

FRBNY Blackbook

RESEARCH AND STATISTICS GROUP

FOMC Background Material

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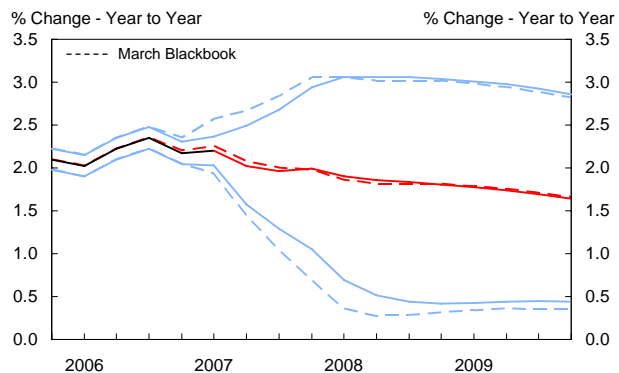
1. Policy Recommendation and Rationale

Our outlook and risk assessment are consistent with the recommendation that the FOMC maintain a 5.25% target rate at the May meeting. This recommended FFR for May is unchanged from the March Blackbook. We also continue to see the probability of a near-term reduction in the target rate as exceeding the probability of an increase; however, relative to March, we see it as less likely that the FFR will be lowered any time before 2007Q4.

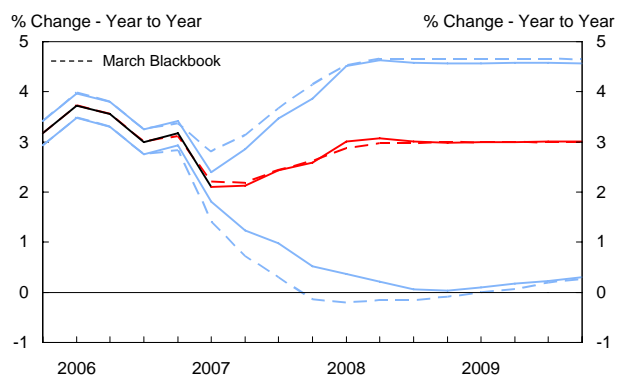
Data on inflation and real activity over the inter-meeting period were fairly consistent with what we had anticipated at the time of the March Blackbook; consequently, we have made only minor adjustments to our outlook and risk assessment over the period. Our central projections for core PCE

inflation are unchanged at 2.0% for 2007 (Q4/Q4) and 1.8% for 2008. We have lowered slightly expected real GDP growth for 2007 from 2.7% to 2.6% but left that for 2008 unchanged at 3.0%, which remains our estimate of potential. As is evident from the charts to the right, we have slightly less uncertainty around our central projections now than we did at the time of the March Blackbook. While the risks to real activity remain on the downside, these risks have diminished modestly since March; the upside risk to inflation, as measured by the gap between the expected value of our forecast distribution and our central projection, has increased somewhat since March.

Change in Core PCE Inflation Forecast Distribution



Change in Real GDP Growth Forecast Distribution



As for the trajectory for policy over the forecast horizon, our outlook and risk assessment argues for maintaining the target fed funds rate at 5.25% through the third quarter of 2007, with a reduction of 25 basis points during 2007Q4 and sometime in 2008, resulting in an end-2008 FFR of 4.75%. Though we still see rates beginning to decline in 2007, the inter-meeting resolution of some of our near-term uncertainty has led us to expect the first cut to occur in Q4 of 2007, instead of Q3 as we had indicated in March

Our recommended path remains above the expected path implied by futures markets, but the gap has narrowed some during the inter-meeting period. In contrast, the gap between our recommended path and that assumed in the Greenbook has widened. The Greenbook now has the fed funds target unchanged at 5.25% throughout 2008, which is slightly above the Board staff's assumption in March.

