter credit conditions and back to the economy, I am very troubled by a different adverse feedback loop—namely, the inflation dynamic whereby reductions in fed funds rates lead to a weaker dollar and upward pressures on global commodity prices, which feed through to higher U.S. inflation. That higher U.S. inflation not only has a price impact but also leads to cutbacks by consumers and by employers so as to offset the effects of inflation. I am worried that, if we do not respond to higher inflation, the whole cycle will intensify. When economic growth and activity return to normal, inflation is likely to have notched up considerably, according to our sense. I know my respected colleagues say that we are willing to be equally aggressive in raising rates once the outlook for real activity improves, but the practicability of that notion I find in talking to my interlocutors is met with some skepticism and doubt.

With that, Mr. Chairman, I see a tail risk on the downside of growth. I acknowledge the argument of President Yellen and others. I think I’m sympathetic, but I see a fatter tail, perhaps an otter’s tail, on inflation. I am hearing this loud and clear from my corporate contacts. I believe that the risk posed by inflation is more significant than the extension of further anemia in the economy, especially now that we have put in place innovative liquidity bridging mechanisms, which we are amplifying upon today. Mr. Chairman, the other day Governor Kohn reminded me that reasonable people can disagree, and he quipped that he hoped that we could agree on the following—that we are at least reasonable people. [Laughter] I’m doing my very best, I hope, to provide reasonable alternative perspectives, and I hope you will judge me on that basis. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. That made me dizzy. [Laughter] President Rosengren.

MR. ROSENGREN. Thank you, Mr. Chairman. Without judgmental adjustments, the Boston Fed forecast is somewhat more optimistic than the Greenbook. As in the Greenbook, our GDP is weak in the first half of this year, though neither of the first two quarters actually turns negative. Our slightly more optimistic forecast assumes that consumption and business fixed investment are weak, but not as weak as in the Greenbook, and then the fiscal and monetary stimuli are sufficient for the economy to pick up in the second half of this year. In a sense, the Greenbook represents another mode in the forecast distribution with probability roughly equal to our forecast. The big risk to our forecast is that the financial turmoil and housing price declines, which are not fully reflected in the Boston model, result in a greater drag on the economy. Such an outcome would largely close the gap between the Greenbook and our forecast. In short, the downside risks to our forecast are appreciable. With a monetary policy assumption similar to the Greenbook's, we have core PCE below 2 percent in 2009, but the unemployment rate remains well above the NAIRU even at the end of 2010. If we sought to keep inflation below 2 percent but did not want an extended period in which the unemployment rate was above the NAIRU, our model would require more easing than currently assumed in the Greenbook.

Since the last meeting, the economic data have remained weak. Private payroll employment declined by approximately 100,000 jobs on average over the past three months, and the unemployment rate increased 0.3 percentage point. In addition, the labor market weakness was widespread across industries. Such labor market weakness is likely to aggravate an already troubling housing story. To date, falling housing prices have disproportionately affected subprime borrowers and those who purchased securitized products. However, if housing prices continue to decline rapidly, that will begin to affect more prime borrowers and a wide array of financial

institutions. Smaller financial institutions that were largely unaffected by the financial turmoil last August are beginning to see increases in delinquencies, and those with outsized exposures in construction loans are now experiencing significant duress. Commercial real estate loans are also now experiencing increased delinquencies. Like the Greenbook, I am concerned that commercial real estate may be the next sector to experience problems. However, the biggest concern remains that rising delinquencies and falling housing prices cause a much higher rate of mortgage defaults than we have experienced historically. Should these mounting problems become more pronounced, we are likely to see credit availability for small- and medium-sized businesses affected. That sector has not to date been significantly affected by the financial turmoil.

Many financial indicators have improved since the last meeting, as was highlighted in Bill's report. The stock market has moved up. Many credit spreads have narrowed. Treasury securities and repurchase agreements are trading in more-normal ranges, and credit default swaps for many financial firms have improved. Nonetheless, several ominous trends remain in financial markets. The LIBOR–OIS spread has widened, so borrowers tied to LIBOR rates have seen those rates rise more than 25 basis points since the last meeting. Similarly, the TAF stop-out rate in the last three auctions was higher than the primary credit rate, providing another indicator that banks remain in need of dollar term funds. Finally, the asset-backed commercial paper market is once again experiencing difficulties. Rates on asset-backed commercial paper have been rising, and there is a risk that more of the paper will end up on bank balance sheets. Higher food and energy prices are both a drag on the economy and a cause for concern with inflation. But despite the extended sequence of supply shocks, I do not see evidence that inflation expectations are no longer anchored. Labor markets do not indicate that the commodity price increases are causing wage pressures, and such pressures are even less likely if the unemployment rate continues to increase. Many of the



financial indicators of inflation, such as the five-year-forward rate, have fallen significantly from their peaks earlier this year. Finally, core PCE over the past year has been 2 percent, and most econometric-based forecasts expect that the weakness we are experiencing should result in core and total PCE inflation at or below 2 percent next year. Overall, the downside risks to demand that I listed in the outset seem the more compelling cause for concern. Thank you.

CHAIRMAN BERNANKE. Thank you. President Lockhart.

MR. LOCKHART. Thank you, Mr. Chairman. Our high-level view of current circumstances is that the real economy is quite weak, with weakness widespread. The financial markets are turning optimistic, and elevated prices and inflation remain a serious concern. Reports from our directors and District business contacts were broadly similar to the incoming national data and information from other Districts reported in the Beige Book. Observations from such District input support themes in the national data—for example, employment growth is quite weak. In this round of director reports and conversations, I heard an increasing number of reports of holds on hiring and expansion plans. One representative of a major retailer of home improvement goods reported that hiring for seasonal employees will be down 40 percent this spring. This translates to approximately 45,000 jobs. Nonresidential real estate development continues to slow in the District, especially in Florida and Georgia. Of the 18 commercial contractors contacted in April, 15 expect that commercial construction will be weaker for the rest of 2008 than for the same period in 2007, with several predicting even more pronounced weakness in 2009. On the brighter side, Florida Realtors are anticipating that sales over the next few months will exceed year-ago levels, and builders are signaling less weakness than in recent reports. This is a level of optimism we have not heard from Florida for some time. However, housing markets in the rest of the District continue to weaken. We heard several complaints that obtaining financing is a serious problem for

commercial and residential developers and consumer homebuyers. In sum, the information from the Sixth District seems to confirm what I believe is the continuing story of the national real economy captured in the Greenbook—that is, shrinking net job creation, developing weakness in nonresidential construction, and a bottom in the housing market still not in sight.

In contrast, conditions in the financial markets appear to have improved substantially. As has been my practice, I had several conversations with contacts in a variety of financial firms. There was a consistent tone suggesting that financial markets are likely to have seen the worst. This does not mean that no concerns were expressed. Some contacts had concerns about European banks and credit markets, and concern about the value of the dollar, notwithstanding the recent rally, is coming up in more contexts. Concern was expressed about the dollar's disruptive effect on commodity markets, in turn affecting the general price level—in particular, the effect of high energy prices on a wide spectrum of businesses' consumer products and even on crime rates in rural and far suburban areas related to the theft of copper wiring and piping from vacant homes and air conditioning units. I worry that a narrative is developing along the lines that the ECB is concerned about inflation and the Fed not so much. This narrative encourages a dollar carry trade mentioned, again, by some financial contacts that puts downside pressure on the dollar that potentially undermines both growth and inflation objectives. I remain concerned about the vulnerability of financial markets to a shock or surprise, but overall, my contacts express the belief that conditions are improving. The Atlanta forecast submission sees flat real GDP growth in the first half of 2008, with gradual improvement in the second half. We continue to believe that the drag on economic activity from the problems in the housing and credit markets will persist into 2009.

On the inflation front, I am still projecting a decline in the rate of inflation over this year. I've submitted forecasts of declining headline inflation in 2009 and 2010, but I should note that my

staff's current projections suggest that improvement to the degree I would like to see may require some rises in the federal funds rate. It is my current judgment that, with an additional 25 basis point reduction in the fed funds rate target, policy will be appropriately calibrated to the gradual recovery of growth and the lowering of the inflation level envisioned in our forecast. This judgment is based on the view that, with a negative real funds rate by some measures, policy is in stimulative territory; that a lower cost of borrowing in support of growth depends more on market-driven tightening of credit spreads than a lower policy rate; that further cuts may contribute to unhelpful movements in the dollar exchange rate; and that extension of the four liquidity facilities may allow us to decouple liquidity actions from the fed funds rate target. In my view, we are in a zone of diminishing returns from further funds rate cuts beyond a possible quarter in this meeting. That said, as stated in the Greenbook, uncertainty surrounding the outlook for the real economy is very high, and the Committee needs, in my view, to preserve flexibility to deal with unanticipated developments.

Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. The economy of the Eighth District continues to show signs of weakness. The services sector has continued to soften, and sales of both general and big box retailers are down from the same period last year. The residential real estate sector has continued to decline throughout the District. Across major metro areas, sales were about 15 percent below the level from last year, and single-family permits were down about 30 percent. Employment growth has slowed and is estimated to have turned negative in March for many areas. Typically, however, employment growth in the District has been stronger than that for the United States as a whole. Manufacturing has remained roughly flat, despite temporary shutdowns that have affected domestic automobile production. Also, commercial real estate construction remains strong, and

vacancy rates are low; however, there are increases in the number of delayed projects. Banks in the District are still in good shape, generally speaking. There have been modest increases in total loans in all categories, including real estate.

Contacts in the shipping and trucking industries reported a mixed bag. In some instances, business seems to be holding up, whereas in others it is down substantially. These businesses are being critically affected by increases in energy prices. Similarly, a contact in the fast food industry painted a picture of a business struggling with substantial increases in commodity prices. On the other hand, a contact in a large technology firm indicated that business is holding up quite well, in part because a large fraction of this firm's business is overseas. Contacts in the energy sector reported robust business prospects, as expected. A contact at a large financial firm suggested that the discovery process concerning asset-backed securities, which has been ongoing for many months, has effectively come to a close. The idea that the discovery process—and the considerable macroeconomic uncertainty that attended that process—is over is an important consideration at this juncture. My sense is that expectations of future economic performance are changing rapidly. The probability that the U.S. economy will enter into a debilitating depression-like state has fallen dramatically.

In the meantime, other risks have increased markedly—in particular, that the FOMC will lose credibility with respect to its inflation goals. The U.S. economy has certainly encountered a large shock. Monetary policy can mitigate the effects of a large shock but cannot be expected to completely offset exceptional disturbances. Attempts to do too much may create more and more dangerous problems in the future. Best-practice monetary policy would do well, it seems to me, to avoid setting the stage for future problems.

The problems with the rate structure, which is too low, are threefold. First, there is the risk of setting up a new bubble. The exceptionally low rates of a few years ago are sometimes cited as providing fuel for today's problems. Some have argued that today's commodity price increases are exactly that new bubble. Second, continued unabated reductions in interest rates will bring the zero bound issue into play with unknown consequences. Third, still lower rates will push the envelope further on inflationary expectations. Those expectations may appear to be reasonably well anchored today, but that is because the private sector expects us to take actions to keep inflation low and stable. Should those expectations become unmoored, it will be too late, and an era of higher and more volatile inflation would be very costly for American households. Much has been done already. A low rate environment has been created and has been in place only for a short time. Marginal moves at this juncture are minor compared with the general thrust of policy over the last nine months. The Committee would do much better at this meeting by taking steps to address eroding credibility. Thank you.

CHAIRMAN BERNANKE. Thank you. Why don't we take a break for coffee and return at 4:45. Thank you.

[Recess]

CHAIRMAN BERNANKE. Why don't we reconvene. President Pinalto, whenever you are ready.

MS. PIANALTO. Thank you, Mr. Chairman. Regardless to whom I talk with these days, the conversation quickly turns to both the fragile condition of financial markets and the spectacular rise in energy and commodity prices. I had hoped that one of these problems would have gone away by now, but clearly that is not how conditions have unfolded since our last meeting. The bankers with whom I talked are paying close attention to their capital and liquidity positions. They

remain concerned about wide bid–asked spreads and low trading volumes in a broad array of securities markets. Indeed, the repercussions of financial turmoil appear to have touched every channel of credit intermediation. It appears that a rewiring of credit channels is simply going to take some time to work out.

The most significant financial news coming out of the Fourth District is the \$7 billion investment of new capital into National City Bank. National City is the country's tenth largest commercial bank, and its problems with mortgage-related credits are now well known. National City still has much work to do to clean up its balance sheet, just as many other financial institutions with impaired capital positions must do before they can stand on solid ground again. Although the fragile state of the financial sector represents a pretty sizable risk to my economic outlook, the National City situation, along with other stories I'm hearing, suggests that modest progress is being made.

With regard to District business conditions, the stories I hear remain downbeat. Commercial builders are reporting mixed though generally positive first-quarter numbers. But their expectations for retail sales in the stores that they lease out across the country have deteriorated, and they are fairly pessimistic about 2008 growth prospects. One large national commercial developer whom I talked with told me that, for the first time in his 45-year career, his company has seen sales declines in March in every retail center that they own across the country. The manufacturers I talked with indicated moderate first-quarter revenue growth as export markets, especially in Asia and Eastern Europe, are still helping to sustain production despite weak domestic demand. At the same time, manufacturers report intense commodity price pressures, and they report little resistance as they attempt to pass along the rising cost of commodities to their customers.

The projection I submitted for this meeting shows real GDP growth under 1 percent in 2008, with virtually all of that growth coming in the second half of the year. This is a decidedly more pessimistic projection than the one I submitted in January but not materially different from the outlook when we met just six weeks ago. I have, however, boosted my headline inflation projection for 2008 compared with what I submitted in January, and it is somewhat higher than what I was estimating when we met in mid-March. Although I am still projecting that the slack in the economy will be sufficient to bring the core inflation number under the 2 percent threshold sometime next year, I am now anticipating a little more pass-through of commodity prices into core measures than I thought probable six weeks ago. Indeed, every time I see commodity prices ratcheting up, I become less confident that slack alone will be able to prevent an upward drift in the inflation trend. To be clear, I think the downside risks that we face in the real economy remain substantial, and I am inclined to believe that some insurance against those risks is probably warranted. But in taking such a step, I am inclined to judge that the downside risks we face in the real economy will be roughly in balance with the upside risks that we face from a rising inflation trend. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Hoenig.

MR. HOENIG. Thank you, Mr. Chairman. Economic activity continues to be slow in the Tenth District with a soft tone in our residential and nonresidential construction and certainly in our retail sales. Mitigating this weakness, however, to some extent is continued strength in energy and agriculture exports and, to a lesser degree, manufacturing. With regard to exports, one interesting development is a shortage of shipping containers domestically and internationally that is limiting the volume of exports of both our agricultural and some of our manufacturing products. On balance though, the District activity continues to be stronger than the national economy, and this is reflected in better employment growth and firm labor markets in many parts of our region.

In my recent discussions with directors at our Bank and in our Branches and the Economic Advisory Council members, several themes have been prominent. Concern about inflation has escalated to the highest level I've been involved with in the last decade. Businesses across the board are experiencing the largest input cost pressures in recent memory for them. Many businesses have not been able to absorb these cost pressures and have raised prices to both retail and business customers, and generally speaking, businesses are finding much less resistance to price increases than in the past. Businesses also report that suppliers are increasingly reluctant to make contractual price quotes very far in the future.

We have also been monitoring the effects of credit availability on business capital spending in our area. Although businesses report some tightening of credit conditions, credit costs and availability are not the primary factors behind reduced capital spending plans. Bank loans have actually continued to grow. Instead, businesses cite uncertainty about the economic outlook as the main impediment to investment. They are in a wait-and-see mode. So spending is being held back not for financial reasons but just caution. Indeed, they suggest that uncertainty about whether monetary policy will be eased further is a factor currently inhibiting their capital spending plans. They want to see when we're done.

Turning to the broader economic output and the national economy, I have revised down my growth estimate for the first half of 2008 but have had few changes to my longer-term outlook. Compared with the Greenbook, I see somewhat stronger growth this year and somewhat weaker growth next year. Weaker growth in the first half of this year is coming largely from the effects of higher energy prices on consumer and business spending coupled with the continued weakness in residential construction. I would say that the effect of high energy prices is now about as large as or even larger than the contraction in residential construction, and I think that the energy outlook



constitutes a main downside risk to growth in the period ahead. In contrast—and contrary to the Greenbook and the views of some—I think that energy and housing perhaps now more than credit problems are holding back economic growth. Certainly credit conditions have continued to tighten as reflected in the April Senior Loan Officer Opinion Survey, and markets for many asset-backed securities, of course, have shut down. But the availability of credit for good business and household borrowers does not appear to have really been restricted that much. They are pricing more wisely for risk, and that is probably a positive. Consequently, the downside economic risks from a pronounced credit contraction appear to have diminished considerably over the past few months.

I want to turn to inflation. In my view, the inflation outlook has worsened considerably. For the first time in many years, we are seeing significant inflation pressure from goods prices, especially imported goods prices. Moreover, the recent moderation in monthly inflation numbers is coming mainly from some softness in service prices, which in my opinion, is unlikely to continue. More optimistic views of inflation, including those in the Greenbook, rely heavily on economic slack and a turnaround in food and energy prices to improve the outlook. I am skeptical on both counts. I do not think that there will be as much slack generated in the current slowdown as does the Greenbook, and there is evidence that the effects of output and employment gaps on inflation have fallen, well, actually more than a little over the past two decades. Furthermore, I have not seen any indication that elevated energy and food price inflation is likely to dissipate soon, as many of these pressures are reflective of international economic developments that we have talked about here, including the weakness in the dollar.

I believe that we are entering a dangerous period, if I can use that word, in which inflation expectations are beginning to move higher and inflation psychology is becoming more prominent in business decisions. In this regard, I also do not take much comfort from favorable readings of labor

costs as wages tend to follow prices in my experience. In these circumstances, I am concerned that maintaining a highly accommodative policy stance for an extended period would greatly increase the likelihood that inflation exceeds our long-run objectives. Thank you.

CHAIRMAN BERNANKE. President Lacker.

MR. LACKER. Thank you, Mr. Chairman. Fifth District economic conditions softened further in recent weeks. Following a pop-up in March, our manufacturing contacts said that factory activity lost momentum in April. Services firms that we surveyed again reported tepid growth in their revenues, and retail sales continued to be very weak. In real estate, the story is mixed. Our housing markets continue to post generally slow sales, but recent anecdotes suggest some scattered firming. Realtors and others indicate that Northern Virginia and Maryland have seen a spring bounce in sales in recent weeks. One Realtor said that a factor supporting sales is that sellers now seem more willing to come off 2006 prices. The Charlotte market has also seen a spring bounce. Coastal areas in the Carolinas, hard hit until recently, are said to be more active lately. Of course, it is hard to know what these anecdotes mean on a seasonally adjusted basis, and contacts caution that it is too soon to call the bottom. In contrast, home sales are weakening in many other areas of the Carolinas, where markets had posted sales and price gains well after the national market had turned down. Residential construction in nearly all areas continues to weaken. On the commercial real estate front, conditions have softened somewhat, although in D.C. proper, commercial rents are firm and vacancies are low. Commercial construction activity is broadly softening.

My reading of the national report since the last FOMC meeting is that the real outlook has not changed much. In particular, we still appear to be in a recession. Payroll employment has continued to decline, falling an average of 77,000 per month in the first quarter. Unemployment is rising, although it is still relatively low. Nonresidential construction is weakening, and the falloff in

architectural billings is particularly discouraging. Other business investment has been soft as well. Consumer spending, like business spending, appears to have slowed to a crawl. The length and depth of the recession are likely to depend on stabilization in the housing market. The sharp decline in home construction has continued unabated, and outside of the one-month tick-up in the brand new, as yet untested, monthly home-price index from OFHEO, there's no sign of any bottoming in any of the national data on housing. Having said that, I noted earlier some scattered reports of a seasonable pickup in home sales. So there's a chance, perhaps only a slim one, that we'll see some stability in markets this summer.

Concerns are often voiced about the possibility of broad spillovers from financial market conditions in the form of sharply tightening credit conditions for households and businesses. But if we look past the drama in wholesale markets and the end-user credit markets that gave rise to it (in housing and buyout financing), evidence of such spillover is hard to come by, at least so far. It is true that delinquencies have risen across a broad class of credits—commercial real estate, C&I loans, and auto and credit card portfolios, for example—and lenders are reporting tightening terms across many of these borrower classes. But that is generally what happens in recessions: Spreads widen and credit flows fall because many consumers and firms become genuinely riskier. So far, delinquency rates and credit spreads faced by consumers and firms appear to be well within the bounds of what happened in past credit cycles.

More broadly, recent experiences have revealed important new information about the efficacy of some prominent financial market mechanisms—information that is, in turn, affecting the current behavior of financial market participants. Auction-rate securities, for example, seem to have worked well for decades because investors attached relatively low probability to contractual clauses that reset their rates and prevented their exit. Reaching those clauses has naturally caused investors

to update their estimates of the probability of reaching those clauses, and the result has been much less—in fact, virtually nil—demand for those securities. Similarly, recent experience has brought dramatic revelations about the informativeness or lack thereof of credit agencies' ratings of asset-backed securities. Its revelations would seem to warrant fairly dramatic shifts in investor portfolios, just as a matter of Bayesian updating. These changing expectations in light of recent information revelation are just as much a change in fundamentals as the invention of the light bulb.

Spreads in interbank markets certainly are elevated, of course, but one fundamental factor here is the continuing uncertainty about the severity of looming losses on mortgage-backed securities. Another fundamental factor is the demand for term funding by European banks about which uncertainty remains regarding mortgage-related losses that may be imminent. Those sources of uncertainty will persist as long as uncertainty about the bottom of the housing cycle persists.

At our March meeting I had strong concerns about inflation, particularly the increase in five-year, five-year-ahead inflation compensation and the rising trend in overall inflation. Since then we received more-moderate inflation numbers for February, and five-year, five-year-ahead inflation compensation has backed off as well. Although I still believe that these TIPS spreads are too high to be consistent with stable, long-run inflation below 2 percent, it's heartening to see them come down following our March meeting. It seems reasonable to infer that the improvement in inflation expectations occurred because of the unanticipated emphasis on inflation risks in our statement and the 25 basis point surprise on the funds rate. That response, however, confirms for me the hypothesis that the previous erosion in expectations was caused largely by the aggressiveness of our January policy actions. I believe that substantial risks for inflation and our credibility remain. The Michigan survey number for 12-month-ahead inflation expectations popped up to 4.8 percent, a relatively large number. The March CPI was again too high, and further increases in food and

energy prices in recent weeks will continue to press headline inflation upward. Persistently high headline numbers could become ingrained in household and business decisionmaking. I believe the risk remains that cutting the funds rate again will have undesirable effects on inflation expectations. The real federal funds rate using the Greenbook's forecast of overall PCE inflation is now between minus  $\frac{1}{2}$  and minus  $\frac{3}{4}$  percent. That seems like plenty of stimulus for now. Thank you.

CHAIRMAN BERNANKE. President Stern.

MR. STERN. Thank you, Mr. Chairman. Well, for some time I have been using the headwinds period of the early 1990s as a frame of reference for thinking about credit conditions, economic growth, and inflation prospects for the next several years. I won't belabor that comparison much this afternoon, except to say that I continue to find it helpful. With that, and given that the information we have received since our March meeting hasn't caused me to change my views about financial conditions or about growth, let me just say that I continue to expect financial headwinds of some intensity to persist well into next year. I think that the economy will decline—contract in this quarter and in the next quarter—before growth resumes, and that the resumption will initially be fairly mild. So my outlook for economic growth next year is below that of the Greenbook. It is a pretty modest outlook.

Recent anecdotes from business contacts and from people in financial services firms have not been what I would call overly negative. If I were to give those anecdotes more weight, I would probably be somewhat more optimistic about the economic outlook than I am. But I am guessing that those anecdotes are underestimating the weight of the credit constraints that are in train, and people—at least people that I have talked to—don't fully appreciate that yet.

Turning to inflation, on average it seems to me that the inflation situation and its prospects are no better, and possibly worse, than I had been anticipating. To be sure, the core

measures of inflation have not accelerated recently and look to be what I might call close to acceptable, looking at their recent performance. But we have been warned that some of that better performance is likely to prove transitory. Meanwhile, headline inflation has been elevated and has tended to surprise on the upside. Moreover, I worry that the persistence of sizable increases in energy and general commodity prices will have a more pronounced effect on core inflation going forward than they have in the recent past. Further, I have the sense, both from some estimates of inflation expectations and from the comments and questions I have been getting about inflation and the foreign exchange value of the dollar, that the public's conviction about monetary policy's willingness and ability to maintain low inflation is starting to waver. Thank you.

CHAIRMAN BERNANKE. Thank you. Vice Chairman Geithner.

VICE CHAIRMAN GEITHNER. Thank you, Mr. Chairman. In terms of markets, Fed credibility, and negative surprises on the data relative to our forecasts, I think this has been the best intermeeting period in a long time. The markets reflect increased confidence that policy will be effective in mitigating the risks both of a systemic financial crisis and of a very deep, protracted recession. We have seen a substantial upward movement in the expected path of the fed funds rate and in real forward rates, significant diminution in the negative skewness in fed funds rate expectations, and a significant move down in a range of different measures of credit risk premiums, and markets have been pretty robust despite bad news over the past few weeks or so. Medium- and long-term expectations in TIPS have moved down, and we have had a very important and substantial additional wave of inflow of equity into the financial system.

Our forecast, though, is roughly the same as it was in March, and it is broadly similar to the path outlined in the Greenbook. We expect economic activity to follow a path somewhere

between the last downturn—a relatively mild downturn—and that of 1990. We expect underlying inflation to moderate somewhat over the forecast period to something below 2 percent. We see the risks to the growth forecast still skewed to the downside, though somewhat less so than in March, and we see the risks to the inflation outlook as broadly balanced. Uncertainty around both paths, though, is unusually high.

I want to make four points. First, on economic growth, again, I still think we face substantial risk in this adverse self-reinforcing interaction among falling house prices, slower spending, and financial headwinds. Even with the very substantial adjustment in housing construction that has already occurred and even if demand for housing stays stable at these levels, we still have several quarters ahead of us before the decline in housing prices starts to moderate. A further falloff in aggregate demand during this period would raise the prospect of a much larger peak-to-trough decline in housing prices, with higher risk of larger collateral damage to confidence, spending, credit supply, et cetera. Weakness, as the Chairman has reminded us several times over the past few years, tends to cumulate and spread in these conditions, and weakness may only just be beginning outside of housing. The saving rate here may have to rise substantially further. The world is behind us in this cycle, and it is likely to slow further, diminishing potential help from net exports going forward.

Second, financial conditions are, I think, still very fragile. The financial system as a whole still looks as though it is short of the capital necessary to support growth in lending to creditworthy households and borrowers. Parts of the system still need to bring leverage down significantly. Liquidity conditions in some markets are still impaired; securitization markets are still essentially shut. I think the markets now reflect too much confidence in our willingness and ability to prevent large and small financial failures. We are going to disappoint them on the

small ones, which may increase the probability they attach to the large. At least I hope we disappoint them on the small ones.

Third, I think the inflation outlook, as many of you have said, still has this very uncomfortable feel to it—very high headline inflation, very high readings on the Michigan survey, and the dollar occasionally showing the spiral of feeding energy and commodity prices and vice versa. I sat next to Paul Volcker when he gave his speech in New York the other day, and he said that the world today feels as it did in the 1970s. I was alive in the 1970s, but only just. [Laughter] But I think it is better than that. It has to be better than that. Core has come in below expectations. David is not going to explain all of that away by these temporary, reversible factors. You have all acknowledged that there is somewhat of an improvement in inflation expectations at medium-term horizon. It is very important that you have not seen any material pressure in broad measures of labor compensation. Profit margins are coming down, but they are still unusually high. The path of output relative to potential, both here and around the rest of the world, is going to significantly diminish pressure on resource utilization going forward even if you have other forces that push up demand for energy and food secularly. I think it is worth remembering that we had a very, very large sustained relative price shock in the years preceding this downturn, with very little pass-through to core inflation. In fact, in many ways, core inflation moderated over that period with output to potential much tighter.

Fourth, on monetary policy, it seems to me that we are very close to a level that should put us in a good position to navigate these conflicting pressures ahead. What matters for the outlook is the relationship between the real fed funds rate and our estimates of equilibrium. Although we can't measure the latter with any precision, those estimates of equilibrium have to be substantially lower than normal because of what is happening in financial markets. The



Greenbook and Bluebook presentations suggest that the real fed funds rate now is about at equilibrium. You can look at it through a number of prisms and see some accommodation—see the real fed funds rate somewhat below equilibrium now. We won't know the answer until this is long over. I think that we are probably now within the zone where we are providing some insurance against the risk of a very bad macroeconomic financial outcome without creating too much risk of an inflation spiral. We should try for an outcome tomorrow in our action and in our statement that is pretty close to market neutral.

One final point about the future. What strikes me as most implausible in our forecast in New York, and I think in the average of our submissions, is the speed with which we expect to return to growth rates that are close to estimates of long-term potential. A more prudent assumption might be for a more protracted period of below-trend growth for a bunch of familiar reasons. I don't know if that is the most likely outcome, but it is a plausible and realistic outcome. I don't think we should be directing policy at trying to induce an unrealistically quick return to what might be considered more-normal growth rates over time. Thank you.

CHAIRMAN BERNANKE. Thank you. Governor Kohn.

MR. KOHN. Thank you, Mr. Chairman. My forecasts of output and inflation for this and the next two years are in the central tendencies of the Committee forecasts. My Okun's law machine went haywire under the pressure of Debbie's deadline, [laughter] so my unemployment forecasts need to be revised. But I hit the 5:00 deadline, I think. I have stronger growth in 2008 than the Greenbook because I was hesitant to adopt the staff's assumption about persistent, serially correlated downside misses relative to fundamentals in consumption and investment implied by entering a recessionary period when we haven't seen those misses yet. But I didn't discount this possibility entirely, reasoning that the extraordinarily depressed business and

household sentiment was significant. I came out between the Greenbook baseline and the “near-term upside risk” alternative scenario.

Despite slightly stronger growth than in the Greenbook, I have roughly the same headline and core inflation paths that are declining gradually through the next few years. I took some slight encouragement from recent better readings on core. I reasoned that flat commodity prices would reverse any recent tendency for inflation expectations to rise, and I anticipate that vacant housing units will continue to put downward pressure on rent increases.

I have a couple of observations on the outlook. First, I think the expectation of improving financial conditions is critical to the favorable medium-term outcome for the economy that President Geithner was just talking about. We don't really know what the current state of overall financial conditions is and how spending is likely to respond to them. Directionally, I think we can say that the severe deterioration that was much in evidence around the time of the last meeting has stopped, as concerns about an even more generalized set of failures—the seizing up of markets and lending—have abated with our actions and with successful capital-raising by intermediaries. We have seen improvements in many segments of the markets, but continued deterioration in term funding suggests to me that there are continued worries about and pressures on credit availability, and credit availability and the cost of credit will be under some pressure as credit is re-intermediated through the banks. Even with some of the recent gains, markets are still fragile and impaired. Spreads have retraced only a small portion of the run-up since last summer. I noticed in Bill's charts that most of those spreads are back down to, say, those in January; and in January, we thought the markets were pretty impaired. So they are still very, very high by historical standards. Mortgage securitization markets away from GSEs remain broken. There are problems in some other securitization markets, including CMBS. A number

of intermediate- and longer-term interest rates are still higher than they were before the crisis hit in August. Baa corporate bonds, which is about the median borrower rating for a corporation, long-term muni bonds, and prime jumbo mortgages are all higher than before we did any easing. Nonprice terms and standards are being tightened considerably, judging in part from the Senior Loan Officer Opinion Survey, and I think that process is likely to continue for a while.

To be sure, short-term interest rates are a lot lower than they were in August. But I suspect that a continuation of current conditions would not be consistent with much of a pickup in growth and an eventual return toward full employment. This is a circumstance in which relationships between the federal funds rate and other measures of financial conditions have changed very, very substantially, and characterizing the stance of policy and financial conditions by looking at some measure of the real federal funds rate can be quite misleading in these circumstances. I think we need to be careful about how we characterize and think about the stance of policy. The sense that it is neutral right now, much less accommodative, depends very much on our expectations of substantial increases in risk-taking in financial markets. Now, I do think that the most likely path is improving financial market conditions, lower spreads, reopened securitization markets, and stabilization and maybe partial reversal of some of the tighter terms that have evolved. But this process is going to be slow. Until the housing market shows more signs of stabilizing, it is more likely to be subject to backsliding than to sudden unexpected improvements.

A corollary to this line of thinking is that there isn't a lot of ease in the pipeline in the conventional sense. Our reductions in the fed funds rate have not eased financial conditions. They have kept them from tightening even more than they would have done otherwise. The lagged effects of policy easing come from improvements in financial markets. That is, as we

look forward, the lagged effects of policy easing come from the improvements in financial markets that allow the reductions in the actual and expected paths of short-term rates to show through to the cost of capital more broadly defined. This is a longer and more nuanced process than the usual rules of thumb about seeing the effects of ease on output after X quarters and inflation after Y quarters.

My second point about the outlook is that the risks around my forecast for growth are still to the downside. Uncertainty is huge. We are sailing in a fog in uncharted waters, and the depth finder is on the fritz. So much for sailing analogies. [Laughter] Too bad Bill Poole is not here, though I am glad Jim is here. Let me note that for the record. [Laughter] Downside risks from financial market meltdown have been reduced, though not eliminated. But I think an important source of downside risk now is the economy itself—the threat of recessionary tendencies taking hold. I am told we have never had three months of substantial employment declines and business and household sentiment as depressed as they are right now without sliding into a recession. Businesses and households have been unusually cautious in how they invest their savings, moving into government-only money funds and bank deposits, boosting M2, and demanding much larger compensation for taking risks. They are facing much tighter terms for their credit and uncertainty about its availability. It seems to me there is a reasonable possibility that this extraordinary caution in managing their financial portfolios and uncertainty about credit availability will carry over into their spending decisions. That is not my projection or apparently the central tendency of the Committee, but it must be a significant downside risk.

In contrast, the risk to total inflation seems skewed to the upside by the potential behavior of commodity prices. I don't understand why these prices have risen so much over the last six months or so. To be sure, over the last several years the rise in prices must have reflected

increasing demand in emerging-market economies, but over the past half-year the prospects for global growth have weakened. In those circumstances, I would expect the effects of lower interest rates—say, in the United States—to be offset by weaker demand. Still, prices have risen. The possibility that those types of surprises will continue poses an upside risk to headline inflation and, along with that, a risk to inflation expectations. Nonetheless, I saw the risk around a gradual downtrend in core inflation as about balanced, with the possibility of greater slack offsetting the possibility of higher commodity prices. I take some comfort in my projection for core inflation and implicitly for the more persistent aspects of overall inflation from the continued moderate increases in labor compensation. Those increases have been moderate for some time despite very high headline inflation for several years along with still-elevated markups for nonfinancial businesses.

Outside of commodities, cost pressures appear to be muted, and businesses are able to absorb increases. Still, I agree that commodity price increases, like any supply shock, have complicated our choices. We are facing a sluggish economy with downside risks as well as uncomfortably high total inflation that is feeding through to some limited extent into core inflation and, by some measures, into inflation expectations, especially near-term expectations. I do think, however, that we need to keep in mind that the higher inflation is largely a function of these commodity prices rather than a broad acceleration in overall prices. Core inflation has come in less than we anticipated it would. I also take some comfort, relative to some of the tone I have heard around the table, in what has happened in markets over the intermeeting period. Markets have built in another  $\frac{1}{4}$  point decline in the fed funds rate but then an increase further out. So somehow they are taking this promise of an increase seriously. At the same time they did that, the dollar rose—it didn't fall—and the long-term inflation compensation built into

markets came down. So I don't see the evidence in financial markets that we are on the cusp of the broad decline in our credibility that I have sensed that some others see around the table.

Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Warsh.

MR. WARSH. Thank you, Mr. Chairman. As has been described by most around the table, official data on the real economy suggest weakness but haven't materially changed since we met in mid-March. Others have talked in more detail about weakening labor markets, poor consumer sentiment, and worrying trends in consumer spending. Certainly the reports through March that I have received are that consumer spending in March was as bad as anyone who was in the business of retail or credit card spending could have envisioned. That is certainly disappointing. Oddly, there are at least some preliminary data through the first few weeks of April of some improvement, but I don't take much signal from them. Also, obviously, as others around the table have said, the tone, trading, and expectations of financial market participants have improved markedly. If only I were as confident. Whereas market participants only some weeks ago saw fear, they now perceive promise. Whether that is the triumph of hope over experience only time will tell, but I am skeptical.

Let me talk for a few moments about a couple of positive factors that should be helping and four or so negative factors. First, on the positive side, I want to give voice to the capital-raising that a couple of others around the table have referred to. We and the Treasury have been calling for some months for capital-raising across all types of financial institutions. The questions then were whether financial institutions were willing to take the dilution and go raise capital. At least equally as important was whether there would be sufficient investor demand. I think the answer to both of those questions appears to be "yes." Investor demand from nearly all

sources—including sovereign wealth funds, hedge funds, and traditional long-only managers—has funded virtually all classes of financial institutions—that is, investment banks, money center banks, regional banks, and community banks—across the capital structure—equities, convertibles, and preferred debt—in a huge range of distressed and more-stable situations. I think that is invariably a very encouraging sign, and we should only be so lucky that those markets remain wide open. Is this improvement likely to be enduring? This strikes me as pretty consequential as to whether or not we see the economy respond as favorably in the second half of this year as the Greenbook suggests. Is the improvement in equity markets, in leveraged loans, and in high-yield markets and the narrowing of CDS spreads sustainable, or is there more bad news to come that is not priced into the market? My own view is that balance sheets are on the road to repair but that income statements for these financial institutions remain highly challenged. March was a terrible month for financial institutions' profitability, which should make it harder for credit to expand, as would be hoped for with any sort of V-shaped or U-shaped recovery.

The second positive factor, building on the increase in capital, is really what is going on among the Fortune 2000, particularly the nonfinancial Fortune 2000. Earnings look pretty stubborn and solid. Though they have come off their peaks, corporate profit levels are quite remarkable for all of the things that are wrong in this economy, and they look to me to be anachronistic with previous periods of recession. The balance sheets of those Fortune 2000 companies look excellent. The investment-grade markets remain wide open. I think the question is whether those Fortune 2000 will be hiring workers during the next two or three years in the United States, and on that front, I am probably reasonably skeptical.

So if those are the positive factors, let me turn to the negative. First, consumer weakness seems to be spreading. The largest credit card providers report that credit card spend is deteriorating—again, absent a couple of odd noises in April—and that the strains showing up as delinquency, which were once only in states where housing issues were predominant, now seem to be in other states as well. Second, credit availability for small business seems under remarkable pressure. Not only has the Senior Loan Officer Opinion Survey continued to be disappointing, large money center banks appear to be pulling back from some segments of the small business markets entirely. Third, interbank funding market problems, as others have discussed, seem inconsistent with the broader improvement in credit markets. It is a troubling sign that all might not be as well as it appears in this curative process. A fourth and final negative factor is inflation. The Greenbook, which has a much more benign forecast for inflation than I do, revised up the forecast for core and headline inflation in the second half of 2008, as David said. I am still more worried about inflation prospects. As for inflation expectations and possible second- and third-order effects of these changes in prices, trading and anecdotes over the last several weeks and months continued to be troubling. I have spent less time in my remarks on inflation than on growth but only because I suppose there is less to say. The trends are troubling. The relationships among our policy actions, the foreign exchange value of the dollar, and commodity prices are worth further scrutiny. In summary, although we should be pleased with the official data on the economy as not deteriorating in the intermeeting period and with financial markets that have certainly exceeded my own expectations for improvement, I remain quite concerned about pressures on both sides of the dual mandate—a discussion that we will take up more in the next round. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Kroszner.



MR. KROSZNER. Thank you very much. As I have talked about many times before, I see what is happening as a continuing slow burn after the fires really heated up for a little while back in March. Things have cooled off again. But exactly as Governor Kohn said, we now seem to be comforted at levels that caused us extreme distress last fall and in January. So I think it is important to put it into that context. There certainly has been improvement, but it is a little early to declare victory—not that anyone has, but I think we just have to be very mindful of that.

Some of the discussion reminds me a little of the discussions that we had at the end of October, when we thought that things were improving and then they deteriorated in a way that had us very concerned. But my central tendency scenario has always been not for a financial cataclysm, although that is certainly a real downside risk, but for a sort of slow burn that is just going to continue to weigh heavily on consumption. I think it is negative feedback between housing and finance, but not necessarily a broader cataclysm. I very much agree with President Evans that the chance of a significant nonlinear break to the downside is not gone but lower than it has been. But the tightening credit conditions are going to make it very difficult for the markets to repair and recover as rapidly as perhaps they do in the Greenbook.

On housing, we know there are direct and indirect effects. We have all the signs that the contraction is continuing. Even after housing starts have fallen more than 60 percent, we are still seeing them in near free fall. But that hasn't helped to alleviate the inventories of unsold homes, which remain at extremely elevated levels—although not moving up dramatically. Part of the concern is that some of the sales may be due to forced sales related to foreclosures because we know that foreclosures are up quite a bit. So we have to be a bit cautious there. Almost all the measures suggest that expectations of future housing prices are lower, which is causing people to be very cautious about buying. The anecdotal evidence that I have is that walk-throughs are fine

but that actually closing the deal is much more difficult, both because of difficulty in finding credit and because people are unwilling to make a commitment now. They think that prices may be 10 percent lower in 6, 9, or 12 months. For many people, this is the largest investment that they will make, and trying to explain to a loved one that they just lost 10 percent of their nest egg is not an easy thing to do. So people are being more cautious. We also see some of this in the ABX measures that Bill put forward. Those numbers have come off their extreme lows, but they are still much lower than they were before. It is hard to believe that the actual default and delinquency performance will be as bad as those measures are suggesting, but they are still suggesting that things are going to be pretty tough, and so we still need to be very wary there.

We are still seeing a difference in consumer behavior—people being willing to walk away from their houses before they walk away from their credit cards or from their cars. That is suggesting that people are just operating somewhat differently from the way they did before. The jumbo spreads are still extremely wide, as the charts showed. We may be getting some offset from the new FHA programs and from Freddie Mac and Fannie Mae, but I am still not optimistic that much of this can come in before the end of the year. That suggests that we have tightness on that part. We also have tightness in the credit card market, exactly as Governor Warsh said. The credit card companies I have spoken to see continuing deterioration. We didn't see any sort of nonlinear changes but just a continuing downward trend of real challenges and increasing roll rates of people going 30, 60, 90, and more days delinquent. Spending is up a bit, but they usually say that's mostly because of increases for gasoline and groceries due to the high commodity prices. Also, as President Yellen mentioned, there is more tightening in the HELOC market. More challenges are there, so the banks are pulling back, and more people are getting into trouble.

I have an anecdote from one of the large companies. A number of large investment-grade firms have drawn down significant parts of their revolvers, not because they actually needed them but because they thought that they better do it now before they are pulled back. Even these large institutions seem to be hoarding liquidity, much as the banks are doing. I think the banks are doing that because we still see CDS spreads that are very high even though they are lower than their peaks. The LIBOR–OIS spread that a number of people have mentioned still is high and is continuing to increase. That is the most troubling for me—that we are moving back to the extreme highs we saw when we had the end-of-the-year problem. But then we had an explanation for its going away. Now we don't have an end-of-the-year problem, so unfortunately, it is difficult for me to understand what is going to make this go away. I think we can provide more liquidity through some of our various facilities, but I am not sure that that, in and of itself, will be the cure.

We have seen more capital come in and help out some of the institutions. But a lot of fragility is still there, as President Pianalto well knows. The issues with respect to National City were liquidity issues, not necessarily short-term concerns about solvency, although I think there are longer-term concerns about solvency. Liquidity and solvency issues are ultimately related, but there is a real concern that many of the money market mutual funds that hold between \$3 trillion and \$4 trillion will just walk away. We saw this with Bear Stearns. We can see this with other institutions. I think that it's fragility that accounts for some of these very high levels. We used to worry primarily about deposit runs, but deposit runs are extremely slow. Deposit runs are leisurely strolls compared with what could happen in these liquidity markets. So I do think that issues are there precisely because still more challenges are coming with commercial real estate construction, as a number of other people have mentioned. There will still be a lot of

provisioning that will have to come up, putting more pressure on the balance sheets and making it more difficult for people to borrow. I also very much agree with Vice Chairman Geithner that the rest of the world is a little behind us and that the boost that we are getting right now from exports isn't going to persist.

Turning to inflation, as I think a number of people have mentioned, we haven't seen a lot of pressure on the labor side. As labor markets soften, it is unlikely that we are going to see more pressure there. So that seems to be a positive. But we do see these very elevated commodity price levels, which don't seem to have fed through to core. But exactly as Governor Kohn said, it is a bit of a puzzle how they continue to increase, and that certainly puts some risks ahead of us. It is a particularly difficult time to get a good reading on inflation expectations because there have been lots of changes in liquidity issues and in other particular factors. Some of the survey-based measures are up, but they tend to be very closely related to gasoline prices, and we know that those are at extremely high levels. So I think it is extremely difficult for us now to make a solid determination about where inflation expectations are. Certainly that raises a caution because we don't want to have inflation expectations become unmoored. But I think it is more difficult for us to identify right now exactly how they are evolving, and obviously, this will be important for us in our decisions tomorrow. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Mishkin.

MR. MISHKIN. Thank you, Mr. Chairman. My modal forecast is for a mild recession in the first half of 2008 and is very much in line with the Greenbook forecast. I am more pessimistic, however, than the Greenbook on the issue of recovery. Again, the issue is that we have had a major disruption to our financial markets and there is a mess, and I think it is going to take a long time to clean up the mess. The parallel that President Stern made to the episode in

the early '90s is very apt. I suspect that there will be substantial headwinds coming from the problems in the financial sector for quite a while, and that means that the recovery we would see would be more L-shaped than V-shaped.

When I look at where I was at the last FOMC meeting, there has really been a big change for me. I re-read the transcripts, because you always want to see what things sounded like, and I sounded so depressed then, as though I might take out a gun and blow my head off. That is the way it read. But my sunny, optimistic disposition is coming back. [Laughter] I think it is very possible that we will look back and say, particularly after the Bear Stearns episode, that we have turned the corner in terms of the financial disruption that we have just experienced. I should mention, however, that it doesn't mean that we should be complacent. I am not sure that is the case. We have been disappointed before. But I think there is a very strong possibility that the worst is over. You can see this in that there is less concern about credit risks in financial institutions. That is because we had a major institution get into trouble, but because of our actions, it didn't blow up the world. There is an issue, of course, of potential cost and moral hazard going forward, but I think it has had the effect of calming down the markets in a very substantial way.

Very important in this regard is that we are seeing that our large financial institutions are able to raise capital now at not too high a cost. In fact, they are doing so in a major way. When we think about the long-term solution to the problems in the financial markets, cleaning up the mess and raising capital is going to be absolutely critical, particularly because in the long run the securitization market will come back. But it is going to very much involve the large financial institutions, which will have to solve the agency problems that were not solved in this recent bout of securitization, which created all of the problems. So their having enough capital is

critical. I think it is very possible that we are on the path to their sorting out their problems, which in the long run will help sort out the problems in the credit markets.

I should mention, by the way, that I still don't want us to be complacent about this because things could go in the other direction. There is still the puzzle about what is going on in the money markets. In particular, we see these very large and actually widening spreads between LIBOR and OIS. So even though I am starting to become optimistic, I don't want to be Panglossian in my view. From my perspective the key issue is that, although my modal forecast hasn't changed much from March, I see that the tail risks have decreased substantially, and I think that the probability that we will have a severe adverse feedback loop, which really scared me just a little while ago, is going to be much lower. I still see some downside risks. Particularly, I am concerned about the issue of housing prices. They could fall more than we and the Greenbook expect, and that could trigger some problems. But I do think that the downside risk is much, much lower. Another thing I should mention is that I think there is very high uncertainty right now. So I could get depressed again, but we will have to see. I hope not.

On the inflation front, I see that long-run inflation expectations are still reasonably well anchored around 2 percent. The information in the financial markets on this score is that there has not been a big blowout in that case. There have been problems regarding some of the surveys, but I am a little less worried about the surveys in terms of households. I am very skeptical of them because they tend to react very much to current conditions. Also, if you ask people what TV shows they are watching, they will tell you that they are watching PBS and something classy, but you know they are watching "Desperate Housewives." [Laughter]

CHAIRMAN BERNANKE. What is wrong with "Desperate Housewives"? [Laughter]

MR. MISHKIN. But I do have a concern about the risk to inflation expectations because of the high commodity prices that we see. This is coming from the very adverse supply shock and the fact that we have had headline inflation so high for so long. The good news, by the way, is that it is actually quite remarkable, given how high headline inflation has been, how anchored inflation expectations have been. I think that has to do with confidence in this institution's doing the right thing. It is very important that we retain that confidence. We have to think about that when we decide what we are going to do regarding policy.

About where I think inflation is going to be—I have been a 2 percent guy for a long time. I am not changing that. I think that inflation expectations are around 2 percent and that there is no expectation that we will have excess demand in the economy. If anything, it is the opposite of that. I see the risks as balanced—there are some risks on the upside, particularly because of what is happening with commodity prices. On the other hand, there are risks on the downside because of the expected slack and because there is some downside risk in the economy. So on that ground, I basically have the same story that I had before. Thank you.

CHAIRMAN BERNANKE. Thank you, and thank you all for very helpful comments. As usual, let me briefly summarize what I heard today and then make a few comments of my own. Again, in summary, data since the March meeting have been soft, and economic activity is weak. But the recent news has not generally been worse than expected. There was disagreement over whether we are technically in a recession. Most saw improved economic growth in the second half of 2008 with further improvement in 2009, although some saw more-protracted weakness. The housing sector remains weak, though there were reports of improvement. Starts and the demand for new houses continue to decline. Prices are falling. Inventories of unsold homes remain very high. Housing demand is affected by restrictive conditions in mortgage

markets, fears that house prices have much further to fall, and weakening economic conditions. Retail sales, sentiment, and consumer spending have generally been soft, reflecting a long list of headwinds, including tightening credit, weaker house prices, and higher energy prices. Payrolls are falling, although there are some pockets of strength. Unemployment is likely to keep rising. It may remain somewhat high into 2010. We will soon see whether the fiscal stimulus package affects either the consumer or business investment plans. Possibly, liquidity-constrained consumers may respond more strongly than normally. Business sentiment is also relatively weak, reflecting in part credit conditions but also the uncertain prospects for the economy and continued cost pressures. Investment has softened somewhat, including declines in commercial real estate investment. Strength in foreign markets is helping support U.S. production and profits, especially manufacturing, although foreign economies may slow in the coming quarters. The energy and agricultural sectors are strong.

Financial conditions have improved in the past month, with financing conditions better, credit risk spreads coming in a bit, and both equities and real interest rates up since the last meeting. Decent earnings, a sense on the part of some that the bulk of the write-downs in the banking sector have been taken, the ability of financial institutions to raise capital, and possibly Fed actions, including liquidity provision and the actions regarding Bear Stearns, have contributed to the improvement. On the other hand, many markets remain fragile, including the key interbank market and other short-term funding markets. Some expressed the view that more-significant write-downs and financial stress lie ahead, as house prices continue to fall and the slowing economy weakens credit quality, and that the full impact of tighter credit has not yet been felt in the nonfinancial economy. Others, however, were less concerned about the real



effects of the financial conditions. Financial conditions and the housing market probably remained the most important downside risks to growth, although energy prices were also cited.

Readings on core inflation were moderate in the intermeeting period, although some of the reasons for improvement may be transitory. Oil prices have continued to move up, contributing to higher headline inflation. Other commodity prices have also begun to rise again. Many firms noted these strong cost pressures and indicated some ability to pass those costs along to consumers. Inflation breakevens showed improvement at some horizons since the March meeting, possibly reflecting lower risk premiums, though survey inflation expectations were higher. The dollar appreciated during the intermeeting period, but longer-term depreciation and rising import prices remain another source of pressure on inflation. Nominal wage gains remain moderate, however, and markups are high. Uncertainty about the course of oil and other commodity prices adds to overall inflation uncertainty and perhaps to inflation risks that are now somewhat more to the upside. Many participants expressed concerns about these upside risks, about inflation expectations, and about the maintenance of the Fed's inflation-fighting credibility. Any comments?

Let me just add a few thoughts to what has already been said. On the real side, I think that I am probably somewhat more pessimistic than the median view that I heard around the table. First of all, I am reasonably confident that we are in a recession. We don't see these dynamic patterns of employment, sentiment, and so on without a recession being eventually called by the NBER. That fact, I believe, raises the risks of more-rapid declines in employment and consumer spending in the months ahead because there seem to be somewhat more-adverse dynamics in a recession scenario. Second, I remain concerned about housing, which is not showing really any significant signs of stabilization. Mortgage markets are still dysfunctional,

and the only source of mortgage credit essentially is the GSEs, which are doing their best to raise fees and profit from the situation. Sales of new homes remain weak. Inventories of unsold homes are down in absolute terms, but they still are very high relative to sales. We heard this morning of yet even faster price declines for housing. As I've said several times at this table, until there is some sense of a bottoming in the housing market and in housing prices, I think that we are not going to see really broad stabilization, either in the economy or in financial markets. Now, there are some positives—exports, for example—which have kept manufacturing and other industries from declining as much as usual during a recession. Interestingly, this could be a mirror image of the 2001 recession. In 2001, the business sector was weak, and consumption and housing were strong. We could have the mirror image this time.

In financial markets, there certainly have been improvements, and that is certainly encouraging. I agree with people about that. But we have heard a few people in the market say that credit losses and write-downs are in the ninth inning. As a baseball fan, I think we are probably closer to the third inning. Let me explain why I think that. The IMF recently projected aggregate credit losses on U.S.-based assets of about \$945 billion worldwide, with about a quarter of those coming in the U.S. banks and thrifts. The Board staff has a somewhat lower number, around \$700 billion to \$800 billion, but they have a higher fraction in U.S. banks and thrifts. So the basic numbers are pretty similar in that respect. The staff projection for credit losses for U.S. commercial banks and thrifts, excluding investment banks, is about \$215 billion for this year and next year and \$300 billion if the recession is more severe. In addition, the staff projects about \$60 billion in write-downs of CDOs and other types of traded assets. Now, most of those \$60 billion write-downs have been taken. They are mostly held by the top banks, and they have mostly been already written off. However, of the \$215 billion to \$300 billion in

projected credit losses, so far U.S. banks and thrifts have acknowledged only about \$60 billion. So if you put together those numbers, you find that we are about one-third of the way through total losses.