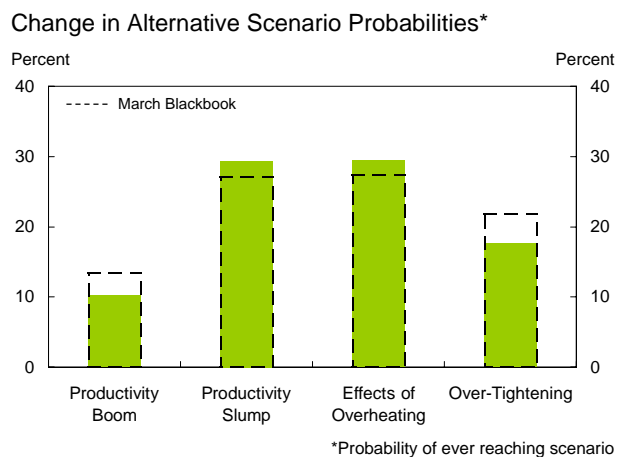
Little has changed in the broad contours of our outlook since March. The recent behavior of certain key components of inflation, particularly medical care and core goods, has been consistent with the moderation in core inflation we expect. Similarly, the slowing of OER inflation, an important factor behind our expected moderation, continues and is in line with what we would expect given the dynamics in housing sector activity over the past year.

The potential for continued weakness in capital spending and residential investment, along with the potential for spillovers from housing to other sectors, are the chief factors generating downside risks to the outlook for real activity. Although spillovers from housing activity probably have been a factor in the recent weakness in transportation and other heavy equipment spending, we still see little sign that the developments in the housing market have appreciably altered the pace of consumption spending relative to what we would expect given the continued strength of real income growth. However, we retain considerable uncertainty about the impact of the problems in the subprime mortgage market, the sources of which are discussed further in the special topic *The Rise in Subprime Delinquencies: Bad Loans or Bad Luck?*

While the broad contours of our outlook have not shifted, we have made some subtle changes to our risk assessment. Most notable is the above-mentioned overall reduction in near-term uncertainty. For inflation, this drop largely reflects a reduced probability that inflation will fall below 1.5%. These changes also have increased the upside risk to our inflation forecast, as the expected value of the forecast distribution now lies further above our central forecast than it did in March [Exhibit C-3]. While certainly not an entirely benign shift, the increase in upside risk is not related to an increase in the probability of uncomfortably high levels of inflation; the 95th percentile of the inflation forecast distribution over the forecast horizon remains essentially at or below its level of March.

For real activity, the reduction in uncertainty results in some decrease in downside risk. The probability of two consecutive quarters of negative real GDP growth over the forecast horizon has receded since March [Exhibit C-3]. The risks to real activity in our outlook have evolved in a manner consistent with signals from financial markets over the period. In particular, 9-to-10 year nominal and real forward rates each have increased by about 10 basis points over the inter-meeting period, and the spread between short- and long-term rates has narrowed [Exhibit B-1]. At the same time, equity markets have recovered from the turmoil of late February and early March and many indices are near multi-year or historic highs [Exhibit B-7].

In terms of our alternative scenarios, the increase in our upside inflation risk and the decrease in the downside real activity risk come largely from a decrease in the weights on the *Productivity Boom* and *Over-Tightening* scenarios. The lower probability of these scenarios, both of which imply inflation below our central forecast, combined with the higher probability of the *Productivity Slump* and *Effects of Overheating* scenarios, served to push up the mean of the inflation forecast distribution.



Similarly, the lower weight on the *Over-Tightening* scenario, with its more severe negative implications for real activity, in concert with the higher weight on the central scenario, prompted the indicated reduction in our downside risks to growth. The chart on the previous page summarizes how the weights attached to the alternative scenarios underlying our forecast changed over the inter-meeting period.

Relative to the March Blackbook, the net effect of these subtle changes in the near-term risk profile probably is to increase the flexibility with regard to the near-term course of policy. At the margin, these changes would seem to make it more likely that we can hold the funds rate close to its current level and that we face less pressure to attempt to induce a further convergence between our policy path and that priced into financial markets.