Now, there are, in fact, obviously some countervailing factors. Banks and thrifts have already raised about \$115 billion in capital since the middle of last year, which essentially covers the losses announced so far. But that said, there is still a lot of deleveraging to go. There is going to be a long process of selling assets, reducing extensions of credit, and building capital ratios. This may not yet be fully felt in the real economy, but it will eventually be there. So I do think that we are going to see continued pressure from financial markets and credit markets, even if we don't have any serious relapses into financial stress. So, again, I am somewhat more skeptical about a near-term improvement in economic growth, although I do acknowledge that the fiscal package and other factors that the Greenbook mentions will be helpful.

The question has been raised about whether monetary policy is helpful and what the stance of monetary policy is. I agree with the comment that the real federal funds rate is not necessarily the best measure of the stance of monetary policy right now. Let me take an example that was given in the New York Fed's daily financial report a couple of days ago, which was about the all-in cost of asset-backed securities backed by auto loans. According to this report, in February of '07, the three-year swap rate was about 5 percent, and the spread on AAA tranches of auto-backed ABS was about 10 basis points. The all-in cost was 5.07 percent for this particular asset. In February of '08, the three-year swap rate was 3.15 percent, almost 2 percentage points lower, but the spread on AAA tranches was 195 basis points. Therefore, the overall all-in cost of auto loan ABS was 5.36 percent. So the net effect is—well, is monetary policy doing anything? Absolutely. We have reduced the safe rate. We have brought down the

cost of funds. But the spreads have obviously offset that. So what we have really done is essentially offset the effects of the credit crisis. Obviously, if we had not responded to the situation, those costs would be much higher, and the extent of restriction would be a lot greater. For these reasons, I really do believe that we need to take a much more sophisticated look at what the appropriate interest rate is. The Taylor rules, in particular, are just not appropriate for the current situation because the equilibrium real interest rate of 2 percent that is built into them is not necessarily appropriate.

Let me turn to inflation, which a lot of people talked about today. First, let me just say that I certainly have significant concerns on the nominal side. In particular, I have a lot of anxiety about the dollar. Foreign exchange rates in general are not well tied down, and they are very subject to sentiment and swings in views. Therefore, although I think that the depreciation of the dollar so far is a mixed bag—obviously, it has effects on different parts of the economy—I do think that there is a risk of a sharper fall with possibly adverse implications, in the short run, for U.S. assets and, in the long run, perhaps implications for our position as a reserve currency and so on. So I think that is an issue to be concerned about. For that reason and for other reasons as well, I am very sympathetic to the view I hear around the table that we are now very, very close to where we ought to be, that it is time to take a rest, to see the effects of our work, and to pay equal attention to the nominal side of our mandate. I agree with all of that. So I am hopeful that in our policy discussion tomorrow we will be fairly close around the table.

That being said, I do want to take a little exception to some of the discussion about inflation. There is an obvious and very elementary distinction between relative price changes and overall inflation. Let me ask you to do the following thought experiment. Imagine you are speaking to your board. Last year, as a first approximation, headline inflation was 4 percent,

labor compensation grew at 4 percent, and oil prices rose 60 percent. Let's imagine that we had been so farsighted and so effective that we managed to keep headline inflation last year at 2 percent. The implications would have been, assuming that relative price changes were the same, that wages would have grown at 2 percent and that oil prices would have risen at 57 percent. In the conversation with your board, your board would say, "This inflation is killing us. These costs are killing us. We have to pass them through." They would, and they would be right. When there are big changes in relative prices, that is a real phenomenon, and it has to be accommodated somehow by nominal price shifts. So to the extent that the changes in food and oil prices reflect real supply-and-demand conditions, obviously they are very distressing and bad for the economy and create a lot of pain, but they are not in themselves necessarily under the control of monetary policy. If we give the impression that gasoline prices are the Fed's responsibility, we are looking for trouble because we cannot control gasoline prices. That said, of course we need to address the overall inflation rate. We need to address inflation expectations. All of that is very important. But, again, we need to make a distinction between relative price changes and overall inflation.

Now, a more sophisticated response to that is, "Well, maybe monetary policy is contributing to these relative price changes as well"; and I think that is a very serious issue. Certainly the dollar has some effects on oil prices. But keep in mind that a lot of the depreciation of the dollar is a decline in real exchange rates, which is essential in any case for balancing our external accounts. So, yes, the depreciation of the dollar, through our policies, has contributed somewhat to commodity prices. But compared with the overall shifts in relative prices that we have seen, I think it is not that large. There are other hypotheses suggesting that we have been stimulating speculation in a bubble, suggesting that low real interest rates contribute to

commodity price booms. I don't want to take more time, but the evidence for those things is very limited. In particular, the fact that we have not seen any buildups in hoarding or inventories is a very strong argument against the idea that inflation expectations, hoarding, or speculation is a major factor in energy price increases. So, yes, the nominal side is very important. We need to address that. I agree with that. But we should try to help our audiences understand the very important distinction between real and nominal changes.

I think I will stop there. If I can ask for your patience, we could do the briefing on the alternatives today and give ourselves more time tomorrow. Around the table, does that seem okay? I'll call on Bill English.

VICE CHAIRMAN GEITHNER. Mr. Chairman, I was wondering if Brian or Bill wanted to talk President Plosser out of his concern about MZM at some point.

MR. MADIGAN. If you like, I could try to address that tomorrow.

CHAIRMAN BERNANKE. We'll have a special session on MZM. [Laughter]

MR. ENGLISH.<sup>3</sup> I will be referring to the revised version of table 1, which is included in the package labeled "Material for the FOMC Briefing on Monetary Policy Alternatives." The revised table presents the same range of options regarding the target federal funds rate as the version discussed in the Bluebook, but we have proposed some changes to the statement language for alternatives B and C. New language introduced in the draft distributed on Monday is shown in blue, with language reintroduced from the March 18 statement shown in black and underlined. An additional adjustment made since Monday is shown in purple. [Laughter] We have about used up the color palette in Word. I will discuss these changes as I go along.

Your policy decision at this meeting would seem to depend on three judgments: Where do you think you are; where do you want to be; and what path do you want to follow to get there? The staff's assessment of where you are—at least in terms of the stance of monetary policy—is summarized in the  $r^*$  chart that was included in the Bluebook. That chart showed that the current real federal funds rate is about 50 basis points above the Greenbook-consistent measure of  $r^*$ , suggesting that the rapid easing of policy this year has left the real funds rate fairly close to the level required to bring the economy back to its potential over the medium term. The low level of the

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<sup>3</sup> The materials used by Mr. English are appended to this transcript (appendix 3).

equilibrium funds rate reflects the staff's judgment that the housing correction and financial market stresses—with their associated effects on consumer and business confidence—have been sufficient to shift the economy into a recession regime in which spending by both households and businesses is likely to be weak. As for where you want to be, the Greenbook projection assumes that the real funds rate is moved down to its equilibrium level—that is, the federal funds rate is trimmed 50 basis points further—and then remains unchanged over the rest of the projection period. Finally, as for the path you want to follow to get there, the staff projection assumes that you move the federal funds rate to the staff's estimate of the rate's equilibrium level relatively quickly by trimming the fed funds target 25 basis points at this meeting and another 25 basis points at the June meeting. However, there is no overshoot below the equilibrium level in order to provide insurance against a further unexpected slide in spending.

If you agree with the staff that about 50 basis points of additional easing is needed to bring the real federal funds rate into alignment with its equilibrium level and you are at least moderately confident of that assessment, then you might be inclined to ease policy by 50 basis points at this meeting and issue a statement suggesting fairly balanced risks to the outlook, as in alternative A. A relatively large adjustment to policy at this meeting would be particularly attractive if the Committee wanted a somewhat faster recovery in output or was concerned about downside risks to growth and wished to move the funds rate back to its equilibrium value quickly in order to help head them off. Members might also select a larger rate cut if they were willing to live with somewhat higher inflation over time, as in the optimal control simulation in the Bluebook with an inflation goal of 2 percent.

The rationale language proposed for alternative A sticks fairly closely to the language used in March, making modest adjustments that are intended to avoid leaving the impression that the weakness in economic activity or the concerns about inflation had worsened appreciably over the intermeeting period. The assessment-of-risk language would continue to indicate that the easier stance of policy should “foster moderate growth over time and . . . mitigate the risks to economic activity,” but it would move toward balance by dropping the explicit reference to downside risks. As in March, it would end by promising timely action to “promote sustainable economic growth and price stability.”

Investors would be surprised by the adoption of alternative A. Market participants generally expect a 25 basis point rate cut at this meeting and put very low odds on a 50 basis point cut. However, the effect of the relatively large easing would be damped somewhat by the shift to a more balanced risk assessment. The result would likely be lower short- and intermediate-term interest rates, a rise in equity prices, and a softening of the dollar.

If the Committee viewed the target federal funds rate as probably close to the level that would appropriately balance the risks to its dual objectives but saw considerable uncertainty regarding that level, then it might be inclined to reduce the

funds rate another 25 basis points at this meeting and suggest a more gradual pace of policy easing, or even a pause, after this meeting, as in alternative B. Policy has been eased very rapidly, and it is difficult at this point to assess the extent to which that easing has been transmitted to households and firms and so to spending. That assessment is complicated by the ongoing turbulence in financial markets as well as the usual difficulty in extracting signals from noisy data on economic activity. Against this backdrop, the Committee may be inclined to take a relatively small policy step at this meeting and then move to a more incremental policy approach under which policy will be guided by incoming information on economic and financial developments. Moreover, with some measures of long-term inflation expectations having moved higher in recent months, members may be concerned that a larger policy move at this meeting would encourage the view that the Committee is more willing to tolerate inflation than had been thought. By taking a smaller policy step at this meeting and suggesting reduced odds of additional near-term policy action, the Committee could limit the extent to which investors extrapolate the recent large policy moves and so build into asset prices more easing than is warranted. Such a brake on expectations may be seen as particularly useful since the incoming data on employment and economic activity are likely to be pretty soft in the near term, and the data releases could well spur expectations of further rate cuts even though the Committee anticipated the weakness when setting policy. Communication on this point will presumably be enhanced by the release of the “Summary of Economic Projections” in three weeks, which should clarify the Committee’s views on the appropriate path for policy and the expected trajectory for economic growth over coming quarters.

In the Bluebook, the rationale portion of the statement associated with alternative B was identical to that under alternative A. However, in the revised version of table 1, the first sentence on inflation has been changed to acknowledge the recent improvement in readings on core inflation but point to the continued run-up in energy and other commodity prices. Rather than simply noting the Committee’s judgment that a further easing move is appropriate, as in alternative A, the assessment-of-risk paragraph begins by stating that “[t]he substantial easing of monetary policy to date, combined with ongoing measures to foster market liquidity, should help to promote moderate growth over time and to mitigate risks to economic activity.” The explicit, time-dependent pause that was suggested in the Bluebook formulation for this alternative has been replaced by wording that is intended to suggest that policy will be more data-dependent, with the final sentence now reading, “The Committee will continue to monitor economic and financial developments and will act as needed to promote sustainable economic growth and price stability.” The addition of the phrase on monitoring developments coupled with the deletion of the indication in the March statement that the Committee will act “in a timely manner” will likely be read by investors as suggesting a slowing in the pace of easing and possibly a pause after this meeting if the economy develops as the Committee anticipates.

Investors appear to expect that the Committee will trim the federal funds rate 25 basis points at this meeting and then leave the federal funds target at 2 percent for



some time. The 25 basis point policy easing and the associated statement under alternative B would seem to be about in line with these expectations, implying little response in financial markets.

If the Committee thinks that the substantial easing of policy already put in place, along with the coming fiscal stimulus, is likely to foster outcomes that appropriately balance its inflation and growth objectives, then it may want to stay its hand at this meeting and issue a statement suggesting that policy is likely to change gradually going forward and could even be on hold for a time, as in alternative C. The Committee may expect the ongoing weakness in spending to be relatively mild and brief. The real federal funds rate is already very low, and the incoming data may not be seen as sufficiently weak to confirm the staff's view that the economy has shifted to a recessionary footing and therefore that spending is likely to come in weaker than one would otherwise expect. With financial markets most recently improving, on balance, and investors apparently less concerned about tail events, the Committee may see smaller downside risks to the outlook for growth. At the same time, members may think that the inflation outlook remains worrisome. Prices of oil and some other commodities touched new highs over the intermeeting period, and members may anticipate that firms will be able to pass a larger share of the increase in these costs through to their customers than the staff anticipates. Longer-term inflation expectations may have increased in recent months, and the Committee might be concerned that failing to push back, at least modestly, against that rise could allow for a more significant increase in expectations that could be very costly to reverse. Moreover, some members may worry that additional policy easing could trigger declines in the foreign exchange value of the dollar and increases in commodity prices that would give a further boost to inflationary pressures. Taken together, these arguments might suggest that, if a further easing step were taken at this meeting, it might have to be reversed fairly soon—an outcome that some members may wish to avoid.

The discussion of economic activity in the statement under alternative C is identical to that under the other two alternatives. The inflation paragraph is similar to that under alternative A, but it does not list the reasons for the anticipated moderation in inflation. The exclusion of this list is intended to suggest less confidence in the judgment that inflation will moderate as expected. Some members may also be uncomfortable repeating the reference to “a projected leveling-out of energy and other commodity prices” when those prices have surprised to the upside yet again. The assessment-of-risk portion of the statement starts by pointing to downside risks, but then proceeds as in alternative B. The reference to downside risks might counter to some degree the suggestion of a possible pause in the easing process, but the lack of policy action combined with this statement language would presumably limit expectations for easing at coming meetings.

Market participants put only about one-quarter odds on unchanged policy at this meeting, and so the combination of unchanged policy and a statement suggesting that the Committee could remain on hold for a time would surprise investors, even with

the retention of downside risks to growth. Short- and intermediate-term rates would rise, stock prices would likely fall, and the dollar could rally. Effects on longer-term rates, and also on inflation compensation, would depend on whether investors interpreted the statement as indicating that the Committee desired a lower level of inflation than had been thought. The unexpectedly firm policy decision could boost pressures in short-term funding markets, either immediately, as a result of higher funding costs for leveraged firms and a weaker outlook for the real economy, or over time, in the event that economic data came in weaker than anticipated and the FOMC was seen as less likely to ease policy in response. That concludes my prepared remarks.

CHAIRMAN BERNANKE. Thank you. Are there questions for Bill?

MR. FISHER. Mr. Chairman?

CHAIRMAN BERNANKE. President Fisher.

MR. FISHER. You emphasized the phrase “reflecting a projected leveling-out of energy and other commodity prices and an easing of pressures on resource utilization.” Can you just refresh my memory? For how long have we been using that phrase—just in the March statement, or have we used it before?

MR. ENGLISH. I’m afraid I’m not sure.

MR. MADIGAN. We must have used that just in March. It was not here in January.

VICE CHAIRMAN GEITHNER. Definitely March. January was minimalist.

MR. FISHER. So not in January—it was just in March that we used that. Second, let’s say we were to have a rally in the dollar. If we voted for no change, might that positively affect equity prices or the credit markets in the United States? Is it possible?

MR. ENGLISH. I suppose it’s possible, but I guess I would expect that, if monetary policy came out tighter than people had expected, it would lead to at least a modest marking-down of the outlook for the economy.

MR. FISHER. For how long? This is a personal view, but it’s not clear to me that things are that clear-cut on a sustainable basis. One of the things that seems to be undercutting

confidence is the weakness in the dollar, even though in the past few days the dollar has rallied. I'm just wondering if it's clear-cut that we would necessarily have a sustained selloff. I can see an immediate reaction, particularly on the announcement. But it's conceivable, is it not, that if we had a dollar rally that we could have a positive effect on equity prices or on the credit markets?

MR. ENGLISH. I think it's hard to know how people would read the news. But as was emphasized earlier, a weaker dollar supports exports and supports the outlook for the real economy.

CHAIRMAN BERNANKE. Bill Dudley.

MR. DUDLEY. I think you could get your result if people took the action as that the Federal Reserve's view was that the economy wasn't as great a risk. So risk premiums would come down, the dollar would rally, and the stock market would do better. I mean, it's possible.

VICE CHAIRMAN GEITHNER. This speculation is perilous.

MR. FISHER. Yes. I just wanted to ask a question.

VICE CHAIRMAN GEITHNER. But I think it goes exactly to what both Bills just said, in that it depends fundamentally on whether the disappointment is reassuring or troubling. We have had two examples of disappointment that have been troubling, and we have had one example of disappointment being reassuring—the most recent one being the latter. So I think what matters most is what happens to the expected path of the fed funds rate going forward, and that is how you would know. If you disappoint significantly and the markets lower the expected path going forward, as they did in October and December, you could have the dollar weaken as a result just as easily as strengthen. We are not very good at speculating about the effect on the fed funds rate expectations of our statements, and it is much harder to speculate about the effect on

the dollar in this context. You can tell a compelling story on both sides. It sort of depends how plausible it is, particularly if you have language saying that downside risks to growth remain even without moving, that we are signaling greater confidence in the strength of the economy going forward with an action that implies not moving.

MR. DUDLEY. It is also being significantly driven by the subsequent data.

MR. FISHER. Well, this just illustrates the point. It's not as clear-cut as one might guess. Thank you.

CHAIRMAN BERNANKE. President Evans.

MR. EVANS. Thank you, Mr. Chairman. I have a couple of questions, unfortunately. I am very sympathetic to your point about how difficult it is to understand what the relationship is between the equilibrium fed funds rate and where we are with respect to financial stress. Actually, my question is for the Greenbook team—if you could remind me again, within the Greenbook-consistent measure, how do you deal with these? You have add factors in your forecast. Presumably, they're related to the financial stress. I know that they are acting as if there is a higher interest rate at work. We also have the role of the lending facilities, which perhaps have relieved a bit of that stress. I am not quite sure how that plays out here, so if you could, please clarify that as best you can. Again, in chart 6 there is no role for the inflation preference, right? This is all about how long it takes to get back to potential over three years with this interest rate. The Board staff was very helpful over the weekend, when I asked a question about chart 7 and the fact that the funds rate took off from a higher level. If you add that type of analysis in there, it seems as if it comes down a little to what your inflation preference is. For the 1½ percent inflation rate, you might want to stick where you are; if it's

2 percent, you would move down a bit. Again, that is taking it as given that you can interpret these at face value, if you will.

I have another question about the fed funds futures market and Bill Dudley's chart about how the dealers seem to have slightly different expectations and whether or not that teases out anything about what Governor Kohn was talking about, because that's a very interesting observation. You know, there is much more weight below the market.

MR. DUDLEY. Yes, it's hard to know what to read into that. It could be that the forecasts have more inertia to them.

MR. EVANS. Oh. I thought these were the smart guys who really were on top of it.

MR. DUDLEY. But forecasts don't change that fast, so it is hard to know; but that could be one factor.

CHAIRMAN BERNANKE. Dave, did you want to respond?

MR. STOCKTON. Yes. First, you are absolutely right. The equilibrium funds rate calculation has no reference to inflation. It shouldn't be viewed as a policy recommendation or where the fed funds rate should be. In essence, it is one transformation of the IS curve interacting with the supply side of the economy—set the real funds rate at that level, and it is designed to deliver the return of the economy to potential in 12 quarters.

Now, as for the way that we have treated financial stress and its effect on the equilibrium funds rate, we have marked down our estimate of the equilibrium funds rate a huge amount since last August. A couple of those big steps really were putting in add factors for our sense of the extent to which financial turbulence and stress were going to depress aggregate spending going forward. How do we get that? We have taken some of these principal component measures of financial stress—in some cases, principal components of the Senior Loan Officer Opinion

Survey—and regressed those on the errors in the spending equations, and observed that there is a pretty high correlation between those measures and our spending errors. We've tried, as best we could, to build that correlation into our spending forecast, so that when we calculate the equilibrium funds rate, it reflects a much weaker level of spending for any given funds rate than you otherwise would have observed. The adjustments show up as a lower equilibrium funds rate.

The second factor that is currently depressing our estimate of the equilibrium funds rate is indirectly related to financial stress. But in the last forecast, when we shifted to this recession-like scenario, we incorporated additional negative add factors on spending to reflect the observation that, when we are in a cyclical downturn, there tend to be correlated errors across these equations that are related to the cyclical event. That was a second factor that was leading to the very low estimate of the funds rate. So those are, as best as we could, incorporated in those measures. Thank you.

CHAIRMAN BERNANKE. Governor Mishkin first, and then President Bullard.

MR. MISHKIN. Is yours on this point?

MR. BULLARD. It's related to this.

MR. MISHKIN. Then why don't you take my slot, and I'll come in after.

MR. BULLARD. Is it a regime-switching kind of model in which you enter the recession state—you call it the recession state—and then add-factor down further?

MR. STOCKTON. Yes, though that may be putting it too scientifically. In essence, we were looking at a configuration of data that, at the time of the March meeting, appeared to indicate recession. Even though we did not have the spending data in hand—and, as Governor Kohn indicated, we still haven't seen these correlated negative errors on spending yet—we had

seen enough other signals in terms of the business and consumer sentiment surveys, the rise in the initial claims for unemployment insurance, and the jump in the unemployment rate that, taken together, suggested to us that there was a likelihood that we were or would be in a recession scenario. We then added in more negative add factors to account for that.

MR. BULLARD. Then, is that calibrated against the 1990–91 recession or the 2001 recession?

MR. STOCKTON. Basically, we did an average of the residuals in recessions since 1970.

MR. BULLARD. Oh, is 1980–82 in there?

MR. STOCKTON. Yes, 1980–82 is in there. Again, the composition of where these residuals are is obviously heavily tilted in this case to housing, some of which is already behind us. So it isn't quite as though all of this weakness is prospective. Some of this weakness we have already had, and so there are very big negative residuals now on housing relative to where you would otherwise have been.

CHAIRMAN BERNANKE. Governor Mishkin.

MR. MISHKIN. Just to ask Bill a question—first the tall Bill, but the shorter Bill can answer afterward. [Laughter] On alternative B, you indicated that this would be very much in line with market expectations and, therefore, shouldn't have much impact. I was wondering about the statement aspect, in particular the assessment-of-risk part, because this is not just saying that we are doing 25 basis points; it is also saying that we are now in a different mode of operation regarding the cycle. So where do you think the markets are concerning where the statement would be in this regard?

MR. ENGLISH. In recent days the stories we have been hearing from market participants and observers are that they think there may well be something—maybe not signaling strongly that we're done but talking about slowing down or possibly a pause. So I think this really is pretty close to what is built in.

MR. DUDLEY. Yes, a soft pause rather than a hard pause is the way I would think about what the market is looking for.

MR. MISHKIN. Okay. Good. Thank you.

CHAIRMAN BERNANKE. Other questions for Bill? All right. Well, we have overnight to reflect. We will also have the GDP data in the morning. I'm sure that they will be informative. We will reconvene tomorrow at 9:00 a.m. There is a dinner and reception, for those of you who would like to attend, and we'll see you there.

[Meeting recessed]



**April 30, 2008—Morning Session**

CHAIRMAN BERNANKE. Good morning, everybody. Why don't we start with the report from Dave Stockton on the data.

MR. STOCKTON.<sup>4</sup> We left at your place, and I hope you have found, a GDP advance release for the first quarter. It came in at plus 0.6 percent versus our Greenbook forecast of 0.4. It was really very close to our expectations, both for the total and for the individual components. There were a few small differences. Nonresidential structures, as you can see about halfway down that sheet, are estimated to have been weaker than we were forecasting. I think that additional weakness certainly reinforces the story I was telling yesterday about this being an area in which we are now seeing more convincing signs of softness. Residential investment was not quite as weak as we thought, but I don't think the difference between a minus 27 and a minus 31 changes the basic tenor of that particular story. Two small areas for which we had some upside surprises were federal spending and inventory investment, but those surprises were really quite small. I don't see anything in this report, quite frankly, on the real GDP side that would cause us to change our basic outlook. Obviously, when we get the detail, we might make some minor adjustments to the second-quarter forecast. As for prices, the final two lines of that table, total PCE came in right as we had expected. Core PCE was estimated by the BEA to be a tenth higher than we had projected, but that is still ½ percentage point below what we were projecting back in the March Greenbook. So, again, I don't think that the report that I gave yesterday would be altered by this release.

We also received the employment cost index. In the release, we get those figures only to one decimal place. To one decimal place, we are right on for total compensation—wages and salaries and benefits; in terms of the 12-month change, it was 3.2 percent, and that was what we

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<sup>4</sup> The materials used by Mr. Stockton are appended to this transcript (appendix 4).

were forecasting. Wages were a bit higher than we thought—3.2 versus the 3.1 we projected—but benefits came in a little lower than we were projecting. There again, I think the data just basically confirm the story that we are not really yet seeing any signs of pressure on the labor cost side.

CHAIRMAN BERNANKE. Any questions for Dave? All right. If not, yesterday we had an introductory presentation by Bill English on the alternatives. You will be pleased to know that there have been no further changes in the proposed statements. So why don't we take comments now from the participants. President Plosser.

MR. PLOSSER. Thank you, Mr. Chairman. What I would like to do—it will probably come as no surprise—is to make the case for why we should stand pat today and make no change. My case is built on a number of points, and I'd like to articulate those as best I can.

First, as we all know, the economic outlook has weakened since the start of the year, but that deterioration occurred largely between January and March. Since the March meeting, there has been little change in the Greenbook forecast or in my own outlook for the economy. Incoming data over the intermeeting period are consistent with a weak first half but not appreciably weaker than we earlier anticipated. I believe that easing policy is appropriate in a weaker economy, but continuing to cut rates for as long as the economy remains weak is not appropriate. Although it is a difficult task, we must try to calibrate the appropriate level of the fed funds rate with the economic prospects and our policy goals. I will just note that, since last September, we have lowered the funds rate 300 basis points. This year alone, in a period of less than 60 days, we have cut 200 basis points. This is a very aggressive policy of easing. Not enough time has passed, in my view, to see the full effect on the economy of those cuts, and a

further 25 basis point cut in the funds rate at this point will do nothing to change the near-term outlook of the economy.

Second, we are currently running a very accommodative monetary policy, no matter how you look at it. The real funds rate is negative or very negative, depending on which measures of inflation you use to construct it. The nominal funds rate is below the level of most versions of the Taylor rule, even when adjusting for some interest rate and real rate effects, given our objectives. As I noted yesterday, monetary aggregates as measured by M2 and, to some extent, MZM have expanded very rapidly, especially since our rate cuts in late January. Now, although none of these measures of monetary accommodation or monetary ease is perfect—each has its drawbacks—I am concerned that all the measures of monetary accommodation suggest that we are very accommodative at the current time.

Third, inflation is high, unacceptably high in my view, and has been that way for a sustained period, as I talked about yesterday. Some would argue that the weakened economy will bring the inflation rate down. But theory and experience both say that such will occur only if expectations of inflation remain anchored. But since the end of last year, most measures of expected inflation have moved up. The instability in the measures of expected inflation is a cause for concern. It suggests to me that markets may be less convinced of our willingness to take the necessary actions that are consistent with sustaining a credible commitment to price stability. I certainly understand the difference between a relative price shock and inflation. Clearly, oil prices and other commodity prices are in part a relative price shock. There is no question about that. But it is also true that in the 1970s one of our mistakes was that we accommodated relative price shocks with very accommodative monetary policy, and in so doing helped convert a relative price shock into sustained inflation. I think we should be careful not to

fall into the same trap. Besides, I think that in most monetary models today we worry particularly about stabilizing core inflation because it represents the sticky prices in our sticky-price models. So if relative price shocks begin to seep into the core, or into the sticky-price elements, monetary theory would suggest that we need to respond to those. If we are going to achieve something close to optimal monetary policy, we should be concerned about that seepage because it may affect expectations and it is part of what monetary policy should be doing, at least in that class of models.