The longer-run risks to growth and inflation are still configured in a way that could make our policy options less appealing than they are in our central scenario, where inflation moderates and growth picks up somewhat from its current pace. First, the downside risk to our longer-run growth forecast remains greater than it was in January. The housing market has continued to surprise us on the downside, and we have no concrete indication that a bottom has been reached. Failure of this sector to stabilize likely would lower the path of investment spending in our forecast not only directly, but also indirectly through the greater uncertainty it would create around the overall outlook. There is also the ongoing risk that the effects on consumption from the weakness in housing could be larger than we have been anticipating. Any further deterioration in housing could affect our consumption profile either because it has implications for credit supply or because it causes households to become more pessimistic about their longer-run income prospects and the associated ability to service their debt.

At the same time, in view of our overall uncertainty about the process governing short-run inflation dynamics, we run the risk of inflation not moderating as we currently expect. We see some potential upside pressures, particularly from the falling dollar and rising energy prices, and these developments may impact the inflation outlook more than

we are anticipating if we are underestimating the degree of pass through from these sources. In addition, inflation expectations may begin to drift upward if the moderation in inflation fails to continue over the medium-term horizon as anticipated.

Finally, the surprising strength of hours has led us to change the mix of potential growth over the 2007-2009 horizon toward growth in hours and away from growth in productivity. For now, we view this as a temporary change in the mix and have not changed our underlying assumptions on longer-term trend hours or labor productivity growth, and we have maintained our estimate of potential growth at 3.0%. However, the benchmark output revisions this summer may offer some insight into the nature of these longer-term trends. If we do not see the upward revisions in real GDP growth that many expect, we may need to rethink our estimate of potential growth, a development that would have impact for our view of the economic outlook as well as one with significant implications for policy.

2. Significant Development

2.1 Economic Developments

The economic indicators released during the inter-meeting period were generally consistent with our central outlook; in particular, they suggested a lower probability of the more extreme downside risks for output and inflation. Consequently, they had only modest effects on our outlook and risk assessment: (1) a small increase in the upside risk to inflation and (2) a small reduction in the downside risk to real activity.

After substantial increases in January and February, core inflation measures moderated considerably in March; the 12-month change of the core CPI moved to the top of its implied comfort zone while that of the core PCE deflator remained slightly above its comfort zone [Exhibit A-11]. This behavior is consistent with our view that core inflation in January and February was pushed up by transitory factors and thus represented only a bump along the slow moderation path in our inflation outlook. In particular, medical care price inflation moderated in March, and current indications are that it should return to a level closer to its average over the past few years. In addition,

owners' equivalent rent (OER) inflation (though not tenant rent inflation) declined further in the month. Higher rental vacancy rates suggest that OER and tenant rent inflation may moderate more in coming months; given their large weight in core consumer price indices, lower inflation in these components will support further moderation in core inflation measures.

Alternative measures of underlying inflation, including the FRBNY underlying inflation gauge (UIG) and smoothed inflation, which rose little or remained stable in January and February, continued to exhibit behavior consistent with a slow moderation in inflation [Exhibit A-12]. The behavior of these measures in the first part of this year also suggests that the rise of core inflation in January and February was transitory. In addition, the UIG expected inflation measures at various horizons have converged toward lower levels [Exhibit A-13].

Long-term financial market inflation expectations rose only modestly during the inter-meeting period, and they remain low relative to recent prevailing ranges [Exhibit B-2]. The modest moves in market inflation expectations, even as core inflation measures have shown more significant swings, indicate that inflation expectations remain contained and are also consistent with the more stable behavior of alternative measures of underlying inflation. A rise in longer-term household inflation expectations as measured in the Michigan survey lends a note of caution to the outlook; however, recent similar rises in this measure have been quickly reversed. The rise in household inflation expectations may reflect the recent rise in gasoline and energy prices, of which feed-through into core prices is an upside risk. Also, until we have further confirmation that the January and February acceleration in core inflation was transitory, we maintain some upside risk to the inflation outlook, although we have less now than we had before the release of March inflation data.

Real GDP growth was tepid in 2007Q1 at 1.3% (annual rate), but this was largely as expected in the outlook prior to its release and thus had little additional effect on our central forecast or risk assessment. A good portion of the weakness reflected negative

contributions from inventory investment and net exports, which we do not expect to persist. Nevertheless, the release indicates continued downside risk from the housing market and capital spending.

Residential investment fell sharply in 2007Q1 as anticipated; however, February and March housing market indicators generally were even weaker than expected, suggesting that the weakness in the housing market and residential investment could persist for longer than we have assumed in our central forecast. Existing home sales, which had been fairly stable in recent months, fell sharply in March, and new home sales remained weak in the month. Although housing starts stabilized somewhat in February and March, the continued elevated level of the inventory-sales ratio and another increase in the homeownership vacancy rate in Q1 indicate a significant overhang in the market that may require further adjustments in production.

Furthermore, these indications of an overhang suggest some additional adjustment in prices. The 12-month change in the composite Case-Shiller repeat sales index was negative in February, suggesting further slowing of home price appreciation in broader indices such as the OFHEO index. In contrast, the Census constant-quality home price index strengthened some in 2007Q1, although this increase may reflect some quirks in the calculation of the index at this stage of the cycle. Also, given the current concern about wealth effects from housing, transaction price indices such as Case-Shiller and OFHEO may be the more important price measures at this time.

Despite the continued weakness in housing, there is little evidence that these problems have spilled over into the broader economy (with the exception of some effects on capital spending discussed below). In addition, the problems in the subprime mortgage market have yet to spread much further into the broader housing market and the aggregate economy. The relative impact of supply (underwriting standards) and demand factors on these subprime mortgage developments is discussed further in the special topic: *The Rise in Subprime Delinquencies: Bad Loans or Bad Luck?* Nevertheless, the risks of broader

effects remain, which contribute to the continuing downside risk to real activity and the increased probability on the *Effects of Overheating* scenario.

Real equipment and software expenditures rose modestly in 2007Q1, supported by a surge in computer expenditures that likely reflects some shifting of expenditures from 2006Q4 to 2007Q1. Even so, capital spending has remained tepid over recent quarters, particularly because of weakness in transportation and “other” equipment. In part, this may reflect the effects of the weakness of the housing market on investment in items like trucks and construction machinery; in the case of the latter, after rising about 20% (annual rate) over the 2003-05 period of the housing boom, construction machinery investment fell sharply over the past year. Some recovery of capital goods orders in March and continued strength in IT production suggest that the current weakness may soon end; however, continued weakness remains a downside risk to our central outlook for growth.

Furthermore, the sluggish behavior of capital expenditures since spring 2006 exemplifies some of the medium-term downside risks to real activity. Slower growth of investment spending may indicate that firms see a greater risk of more tepid final demand or fewer good investment opportunities, both of which could result from a previously overheated economy. It also could indicate that firms expect slower productivity growth; in fact, we have reduced our estimate of trend productivity growth slightly, and it could be subject to further revision later in the year (see discussion in **3.1 Central Forecast**). Nevertheless, the 2007Q1 productivity data were somewhat more robust than they had been recently: according to the Kahn-Rich model, the probability that the economy is in the low-productivity-growth state declined from 38% to 22%.

Currently, the sources of the weakness in capital spending remain unclear; some commentators have argued that greater uncertainty has been a factor, but this explanation is not consistent with the continued firm growth of payrolls. Therefore, a better understanding of the factors underlying this slowdown will be important to our outlook and risk assessment in upcoming months.

Beyond capital spending, manufacturing indicators improved moderately, although they do not yet suggest a strong rebound in the sector. Rises in production and orders in March reduced concern about the sector entering a more severe decline, and the ISM survey indicates improving confidence among firms. Indications that the inventory cycle in some sectors, particularly motor vehicles, may be nearing an end suggest that manufacturing could see somewhat more robust growth in the coming months.