Although it is true that we have not seen much in the way of wage inflation to date and that is encouraging, I would also reiterate, as some people noted yesterday, that wage inflation tends to be a lagging, not a leading, indicator of overall inflation. Contrary to the Greenbook forecast, which has us maintaining a negative real funds rate for two years and inflation coming down, I think that, if we continue easing or maintain the real funds rate well below zero for a period of time despite inflation well above our goal, it is reasonable to assume that expectations will not remain anchored. The FOMC's stated goal of price stability cannot remain credible independent of our actions. If we want expectations to remain well anchored, we have to act in a way that is consistent with that.

Fourth, I believe that we are in the fortunate position today of being able to pause. Market participants have reacted to the incoming data by appreciably tightening their expectations of future funds rate moves—at least as measured by the futures markets, as we have seen. Participants seem to be getting less comfortable with the idea of very easy monetary policy over a sustained period, given the outlook for inflation. I note that the markets' reassessment of their policy expectations over the intermeeting period doesn't appear to have had any significant negative effect on the markets, or the economy more broadly, during this period. I think this

reassessment by the markets presents us with an opportunity to reinforce our stated commitment to price stability, not just with words but with action or, in this case, inaction. I think a pause today would send a strong signal of our commitment to price stability, which could further help anchor inflation expectations, which I consider to be very fragile. A pause, it seems to me, balances the risks of the two parts of our mandate. Some might argue that, in the midst of the financial market disruptions that we have seen this year, it is important for the Fed not to add to market turmoil by taking policy actions not anticipated by the markets. The mean expectation for the markets is for 25 basis points of easing today. But market participants are placing odds of somewhere between 25 percent and 30 percent on our pausing, so I don't think a pause would be very disruptive to the markets. The magnitude of the surprise would be about the same as the surprise we had last time when we cut 75 basis points. That surprise, in my view, did not really cause much turmoil in the marketplace.

Finally, when I say that cutting 25 basis points won't help the outlook for the economy very much, others might respond that cutting 25 basis points won't hurt it very much either, so why not. I disagree. I think a cut today will not be a disaster but will contribute to a further eroding of our credibility in the eyes of the public. At past meetings this Committee has spoken a lot about the need for rapid reversals of our rate cuts that we took out for insurance. I think we should not be overly confident of our ability to implement such rapid reversals. In fact, the lower the rates go, the further we will need to come back when we start taking the accommodation back. I am dubious of our ability because we will be so much further from what might be a more neutral rate.

In summary, to my mind the gain in credibility from pausing today substantially outweighs any negative effects from slightly disappointing the markets. It doesn't preclude us

from choosing to resume cuts at a later date should economic conditions warrant them. After all, I think this Committee has demonstrated its ability to act aggressively in response to economic conditions, and we can do so again. But that is the future. For today, I think we should take the opportunity that the economy and the markets have afforded us to pause. As the old Latin expression says, “Carpe diem.”

With regard to language, I am happy with alternative C. Rather than the language in paragraph 4 of alternative C, I would prefer the language of paragraph 4 of alternative B. I would just make that the language for paragraph 4 in alternative C—that is the only change that I think would be necessary. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Evans.

MR. EVANS. Thank you, Mr. Chairman. I, too, favor maintaining the federal funds rate at 2¼ percent today. The current real interest rate provides accommodative monetary conditions for an economy that is struggling near recession or is in mild recession. Our lending facilities are probably doing as much as can be expected to mitigate the serious and necessary financial adjustments that must be accomplished by the private markets. If the economy takes another serious leg down, our current funds rate setting is well positioned for us to respond promptly, appropriately, and aggressively, if circumstances warrant. A pause today affords us a unique opportunity to wait and see how our recent aggressive actions are influencing the trajectory of real activity. Since markets are putting substantial weight on a 25 basis point easing today, a pause will be a relatively small disappointment. As President Plosser pointed out, that was similar to our March disappointment, which seemed to be all right. I think it is important for us to understand how the economy will respond to a pause in rate-cutting when it does occur. With high food, energy, and commodity prices, the extended positive differential of headline inflation

over core measures risks an increase in the public's inflation expectations. I agree with President Plosser's discussion of relative prices on that front.

From a longer-term perspective, which we don't really talk about very often, I worry about the asymmetric response of policy to high inflation as opposed to when it is low. When headline inflation is above core inflation, we take on board the relative price adjustment, and then we are content, I would guess, to bring inflation down to our perceived inflation targets. But on the downside, when inflation gets low, we become uncomfortable with certain low inflation settings, and so I fear that we would respond more aggressively, as we did in 2003, which really was a positive productivity environment. If you have an asymmetric type of response, you are going to take on board increases in the price level because of that asymmetry. That's one reason that I am concerned about these types of behaviors. Although I expect emerging resource slack to temper any adverse inflation developments, the risk is simply growing in importance with every additional policy easing, compared with the economic risks, which presumably are abating as we respond to them with such easings.

Calibrating the current policy stance against these divergent economic and inflation risks is important and challenging, as you pointed out yesterday, Mr. Chairman. I think that comparisons to the rate troughs in the previous cycles of recession policy are instructive. The current real fed funds rate is somewhere in the neighborhood of zero, or it could be lower if you choose a different way to deflate the funds rate by total inflation. I was very impressed with Dave Stockton's response to my question about what types of factors from financial market stress are embodied in the Greenbook-consistent real interest rate. It seems as though a tremendous amount of care has been taken to introduce some of these special factors in innovative ways, and while they may not capture all facets of that, I thought that they did quite a

good job. So I feel a bit more comfortable in making those comparisons, but I do recognize that it is a treacherous period.

That said, this is about the same place the real funds rate bottomed out during the jobless recovery with financial headwinds in the 1990–91 recession, and with the data we had in hand at the time during the disinflation concerns in 2003. Both periods were unique in suggesting a high degree of accommodation, and the factors that were at work in each of those episodes were unique. Our attempt to incorporate these factors has been quite useful, and so it's a reasonable, if not definitive, comparison. With our current lending facilities addressing financial stress, I think our current policy accommodation, now at  $2\frac{1}{4}$  percent, is appropriately similar to those episodes.

My final observation has to do with these end-of-cycle expectations and what they might mean for long-term interest rates. If 25 basis points is viewed as additional insurance against downside risks, I just don't think this action is significant enough to have much of an effect. We expect to take back some portion of the aggressive cuts, especially the ones that have been an attempt to respond to the financial stress. If the financial stress is mitigated to some extent, we should be expected to take that back. Expectations, as in the fed funds futures market, should limit the effect of those actions on long-term interest rates. After all, by the expectations hypothesis, you are going to be averaging these short-term paths into long-term rates. That is one reason that the Committee injected the language "considerable period" back in 2003, to try to convince people that we would do this for a longer period of time and affect long-term rates. So if there is an expectation of some type of rebound, these last insurance cuts might not have that large an effect. Again, I think our lending facilities are better geared for the financial stress.

I think we have clearly demonstrated our willingness to provide appropriately accommodative policies in a timely fashion when the economic situation demanded it. For me,



the public's expectation of these actions in that event argues against one further small insurance move. Because we are concerned about inflation risks and have indicated that we must flexibly move toward more-neutral policy stances once the economy and financial markets improve, a pause today is a small down payment on those difficult future actions. In terms of language, if it came to that, I would be comfortable with the language of alternative B with this particular rate action. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Lockhart.

MR. LOCKHART. Thank you, Mr. Chairman. I must say that I am sympathetic to the "hold" advocates and the view that we are already accommodative. I think an apt anecdote is a conversation I had in the past six weeks with a cruise line CEO who doesn't know how to drive his ships but who has in fact been at the helm a couple of times. He said, "When you turn the wheel and nothing happens for several miles, the temptation to keep turning the wheel is overwhelming." [Laughter] So I do have some sympathy. That said, I am going to support a reduction in the target rate of  $\frac{1}{4}$  percent, effectively alternative B, as I indicated yesterday. I think it is pretty clear that we have a tradeoff between "a little more help to the economy" and "enough for now" and really some shift in our focus to combating inflation.

So let me lay out my rationale for not holding. I think there is still substantial downside risk to the general economy, and it may take quite some time for recovery to materialize. A quarter would help slightly to effect a lower cost of borrowing and, therefore, would stimulate activity, although much of that is really beyond our control. It will be dictated by market forces. I think that halting today versus conceivably halting at the next meeting risks some interpretation as a lack of recognition of the real state of weakness in the economy.

Regarding inflation, I think the core numbers in the first quarter were not overly discouraging, and I have to believe my own forecasts—in many respects, the forecasts I heard—that inflation will soften in the coming months and be consistent with our working view of expectations. I would say, however, that I am concerned that, in the minds of the general public, high prices actually translate into inflation, whether or not the rate of inflation has flattened.

As I have suggested, I am inclined to pause after this move, provided that the incoming data are not too adverse and too divergent from expectations, but with the caveat that I think a lot of shock risk is still out there and we have to remain flexible to deal with surprises. Holding or signaling a pause may help the housing market a bit by starting to construct a bottom, as borrowers or buyers begin to perceive that they shouldn't expect any further rate cuts from us.

Regarding the statement, I think the rationale section in alternative B is appropriate to the situation that we face. Section 3 is a realistic acknowledgement of inflation trends and risk. I gather that, with the changes in section 4, the question was whether or not to signal a pause or an inclination to pause, and I tend to agree with a more cautious, less committal approach of the proposed language—what yesterday was called a “soft” pause. So I am, on balance, quite happy with the language in alternative B. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Stern.

MR. STERN. Thank you, Mr. Chairman. Well, I have given serious consideration to both alternatives B and C, and I think a credible case can be made for either one. There are, of course, risks associated with adopting either one as well. On balance, I come out in favor of alternative B, for the following reasons. First, we are certainly not yet out of the economic woods. Although my forecast is for a relatively mild recession, I would not be particularly surprised if it turned out to be both deeper and more prolonged, given, among other things, the

persistent overhang of unoccupied, unsold homes and the severity of the financial dislocations of the past nine months. As I have tried to emphasize, I think it could be dangerous to underestimate the effects of the financial headwinds now in train and likely, in my judgment, to get more severe. Second, and closely related to those observations, financial conditions remain quite sensitive. Even if improvement is now under way in some markets, I think it will be some time, as I said yesterday, before credit conditions are fully supportive of economic growth. To amplify a bit, I think we need to be a bit careful about the weight we put on the low level of the real federal funds rate per se for, as Governor Kohn pointed out yesterday, the credit situation is a good deal more complicated than that.

My principal reservation about supporting alternative B has to do with the inflation outlook. The news here has not been uniformly bad, especially with regard to core inflation, but I am not convinced that inflation will abate in a timely way without policy action. On the other hand, I take some comfort from the fact that apparently financial market participants do not anticipate further reductions in the federal funds rate target beyond this meeting. I think the language associated with alternative B should help to reinforce the view that, at a minimum, a pause in the reductions in the target is not that far off, given what we know today. I think it important that we find opportunities to bolster that view when we can. Thank you.

CHAIRMAN BERNANKE. Thank you. President Rosengren.

MR. ROSENGREN. Thank you, Mr. Chairman. There seems to be a groundswell of opinion in financial markets, and perhaps around this table, that given the easing to date we are at or close to a point where we should pause and assess the impact of both fiscal and monetary stimulus already provided. Should we pause at a fed funds rate below 2 percent, at 2 percent, or over 2 percent? The Greenbook forecast assumes that we pause at 1¾ percent. With this degree

of stimulus, core and total PCE inflation is at or below 2 percent in 2009, but the unemployment rate remains well above the NAIRU, even at the end of 2010. The Boston forecast generates similar outcomes. The Greenbook and the Boston forecasts suggest that 25 basis points at this meeting may not be enough. Both forecasts imply that a significant degree of slack remains in the economy, even with a 25 basis point reduction at both this and the following meeting. In addition, there are significant downside risks to the outlook. Falling asset prices in other countries have frequently been accompanied by prolonged periods of weakness. Finally, given the rise we have seen in the LIBOR rate, for many borrowers a 25 basis point decrease leaves policy no more accommodative than at our last meeting.

The consensus seems to be that we should be moving in smaller increments. But if we choose option B, it is not at all clear to me that we should pause after this meeting. In that regard, I was happy to see the revised language in the Bluebook table 1, which does not imply that our easing cycle has definitely ended. While I hope that the economy recovers sufficiently that further easing is not necessary, we need to remain flexible, particularly given that our models indicate that even with further easing we are likely to experience several years of elevated unemployment rates. Thank you.

CHAIRMAN BERNANKE. Thank you. Governor Kohn.

MR. KOHN. Thank you, Mr. Chairman. I think I can be brief by just associating myself with the comments of President Stern. This is a difficult decision. You could make a case for either of these. But on balance, I think we should be lowering interest rates 25 basis points, as under alternative B. As President Stern said, I don't think just subtracting past inflation from the nominal federal funds rate is a good metric for where the stance of policy is today. It would be if financial conditions were consistent with historical relationships, but they're not. We have very

tight credit conditions in many sectors of the market, and a zero or negative federal funds rate means a very different thing today than it did even in the early 1990s, Gary, because then you had the banking system broken but the securities markets working. Now you have the banking system broken and the securities markets not working very well. So I think we have stronger—I guess Greenspan called them “50 mile an hour”—headwinds. I would say they are 60 or 70 today, at least for now.

We expect the headwinds to abate; and as they abate, policy will look a lot more accommodative. But I don't think we really have insurance right now against the contingency that the headwinds don't abate very quickly or even get worse, or against the contingency that the staff is right and we are entering a recessionary period in which consumption and investment fall short of what the fundamentals would suggest. I think that 25 basis points probably won't buy us much, if any, insurance, but it will get policy calibrated a little better to the situation that we are facing today. I expect a small decrease in the funds rate to be consistent with further increases in the unemployment rate—and everybody does, I think, judging from the central tendencies of the forecast—which will put downward pressure and help to contain inflation. I agree that there is an upside risk from continued increases in commodity prices that feed through, as President Plosser noted, into core inflation.

I think that this is a very different situation from the 1970s. I looked this morning at the Economic Report of the President, at those tables in the back. The stage for the 1970s was set in the 1960s. Core inflation rose from 1½ percent in the mid-1960s to 6¼ percent in 1969. That's a situation, obviously, in which inflation expectations can become unanchored, and then these relative price shocks feed through much more into inflation expectations. Looking in the Greenbook, Part 2, page II-32, every measure of core inflation for 2007 was lower than the

measure of core inflation for 2006, and half of them—these are Q4-to-Q4 measures of core inflation—are lower than for 2005. So we are not in a situation of a gradual upcreep in core inflation, which I think was what set the stage for the 1970s.

I don't expect a small decrease in interest rates to result in higher inflation through this dollar-commodity price-inflation expectations channel either. The decrease in interest rates is already in the markets. If anything, a statement like alternative B might firm rates a bit; and taking out "downside risks" and "act in a timely manner" reinforces the notion that the Federal Reserve is not poised to ease any more. I wouldn't expect interest rates to go down; therefore, I wouldn't expect the dollar to go down, and I wouldn't expect commodity prices to go up from this.

I think the markets reacted very well over the intermeeting period to incoming data. They saw the tail risk decrease. They raised interest rates. The dollar firmed. They put a U shape in our interest rate path. It seems to me that path is very close to what many of us said we expected and thought was appropriate, give or take  $\frac{1}{4}$  point, for the federal funds rate over the coming couple of years. I don't see any reason to act in a way that changes those expectations; I think the market expectations are fine. I wouldn't lower interest rates  $\frac{1}{4}$  point just to confirm market expectations. I think it is the right thing to do, and I don't see any reason to lean against it to change expectations. I think that expectations are lined up pretty well with our objectives. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Fisher.

MR. FISHER. Well, Mr. Chairman, I was listening very carefully to Governor Kohn, as I do the rest of my colleagues. I noted your comment that it doesn't buy us much. I'm worried that it may cost us much. Had I gone first, I would have made arguments similar to those of

President Plosser and President Evans. I am in favor of a pause. I think that is pretty clear. I want to stress a couple of things I mentioned yesterday because I think they're important. I am concerned about our costs regarding what I call a different kind of adverse feedback loop, which is the inflation dynamic whereby reductions in the fed funds rate lead to a weaker dollar and upward pressure on global commodity prices, which feed through to higher U.S. inflation and to cutbacks in consumption by consumers and actions by employers to offset the effects of inflation. I quoted a CEO, whom I consider to be very highly regarded, regarding his company's behavioral patterns. This is someone, by the way, who was in the business in the 1970s. He said, "We're learning to run a business, once again, in an inflationary environment." That quote bothers me because it shows a behavioral response. This goes beyond the issue, but I thought that comment you made yesterday about relative prices, Mr. Chairman, was very interesting. But it shows a behavioral response, and behaviors eventually become habits, and habits become trends, and I'm worried about that.

There was a period when I felt that we were at risk of a repetition of the 1930s. I think the liquidity measures that we have taken—which I have fully supported, and I applaud you, Mr. Chairman, and the New York group for thinking these through with the staff—have provided the bridge that we spoke of yesterday. Don, you mentioned the 1970s. I am no longer worried about the 1930s, although I think there are tripwires out there that are very, very serious. You pointed to them in your intervention. You are right; under Bill Martin these pressures were put in place. But somebody mentioned yesterday—it may have been Vice Chairman Geithner—that he wasn't around in the 1970s. I actually sat by President Carter's side when he got lectures from a left-wing socialist named Helmut Schmidt and by a right winger named Margaret Thatcher. Their points were that you cannot risk appearing to be complacent about inflation. I worry that we risk

appearing to be complacent about inflation. I am speaking within the family here, but I sense that we are giving that appearance on the outside. The question really is, Is it worth  $\frac{1}{4}$  point? What is the risk–return tradeoff here? I don't think it's worth cutting  $\frac{1}{4}$  point. I think it is worth staying where we are.

I know that the markets anticipate X or Y. We had a conversation about that yesterday. I made my living in the markets. The markets come and go, and I am happy to hear Governor Kohn say that we are not influenced by the markets. I don't think we should be. Their reactions are momentary. But I just don't feel the risk–return tradeoff makes it worthwhile for a  $\frac{1}{4}$  point cut here unless we saw evidence of substantial downside slippage beyond what we are all discounting for housing, which is very negative. I have spoken about a price correction of 35 percent from peak to trough, and we're not there yet. It would have to be more negative than that to convince me to cut rates further. So, Mr. Chairman, I respectfully submit that we should pause, and that's how I plan to vote. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Yellen.

MS. YELLEN. Thank you, Mr. Chairman. I favor alternative B with the wording that has been proposed. But I do appreciate that there is a case for alternative C as well, and I understand and appreciate the arguments that have been made in favor of it. On the pure economic merits, I definitely support a 25 basis point cut. As I noted in my comments on the economic situation, it appears that the economy has stalled and may have fallen into a recession. I share the same concerns as Governor Kohn and President Stern. My forecast is close to the Greenbook. I think a further easing in financial conditions is needed to counter the credit crunch, and I believe that a cut in the federal funds rate will be efficacious in easing financial conditions.



Although the real federal funds rate is accommodative by any usual measure of it, I completely agree with Governor Kohn's discussion of this topic. This is a situation in which spreads have increased so much and credit availability has diminished so much that looking at the real federal funds rate is just a very misleading way of assessing the overall tightness of financial conditions. I consider them, on balance, to be notably tighter than they were in the beginning of August. I don't agree that further cuts in the federal funds rate will be ineffective in helping us achieve our employment goal or counterproductive to the attainment of price stability over the medium term. Given that a 25 basis point cut is what the markets are now anticipating—it is built in—I would not expect this action, coupled with the language in alternative B, to touch off further declines in the dollar or to exacerbate inflationary expectations.

That said, I did see arguments in favor of alternative C as well. I can see some advantage in doing a little less today than markets are expecting as long as we reaffirm that we do retain the flexibility to respond quickly to further negative news with additional cuts. A case that could be made for pausing is that we will soon get information relating to GDP in the second quarter and get a better read on just how serious the downturn is. With respect to market and inflationary psychology, I also can see a case for doing less than markets expect. It is true that some measures of inflation expectations have edged up a bit, and I would agree with President Fisher that perhaps a pause would counter any impression that we have become more tolerant of inflation in the long run. But I don't think we have become more tolerant of inflation in the long run, and I did see today's reading on the employment cost index as further confirmation that at this point nothing is built into labor markets that suggests that we are developing a wage–price spiral of the type that was of such concern and really propelling the problems in the 1970s. On the other hand, I agree with President Plosser, too. Wages aren't a leading indicator. We have to

watch inflationary expectations. So I don't think that is definitive. Nevertheless, I do find it quite reassuring that nothing is going on there at this point.

I think doing nothing today might mitigate the risk of a flight from dollar assets, which could exacerbate financial turmoil. So there are arguments in favor of alternative C, and I recognize them. But, on balance, I believe that the stronger case is for B.

CHAIRMAN BERNANKE. Thank you. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. The FOMC is badly in need of a stopping rule on the federal funds rate. Continued reaction to bad economic news—and there is likely to be bad news in the coming months—is going to set up serious future problems for this Committee. The fragile credibility of the Committee is being eroded as we speak, and we will do well to take steps to reassert inflation-fighting resolve at this meeting.

The intuition in dealing with the current crisis is that we can use new lending facilities to help return financial markets to more normal operation and that interest rate policy is not that likely to help on this dimension. But exceptionally low rates can create new problems. Since lower rates are not really helping directly with the smooth operation of financial markets, I suggest that we put that on hold for the time being and let our past, stunningly aggressive, interest rate moves have an effect through the summer and into the second half of the year. This would be consistent with alternative C in the policy alternatives.

Many participants have emphasized that there will be a long unwinding process. The Chairman described us as being in the third inning on this, similar to the late 1980s and early 1990s. During that episode, the Fed went on hold at 3 percent, considered an exceptionally low rate at the time. That gave financial markets a chance to heal following the S&L problems without creating other problems for the mid to late 1990s. In retrospect, this policy worked quite well during that

era, and it seems to me that something similar could be done today at the current level of the federal funds rate. Thank you.

CHAIRMAN BERNANKE. Thank you. President Hoenig.

MR. HOENIG. Mr. Chairman, I'm glad that reasonable people can differ. I do continue to hold the view that easing policy today is a mistake. If I were voting on it, I would vote to hold where we are. With the fed funds rate at the level it currently is, I think that continuing to ease policy in an environment of rising inflationary pressures gives serious erosion to our long-run credibility. We are seeing increasing signs that inflation expectations are rising. I see it constantly, as the public's inflation psychology is changing as well. This change reflects the large, sustained now, increases in food, energy, and other commodities and accelerating import prices. I am concerned that maintaining at this highly accommodative policy level for an extended period, while it may bring some short-run stimulus into the economy, increases inflationary risk to an unacceptable level, which will, over the not-too-distant future, begin to distort long-run investment decisions and continue to increase the risk of financial instability and imbalances in the longer-run. Finally, on the psychology of the markets, holding rates constant, although it might disappoint some on Wall Street, will please many, many on Main Street. I judge that it will confirm to the world that we are turning our attention to these longer-run issues, and I'm disappointed that we're not seizing the opportunity to make that statement. Thank you

CHAIRMAN BERNANKE. Thank you. President Pinalto.

MS. PIANALTO. Thank you, Mr. Chairman. My concerns about the real economy are similar to those that I had in March. I continue to believe that residential real estate markets could deteriorate even further than what I have in my baseline projection and could exert even greater downward pressure on business activity. Financial markets in my view are still fragile, and larger or

more-widespread liquidity pressures could quickly present us with an even weaker set of economic fundamentals. At the same time, I can't easily dismiss the ongoing escalation of energy and commodity prices. Although many of us, as we talked about yesterday, have expected these price pressures to abate for some time, they have not; and as I indicated yesterday, I do believe there is a risk that core inflation will not follow the downward path that I submitted as my projection for this meeting. So like others, I can see a case being made for alternative C. However, I think a modest reduction to our policy rate today as a precaution against further slippage in the real economy is prudent. But I also strongly support the language that indicates we're very close to, if not at, a pausing point in our easing cycle. So I support the policy recommendation and the language in alternative B. Thank you.

CHAIRMAN BERNANKE. Thank you. President Lacker.

MR. LACKER. Thank you, Mr. Chairman. I find myself agreeing with my colleagues who have advocated alternative C. One way to think about our approach to the policy decision today is to look ahead and think about the probabilities associated with two bad outcomes. Will the economy go into a substantially deeper recession than we expect? Or coming out of this recession, will the trailing inflation rate be higher than it was when we went in? Although I hope neither of these occurs, my sense right now is that the chance of an increase in trend inflation is more likely than a much deeper recession, and I think we should alter our policy path accordingly.

The incoming data since the beginning of the year have resulted in a more adverse outlook, and that change in the outlook is already, in my view, reflected in the current stance of policy. I noted yesterday that the real federal funds rate using the Greenbook's inflation forecast rather than four-quarter lagged core inflation is now between minus  $\frac{1}{2}$  and minus  $\frac{3}{4}$  percent. I think it makes sense to take advantage of information about foreseeable gaps between overall inflation and core,

and the stance of policy strikes me as very stimulative, certainly plenty for the recession we now expect, when we look at back historical recessions. As I noted yesterday, at the retail level for firms and consumers, spreads aren't out of line with where they've been in past recessions. It is true that jumbo mortgage rates and some other rates have not come down as much as they've come down in past recessions, but I just remind people of the secular technology shift. There's a sort of level shift in intermediation technology that we're going through right now that really constitutes a change in the relative prices of different financial assets.

Now, I can't think clearly about the stance of policy without talking first about the risk-free rate and then thinking about various spreads as really having to do with the relative prices of different financial claims. So in looking at and through retail rates, that's informative. But the risk-free rate is the risk-free rate, and an array of factors affects how those relative financial prices evolve. The securitization channel that seemed to work very well for a while is now exposed as more costly and less efficacious than once was thought. Some of these securitization vehicles didn't exist in past recessions or expansions, and only a couple of decades ago these spreads were as high as or higher than they are now. So I stick to thinking about the stance of monetary policy in terms of the real risk-free rate.

I think our experience between the January and the March meetings with inflation expectations is pretty good evidence of their fragility in the current environment without our having articulated what our long-run objective is for inflation. I don't think that the level of inflation expectations is aligned with our objectives; I think it is too high relative to our objectives. Market participants see a good chance of our dropping the rate  $\frac{1}{4}$  point today and reversing field later in this year and raising rates again. I suspect they don't fully grasp how difficult it's going to be to reverse course while we negotiate the murky waters of the recovering economy later this year. Indeed, I

think that the fiscal stimulus that we're going to get will make those waters even murkier. It will be even harder to divine the underlying, ex-fiscal-policy strength of the economy.

So for these reasons, I believe that we should leave the fed funds rate alone today. The upward surprise at our last meeting did not appear to affect financial markets adversely. Coupled with that statement's emphasis on inflation risks, it did seem to have the beneficial effect of reversing the run-up in inflation expectations. I would expect that leaving the funds rate alone today would have a similar beneficial effect in stabilizing inflation expectations. So I favor alternative C, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Warsh.

MR. WARSH. Thank you, Mr. Chairman. I can support alternative B, but I must admit I can't do it with the conviction that I would prefer to have. I think market participants will look at our decision today and at the data over the next few weeks and try to measure whether we can hold up to the pause language that accompanies alternative B. Taking action with a 25 basis point move today, we have to then be prepared to stomach the continued weakness in the real economy that is in many of our projections. Speaking for myself, I'd say we also have to be prepared when we next meet to hold the line even if we see a retracing of some of the improvements in financial markets. So in my own base case, the judgment when we next meet will be a harder one. The economy might look weak; financial markets might look weaker than they are; and trying to signal to the markets in alternative B that we are serious about holding the line at what would then be 2 percent is putting a pretty hard task on us. I think we're capable of holding the line there, but we have to hold ourselves to that standard.

The 25 basis point move, in and of itself, doesn't strike me as that consequential. What strikes me as consequential is the symbolism. Given the uncertainties that Dave and the team have

spoken about, it strikes me that the 25 basis points is not nearly as consequential in effect as what might well happen to the transmission mechanism and the efficacy of this change in federal funds rates on the real economy. Put differently, if the financial markets can get back to business, they will be helping the real economy, in effect lowering the cost of capital far more than our actions would today.

As I said, I think the symbolism here does matter. By moving 25 basis points today, we're taking some risks with the dollar. I think that the dollar improvement we have seen over the past several days and weeks has occurred because there's an expectation that we are closer to a pause and that this Committee is going to have a tougher decision about whether or not to move than they had anticipated some weeks ago. Even though the language in alternative B is useful in trying to lay the factual predicate for a pause when we next meet, there will be a lot of folks who will be wondering about our convictions there, and when they do, I think we are assuming some dollar risks. We are also assuming incremental risks on the inflation front. Continued easing could well encourage the perception that the FOMC has a greater tolerance for inflation than is prudent, with potential adverse effects on inflation expectations, a further run-up in commodity prices, and a continued decline in the foreign exchange value of the dollar.

So this is a tough judgment that we're making, with significant uncertainty. I take comfort in believing that the language in the minutes and the remarks that we all offer between now and the next time we meet will suggest not that this is a cut with a dovish pause but that this is a cut with an expectation of holding after our actions today. We are not barring all events because we can certainly imagine the world turning yet again and we can certainly imagine another let-down, particularly in the global economy. But this is a statement that we want to hold after our action

today and that we are prepared to stomach some additional bad news with respect both to the economy and to financial markets. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Kroszner.

MR. KROSZNER. Thank you, Mr. Chairman. As many speakers before me have said, this is a pretty close call, and reasonable cases can be made for both alternative B and alternative C. If you look at financial market conditions, you can see your favorite indicator and say whether things have eased or not eased. One indicator that I look at when thinking about the transmission of monetary policy is the LIBOR–OIS spread, which has gone up very significantly. A lot of short-term borrowing is priced off of that. If we wanted just to keep policy where it was six weeks ago, we would actually have to cut more—not that I’m suggesting that we should. But if you use that spread as the relevant indicator, it would suggest that, if one were to keep the same stance, or potentially the same stance, of monetary policy, you’d have to cut a lot. It doesn’t seem as though our liquidity facilities have been effective on this particular dimension. We had been hopeful that they would be, but they don’t seem to be. Even with some of the things that we voted on yesterday, we’re still going to see very elevated spreads in some of these markets, still making borrowing costs relatively high and so disrupting the traditional monetary transmission mechanism. So that’s where I would argue for alternative B.

Another argument for alternative B is the potentially protracted slowdown. I agree very much with President Stern. As I’ve talked about a lot before, this sort of slow burn is related to the housing market. The repair and recovery of those markets is going to take a long time. The spreads are still quite elevated in a number of these markets. So providing more cushion against the downside risk there for those markets and then thinking about how that risk affects the potential for



broader downside risks, in which the housing market seems to be a potential trigger point for negative nonlinear dynamics, again suggests that moving down 25 basis points now is prudent.

The key, of course, that people have been talking about is inflation pressures going forward—inflation expectations. Here a case can be made on either side with some cogency. One challenge we have right now is that we have a lot of differences in the way to read inflation expectations. Looking at the five-year-ahead versus the five-to-ten-year-ahead, we've seen them spread apart quite a bit and now start to come back together, with the next five years starting to move up but the five-to-ten-year-ahead moving down. We have a number of other measures of expectations, some of which have moved up quite significantly but maybe primarily because of some relative price movements rather than underlying inflation trends.

One thing that is comforting for me on the alternative B side is that during the last year to 18 months, when we have had very low—below 5 percent—unemployment rates, we have seen very little evidence of high wage pressure. I find it unlikely that it is going to increase as the unemployment rate goes above 5 percent, and I think, as many people around the table do, that unemployment may sustain itself above 5 percent for quite some time. We also haven't seen some of the real shocks to energy and commodity prices feed through to core. Now, that still could be coming. But we've seen very elevated prices in these areas for quite some time—six to nine months—and the most recent readings from the PCE index suggest that they haven't fed through. Maybe that is still to come, and I think to be worried about that is reasonable. It is also reasonable to be worried about implications for the dollar if we were to go for alternative B rather than alternative C.

But the language in alternative B can provide some comfort to the markets that we are unlikely to be pushing much further, given what we see and what we expect, but that we are open to

that possibility. We certainly have a very long time between this meeting and the next meeting. We're going to be getting two employment reports, GDP, and a lot of other information, so we may need to revisit some of these issues. But at this point I would come down for alternative B with the language that we have. I think it gives us the appropriate flexibility, and I don't see sufficient evidence of an unhinging of inflation expectations or actual inflationary pressures, at least with respect to core, to say that we need to take a pause now. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Mishkin.

MR. MISHKIN. Thank you, Mr. Chairman. Well, I'm in a very uncomfortable position here because I usually like to be very decisive, and I think in all past cases I've had a strong view before going into the meeting in terms of what is the appropriate alternative that the Committee should take, at least that I should take. I'm in a very uncomfortable position because I'm actually sitting exactly on the fence between alternative B and alternative C. As you know, sitting on the fence and having a fence right in that anatomically uncomfortable position is not a good place to be. [Laughter] So let me go through the current situation and argue why I'm in this uncomfortable position.

The first point to make is that inflation expectations are actually reasonably well contained. It is true that I have a concern that high headline inflation could make containing inflation expectations and preserving the nominal anchor more difficult. But it is important to note that we have been in a situation in which we've had very high headline inflation and, in fact, core inflation and inflation expectations have behaved very well. So it's very important to emphasize that this is not the 1970s, and I really get disturbed when people point to that as a problem. We do have to worry about inflation expectations possibly going up, but it's not a situation that, if we make a

mistake, they go up a whole lot. They could go up, and it might be costly to get them down, but it would not be a disaster.

The second issue is that, although we may have turned the corner, we are still in a situation of very fragile financial markets, and we have been disappointed before. I am getting more optimistic. I'm hopeful and think it's very possible that we'll look back at the middle of March and say that was the worst of it. But there is a possibility, and it's not a small possibility, that things could go south again, and that would argue for the need for aggressive cuts in the future.

The third thing that I point out about the situation is that the modal forecast given by the Greenbook—and consistent with my modal forecast and with the modal forecasts of most of the participants—suggests that we may have to cut a bit further in the future. So the problem is that, given the conditions that we face, we need a lot of flexibility to deal with potential downside risks. I think the downside risks have diminished, but they could go back up again. So there could be a situation in which we need to ease aggressively in the future. Of course, we've convinced the markets that we are non-gradualists, but so far we've been non-gradualists in only one direction, which is to ease. In fact, we'd like to be in a situation where we could aggressively ease in the future if we had to but not risk having inflation expectations go up. That's a very serious problem that many participants have pointed out.

So how would I like the markets to perceive us? Well, I'd like the markets to perceive us as being willing to be very aggressive in terms of easing, if necessary; but I'd also like them to perceive us as having the Volcker characteristics of being six feet, six inches, tall and having a big baseball bat and, if inflation and inflation expectations are starting to unhinge, being willing to take out the baseball bat and do whatever is necessary. You really would like to position yourself to have those characteristics.

So let me first talk about the case for alternative C of not changing and then go to the case for alternative B. In the case for C, the advantage of pausing at this point is that it would actually indicate to the markets by our actions that we're serious about keeping inflation under control and that it's more likely that we would bring out the baseball bat. In that sense, it could enhance credibility, and a very important, positive element of that is that it would be easier for us to be flexibly aggressive if we needed to be so in the future. That is one reason that I think there is a strong case for alternative C. But I also think there is a strong case for B. First, the evidence that inflation expectations are unhinged or are likely to get unhinged is not very strong. I do not put a lot of stock in consumer surveys. But I tend to look at financial markets as being the canary in the coal mine. Though being a New Yorker, I actually have been in a coal mine [laughter] – at the Museum of Science and Industry in Chicago. It's really cool. All of you should go there someday when you go visit Charlie.

MR. KROSZNER. But he has never seen a canary. [Laughter]

MR. MISHKIN. I have seen a canary. But the key is that the canary has not keeled over. In fact, if you look at what's going on in the financial markets, the concerns in terms of inflation compensation have dissipated somewhat. I think the fact that they were moving up is an indication of greater inflation risk. They've come back down again. I don't think that should make us complacent, but I do think it tells us that we haven't seen anything really bad happen at this stage.

So the question is why we should cut now and go with alternative B rather than C. Well, first, I think the modal forecast suggested that a cut is in line with optimal monetary policy, and I think that's an important argument. It is particularly so because there is a very strong likelihood that, even though I'm a little more confident that the recession that we're probably in now will be very mild, if it's even a recession at all—I think it is likely that we're in a recession but a mild

one—the recovery actually is going to have a lot of the characteristics of the recovery that we had in the 1990s because it’s just going to take a long time to clean up this mess. That again argues for a cut. The other issue that I think is important is that there is a very long period between now and the next FOMC meeting. Given that the modal forecasts indicate that things are likely to get worse in the economy in this quarter, there is an issue that, if we get bad news, then we might regret not having cut now, and I’m not a big fan of intermeeting cuts. That would be another argument for cutting now.

I guess the bottom line is that I’m just in a very uncomfortable position in that I dislike being not very decisive here. One thing that has helped me a lot in being comfortable with alternative B is that the language has changed quite significantly from the initial wording. I was not happy with the idea that, if we suggest that there will be a pause in the future, it would be time dependent. It should be clearly data-dependent. If it were time-dependent, we would get into exactly the problem that Charlie Evans talked about: We want the flexibility of saying that what we’re doing is dependent on data, not time, because if people know that you’re going to reverse things later on, it doesn’t have the impact. I think that is an important change here. So I’m quite comfortable with the language of alternative B. I’m willing to support B. It looks as though that is the consensus, and my view today is that I’m going to go with whatever the consensus is. Thank you very much.

CHAIRMAN BERNANKE. Vice Chairman.

VICE CHAIRMAN GEITHNER. Thank you, Mr. Chairman. The transcript says, “Mishkin says canary wheezing but hasn’t keeled over.” [Laughter] I support alternative B. I think you could frame this as a modest recalibration of policy with a hawkish soft pause.

CHAIRMAN BERNANKE. And a wheezing canary. [Laughter]

VICE CHAIRMAN GEITHNER. I don't think the canary is wheezing. Look, I think there are lots of good arguments on both sides of this. I think all the good ones have been made. The markets have been giving us a pretty good test against the concern, which I think we all share, that if we move today we risk some significant erosion of our inflation credibility or inflation expectations feeding through the dollar into a commodity price spiral. We have had a pretty good test of it. Over the past several weeks, there has been a very substantial shift in expectations for the path of the fed funds rate, which embody substantial expectations around a near-term cut and very little beyond that and some modest retracing as we go forward. Expectations have come down despite what has happened to oil prices. Inflation has come down. The dollar is stronger on net over that period. This is pretty good validation that the path that is represented in alternative B does not come with excessive risk that we will be eroding our credibility. We can't know for sure. It's good to be worried about that risk, but the protection against that risk is fairly good.

What strikes me about this discussion is the extent of the gap in this Committee in how we think about the way to measure the stance of monetary policy. What we could do is use a seminar and a bit of history on this. It would be nice to run monetary policy back over the past four decades to see, if it had been set with a basic policy regime in which we looked only at the real fed funds rate deflated by headline inflation today, what the outcomes would have been for the economy at that time. That's essentially what you guys are saying. It seems to me that you are basically saying that equilibrium doesn't vary and that deflating the nominal fed funds rate with some mix of headline and core today is the best way to judge the stance of policy. But I think it's worth having a little exercise in it. It is hard to look back.

MR. PLOSSER. Excuse me. Make sure that you say you're speaking for yourself, not for me, in terms of how I think about policy.

VICE CHAIRMAN GEITHNER. Okay, but it is a surprising gap. So I think it would be worth some time to think through that. Obviously we also disagree about how inflation works in the United States, how relative price shocks take effect, and what we should respond to in that sense. That would be worth a little time, too. Again, it is a surprise to me. We sit here to make monetary policy, and we haven't talked much about this basic core question: How should we judge the stance of policy? It would be worth some attention.

I just want to end by saying something about the dollar. My basic sense about the dollar—and I'm very worried about this dynamic now—is that it has been trading more on concern about tail risk in the economy and in the financial system than anything else. As I said yesterday, if you look back to when there has been an increase in perceived tail risk, however you want to measure it—credit default swaps on financials or something like that—and the two-year has fallen sharply or we have had a big flight to quality, those have been the periods that have been most adverse to the dollar. Now, it is not a consistent pattern, but I think it's basically right; and I think it gives an important illustration that what goes into a judgment about whether people hold dollars and U.S. financial assets has to do with a lot of things. It has a lot to do with confidence that this Committee will reduce the tail risk in the financial system and the economy to tolerable levels. It also has a lot to do with confidence in our willingness to keep inflation stable over a long period, but it's not only that. Again, we have had a pretty good experiment in that proposition over the past year or so.

My sense is that the biggest risk to the dollar, since I'm pretty confident that this Committee is going to make good judgments about inflation going forward, is in the monetary policy of other countries. The real problem for us now is that we have a large part of the world economy—in non-China, non-Japan Asia and the major energy exporters—still running a monetary policy that is based on the dollar as nominal anchor. That has left them with remarkably easy monetary policy

and a pretty significant rise in asset-price inflation. The transition ahead for them as they try to get more independence for monetary policy and soften the link to the dollar is going to carry a lot of risk for us because the market is going to infer from that a big shift in preferences for the currencies that both governments and private actors in those countries hold. As that evolution takes place in their exchange rate and monetary policy regimes the risk for us is that the market expects a destabilizing shift in portfolio preferences, which people might infer is also a loss of confidence in U.S. financial assets. I think that's a big problem for us. It's not clear to me that it means that we should run a tighter monetary policy against that risk than would otherwise be appropriate because I don't think it buys much protection against that risk. I just want to associate myself with all the concerns said about the dollar in this context. The judgment that goes into confidence and people's willingness to hold U.S. financial assets is deeply textured and complex, and it has a lot to do with confidence in this Committee's capacity to navigate the perilous path between getting and keeping down that tail risk and preserving the confidence that inflation expectations over time will stay stable. So I support alternative B and its language.

CHAIRMAN BERNANKE. Thank you all. The discussion was very good as usual, and let me just assure you that I listened very, very carefully. So I'm certainly hearing what you're saying, and I understand the concerns that people have expressed. I play Jekyll and Hyde quite a bit and argue with myself in the shower and other places. [Laughter] Let me first say that I think we ought to at least modestly congratulate ourselves that we have made some progress. Our policy actions, including both rate cuts and the liquidity measures, have seemed to have had some benefit. I think the fear has moderated. The markets have improved somewhat. As I said yesterday, I am cautious about this. There's a good chance that we will see further problems and further relapses, but we have made progress in reducing some of the uncertainties in the current environment.



I also think that there's a lot of agreement around the table—and I certainly agree—that we have reached the point where further aggressive rate-cutting is not going to be productive and that we should now be signaling a willingness to sit, watch, and listen for a time, for two reasons. First, risks are now more balanced. That is, there is more attention to inflation risks and dollar risks, and although our output risks remain quite significant, the balance is closer than it has been for some time. Second, given that we have done a lot in a short time and moved aggressively and that we're seeing fiscal actions coming in and perhaps other policy effects as well—lagged effects of our own actions—it seems to be a reasonable time for us to pause, to watch carefully, and to presume that we're not going to move unless conditions strongly warrant it. So I think that, at least in that broad respect, there's a lot of agreement around the table.

The two alternatives that have been discussed by most people are B, which is to move 25 basis points today but to send a fairly strong signal of a preference to pause after this meeting, and C, which is not to move but to keep some elements of the downside risk alive in our risk assessment. Like a number of people, I think both are plausible. Both have appeal. Alternative C, in particular, has the appeal of pushing back against some critics on the inflation side who have criticized us for not being sufficiently attentive to the dollar, to commodity prices, and so on. As I said yesterday, I think that inflation is an important problem. It's a tremendous complication, given what is happening now in the other parts of the economy. In no way do I disagree with the points made by many participants that inflation is a critical issue for us and that we have to pay very close attention to it. As I said yesterday, I do think that some of the criticism that we are getting is just simply misinformed. I don't think there's any plausible interest rate policy that we can follow that would eliminate the bulk of the changes in commodity prices that we're seeing. I think they are due mostly to global supply-and-demand conditions. A small piece of evidence for that is that yesterday

the ECB was mentioned favorably as having the appropriate inflation attitudes compared with our attitudes. I would just note that headline inflation in the euro zone is about the same as it is here, despite their stronger currency, because they are being driven by the same global commodity prices that we are.

I would also say that, although the inflation situation is a very important concern, I don't see any particular deterioration in the near term. Since the last meeting, oil prices have gone up, which is very high profile, but gold, for example, has dropped about 12 or 13 percent. Other precious metals are down. Some other commodities are down. The dollar is stronger. TIPS breakevens have moved in the right direction. Wages, as we saw this morning, are stable, and I would urge you to compare wage behavior over the past five years with wage behavior during the 1970s. Wage growth then was not only high but also very unstable and responsive to short-term movements in headline inflation. So I think the canary is still getting decent breath here. [Laughter] I want us to be careful not to overpromise. We cannot do anything about the relative price of gasoline, and I don't think that we're on the edge of an abyss of the 1970s type. I do think it's an important issue, and I do think that there is benefit to pushing against the perceptions. In this business, perceptions have an element of reality to them, and we understand that. That's an important part of central banking, and I fully appreciate that point. So again, I see a lot of merit in the alternative C approach.

As I think you can conjecture, I'm going to recommend alternative B—25 basis points but with a stronger indication of a pause. Let me discuss why in the end I come down on that side. First is the substance, the fundamentals. I don't think that 25 basis points is irrelevant. For example, one-month LIBOR is up about 35 basis points since our last meeting. These short-run financing costs do matter, particularly in a situation of financial fragility. So it is not just an issue,

as President Evans mentioned, of long-term interest rate expectations. Overnight and short-term financing costs do matter for the financial markets, and a lower rate will help the markets to heal. It will affect other rates. To take an obvious example, it affects the adjustable rate that mortgages move to in the economy. So I think there's a case to be made on the substance. I will not add much to the discussion about how we define "accommodative." But one way to do it, I guess, is to look at the Greenbook's very thorough analysis, which rather than using rules of thumb attempts to look at a broad forecast conditional on what the staff can ascertain about the financial drags that we're seeing. Their analysis suggests that something around where we are or a little lower is consistent with slow economic growth but also price stability within a relatively short time. That is one way of trying to calibrate. Obviously, there are other ways as well.

The second point I'd make, besides just the substance, is the consistency with our own projections. Virtually everybody around the table still thinks that the downside risks to growth are significant, and we've mentioned the same factors—financial conditions, housing, and a few other things. Those remain very serious downside risks. I don't think anybody thinks they are under control at this point. Yes, we also see an increased number of people with upside risks to inflation. But again, in terms of the numbers we'll publish, I think the downside risks are still held by more people than the inflation assessment. That, by the way, suggests why we can't really do what President Plosser suggests—hold and move to the alternative B, paragraph 4, language. Not to move and to say that the risks are balanced would, I think, be clearly inconsistent with the risk assessments that are in the projections.

The other issues have to do with communications. We are at an important transition point in our communication strategy. One of the risks that we took when we made the very rapid cuts in interest rates earlier this year was the problem of coming to this exact point, when we would have to

communicate to the markets that we were done, that we were going to flatten out, and that we were going to a mode of waiting. It was always difficult to figure out how that was going to work in a smooth way. Whether through luck or design, market expectations have set up perfectly. I mean, basically they're now assuming a flat path going forward, with some increase later; and that appears to be consistent, as Vice Chairman Geithner noted, in the last few days with significant dollar appreciation, declines in commodity prices, and declines in inflation expectations—all the things that we want to see. It appears that we're in a position that had seemed really problematic some time ago, so we are now able to make the transition in a way that will be relatively clear and, I hope, not too disruptive.

Now, I want to come back to the issue of disappointing markets. I agree with President Fisher and many others that disappointing markets can be a good thing. It is certainly not always a bad thing, by any means. I think the issue is a little more subtle than that. The issue here is the clarity of what we're trying to say and the way our message is going to be read. Let me make two points about that. If we were to do alternative C, I think there would be essentially two issues. One is that, although we would not be moving, which would be a surprise, we would also not be declaring a pause because of downside risk, which would be another surprise. We'd have a surprise both in the action and in the statement. The risk there is that we confuse the markets about what our intentions are and what would cause us to respond. For example, the Greenbook's projections of Friday's employment numbers are somewhat more pessimistic than those being held in the market. If we took action C today and Friday's numbers were consistent with the Greenbook forecast and with our own projections but worse, significantly worse, than the market expectation, would statement C then lead to the building in of additional ease? I think there would be a lot of confusion

there—a lot of uncertainty about what exactly we are saying about when we'd be willing to respond.

The other communication issue that I have with alternative C—and this, again, is something President Fisher said yesterday—is that if we don't move and we put C out there, the stock market could go up because it might be read as saying that the Fed has increased confidence, is seeing things looking better, and is feeling stronger about the economy. I'm not sure that really is the assessment we have, and if we then have bad data on the labor markets and the financial markets weaken somewhat, will we be seen as having made a wrong call, as being blindsided by circumstances? This is more discussion than it's worth, but what I'm trying to convey is that it's not just a question of disappointing or not disappointing markets. It's a question of whether or not we're sending a clear message. I think alternative B, while it's consistent with our risk assessments, is also a pretty strong statement. Let me, just for what it is worth, assure you now that data that come in within the general, broad ranges of what we're expecting, even though they will be weak, should not cause us to ease further, given this statement. I believe that this statement will provide us with plenty of cover. No matter what the markets expect, we have said that we have come to a point at which we need to take a pause, we need to see what's happening, and we are going to be watchful and waiting.

With respect to the language, I just want to point out how much the language in alternative B has moved from March. It really is a very significant change. First of all, we are acknowledging explicitly how much we have already done—the substantial easing of monetary policy to date plus the measures to foster market liquidity—and expressing a general confidence implicit in that first sentence that we have done a lot; that it is likely to help; and therefore, that we should wait and see what happens. Second, we removed any reference to downside risk to growth,

which has been in there for a long time. That’s a very strong statement. That says a lot about our inclinations going further. Third, we’ve added the phrase “continue to monitor,” which to me suggests very much a watchful waiting rather than an active approach to developments in the economy. Finally, we have made it clear that we are going to be data dependent and, in particular, though we have done a lot, we are expecting continued weakness, and we’ll act as needed. But we have taken out the “timely manner,” so the presumption that we’ll be responding in a very rapid and aggressive way, I think, has been moderated.

I think of alternative B as being a compromise in the sense that it takes a step that is consistent with the fundamentals in terms of the underlying tightness of the financial system and the risks that most of us see to economic growth as well as inflation. At the same time, I think it is a rather strong step in expressing a shift in our strategy—that we are moving from the phase of rapid declines and aggressiveness to a phase of waiting and observing how this economy is going to evolve. Again, with full respect to everyone’s comments, I understand. Unlike Governor Mishkin, I wasn’t sitting on the fence; I thought that was a little uncomfortable. But I understand the concerns and the arguments. The communication issues did concern me, and largely on that basis, I would advocate B today. Are there any comments? If not, could you please take a roll call?

MS. DANKER. This vote encompasses the language of alternative B in the table that was handed out as part of Bill’s briefing yesterday, as well as the directive from the Bluebook.

“The Federal Open Market Committee seeks monetary and financial conditions that will foster price stability and promote sustainable growth in output. To further its long-run objectives, the Committee in the immediate future seeks conditions in reserve markets consistent with reducing the federal funds rate to an average of around 2 percent.”

Chairman Bernanke	Yes
Vice Chairman Geithner	Yes

President Fisher	No
Governor Kohn	Yes
Governor Kroszner	Yes
Governor Mishkin	Yes
President Pianalto	Yes
President Plosser	No
President Stern	Yes
Governor Warsh	Yes

CHAIRMAN BERNANKE. Thank you. I will ask the Governors to join me in the office for the discount rate decision. Everyone else, why don't you take a 20-minute coffee break.

[Coffee break]

CHAIRMAN BERNANKE. Okay. Why don't we recommence. The meeting that we are about to begin is a joint meeting of the FOMC and the Board, so I need a motion to close the meeting.

MR. KOHN. So move.

CHAIRMAN BERNANKE. Without objection. The discussion is about interest on reserves. Let me turn to Brian.

MR. MADIGAN.<sup>5</sup> Thank you, Mr. Chairman. We will be referring to the package of material labeled "Implications of Interest on Reserves for Monetary Policy Implementation." Today, the staff will report on work prompted by two changes the Congress made to the Federal Reserve Act in October 2006 and will seek your guidance on further work. Both changes become effective in October 2011. As shown on page 2, the first change allows the Board to authorize the Reserve Banks to pay interest on balances maintained by depository institutions at an interest rate or rates not to exceed the general level of short-term interest rates. The second allows the Board to set required reserve ratios on transaction deposits within a range of 0 to 14 percent rather than the currently mandated range of 8 to 14 percent, permitting the Fed effectively to eliminate reserve requirements if it chooses. These two changes will allow the Federal Reserve to make significant improvements in its approach to monetary policy implementation. They give us an opportunity to reduce distortions and deadweight losses resulting from our current complex system of reserve requirements. They also give us an opportunity to improve the effectiveness of monetary policy implementation in routine circumstances as well as in conditions of financial stress.

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<sup>5</sup> The materials used by Messrs. Madigan, Meyer, Clouse, Hilton, and Dudley are appended to this transcript (appendix 5).

While the Congress made important changes in the law, it also left some key statutory constraints in place. As discussed on page 3, if the Board chooses to retain reserve requirements, the law continues to allow them to be imposed only on transaction deposits, nonpersonal time deposits, and Eurodollar liabilities and only on depository institutions. In effect, the law continues to enshrine a system of reserve requirements that was designed to facilitate control of M1—an objective that has had little relevance to the conduct of U.S. monetary policy for a quarter-century. Second, the prohibition against paying interest on demand deposits remains in force and is a significant continuing distortion in the U.S. financial system. We continue to work with congressional committees and staff to seek opportunities for the repeal of this prohibition. Third, the law retains significant constraints on the assets that the Federal Reserve can purchase in the open market. Fourth, interest on reserves has potential implications for priced services and for Reserve Bank operations more generally. Finally, the Federal Reserve remains unable to pay explicit interest on balances held at the Federal Reserve by the Treasury and by foreign central banks.

Page 4 summarizes the steps we have taken to date in our work on interest on reserves. Shortly after the legislation was passed, the Chairman asked the staff to begin background work. Last year, a System workgroup undertook a preliminary study of a range of options for implementing monetary policy given the new authorities. I'd like to recognize the participants in that workgroup, who made remarkable progress during a period in which some of these individuals were experiencing considerable pressures relating to the implementation of monetary policy that day, not just in five years. These individuals included Jim Clouse, Seth Carpenter, John Driscoll, Sherry Edwards, David Mills, and Travis Nesmith from the Board; Spence Hilton, Leo Bartolini, Chris Burke, Todd Keister, Antoine Martin, and Jamie McAndrews from the New York Fed; Ron Feldman from Minneapolis; Steve Meyer from the Philadelphia Fed; and Huberto Ennis and John Weinberg from Richmond. Separately, a System workgroup co-headed by Don Hammond here at the Board and Ron Mitchell at the Boston Fed has begun work on the implications for priced services of paying explicit interest on balances. In February, the Board hosted a workshop on monetary policy implementation; five foreign central banks and the Federal Reserve participated.

As shown on page 5, our briefing today is in four parts. After this introduction, Steve Meyer will present a summary of the Federal Reserve's current approach to implementing monetary policy. Next, Jim Clouse and Spence Hilton will discuss five options for implementing the new legislative authorities. Finally, Bill Dudley will make a number of concluding comments and present our recommendations.

As shown on page 6, we will be seeking your comments on the criteria that we have tentatively adopted for evaluating the options; on the options themselves; and on the process and timeline that we are tentatively proposing for this project. One of the key issues is whether you would be prepared to see reserve requirements reduced to zero. Steve will now continue our presentation.



MR. MEYER. As Brian noted, I will summarize our current approach. As indicated on page 7, I will discuss depository institutions' demand for central bank balances, how the Desk manages the supply of balances, and outcomes in the federal funds market. There are three components of demand. Some depository institutions (DIs) hold balances to satisfy the reserve requirements shown on page 8. Many more hold contractual clearing balances, and some routinely hold excess reserves.

Page 9 notes that DIs can meet their reserve requirements by holding currency, by holding balances at a Reserve Bank, and by holding deposits at a correspondent that holds an equal amount at a Reserve Bank. These assets earn no interest, so DIs have an incentive to reduce their required reserves to the level of vault cash and reserve balances they would choose to hold if there were no requirements. In practice, DIs cut required reserves by using sweep programs that shift deposits out of transaction accounts into linked nonreservable accounts. This stratagem works because the Fed applies reserve requirements to end-of-day, post-sweep, deposits. About half of the DIs have no reserve requirement. A large majority of the remainder meet their requirements entirely with vault cash. Only 1,500 DIs hold balances to meet reserve requirements, so last year required reserve balances averaged less than \$7 billion, an amount equal to 0.1 percent of total deposits in the U.S. banking system. Economists claim that central banks impose reserve requirements to ensure a sizable demand for central bank balances. Imposing a high required reserve ratio on a narrow deposit base and then allowing DIs to run sweep programs and use vault cash to meet reserve requirements does not achieve that goal.

More than 7,000 DIs have accounts at Reserve Banks. On an average day, they use their accounts to make and receive more than 0.5 million interbank payments with a value of roughly \$2.5 trillion. As noted on page 10, many of those DIs need a larger balance to avoid frequent overnight overdrafts than to satisfy reserve requirements. About 5,700 choose to hold a contractual clearing balance. The incentive to maintain a contractual balance is that such balances earn implicit interest that offsets the fees a DI incurs when it uses our priced services. But these "earnings credits" cannot be paid in cash, so DIs that do not use our services have no incentive to hold a contractual balance. Page 11 shows that DIs hold a bit less than \$7 billion of contractual clearing balances. The rough equality with required reserve balances is coincidence.

Required and contractual balances, though small, facilitate the implementation of U.S. monetary policy in two ways, as indicated on page 12. First, required and contractual balances are set before the start of each reserve maintenance period, so they establish a predictable lower bound on the period-average demand for balances. Second, DIs are allowed to meet reserve requirements and contractual balance commitments on average over multi-day reserve maintenance periods. This averaging feature helps make the demand for balances interest elastic. DIs reduce the opportunity cost of meeting requirements by holding smaller balances on days when the fed funds rate is above target and larger balances on days when the funds rate is

below target. Carryover provisions and clearing bands, which give DIs some flexibility to hold too many or too few balances in one maintenance period and the opposite in the next period, also help make the demand for balances interest elastic.

Page 13 summarizes the third component of demand for balances: desired excess reserves. Large DIs usually aim to hold zero excess reserves on average. Small DIs as a group generally hold positive excess reserves. The left half of the graph on page 14 illustrates that the daily sum of required, contractual, and excess reserve balances averaged about \$15 billion from January through July of last year but varied between \$10 billion and \$25 billion. The day-to-day variation largely reflects big banks' behavior: Big banks want much larger balances on days when an unusually large volume of payments flows through their Federal Reserve accounts than on other days. This strategy lowers their risk of incurring overnight overdrafts on high-payment-flow days while reducing their opportunity cost of holding non-interest-bearing balances on other days. The right half of the graph shows that demand for balances has oscillated even more widely since August. Even at \$25 billion or more, DIs' balances are not big enough to clear \$2.5 trillion of Fedwire payments per day without incurring overdrafts. Indeed, DIs make heavy use of daylight credit. At least in theory, ready availability of inexpensive daylight credit reduces DIs' demand for central bank balances. A proposed reduction in the cost of collateralized daylight credit—the proposal is now out for public comment—may further reduce demand for balances.

We turn next to the supply of balances, beginning on page 16. You've told the Desk to keep the federal funds rate close to target on average. The Desk does so by trying to make each day's supply of balances equal to the quantity that DIs would demand that day if the funds rate were at target. The Desk's strategy is to use outright purchases or sales of Treasury securities, plus 14-day and 28-day repurchase agreements, to supply a level of balances somewhat lower than the minimum amount the banking system is likely to demand going forward. The Desk then uses one- to seven-day repo to supply the remainder. The Desk structures its operations so that maturing repo almost always leave the supply of balances short of the quantity demanded and then undertakes a new repo to fill in the gap. But as indicated on page 17, the Desk does not completely control the supply. Unanticipated changes in autonomous factors can make the supply of balances larger or smaller than projected. The staffs at the Board and in New York do a very good job, but not a perfect job, of predicting changes in these factors.

Variations in borrowing from the primary dealer credit facility also affect the supply of balances. For example, Citigroup Global Markets borrowed on 20 of the first 25 business days that the PDCF was in operation, in amounts that varied from \$0.5 billion to \$2.7 billion. Barclays Capital borrowed on 21 days, in amounts that ranged from \$1 billion to \$7 billion. Four other primary dealers were frequent borrowers; another six borrowed less often. Changes in PDCF credit are not always captured in the staff's daily projections, so they can, and do, cause the supply of balances to deviate from the intended level. In any case, if the day's projected supply

is not close to the forecast of quantity demanded, the Desk conducts an open market operation to make the two roughly equal. As noted on page 18, the Desk was in the market almost every business day—indeed, all but six business days—from January 2006 through July 2007, replacing maturing repo with larger or smaller repo as projections showed a need to add or to drain balances.

How well does this approach to implementing monetary policy work? If the key criterion is keeping the funds rate close to target, our current approach works well in normal times and not so well when interbank markets are under stress. But our current approach imposes substantial and unnecessary burdens. As the graph on page 20 indicates, the effective fed funds rate is almost always within a few basis points of target during normal times, as it was from January through July of last year. But there have been many larger-than-usual deviations from target since last August, for two primary reasons. First, daily variations in demand for balances have become larger and more difficult to forecast. Second, demand apparently has become less responsive to temporary deviations of the funds rate from target—that is, demand has become less elastic. Even so, the average of daily deviations from target has been close to zero since mid-September. Pages 21 and 22 summarize equilibrium in the federal funds market and the reasons for large deviations from target. Fed funds typically trade near the target early in the morning because buyers and sellers usually expect the Desk to supply enough balances to get the funds rate to target in the afternoon. But the funds rate sometimes is firm or soft in early trading, signaling a likely shortage or surplus of balances and leading the Desk to aim for a somewhat larger or smaller supply than otherwise.

After the Desk conducts the day's operation, three things happen concurrently: The supply of balances responds to changes in autonomous factors and PDCF credit; the demand for balances is realized as DIs make and receive payments; and DIs trade federal funds, determining the day's average or "effective" funds rate. If the supply of balances is close to the actual quantity demanded and if the payment system and the federal funds market work normally, the funds rate will be close to target. Any excess demand or supply generally does not become apparent until late in the day, when the Desk is unable to adjust the supply of balances because primary dealers no longer have uncommitted collateral. DIs that end up with larger balances than they want late in the afternoon seek to sell fed funds. When the banking system as a whole has sizable excess balances, DIs that try to sell fed funds late in the day find few buyers. Because balances earn no interest, the funds rate can fall to zero in that situation. On the other hand, an excess demand for balances makes the funds rate rise relative to target. If the funds rate climbs sufficiently above the primary credit rate, some DIs overcome their reluctance to borrow, raising the supply of balances and helping limit the increase in the funds rate.

Last August provides an interesting case study. The demand for balances rose as DIs sought greater liquidity. The Desk increased the supply. Even so, the funds rate traded firm relative to target almost every morning as European banks bid aggressively for fed funds to lock in dollar funding before the end of their business

day in Europe. The firm morning rate suggested a shortage of balances. But late in the day in New York, the funds rate often fell well below target as domestic banks that held larger-than-normal balances during the day tried to sell fed funds rather than hold big non-interest-bearing balances overnight.

While our current regime keeps the funds rate close to target on average, it imposes sizable and unnecessary burdens. As noted on page 23, DIs use real resources to run sweep programs and to carefully manage each day's balance in their Federal Reserve accounts. While those efforts generate private gains, they are a waste from a social perspective. Even with sweep programs, the opportunity cost of holding unremunerated reserve balances averaged about \$360 million per year during the past two years. In addition, the banking system and the Federal Reserve spend many millions of dollars each year to ensure and monitor compliance with complex reserve requirement rules.

As indicated on page 24, our current approach to implementing monetary policy has strengths: It usually keeps the funds rate close to target, and it supports an active interbank market. But our current approach also has shortcomings: It allows occasional large deviations of the funds rate from target even in normal times and more-frequent large deviations when interbank markets are disrupted. Our approach is less than transparent; even well-informed market participants sometimes are surprised by the Desk's daily operations, and there was widespread misunderstanding of the Desk's actions last August. Finally, our current approach imposes burdens that simply are not necessary to enable the Desk to keep the funds rate close to target. Theory and foreign experience suggest that it is possible to reduce the shortcomings of the current U.S. approach to implementing monetary policy without sacrificing its strengths. Jim Clouse and Spence Hilton will now discuss a range of options for improving the U.S. approach.

MR. CLOUSE. Thanks, Steve. As noted on page 25, the Interest on Reserves Workgroup developed a set of options for monetary policy implementation in the United States based on alternative settings for a small set of core structural elements. The first core element—so-called balance targets—is a central feature of many systems. In the United States, Japan, Switzerland, and the euro area, balance targets are established through mandatory reserve requirements. In the United Kingdom, balance targets are established through voluntary contractual arrangements. Other countries, such as Canada and Australia, operate with no formal balance targets. Target bands are a second structural element incorporated in many systems to afford banks some flexibility in meeting their targets. The carryover provisions for required reserves and the clearing band for required clearing balances play this role in the United States. The structure of the maintenance period is another core structural element. As Steve noted, the U.S. system operates with a mixture of one-week and two-week maintenance periods. The United Kingdom and the euro area operate with maintenance periods that correspond to the interval between monetary policy meetings. Central banks like the Bank of Canada and Reserve Bank of Australia that operate without balance targets implicitly operate with a one-day maintenance period.

Finally, most systems involve some form of interest rate corridor with the upper bound of the corridor established by a standing lending facility and the lower bound set by the rate of remuneration on excess reserves or a redeposit facility.

As noted on page 26, market developments may, at times, impair the efficacy of one or more of these core structural elements. For example, the standing lending facility should, in theory, establish a cap on interbank rates. However, the presence of stigma in using the standing lending facility can impair the effectiveness of the cap. That certainly seems to have been the case in the United States over recent months. We have observed depository institutions regularly bidding for funds in the market at rates above the primary credit rate. The table at the bottom reports some evidence on this score culled from data on Fedwire transactions. Over recent weeks, many of the largest banks in the country have executed numerous trades for sizable amounts at rates well above the primary credit rate. It may be possible to redesign the discount window to mitigate stigma to some extent, but it appears likely that stigma will continue to be an issue for the discount window, especially during periods of financial distress. As a result, systems that rely heavily on a standing lending facility to establish an upper bound on the federal funds rate implicitly disadvantage those institutions that are most wary about using the discount window. As you can see in the table, that set of institutions in the United States includes many that are critical providers of liquidity across a range of markets. It is noteworthy in this regard that Citibank in the past has been willing to provide liquidity in the funds market by borrowing primary credit and relending the proceeds in the funds market. However, in recent weeks, Citi has seemed reluctant to pursue this strategy and has, in fact, executed more than 100 trades from late March through last week in sizable amounts at rates above the primary credit rate. Indeed, the three largest banks in the country—shown in the first three rows—all appear to be quite wary about using the discount window.

As noted on page 27, it is helpful, broadly speaking, to think about the five options discussed in the paper as falling into two basic categories—systems that incorporate a multiple-day maintenance period and systems in which depositories manage their reserves to meet a daily reserve objective. The multiple-day systems—options 1 and 2 in the paper—rely on arbitrage across days of a maintenance period as an important factor contributing to day-to-day funds rate stability. Single-day systems tend to rely more heavily on standing facilities and the structure of remuneration rate(s) on reserves to stabilize the funds rate. The next few slides focus on multiple-day systems.

*Option 1.* As noted on page 28, option 1 considers a straightforward modification of our current system of monetary policy implementation. Required reserve balances would be remunerated at a rate close to the target funds rate. The primary credit facility, in theory anyway, would establish the upper bound of an interest rate corridor. The lower bound of the corridor would be established by paying interest on excess reserves at a rate appreciably below the target funds rate. The solid line in the picture displays what the demand for reserves might look like on the last day of the

reserve maintenance period. The curve would be downward sloping and might entail some precautionary demand for excess reserves. The reserve demand curve on previous days in the maintenance period—the dotted line—would be much flatter at the target rate over a wide range, reflecting the ability of banks to substitute balances across days of the maintenance period in meeting reserve requirements. Eventually, though, at very low levels of balances, the increased risk of an overnight overdraft would push the intraperiod demand curve up to the primary credit rate. At high levels of balances, the intraperiod demand curve would eventually fall to the remuneration rate on excess reserves as banks recognized that they held excess balances that could not be worked off by the end of the maintenance period. The width of the “flat portion” of the intraperiod demand curve tends to narrow over the maintenance period as the scope for substitution diminishes across the remaining days of the period. In this structure, the Desk would operate much as it does today, supplying an aggregate quantity of reserve balances each day to address both daily demands and maintenance-period average needs.

*Option 2.* As noted on page 29, option 2 in the paper is a multiple-day system based on voluntary balance targets rather than mandatory reserve requirements. This system would share many of the key structural elements of the system for monetary policy implementation employed in the United Kingdom. Depository institutions would establish a voluntary balance target that they would agree to meet, on average, over a maintenance period. The maintenance period could be set equal to the interval between FOMC meetings. The system could include a target balance “band” to afford banks some flexibility in meeting their voluntary target balance. As shown on the right, the demand for reserves on the last day of the period would again be downward sloping, and the Desk would supply an aggregate quantity of reserves equal to the quantity demanded at the target funds rate. Reserve management and the funds market under this option probably would be similar to that for option 1. The longer maintenance period might allow depository institutions more scope for substitution of balances across days of the maintenance period. That could imply less need for daily fine-tuning of balances and greater funds rate stability. A key issue, however, is whether the aggregate quantity of voluntary balance targets would be large enough to provide adequate leeway for effective arbitrage across days of the maintenance period. Many banks might choose not to establish a voluntary balance target in this system, and those that do may not choose to establish a large balance target. In this case, the funds rate could be fairly volatile within the interest rate corridor.

*Option 3.* As noted on page 30, option 3 in the paper—the simple corridor—is similar to the systems employed by the Bank of Canada and the Reserve Bank of Australia. Banks would not need to establish a balance target of any sort and would simply manage their accounts each day to balance the opportunity cost of holding reserves against the risk of overnight overdrafts. The system would involve a fairly narrow symmetric funds rate corridor. As noted in the figure, the Desk would supply reserves each day equal to the quantity demanded along the downward sloping portion of the demand curve. Because the demand curve is likely to be fairly steep,

shocks to reserve supply are likely to result in significant volatility in the funds rate within the corridor. As noted earlier, the heavy reliance on the primary credit facility to establish an upper bound on the funds rate may be suspect, especially during periods of financial distress.

*Option 4.* As noted on page 31, option 4 in the paper is a system similar in many respects to that employed by the Reserve Bank of New Zealand. Key structural features of this system include an asymmetric interest rate corridor and a relatively high level of balances to ensure that the funds rate trades near the floor of the interest rate corridor. As in option 3, depositories would not need to establish a balance target of any sort. The reserve demand curve for this system might look like that shown to the right. At low levels of balances, the demand curve would be downward sloping reflecting precautionary demands for balances to avoid overnight overdrafts. But at sufficiently high levels of balances, the risk of overnight overdrafts should become very low, and the demand curve would asymptote near the floor of the funds rate corridor. It is difficult to estimate the level of balances that would be necessary to reach this point, but an aggregate level of balances on the order of \$50 billion would probably be sufficient in most cases. In principle, fluctuations in various factors affecting reserves would not have much effect on the funds rate, and the generally high level of balances could reduce daylight overdrafts. Partly because of the experience in New Zealand, there are questions about incentives for strategic behavior in this structure.

*Option 5.* As noted on page 32, option 5 is a hybrid single-day system that would involve a voluntary daily balance target and a relatively wide target band. Depositories would receive full remuneration on balances maintained up to the upper bound of the target band and would be penalized for any shortfall in balances below the lower bound of the target band. With these structural elements, the reserve demand curve should be fairly flat at the target rate over a wide range, but the curve would be downward sloping near the upper and lower bounds of the target balance band. The Desk would presumably operate by targeting a quantity of balances each day near the middle of the target band. As with option 2, a significant issue with option 5 would be whether depositories would choose a high enough level of voluntary balance targets to allow the target band to play the desired role in stabilizing the federal funds rate.

As noted on page 33, the paper also identifies a number of general issues that cut across all the options. First, depository institutions will still be subject to statutory limitations on their ability to pay interest on demand deposits. As a result, the Federal Reserve's initiative to pay interest on reserves may be seen by correspondent banks as unfair competition. There are also technical issues associated with the setting of the remuneration rates on reserve balances that appropriately account for the essentially risk-free nature of balances held with the central bank. The Federal Reserve would need to work through governance issues associated with all the options. In particular, the Board is responsible for setting all remuneration rates on balances, and this would need to be closely coordinated with the FOMC's

determination of the target federal funds rate. Finally, many if not all the options discussed would likely require some transition period that would need to be carefully managed. Spence will now discuss some of the pros and cons of each option in more detail and how they stack up relative to key objectives.

MR. HILTON. Thank you, Jim. We have identified four critical objectives for a new operating framework, which are listed on page 34 of your handout. These are (1) to reduce burdens and deadweight loss associated with the current regime, (2) to enhance monetary policy implementation, (3) to promote efficient and resilient money markets, and (4) to promote an efficient payment system. For each of the five options that Jim has just presented, I am going to describe what we see as the major advantages and disadvantages of each vis à vis these objectives. I will also highlight some important sources of uncertainty that we have about how some of these options might function in practice. Then I will close with a broad assessment of how the five options measure up against each of these four objectives.

The key advantages and disadvantages of option 1—remunerate required and excess reserve balances—are listed on page 35. This option would have the advantage of being relatively easy to implement given that it would build largely on elements of the current operating framework and would simply pay interest on reserve requirements and, at a lower rate, on excess reserves. The basic framework, which consists of an interest rate corridor with reserve requirements and maintenance periods, is widely used by other central banks, and we're pretty certain how it would function in practice. For central banks that have adopted this basic framework, it has proven to be reasonably effective for controlling short-term interbank rates under a variety of circumstances. However, this option would do little to reduce the administrative burdens associated with our current regime. This framework is also somewhat rigid, particularly in the flexibility it would provide to us and to banks themselves to adjust the level of requirements in ways that would facilitate monetary policy implementation. A particular shortcoming is that many depositories active in the interbank market have a very small base of deposits against which requirements of any level could be assessed. An important source of uncertainty with this option is whether it would lead to a significant increase in total required operating balances, which would be helpful for damping interest rate fluctuations that can arise when requirements are very low. However, the Fed would have some power to influence the aggregate level of requirements by raising requirement ratios.

Option 2—voluntary balance targets—(shown on page 36) would lead to some reduction of administrative costs and burdens compared with the current framework (option 1), as relative simplicity would be one of the principal design objectives for a new system of voluntary reserve targets. The basic framework is similar to that of option 1. It consists of an interest rate corridor with maintenance periods but substitutes voluntary targets for reserve requirements. As already noted, this basic framework has proven to be reasonably effective for controlling overnight interbank rates where it has been adopted. Furthermore, a new system of voluntary targets could provide all DIs with considerable flexibility for setting their own level of



targets and for adjusting the size of these targets, a feature that banks might find useful during periods of heightened uncertainty or stress. With this option, there would also be the opportunity to review and totally revamp the length and mechanics of the maintenance period to make them more supportive of monetary policy implementation. However, almost any system of voluntary targets for reserves is bound to impose some administrative costs on both depositories and the Fed, and there may be some tradeoff between administrative simplicity and design flexibility. An important source of uncertainty with this option is that we have yet to identify with precision a system of voluntary reserve targets that would be workable, in the sense of being easy to administer across a large number of DIs with disparate structures, and that would be effective in yielding a total level and distribution of voluntary targets across DIs that would enhance our ability to achieve our operating objectives. Unfortunately, experiences of other central banks offer little guidance in how to design voluntary targets. A particular risk that concerned the Bank of England when it designed its voluntary target scheme was the potential for market manipulation that a new system might offer individual banks if they were entirely free to choose their level.

Option 3—simple corridor—(on page 37) would go about as far as possible toward eliminating administrative burdens by doing away with all requirements and maintenance period accounting rules. This option should also keep the overnight interbank rate within a narrower range than the other options, assuming that we adopt a narrower spread between the discount rate and the interest rate paid on excess reserves. Experiences of other central banks that have adopted this kind of operating system support that belief. However, there is also reason to believe that, with removal of the ability of banks to average reserve holdings over a maintenance period, interest rate volatility within the interest rate corridor could be high. We could respond to high volatility within a corridor by further narrowing that corridor. But there is the risk that, at some point as you go in that direction, market participants could use our discount window or interest on excess reserves as a first recourse rather than as a last resort and thus affect the Fed's role as intermediary and impair normal market functioning. There are some important questions about how effectively a simple corridor system would function in our particular environment. All the options we are considering propose to use the primary credit facility to limit upward movements in market rates. To the extent that this facility might not serve as an effective brake on upward rate movements, the consequences would be greatest for this option because there are no other mechanisms for smoothing interest rates. Some central banks that have a simple corridor framework have also developed arrangements to adjust reserve levels late in the day to prevent exogenous reserve shocks from pushing market rates to either the upper or the lower end of the corridor.

Option 4—floor with high balances—is shown on page 38. It would also do away with all requirements and maintenance period accounting rules and, like option 3, would go a long way toward eliminating administrative burdens. Moreover, because the rate effects of even a large aggregate reserve shock or a payment shock at an individual DI are likely to be relatively small, the need for depositories or for the

Desk to manage daily reserve positions intensively is likely to be reduced, which should translate to further resource savings. Better insulation of market rates from exogenous reserve shocks is a design objective, and it is a particularly distinctive feature of this framework. However, completely severing the link between daily reserve levels and interest rate movements can be a double-edged sword. While we may wish to better insulate market rates from reserve shocks, we may also wish to preserve some ability to influence market rates by manipulating reserve supply when other factors are distorting rates. One risk associated with this option is that it would represent a radical departure from the basic elements of our own current framework and from those of almost every other central bank, preventing us from learning from the experiences of other central banks. A particular unknown with this option is the possible implication for the functioning of the interbank market. Offering to compensate DIs for all the reserves they might choose to hold at a rate that is in line with market rates could have profound effects on their willingness to lend in the market, under both normal circumstances and during periods of market stress. The Reserve Bank of New Zealand, one central bank that has experimented with a system similar to option 4, did run into some difficulties with the hoarding of reserves by individual banks to the detriment of the interbank market. As a result, they adjusted their framework to cap holdings of excess reserves by individual banks.

Option 5—voluntary daily target with clearing band—is on page 39. It has many of the same advantages and disadvantages as option 2, stemming from the fact that both feature voluntary reserve targets. Because simplicity would be one of the design principles, it should reduce current administrative burdens. It would also provide DIs with the same kind of flexibility that option 2 does for setting and adjusting their own reserve targets. On the other hand, a system of voluntary targets for reserves would still leave some administrative costs, and we have yet to specify a system of voluntary reserve targets that would be workable and effective. An additional advantage of this option is that it could allow the Fed to adjust the width of the daily clearing band around the reserve target. The final choice of clearing band width could be made after some experimentation based on what works best. Moreover, being able to make temporary adjustments to the width of this daily clearing band could be a powerful tool for dealing with exigent circumstances. Experiences of other central banks provide little guidance about how this flexibility might be best employed. But the Bank of England did widen its maintenance period clearing band during the recent financial market turmoil, and they have been happy with the results. Interestingly, the ECB, quite independently, has been examining the possibility of a new system centered on a one-day clearing band rather than a multi-day maintenance period.

Let me sum up by outlining how these five options stack up against the four objectives that we have established for a new operating framework, which are summarized on pages 40 and 41. First, all the options would eliminate most of the current “reserve tax” associated with the nonpayment of interest on reserves, and perhaps with the exception of option 1, they would reduce the administrative burdens associated with our current framework. Option 3 (simple corridor) and option 4 (floor with high balances) would do the most to eliminate these administrative costs.

Second, all the options would improve monetary policy implementation by helping set a floor on the fed funds rate. Most have additional features that could help control rate volatility, although these differ from one another in terms of their mechanics. But some of the options offer greater potential to adjust parameters in ways that could be helpful amid changing circumstances—say, during periods of market stress or heightened uncertainty about developments that could affect our balance sheet. An adjustable clearing band in option 5 could offer considerable flexibility. Adjustable reserve targets, a feature of both options 2 and 5, are another possibility.

Third, all the options would rely on efficient money markets for distributing reserves between DIs. There is more uncertainty, however, about how some of the options might influence the incentive structure for trading and the allocation of liquidity in short-term financing markets and the role of the central bank in that process. This is the case with option 3 (simple corridor), should that corridor be too narrow, and with option 4 (floor with high balances), where the choices of lending excess liquidity in the market versus holding excess reserves would be nearly equivalent.

Fourth, all the options are compatible with the proposed changes in payment system policies. However, there are differences among the options in the levels of reserves that would likely be in place and that could serve as a substitute for the provision of central bank daylight credit. Option 4 (floor with high balances) would provide the most reserves in the system, and option 3 (simple corridor) would provide the fewest, perhaps even lower than current levels. A system of voluntary reserve targets, a feature of both options 2 and 5, could be deliberately designed to encourage a relatively high level of reserves.

MR. DUDLEY. Building on the earlier presentations, I am going to focus briefly on four areas. First, I'd like to put the interest on reserves project in the broader context of monetary policy implementation. Second, I will discuss briefly the implications of our experience during the recent market turmoil in terms of how it might influence our choices in this project. Third, I'll suggest some next steps and a potential timeline. Fourth, I'll focus on the criteria for evaluating the different options and those areas where your guidance will likely be particularly important.

Turning to page 42 of the handout, the issue of paying interest on reserves should be placed in a broader context. In particular, this project should be considered as part of the process of improving the overall monetary policy framework. Put bluntly, although the current system works very well during normal times, we have found it recently to be less robust during times of stress. As a result, we should use this opportunity to strengthen the robustness of the framework.

So what are the weaknesses of the current monetary policy framework? As shown on page 43 of the handout, four come immediately to mind. (1) In times of

stress, the federal funds rate can be very volatile—both day-to-day and intraday. (2) On the upside, the primary credit facility rate is not a binding ceiling on rates. (3) When there is a large reserve adding miss, the Desk can temporarily lose control of the federal funds rate target to the downside. (4) Stability in the federal funds rate may not limit upward pressure in term funding rates. Today I'll focus on the volatility issue and the failure of the PCF rate to be a binding cap. Two issues are worth noting regarding volatility. First, the federal funds rate has become more volatile on a day-to-day basis since last August. This can be seen on page 44. Second, the federal funds rate has become very volatile intraday. The exhibit on page 45 shows how wide the range of federal funds rate trading has been recently. The vertical dashed lines indicate the daily range. Note that the primary credit facility rate has not acted as a firm cap on the upper end of the daily range.

As shown on page 46, these shortcomings suggest that paying interest on reserves should be considered in tandem with other changes to the overall monetary policy framework. We should be willing to make significant adjustments to our monetary policy framework so that it is more robust during times of stress. In this context, although option 1 (paying interest on required and excess reserves) and option 2 (eliminating reserve requirements) are attractive because both would eliminate the reserve tax distortion, they do not do much in terms of making the monetary policy framework more robust. That said, option 2 has a number of favorable features. It is voluntary and would lessen the regulatory burden. We have considerable experience with this type of framework, so the risks of unintended consequences might be lower than for some of the other options. The Bank of England has been using this framework successfully, and it has proven to be reasonably robust through this period of market turmoil. Nevertheless, we may wish to be more ambitious.

Turning to page 47, option 5 (voluntary daily target with clearing band) is potentially more robust than option 3 or option 4. In part, this is because it is very flexible. This proposal has a number of parameters that can be adjusted—for example, the width of the corridor and the size of the voluntary reserve band. Thus, this option has the advantage that it could be modified relatively easily in light of experience or in response to changing market conditions. The biggest shortcoming of option 5 is that no other central bank has adopted such a model. Thus, experience and empirical evidence are lacking compared with the other proposals.

So what is our recommendation in terms of pushing this forward (see page 48)? As Jim noted in his presentation, the five options can be broken down into two classes. Options 1 and 2 operate in a framework of a multiple-day reserve maintenance period. Options 3, 4, and 5 are single-day systems. Reserve maintenance periods have both advantages and disadvantages. Reserve maintenance periods reduce volatility by averaging—which can be a good thing. But there is a cost. The shocks can persist. In contrast, in single-day systems, each day is a new start, so one avoids the problem of a large shock contaminating an entire reserve maintenance period. This suggests that a reasonable next step might be to develop the best proposal within each of these two broad classes. We recommend focusing on

option 2 as the best proposal within a reserve maintenance framework and option 5 as the best proposal in a single-day system.

What would be the next steps (see page 49)? First, we would need to identify workable systems of voluntary targets for reserves needed for either option 2 or option 5. This would include setting clear objectives for the aggregate size and the distribution across depository institutions and how such a system would be applied to a heterogeneous banking system. Second, we would need to critically assess the relative merits of maintenance periods versus daily clearing bands. In this context, we would need to determine the optimal length of a reserve maintenance period and the width of a clearing band. Third, we would have to define the optimal width of a rate corridor under both options. Here we would have to understand the implications for rate dynamics and the functioning of the market during normal conditions and during times of stress. Finally, we would need to assess whether the options were compatible or could be made compatible with other changes that we might implement, such as changes in our counterparties or in the types of collateral we accept as part of our central bank operations.

So what would be a possible timeline between now and implementation in October 2011? The timeline that I will discuss should be viewed as tentative and subject to revision in light of your comments and further discussion within the Federal Reserve System. Turning to page 50, we would propose that most of the remainder of 2008 be used for an extensive study of the options. In May 2008, the staff would publish a white paper on possible approaches for public comment. In December, the staff would propose a specific approach to the Board and to the FOMC. Continuing on page 51, the first half of 2009 would be spent filling in the details, with the final proposal published for public comment in August 2009. The rules implementing the proposal would be published by the Board in October 2009. The final two years would be spent preparing for October 2011 implementation.

On the last page, we outline areas in which we particularly seek your guidance. These include the following questions. Do you agree with our metrics for evaluation of the policy options? In particular, what are the appropriate weights to place on the reduction in burden and distortions versus the other criteria? Which options should be studied further? Are you comfortable with our proposed timeline? Finally, how do you view the interaction of the interest on reserves project with other issues—for example, collateralized daylight overdrafts? We would now like to open the floor for questions and comments.

CHAIRMAN BERNANKE. Well, let me first congratulate and compliment the staff for a really thorough piece of work, both the presenters and all the other people whom Brian mentioned. It is excellent work, particularly under very trying circumstances. I mentioned that in February a workshop was held here at the Board on monetary policy implementation, which brought together

people from major central banks around the world. So there has been a very, very serious attempt to evaluate others' experience. Thank you very much for all of that. Why don't we take some questions first, if there are any. Then anyone who would like to make comments can do so. Any questions? President Hoenig, do you have a question, sir?

MR. HOENIG. Yes. Option 1 doesn't seem to be one of your recommendations, and yet it is something that basically people know how to do. The idea is to eliminate the pack so that you have the system already in place. It's simple; you can learn from it. Why wouldn't that be one of the options you'd pursue? I don't have any real opposition to option 2, but I was just curious because the transition seemed so simple with option 1. That is the question.

MR. MADIGAN. President Hoenig, I would say that we believe we already have a fairly good sense as to how paying interest on the required reserve balances and on excess reserves would work, at least qualitatively. We do think it would be an acceptable means of implementing monetary policy. As Jim noted, it probably wouldn't be all that different in terms of monetary policy effectiveness from the way things work now. Of course, as we also emphasized, the current system of reserve requirements has a lot of problems. Admittedly, paying interest on required reserve balances in some sense solves the first-order problem, but there are lots of costs associated with the system of reserve requirements that we've discussed, and we think that those may warrant serious consideration of eliminating reserve requirements. But to be clear, we're not suggesting that we rule out option 1 at this stage. We could certainly view it as a fallback position, for instance.

CHAIRMAN BERNANKE. Governor Mishkin.

MR. MISHKIN. I'd like to understand this issue in terms of the voluntary targets. How are they deciding on these? Clearly a big part of the issue is whether or not they choose you. I was just completely confused about what their considerations in choosing these numbers would be and what

implications that would have. Now, there is experience for that one case. I'm sure you have views on this, but it's sort of the black box in this proposal, and it's a really important part of it.

The second question regards the corridor approach. I do not think it is a good model for us because the countries that use it have very few banks. The issue of using the central bank as a financial intermediary is less of a problem for them because there are fewer guys that they have to look at, and we have to look at a zillion people. But is it true that they have high volatility? I'm not sure. I just would like to know the facts, but as I say, I don't think it's critical. I don't think the experience there, even if it worked well, really does tell us that we should do something here.

MR. MADIGAN. Maybe I could just take the second question, and Spence or Jim may want to take the first. On the corridor approach, for other countries that are using it—I'm thinking of the Bank of Canada in particular here—their institutional set-up allows them extremely precise control over the supply of reserves. Also the demand for reserves—I'm talking about reserve balances—is considerably less uncertain than in the United States. Part of it comes from the fact that they have only a handful of large banks.

MR. MISHKIN. It is five or six banks, right.

MR. MADIGAN. So the communication with banks regarding their reserve management is extremely simple compared with what we could expect here in the United States.

MR. CLOUSE. The determination of voluntary targets, as Spence mentioned, is a really big issue that we'd have to study much further. At least in the context of the simple models, banks will face some probability of an overdraft charge if they are operating with very low balances, so they might have an incentive to set up a voluntary requirement on which they receive remuneration. On the other hand, they may not view even fully remunerated balances as an especially attractive asset, so there might be some balancing between the desire to hold large enough requirements to stay

away from overdrafts and the idea of having balances or assets booked that aren't particularly high earning. But this is a major uncertainty for these types of models.

MR. MISHKIN. The Bank of England has used a procedure like this. What has been their experience? Again, it may not be completely comparable.

MR. HILTON. Well, for the Bank of England, the way the voluntary target rules are set is really very simple. The bank chooses its own voluntary target. It can't be below zero, of course, but they have a cap. It can't be any higher than a certain amount, and I think it's 2 percent of some measure of their liabilities on their balance sheet. They were extremely worried. They had no idea what they were going to get. Their experience was encouraging in that they got an aggregate level and a distribution that have brilliantly facilitated their control over their interbank market. But it is sort of taking a leap to go into that system, although we have some experience with our clearing balance program. We do see how banks adjust their participation with reserve-management objectives in mind. In our case, because there are practical limits—ceilings on the size of a clearing balance that makes sense for any bank to have—we don't really have a direct observation of what we would get if it were entirely voluntary. The evidence that I see from our experience of clearing balances and from the Bank of England is encouraging that we would get, even with a very simply designed set of voluntary targets, a good aggregate level and distribution of voluntary targets. But right now, based on what we know, it is an uncertainty.

MR. DUDLEY. The big risk would be if the voluntary balances were really low.

MR. MISHKIN. So let's say that actually happened, that they were zero. Then what? Let's say we implemented this and they came out at zero. What are our options?

MR. DUDLEY. You'd have to change the incentives somehow.

MR. MISHKIN. Right, and that would be the answer.



MR. DUDLEY. But you could. You could raise the cost of daylight overdrafts.

MR. MISHKIN. Right. You could raise the cost of daylight overdrafts, or you could adjust the interest rate that you pay on reserves to get it right. That could solve the problem.

MR. DUDLEY. As long as you have enough parameters that you can adjust to change the incentives, you're probably going to be okay in that environment. But if you have a system in which there aren't any parameters that you can actually move, then you have a real problem.

MR. MISHKIN. But in the context of the law, we would have the ability to adjust these parameters.

MR. MADIGAN. Governor Mishkin, to state the obvious, we'd want to avoid that situation completely. We want preparation and consultation with banks *ex ante* as to how they would react under various subparameterizations.

MR. MISHKIN. Okay. Thank you.

MR. CLOUSE. As Steve noted, we already have \$7 billion in required clearing balances with a rate of remuneration that's only 80 percent of the T-bill rate. So in all likelihood, we would have a positive number. How large that number would be is the question mark.

CHAIRMAN BERNANKE. President Yellen.

MS. YELLEN. I have a comment, not a question.

CHAIRMAN BERNANKE. President Lacker.

MR. LACKER. Thank you. This represents a once-in-a-generation opportunity to reengineer our monetary policy operational framework, and I think it's important that we do our best to get it right. I want to start by applauding the staff for taking a very deliberate, very thoughtful approach to this project. I was able to attend the workshop on foreign central banks' operations. I found it very illuminating, instructive, well organized, and well thought out. So far

the work has been well organized, and the broad-based involvement has been very good. I want to compliment you on sifting down. The combinatorics must have been mind-boggling given the number of free parameters in the design of one of these schemes. I want to applaud you for boiling it down to a good, representative set that spans everything that I think we'd want to consider. What you produced—with one slight exception that I'll talk about in a bit—is a very thorough and careful analysis.

In Richmond, we have thought about the issue of interest on reserves for many, many years—even before the Congress considered it. Toward the end, I'm going to argue that option 4 deserves serious consideration, and I'd like to see you focus on that as well as the other options going forward. Before I do, though, I want to comment briefly on the objectives. You asked for feedback on this. In particular, I think objective 3 needs to be interpreted very carefully. The report often seems to interpret objective 3 as implying that anything that reduces the amount of lending in the fed funds market must reduce financial market efficiency. I just don't think that's right.

The prohibition of interest on reserves is obviously a tax on reserve holdings. You have focused on the tax that it implies on reservable liabilities, but the fact that we also don't pay interest on excess reserves is a tax on excess reserve holdings. If we eliminate reserve requirements and we still don't pay interest on reserves, we'll still be taxing reserve holdings. That gives rise to inefficiencies for the same reason that the lack of interest on currency gives rise to inefficiencies, and so in this setting, obviously banks do a lot of things to avoid the reserve tax. Some of the measures involve a lot of monitoring of the reserve account, monitoring of the prospective payment flow, and making sure that they can predict where they're going to be at the end of the day.

But some of the measures undoubtedly involve some transactions—such as fed funds loans, purchases of Treasury securities, repo lending, and the like—that are aimed at minimizing their non-

interest-earning balances. Such transactions are exactly analogous to the classic shoe-leather costs of inflation. Additional transactions that are induced by the tax on currency are a waste. Reducing the inflation tax results in fewer trips to the bank or to the ATM to get money out, and that reduction is a good thing, not a bad thing. It would be a benefit, and that is exactly what it means to reduce the dead weight burden of inflation. Similarly, I think that paying interest on excess reserves will reduce transaction volumes in the fed funds market, but we should count that as a benefit, not a cost. Put more generally, the effectiveness of a market isn't the same as the quantity of transactions.

I bring this up because one of the main objections to option 4, at least in the report—it didn't appear in the slides—is that it could reduce fed funds market lending. I think it should be obvious at this point why that wouldn't necessarily be a bad thing. It's sort of like saying that reducing inflation would be a bad thing because people would make fewer trips to the bank. I don't think you'd say that.

Even if we believed that fed funds volume is important, I think a quick look at the numbers would suggest that it's not likely to be that big a problem. The staff estimates that the fed funds market is about \$225 billion, on average. So how much by way of reserves will we need to add to ensure a negligible chance that our autonomous reserve factor drains reserves enough to drive the funds rate up? You showed a graph, and there was a flat spot, and you had supply way, way, way out on the curve. But it doesn't need to go out that far. It just needs to go out so that you'd know that you're not going to accidentally go in on the upward part. My reading of your intermeeting report is that reserve misses are typically on the order of \$1 billion or \$2 billion. I think the average absolute value is about \$990 million. Two is pretty rare. It happens every now and then. So it seems as though \$5 billion would do plenty. The report says that \$35 billion would be how much reserves you'd need to add. I'm a little curious about where that number came from. It's hard for

me to believe we'd need that much. But certainly more broadly than that, if you think about the market, is that right now \$225 billion in lending is going on. If you do the thought experiments about current equilibriums and you are a bank that just walks into the market and needs some reserves, will it be hard to get reserves? Well, you're going to run into \$225 billion worth from banks that are already lending their reserves with interest. So if you're going to get your loan, you're going to have to pay a competitive rate and shake loose some money from one of them. If we are paying interest on \$35 billion in reserves, will that change that calculus much? I don't think so. I think that your markets are still going to work the same way. If you want reserves, you're going to have to pay a competitive rate for them. If you're not getting reserves at that rate, you're going to bid up until you get them. So I just don't quite get this concern about the volume of transactions in the funds market.

A related objection is the issue of hoarding—the idea that one bank might decide to hold a whole bunch of reserves. The staff cited the example of New Zealand. I thought that was a really interesting discussion at the workshop. One bank accumulated \$8 billion or \$9 billion in reserves, I think it was, which was large for them, and they had to add a large amount of reserves to accommodate that demand plus the demand of other banks in the system. Now, the problem for the Bank of New Zealand is, as I understand it, that the government doesn't issue debt. When they have to issue deposits, they have to acquire foreign exchange reserves, and that involves a fiscal risk that they're reluctant to take on. My sense of the conversation is that they don't like to accumulate foreign exchange reserves. We seem to be quite willing to expand our balance sheet. Plus, there are plenty of government securities around. So I just don't see why it would be a problem for us if reserve demand was unexpectedly high or some bank decided to hold \$50 billion in reserves.

I want to talk about one more thing, which is the issue of the rate. The way you have written it up is that what we target now is the average rate of brokered deposits. You said it was \$80 billion to \$100 billion out of \$225 billion, on average—so less than half the market—just the weighted average of trades during the day that go through brokered channels. That doesn't include direct credit funds. The approach you envisioned is that we try to set a remuneration rate so that the effective rate, that average, comes out at the target rate that the Committee sets. A very natural alternative, it seems to me—and I think this is the way the Bank of England does it—is that our policy rate is now the deposit rate. When we issue a press release, we say we're changing the policy rate—I don't know whether or not we would rename it.

Now, you folks estimate that the risk premium that would, on average, be the gap between this deposit rate and this effective fed funds rate you measure might be 10 basis points. We now set the funds rate target in  $\frac{1}{4}$  point increments. In theory, we could set our policy rate 10 basis points below  $\frac{1}{4}$  point increments. That seems a little bizarre. I'm not sure that we have such precise confidence in the optimal funds rate that we'd know that it should be on the  $\frac{1}{4}$  point and not 10 basis points below or above. It strikes me that a natural version of option 4 or any of these options would be to set the remuneration rate at  $\frac{1}{4}$  point increments and have that be the policy rate, and just make that the reference point for how we do. Admittedly, econometricians would have to do a lot of work in the future to splice these series together, but I think that's a workable alternative we ought to think about.

I think that option 4 has some obvious benefits over the other options. Intuitively, if you were given a limited budget and were asked to peg the price of a commodity—minimize the variance of a commodity price around a given target—your natural inclination would be to stand ready to buy and sell that commodity at the target price. That would be, right out of the box, the

first thing every economist would say. Option 4 is the closest practical analogue to that. It's clean. It's simple. I think it's eminently workable. I just don't see the force of the objections. In comparison, option 5, which is the one that comes closest to option 4, involves the monitoring of voluntary targets. You have to monitor these bands. You have to check the balances every night against the bands. It just seems like a lot of superfluous machinery.

Option 4 would go furthest toward reducing our dependence on forecasting uncertain autonomous factors. It would also go furthest toward solving the problem that the primary dealer credit facility has given rise to, which has been particularly acute in the last intermeeting period, which is that rates are firm. You've done a pretty good job with the average daily rate, but it crashes at the end of every day. More than half the time you look at the low for the day and it's under 1 percent. It's like ½ percent. So we have a chronic intraday problem of rates being firm and then crashing because you don't know. Primary dealers come in, that stuff goes on the market, and the rate crashes.

I think option 4 would also be the most transparent approach. It would be the easiest to explain to people. It would go furthest toward eliminating the risk of the downside target misses and concerns about stealth easing. Option 4 would also facilitate long-run moves toward lesser lines of daylight central bank credit, and I think that's an important consideration. It shouldn't be the deciding consideration, but it is important. In terms of the timeline, you have yourselves focusing on two options before the results of the public comment come in. To some extent that's prejudging where the public comment is going to come in. So, in short, option 4 strikes me as the most straightforward and practical way to do it, and I'd urge that we direct the group, which has done great work so far, to focus on option 4 and to keep it as a live option. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Just a procedural question. You kind of segued into the positions. Does anyone have a short question of fact? Governor Kohn.

MR. KOHN. I actually have a couple of questions rather than positions. One is a bit more about what we've learned in this period of stress. For example, on page 26, you list a bunch of banks that don't seem to have taken advantage of primary credit. I assume that you have talked to them, and I wonder how they had rationalized their concerns about stigma and what they said about that. Along similar lines about stress, and following up on Governor Mishkin's question, how did the U.K. system work in this period of stress? My impression is that they had problems. Initially the banks wanted to increase their voluntary targets and that required the Bank of England to be a little more flexible than it started out to be. I'd be interested in how option 2 behaved under stress and then any new insights you have about bank behavior in this period that produced the oscillations that we saw.

A second point is that Brian, Scott, and I have been talking about asking the Congress to allow us to pay interest on reserves sooner rather than later. Are we pursuing that? If we got that authority, I assume that it would not involve implementing this over four years but that we could implement something in one or two weeks, in the maintenance period after we got that authority. How would you go about that? What are you thinking in that regard? I think I'll stop there.

MR. MADIGAN. If I may start with the last question, we can work our way up or around the list. On pursuing legislative authority, the Federal Reserve is interested in accelerating that authority. We have had some conversations with congressional staff about this. For instance, the staff of Senate Minority Leader McConnell has asked us recently whether we'd be interested in legislation to accelerate the authority. Of course, we responded enthusiastically. We did say to them that it would be helpful if it were clear that we could use that authority in such a way as to be

able to pay interest on excess reserves or, rather, to buy federal funds as a way of paying interest on excess reserves, in effect. Buying federal funds when the rate is falling would help us put a floor under the funds rate. So we would want to be sure—perhaps Scott wants to comment on this—that the legislation clearly permitted that. Presumably we would be able to use that authority fairly quickly at an operational level—Bill or Spence may want to comment on this.

Paying interest on required reserve balances is, of course, a whole other matter. That involves complicated systems, and we would simply want to be sure that we made this clear to the congressional staffs, that it would take a longer time before we could implement that.

MR. DUDLEY. We think we could implement it pretty quickly. Another benefit would be not just addressing the crashes of the funds rate late in the day but also enabling us to actually expand our balance sheet if needed.

CHAIRMAN BERNANKE. Vice Chairman.

VICE CHAIRMAN GEITHNER. Just to clarify, what are the implications for scoring?

MR. DUDLEY. It's pretty small if you just confine it to excess.

MR. MADIGAN. My impression is, as Bill said, that it is small and there may not even be positive costs if you confine it to excess. The issues of paying interest on required reserves are possibly a little more troublesome, but that may be viewed as a worthwhile cost to undertake at this point.

CHAIRMAN BERNANKE. Let me interject. If there's a sense of the Committee that this is something we should escalate, let's move it up the ladder and do that. But anyone who wants to comment on that during the go-around, please feel free. There was a second part about the United Kingdom, I believe.



MR. MEYER. With respect to the U.K. system during the period of turmoil, banks' initial reaction was to lower their reserve deposits, their contractual commitments. But they came to their senses and realized that holding more rather than less was a more sensible approach, and the Bank of England accommodated the banks' desire both to increase their targets and to widen the bands.

MR. DUDLEY. Pretty dramatically, in fact.

MR. MEYER. Quite dramatically, to avoid the end-of-period spike in rates. In terms of rate volatility, the Bank of England, the ECB, and the Fed all achieved about the same rate volatility during the period of market turmoil. For the Bank of England, the spikes just tended to be more on the upside than the downside, but that had to do with their implementation procedures and not getting to the end of the period and being willing to accommodate.

MR. KOHN. I assume it was the stigma problem as well.

MR. MEYER. Though they had a few trades above their lending rate, in fact that was not much of a problem. Their system worked quite well. Interestingly, the country with the smallest rate volatility during the whole period of market turmoil was Canada, and that's because they knew the demand for balances at the end of every day and could adjust the supply by adjusting the government balance at the end of every day. So they hit it basically every day.

CHAIRMAN BERNANKE. Other short questions? President Fisher.

MR. FISHER. A very short question having nothing to do with what everybody else has asked about—but going back to page 33, what are the governance issues, and how do you resolve them, in 30 seconds or less? [Laughter]

MR. MADIGAN. Well, the governance issues are that the FOMC is in charge of open market operations and setting the target for the federal funds rate, at least under current approaches to policy. The legislation specifies that the Board is in charge of setting the rates paid on balances to

institutions. For instance, there may be differential rates as in option 1 on required reserve balances and excess reserve balances. Presumably, if we went with option 1, for instance, one approach would be to simply set them by formula relative to the target federal funds rate. We don't mean to say that this is likely to be an enormously large issue, at least in some of the options, but it ought to be handled carefully.

CHAIRMAN BERNANKE. President Stern.

MR. STERN. My question is about intraday and day-to-day volatility in the funds rate. I would think that as long as we hit the target on average, that kind of volatility wouldn't have any significant macroeconomic consequences. So why would we care?

MR. HILTON. That's our impression, that it doesn't have macro consequences. Maybe it's a tempest in a teapot, but for the participants in that market, the uncertainty and the costs that are borne by borrowers and lenders are an important issue. But the macro fallout, the effect on longer-term rates, doesn't seem to be significant.

MR. DUDLEY. What we don't know is whether that volatility somehow has consequences for term funding. How do you know the linkage between the two because they're happening sort of simultaneously? But I agree with Spence that we don't think there's any significant macro effect. There may be some marginal effect of volatility creating a greater risk premium in the market, but it's hard to say.

CHAIRMAN BERNANKE. There is an effect on swaps, like foreign exchange swaps, right?

MR. HILTON. Well, for a lot of what we seem to get—like the Eurodollar rates and LIBOR and foreign exchange swaps and the way they relate to what goes on in our overnight funds market—the typical intraday pattern is firm in the morning and coming off late in the day. Those

higher morning rates are the ones that are linked to the other rates—Eurodollars, swaps—and so it's not the average rate over time that seems to get priced into these other vehicles.

MR. DUDLEY. The high morning rate could conceivably affect other rates in a way that's—

MR. STERN. It sounds like an obvious arbitrage opportunity.

MR. DUDLEY. Well, we're not seeing much arbitrage.

MR. HILTON. We are finding a great reluctance to do intraday arbitrage. We're hearing this from the banks that in the past would do that from time to time. Coming back to one of the other questions that Don had about what we are hearing about stigma from some of the banks, one of our better contacts, Citibank, as Jim mentioned, used to do a lot of arbitraging and using the discount window, the primary credit facility. On occasion, after they borrowed to re-lend in the market at a higher rate last year or so ago, they would call us in the morning to let us know how it was that they were helping us out with the funds rate. That has pretty much stopped cold, and they have decided on sort of classic stigma. They routinely point to the publication of borrowing data in the H.4.1 release, and they are just not interested in the small gain from that kind of activity while taking the risk in the market of being seen as in dire need of liquidity.

MR. DUDLEY. The TAF auction results underscored the idea of stigma at the primary credit facility. It's possible that we have actually a bit more stigma now than we did before because you can just see very clearly that there would have to be stigma for people to be bidding that much in the TAF auction.

CHAIRMAN BERNANKE. President Evans had a two-hander.

MR. EVANS. My primary comment in all of this is related to what President Stern, I think, said. The way the objectives are worded here is “enhanced monetary policy implementation,” and

the memo is worded more like, “How do we get our federal funds rate target effectively?” or something like that. But there is really no discussion that I could find about the transmission of our policy actions to the economy and to inflation. Under our current regime, we think, quite confidently, that the short-term federal funds rate prices short-term risk-free assets along the yield curve all the way up to the Treasuries and then corporates are priced off all of that. I associate that with Marvin Goodfriend, who taught me that quite some time ago. It’s not money; it’s not liquidity; it’s not the reserves per se. It would be nice if, for each alternative, there were some discussion that we are preserving our understanding of the policy transmission mechanism or that we are enhancing it or whatever. President Lacker mentioned the Bank of England—maybe we could set the policy rate as they do. The question is, What will the markets do in terms of actively arbitraging something that helps price these securities? This may not be an issue for many of these systems, but until there’s some kind of analysis, I’m not so sure. It’s not just averaging over the maintenance period, and I think that analysis would be useful.

CHAIRMAN BERNANKE. Governor Warsh.

MR. WARSH. Governor Kohn shamelessly stole my question. [Laughter]

CHAIRMAN BERNANKE. Governor Kroszner, do you have a question?

MR. KROSZNER. Yes. In a lot of the discussion you just take as given the stigma associated with the primary credit facility, and you were just discussing that related to the publication of information about the facility. Is that something that could also be on the table? That seems to be potentially an instrument for which we might have to consider how much information to provide or about making it less or more attractive, which then would affect which options are more or less attractive. Is there some reason not to do that?

MR. MADIGAN. I think that's worth some further thought, Governor Kroszner. One issue though, as I'm sure you know, is that the Board is required by law to publish weekly information on the individual Banks' balance sheets as well as the consolidated balance sheet with a certain amount of detail. I don't remember the exact legal wording, but at least within the current law, to back away from that might be difficult. Of course, you could conceivably pursue a change in the law, but I think we would want to think about the pros and cons of that before you went in that direction.

MR. KROSZNER. For sure, but just thinking about whether there are other things that we could do related to stigma might be worthwhile in this context.

MR. MADIGAN. Absolutely, we agree. Of course, when the Board adopted the primary credit program in 2003, we gave a lot of thought before that and did considerable work after that to try to minimize the amount of stigma by trying to make very clear to banks that in our view use of the window didn't entail stigma. But the fundamental problem still is that banks are concerned that their use of the window may be detected in the market one way or another, especially in a period of financial stress, and that is just not a cost worth incurring.

CHAIRMAN BERNANKE. President Plosser, did you have a question?

MR. PLOSSER. Yes, just an implementation question. One thing you talked about was in periods of stress, the way we've conducted policy intraday, you have had firmness in the funds rate in the morning and then weakness in the afternoon causing some intraday volatility. The difficulty of hitting the target was partly the fact that we were entering the market only once a day, in the morning, and you had to see through that. With all these other strategies, as they are implemented in other countries, are the central banks doing the same thing? Are they entering the market only once a day, or do they come in several times a day? I just wondered if there are differences in their approaches as to how often they interact in the marketplace.

MR. HILTON. I would say, as a general characterization, that the common practice is to intervene only once a day, in the morning—not unlike what we do. Where there's an exception, it's like with the Bank of Canada. They have access to information that would allow them to know with precision late in the day what the supply of reserves is in the absence of any further open market operations, and then they make an adjustment accordingly.

The fact is that, even if we were to operate late in the day but still before the close—let's say, 5:30 or 6:00—we really have no more information than we had at 9:30 in the morning upon which to make an estimate of that day's reserve supply. We can observe rates, but we don't know what amount of a reserve adjustment would be needed to bring supply in line with demand. The risk of just opening up and offering to be one side or the other of the market in that situation late in the day is that we could get the entirety of one side of the market and actually create a reserve imbalance in the other direction between that time and the close of the day. So simply being willing to operate late in the day isn't really enough. You do need reserve information as well upon which to size those operations.

VICE CHAIRMAN GEITHNER. Just to make this clear, Spence, is it the number of banks that make that information more accessible in Canada, or is it something else? Is it fundamentally that they have just five banks?

MR. HILTON. No, it is that they know the balance sheet. They know it by late in the day with certainty. They have few sources of uncertainty to begin with, and their major source of uncertainty, government balances, is something that perhaps the small number of banks they're dealing with facilitates. But it is that they know by late in the day what the supply of reserves will be with real precision.

MR. MEYER. Basically everything clears through their equivalent of Fedwire, so they know in real time what the balances are.

CHAIRMAN BERNANKE. Okay. Did you have a question?

MR. LACKER. A comment about stigma. Every financial transaction that a substantive firm engages in that becomes known is relied upon by market participants to make inferences. There's a huge literature on the effect on equity values of the announcement of a bank line of credit; and like through this last crisis, if you talk to funding-desk guys, they're very aware at the tactical level about what counterparties are revealing by their actions in funding markets. They take that on board, and they're very strategic about what they reveal with their market transactions. We can try to keep it secret, but there's a broad ability in the market to infer when somebody goes to the window by their behavior before that. I'm saying that I don't think we should get our hopes up about ever eliminating stigma.

CHAIRMAN BERNANKE. Okay. Let's take positions and comments, keeping in mind that lunch is being held hostage. [Laughter] President Rosengren.

MR. ROSENGREN. Okay. Just a quick question, which doesn't have to be answered now—given all of the financial turmoil, it would be interesting to see whether in other countries that have these different arrangements there was a decrease in either overnight or term lending with counterparties. Given the extent to which you can just work with a central bank rather than counterparties, is there any evidence in these other regimes that interbank lending transaction volume disappeared in some of these countries? I would be interested in seeing that. Regarding Governor Kroszner's comment on the H.4.1 release, it does seem that we could probably have a materiality requirement in our balance sheet. Under most circumstances, what we are doing at the discount window would seem not to hit that materiality criterion. I think we could be a little

more innovative—I agree with President Lacker’s point—but I think that the H.4.1 does seem to have an effect; and if we will be doing all these other things, taking another look at the H.4.1 and making sure that we don’t have more untapped flexibilities probably makes a lot of sense.

I would like a little more discussion of “promote efficient and resilient money markets and government securities markets” as a criterion. I’m not sure I would weight those criteria equally. It seems that all these criteria, for the most part, take care of most of the dead weight loss; and given that the banks still have to administrate for daylight credit, I am not sure that the burden is all that different across these various regimes. But I can imagine that that one might be different, and given we just had financial turmoil—I know this is a bit different from what President Lacker said—I would put a little more attention to that.

Overall, I like option 2 and option 5. I’m comfortable with those two. I’m attracted to the voluntary balance program. On net, I would probably prefer a longer maintenance period to a one-day maintenance period, but I don’t have a strong preference and could easily be convinced otherwise.

CHAIRMAN BERNANKE. Thank you. President Evans.

MR. EVANS. Thank you, Mr. Chairman. As I mentioned earlier, I would find some discussion about the transmission mechanism useful—at what rate we think the markets would be picking up the price of risk-free yield curves. I think that would help. To the extent that we can align this with other foreign central bank experiences, we might be able to draw on how they view that and what the financial market data look like. So I am comfortable with focusing primarily on options 2 and 5. I was thinking along the lines of President Hoenig, which is that the Federal Reserve tends to go slowly. Vince isn’t here, but he often reminded us of that.



Option 1 is the easiest one. If we have enough information about it, then that's fine. I think that's all I have.

CHAIRMAN BERNANKE. President Stern.

MR. STERN. I have only two comments. I would drop option 1. I just think it doesn't do enough to reduce the burdens and dead weight losses. As long as it's there, there will be a tendency to fall back to it for all sorts of reasons, given bureaucratic tendencies. So I would just discard it. I would not discard option 4, so I would include options 2, 4, and 5. I was originally attracted to 4. I read the reservations in the report and thought, okay, it's not worth pursuing. But I listened to President Lacker, and he reconvinced me that there are some significant merits there.

CHAIRMAN BERNANKE. President Yellen.

MS. YELLEN. Thank you. First, I do really appreciate all the excellent work the staff has done on this topic. I really learned a lot from these papers. I thought they were very clear and very comprehensive. I have just a couple of comments on the questions that Bill and Brian raised in the memo. The first one has to do with whether or not we agree with the objectives, and I do have a couple of issues.

First, I think that the stated objective of reducing the burdens and dead weight losses associated with the current reserve tax is too narrowly framed in the paper. My starting point is, about burden, that to cover a given program of government spending, the Treasury has to obtain revenue from some source, and nondistortionary lump-sum taxes are not one of the available options. So the real question from the public finance standpoint is what to tax and how much. That means, to my mind, that the issue here is how the magnitude of the welfare gains that would come from lowering the dead weight loss due to the implicit tax on reserves compares with

additional dead weight losses that would result from the alternative taxes that would have to be raised to make up for this lost revenue. Now the answer depends in part on the interest elasticity of demand for reserves, I believe. I think it is the case that, if the interest elasticity is relatively small, the dead weight loss from the reserve tax is relatively small, and the net welfare gain, taking into account the burdens of raising other taxes to make up for the lost seigniorage, in effect, could easily turn out to be negative.

Let me give you an example of where this comes into play. There is a well-known paper by Martin Feldstein in which he looks at the benefits of moving to price stability, zero inflation, which he favors. He looks at this issue in that context, and he concludes that there would be net social losses, not gains, from the reduction in seigniorage that would be associated with a move to zero inflation from positive inflation because the dead weight loss due to the shoe-leather cost, also known as the Bailey effect, is smaller than the dead weight losses that would be associated with alternative taxes. In his analysis they are taxes on labor supply and saving. I actually think that this is a serious problem with the framing of the objectives in this paper. It is, in effect, saying, “We think we should give a tax cut. We think we should give it to banks, and we think that, because there is a welfare loss—a Harberger triangle—associated with that, this is clear welfare gain.” Now, I am not pretending to know exactly how this would come out, but I do think that’s the issue. If it were to come out that this is a net loss, not a gain, a possible implication is that if there were a fallback to option 1—I’m not saying that I favor option 1—there could be a case for paying no interest on required reserves rather than paying interest at the federal funds rate but paying interest on excess reserves at some rate that we would determine.

There are administrative costs with having voluntary target balances, and it seems to me that the paper, as we come out with it, ought to try to at least estimate what the administrative burdens associated with options 2 and 5 would be.

Another comment on the issue of objectives: If we are coming out with a white paper, it seems to me that the objective that everybody is now discussing and that was just discussed—namely, that paying interest on reserves would enable us to expand the size of our balance sheet in times of financial crisis, like now, and perhaps greatly enhance the scope for liquidity-altering interventions that would be possible without having to push the federal funds rate to zero—is a real improvement in the tool kit that is available to us to address market disruptions. I would see it as an advantage of paying interest on reserves. If you are discussing this right now with the Congress and it is much discussed in the press, I think it is kind of odd to come out with a paper that doesn't even mention it. Maybe there are disadvantages and not just advantages. But it seems to me it should be there.

Also, I would just say on the question of options 2 and 5 versus options 3 and 4, an advantage that the paper attaches to having voluntary targets is the ability to moderate the volatility in the federal funds rate. So it does seem to me that—I understand it may be difficult—the possibility of intervening multiple times during the day as an alternative, if it were possible to change the procedures so that there could be multiple interventions to reduce volatility, would mean that 3 and 4 could be on the table, and there might be less burden associated with those. So I think that possibility deserves at least careful consideration.

CHAIRMAN BERNANKE. Thank you. President Bullard.

MR. BULLARD. Thank you, Mr. Chairman. This is a proposal for study. The timeline seems fine to me. The study period is pretty important in this case because it is not clear to me

which option is best, and so I think maybe we should keep more of the options on the table. One question that I have is, To what extent are current reserve requirements actually binding for depository institutions? There is a past study by the St. Louis staff—Dick Anderson and Bob Rasche—suggesting that, by and large, existing reserve requirements are not binding. To me that calls into question whether objective 1 for this study group is really appropriate. Dead weight losses make sense to me only if there is a binding reserve requirement. In that regard, I'd like to endorse President Yellen's comment, which I thought was right on target, about whether you are going to make up for lost revenue from somewhere else and how distortionary that would be. There is a bit of political risk here that, if this starts to get painted as a handout to banks, maybe it wouldn't serve us well.

I would like to see more emphasis on option 3, which based on the discussion seems to be not too bad a system. That is the Canadian system. That is a tested system in an economy that is not too different from our own—certainly, an economy that is closely integrated with this one. The corridor would be narrow. There might be more volatility within that corridor, but you still seem to get pretty good results. I know they have a small number of banks, but it seems to me with today's technology you might be able to get a good read even for a large economy. I would like to see it kept in the mix here. They have had lots of success and very low administrative burden, if that is what you are worried about. I am perhaps not so familiar with options 2 and 5, which are the favored options in this discussion. But I am concerned about the language of voluntary balance targets, which seem to be maybe not that voluntary. It seems to me to create a risk that the systems are really not as market-oriented as I would like to see or that they could be manipulated by market participants, particularly in a time of stress. Those are some of the concerns I had about this.

CHAIRMAN BERNANKE. On the public finance question, of course, the Congress has acted and they score it to cost. So in some sense that is moot from our perspective. President Pianalto.

MS. PIANALTO. Thank you, Mr. Chairman. Let me also start by commending the authors of the papers that were prepared on this topic. I found the material very informative and helpful. I agree with the objectives established by the staff to evaluate the set of proposals, and I also support the process and the proposed timeline for moving the proposals forward. I think it is good that the timeline provides for comments from banks so early in the process. It will be important for us to receive their input at an early stage.

I found option 2 to be preferable to option 1 because option 2, as we have discussed, clearly reduces the administrative burdens relative to option 1. I think that option 3 leaves too much potential for fed funds rate volatility in its corridor. I was also intrigued by option 4 with caps. However, I ultimately rejected option 4 out of the concern that it might lead to a less robust interbank lending market. But given the comments of President Lacker and others, perhaps it makes sense to keep option 4 on the table. In the end, however, I am comfortable with moving forward with our focus on options 2 and 5. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Lockhart.

MR. LOCKHART. Thank you, Mr. Chairman. Just to answer the questions that were posed, I am comfortable with options 2 and 5, but I thought President Lacker's presentation made the case that option 4 deserves to remain in the mix. I think the objectives are appropriate. The only comment I have—and this is a bit vague, I realize—is to ensure that we are thinking far enough ahead to ensure that we have a durable system that can operate in different mixes of private and public in the payment system. Certainly, I think it is conceivable that in some years

we will be out of the business of retail payments, so I think we have to address different mixes of private and public payment systems.

Regarding the timeline, Governor Kohn already asked the question about approaching the Congress to accelerate. Assuming that we do not approach the Congress to accelerate this, then this timeline seems to me quite comfortable and gives plenty of time for very careful consideration.

In the room here is Will Roberds from our research staff, who by chance was at the Bank of England talking about their experiences recently. I thought I would share a couple of things that are apropos. They tried maintenance periods other than the intermeeting period, and they found them to be not so effective, apparently because of ambiguity around the target rate. That is a useful way of thinking—that the maintenance periods would be designed around the intermeeting period. They apparently tried option 3, and it didn't work because of too much volatility within the corridor. Those two tidbits are feedback from the visit of a member of my staff to the Bank of England. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. President Hoenig.

MR. HOENIG. Thank you, Mr. Chairman. I would look at this meeting as an introduction to this topic, given the breadth of the discussion here, which I found extremely interesting and useful. I think we will need to come back to another discussion of it—not necessarily with another 100-page study. I wouldn't want to put that burden on you—it might negate any savings we get from this project. [Laughter]

To the point of the options, the one that was most attractive to me was option 2. It is a good transition. We have some familiarity with it, given the way we do clearing balances now, and I think we can work on it. The reason that I was a little questioning about option 1 is that in

option 2 you are not quite sure what you are going to end up with, given how the banks may choose to target the amount of reserves and so forth. But with any choice we make, we are going to have to go up that learning curve. So of those, I prefer option 2. I am fascinated, though, with President Lacker's comments on option 4 and will look at it again with that in mind because I thought he made some good points. But at the moment, I think option 2 is a pretty good path to go down.

CHAIRMAN BERNANKE. Thank you. President Plosser.

MR. PLOSSER. Thank you, Mr. Chairman. This will be very brief. Option 2 looks very attractive to me. I think option 1 may be a fallback position, but like President Stern, given our tendency to move slow too quickly, if that makes sense, I would rather take the opportunity to make a larger step. So I think option 2 is fine. Option 5 is interesting, but its distinction is that nobody else is really doing that. So it would be a little more of a wild card in terms of how we might implement it and how it might work. But I think it has some merit.

I had asked Bill Dudley back in the fall, when we were having trouble meeting the end-of-day targets, about why we didn't set the price. The answer I got was, "Well, this was a good time to think about that option in the context of paying interest on reserves." I was probably a little disappointed that we didn't see more of what such a strategy might look like and how it would behave. Thanks to President Lacker, his interpretation of option 4 is pushing us more in that direction. I hadn't really thought of option 4 in that context that way, but I like it. I still have the view that essentially looking at everything as a quantity-based view of how we go about doing this restricts the way we think about what our options might be. So I would like to see a little more explanation of what a price target, where we buy and sell, might actually do. How that might interact with option 4 would be an interesting way to enrich the set of options.

Another question I had—and I don't know the answer to this—is that we have instituted a number of new facilities. There is the TAF, there is the TSLF, and so forth. I wasn't quite clear how those facilities would interact or be appropriate or inappropriate within the context of these things, or whether this would substitute for all of those in some sense. If we wanted to pull those off the shelf again at some future time, how would they interact with these systems? I think it would be useful to have a little discussion about what those interactions might be.

The last observation is related to President Lockhart's comment. How we go about paying interest on reserves has implications for other parts of what the Federal Reserve System does—in particular the retail payment system and the way we calculate cost recoveries and our revenues under the Monetary Control Act. There are some separate study groups that are thinking about this, but we ought to make sure that we tie these pieces together as we go forward so that we know what the domino effects of going this direction might be. Maybe there will not be a concern, if we get out of retail payments, how it affects the Monetary Control Act requirements on fees for services and things like that. I would like to see that loop closed somehow before the end of the discussion. Otherwise, I want to congratulate the staff on a very thorough report. I was at the conference as well in February. I thought it was very interesting, and I applauded the staff on some good work. Thank you.

CHAIRMAN BERNANKE. Thank you. President Fisher.

MR. FISHER. Mr. Chairman, we have been in favor of paying interest on reserves for some time. This is an excellent paper. Like everybody else, I learned a great deal from all the papers that were sent and this superb summary that was just presented. I personally tend toward option 2, but I think it is worthwhile considering options 4 and 5 as well in terms of vetting this under the timetable. I think that Charlie asked a good question about how this relates to the other



facilities, but generally, the optics on this are favorable. Again, we are moving forward. The public doesn't really understand the background of this—where the Congress has stood and what we have achieved so far. I think it would be just one other good thing for us to be modernizing the Federal Reserve.

I asked the question on governance just because I understand that the current plan calls for rates to adjust automatically to changes in target set by the FOMC. I would want to make sure that was the case. In other words, I don't like the potential for vesting all the power in the Board; and, of course, that potential is there. I think it is worth preserving the federal system of the Federal Reserve. That is the only reservation I have. Those are my comments. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. We don't want it. [Laughter] Governor Kohn.

MR. KOHN. Thank you, Mr. Chairman. I thought this was a great piece of work by the staff, and I thank them all. You did a good job of organizing it and laying out the general principles in a way that people can understand. Despite President Yellen's comments, I have no regrets about my testimony in favor of paying interest, perhaps because I bore so much of the administrative costs over the years [laughter]—along with Stephanie Martin and her predecessors in the Legal Division. Those costs that were borne were considerable, in addition to the dead weight losses.

I think we should consider options 2 and 5 for sure. On option 4, I think we need to understand a bit—other people have said this—what the third objective, “promoting efficient and resilient money markets,” means exactly, what is entailed, and how that would intersect with option 4. So I think that needs to be fleshed out a little more. Because you have planned to get a white paper out soon, I think perhaps including option 4 would be easier than not including it,

just to get people's comments. Perhaps because of my administrative burden experience, I would like to see reserve requirements at zero, ruling out option 1. On option 3, I just don't think, at least with our system and in periods of crisis, that the top of the band would hold, so I don't think that option would really work very well. Thank you all for your work.

CHAIRMAN BERNANKE. Governor Warsh.

MR. WARSH. Thank you, Mr. Chairman. Let me add my plaudits to those already expressed on the quality of this work, and then let me confine my comments to the timing and sequencing. First, with respect to the rollout of the white paper, it strikes me that, given that questions have been raised about what our flexibility is around our balance sheet and tools in the event of continued problems in the financial markets, we just need to be cognizant in that paper of how this discussion might be read, not in the context of a long Fed effort to get interest on reserves but perhaps as being solely responsive to what are perceived to be burdens on our balance sheet flexibility. I am just sensitive to how that white paper will be read and rolled out. More broadly, on timing—come fall, in the event that we decide collectively to go to the Congress seeking other authority with respect to the PDCF, investment banks, and other things that might or might not be concluded, even though this timeline makes a lot of sense, we might be in good stead to have a fairly good sense of the conclusions to which we will ultimately come, even if our exhaustive Fed rigor isn't complete by that time. If there is real benefit to accelerating our new authority from late 2011 to some earlier period, we could put that in the context of some of broader asks from us with an expectation that we might get some traction there. So as a sort of secondary timeline, having that option value come fall strikes me as useful. Thank you, Mr. Chairman.

CHAIRMAN BERNANKE. Thank you. Governor Kroszner.

MR. KROSZNER. Thanks. Great work, great presentation. It is impressive to get through fifty-two pages in less than fifty-two minutes, and so I applaud you on that. Basically I agree with a lot of the stuff that has been said before. The trick may be thinking a bit creatively about stigma issues, if there is any way to deal with those. I am not quite sure what you are suggesting putting out in a white paper for comment—options 2, 5, and possibly 4? Or were you thinking of putting all five out?

MR. MADIGAN. Well, I certainly think at this point the three that you mentioned first. At this stage, if we are going to go to with three, we might want to think about putting all five out, just to flesh out all parts of the spectrum and acknowledge that option 1 could be a fallback. We have to think about the pros and cons of that, but certainly the three at this point is where the consensus seems to be.

MR. KROSZNER. Doing three of them seems perfectly reasonable. Thank you.

CHAIRMAN BERNANKE. Governor Mishkin.

MR. MISHKIN. I am very comfortable with the analysis and the approach, so I don't have any major comments there. Although in the white paper you might mention them, I would like to take options 1 and 3 off the table. Option 1 has just too much administrative burden. We have enough *tsuris* already. Although option 3 may work well in countries with very different structures of the banking system, I don't think it is a feasible alternative for us. So I think that we should look at options 2 and 5, and I am certainly comfortable with another look at option 4.

One issue that I worry about a bit is that these markets do sort out some interbank credit risk issues. We don't want to lose that, so we have to be very aware of it. I also worry a bit about setting a price when there is a credit risk element to it. When there is no credit risk

element—if you want to set the Treasury bill rate—it is no big deal. But there may be an issue there, I am not sure, and it should be one of the considerations in this context. Thank you.

CHAIRMAN BERNANKE. Vice Chairman. Oh, sorry. President Lacker.

MR. LACKER. Presumably, the rate we pay would be viewed as a risk-free rate. Presumably, any market rate would be priced relative to that to include a credit premium in the usual way. If any other dynamics are anticipated by the staff, it would be useful to know that. But the usual presumption we have is that observed market rates would have our rate plus a credit premium booked into it, or transaction costs, or whatever. I'd just make that comment.

CHAIRMAN BERNANKE. Vice Chairman.

VICE CHAIRMAN GEITHNER. Thank you, Mr. Chairman. I don't have a conviction yet on the options, but I agree that we should narrow our focus to options 2 and 4-5. I think we should design a process that tries to force us to get conviction more quickly on which option we would prefer. I think it is possible. You have made a huge investment already. You know the alternatives. I think it is worth, again, a goal that gets us conviction more quickly, in part because we do have a brief window now in which we might be able to get the Congress to accelerate and we could implement more quickly. I would get the Congress to accelerate if I could be totally confident that it would be free, that we would pay no price, and that there would be no risk that anything else would be on the table or that it would compromise any other objective. It is very hard to have confidence on that. But if you get confidence on that, then I would go do it. But I would certainly run a process by which we get conviction early.

I would want us to have conviction before we go out for public comment. The general rule is to figure out what you want to do and design a process that maximizes the chance that you get there quickly. It also strikes me that a process this drawn out will take much more staff time.

You guys are busy. We don't have a lot of time. We don't have a lot of excess capital in the Federal Reserve System now relative to the challenges we face. The longer it is drawn out, maybe the smaller the tax day by day, week by week, but it is just a huge tax. I would not want to go out for public comment on a white paper in this time frame until I knew two things. One is, Are we going to get the Congress to accelerate? If so, on what? What is the probability? Are we going to ask for it? The other is I wouldn't do it until I knew that we were closer to saying, "If we got it, we would do this in this time frame."

Finally, I think it is hard to have this discussion in public with the Congress now without an answer to what they will perceive to be the larger questions. What are the larger questions? I think that you can reduce some of the larger questions simply to, What are we going to do with our role as lender of last resort going forward? This is a version of President Plosser's and Governor Warsh's questions—what the future of our facilities is, in some sense. The staff has assured me that these options all preserve optionality on any future facility framework. They don't prejudice those options, which is very important. But I think there is a demand now and interest in what our answer is to those broader questions. It is hard to see the architecture of our role as lender of last resort without having the answer to what the framework will be for restraints on risk-taking by institutions that have access in normal times and in extremis to those lender of last resort facilities.

We can't get conviction on that in the same time frame that we need to accelerate legislation on this stuff, but—and probably because—I think those things are fundamentally more important than whether we end up with 2 or 4.5 or 5 on the way to 4.5. I would try to shorten the amount of time and effort we put into this, and I would increase the amount of time and effort we put into that broader set of policy questions, which are going to be essentially

about the intersection among the lender of last resort role, our monetary policy regime, the moral hazard consequences of all the stuff we have done, and how we deal with those in the future. I think that is going to take a lot of time, effort, and care.

I don't know how to reconcile all of what I just said in the context of a practical path forward, except just to repeat it. Why not try to run a process in which you get conviction more quickly on this relatively small set of adjustments as to how we operate? Try to get a judgment quickly about whether we can get the Congress to accelerate without any meaningful political cost, then design a process whereby we put ourselves in the position to implement early next year, if the Congress were to accelerate. And try to have the resources saved by attenuating that process devoted to these deeper questions about our future facilities and the associated constraints we are going to have to put on a broader set of institutions.

CHAIRMAN BERNANKE. Thank you. On those broader questions, Vice Chairman, we are going to talk at lunch about some initiatives by which we will address some of the broader regulatory and bank supervision issues. That process will be parallel to this. What I would say about this issue is that, as you go forward, you should keep in mind the possibility we might want to go to the Congress for some kind of interim power. Obviously, there are things that we can do that are not the full panoply of things you described today. They would be interim steps, and I think that the most important thing is to make sure that whatever we ask for would not be inconsistent with or contradictory to some of the longer-term plans. We obviously don't anticipate implementing option 5 next year, but we could take some interim steps that potentially might be useful in the current circumstances.

Very briefly, I agree with President Fisher and President Lacker. This is a once-in-a-generation chance to modernize our system. It is a relic that we use a quantity-based

management of the federal funds rate. So I think option 1 should be a fallback if we can't make something else work, but we should try very hard to see if we can find a system that will let us manage the funds rate tightly, even as our balance sheet expands and contracts, and so on. I have the same concerns about option 3, that it might not tie down the fed funds rate very much.

Options 2 and 5 are interesting. I agree with President Lacker that option 4 is worth exploring. I broached this with the staff before the meeting. Option 4 seems a lot like Friedman's optimum quantity of money: You just throw out money until the transaction cost on margin is zero.

That's basically what it is. I don't, frankly, fully understand what the implications would be for the federal funds market—whether the federal funds market is just a shoe-leather cost or whether it actually has some useful functions, including price discovery, credit risk management, and counterparty discipline. There may be some functions of that market that are important, and even if it still existed, if its liquidity were greatly reduced so that it wasn't functioning in a normal way, it could be a question. To my mind, that is the main question we have to understand as we think about option 4. Once again, terrific work, and this is really exciting, interesting stuff. So thank you all very much. Are there any other comments on interest on reserves?

Okay. If not, let's see. First, again, the projections are due Thursday at 5:00 p.m. If anyone has changes, please make the effort to do that. We will be circulating information on the 2009 FOMC schedule to try to come to closure on that. The next meeting is Tuesday and Wednesday, June 24 and 25. In a moment, we will adjourn and get lunch, but please come back to the table so that we can have some discussion about some of our longer-term issues on supervision and regulation. Thank you very much. The meeting is adjourned.

END OF MEETING