In contrast to the weakness in housing and capital spending, consumption remained robust in 2007Q1. The monthly patterns suggest some slowing in 2007Q2, but most indicators, including April auto sales, still were consistent with our consumer outlook.

Part of the support for the continued robustness in consumption comes from a labor market that has remained fairly firm. Although payroll growth has been somewhat slower in the first four months of the year compared to 2006, it is still fairly well maintained at a level consistent with our outlook. The unemployment rate remained low at 4.5% in April. The labor force participation rate and employment-population ratio fell in April, but we believe this change reflected statistical noise associated with the household survey as longer-term changes remain solid: in particular, over the 12 months through April, the average monthly change in household employment (adjusted to be comparable to payroll employment) was over 65,000 above that for payroll employment.

The continued fairly firm growth of employment in the face of modest real GDP growth over the past year was one factor behind our decision to change the composition of potential GDP growth toward stronger trend hours growth and lower trend productivity growth.

Measures of wage and labor compensation provided differing assessments of labor cost growth. Growth of compensation and unit labor costs was strikingly low in 2007Q1, likely because of timing quirks associated with incentive pay. The growth of average hourly earnings has displayed more modest slowing in recent months. The 12-month change in the Employment Cost Index increased moderately, moving it closer to that of

average hourly earnings. Overall, we see little indication of any fundamental change in labor cost pressures over recent months.

The economic indicators from foreign economies generally were consistent with our outlook. The indicators for the euro area indicate fairly robust growth, with confidence at a high level and unemployment relatively low. The Japanese economy also appears to be growing at a decent rate, but indications of a return of deflation, along with some weak industrial production and retail sales data, raise some concern. China's real GDP growth in 2007Q1 was very strong; though anticipated, this strength combined with higher inflation, reinforces concerns about possible overheating. Nevertheless, the indications of robust growth outside the U.S. support our view that U.S. export growth should rebound from a weak 2007Q1, reducing the drag from net exports over the rest of the year.

Special Topic

The Rise in Subprime Delinquencies: Bad loans or bad luck?

Joseph Tracy Redacted

The housing market by many measures peaked in late 2005. In 2006 delinquencies (60+ days) of subprime loans, which had become relatively more important as a source of mortgage credit during the housing boom, rose significantly. The question addressed in this special topic is how much of this rise in delinquencies can be attributed to “bad loans,” that is, worsening underwriting standards, as opposed to “bad luck”, that is, worsening local housing/labor markets.

Using data from the Mortgage Bankers Association (MBA) for the period from 1998-2005, the average delinquency rate for subprime mortgages was 4.04%. In 2006, it increased to 5.08%.

To begin our analysis of this increase we need to design a proxy for conditions in local housing and labor markets. The role of this proxy is to allow us to control for changes in local conditions that would be expected to impact the subprime delinquency rate. A key assumption that we need to make is that the measure is not affected by any possible deterioration of underwriting standards in the subprime loan market. I will use the

delinquency rate of prime mortgages as this proxy.

Chart 1 presents a scatter plot of the quarterly MBA state data on delinquencies of subprime and prime mortgages. I also include a regression line, for which the subprime delinquency rate is the dependent variable and the prime delinquency rate is the explanatory variable. The positive intercept of the regression line (0.59) indicates that subprime loans are riskier than prime loans even when conditions in the local housing/labor market are extremely robust. The slope of the regression line (5.37) indicates that subprime loans are much more sensitive than prime loans to conditions in local housing and labor markets. For example, an adverse shock that increases prime delinquencies by 10 basis points would be expected to increase subprime delinquencies by 54 basis points. Holding constant conditions in local housing and labor markets by picking a given prime delinquency rate, we would expect a weakening of subprime underwriting standards to push a data point above the regression line.

Chart 2 brings in the data (in red) for 2006. We can see that the preponderance of the data points lie above the regression line. Holding fixed the intercept, the data for 2006 suggest that the regression line has rotated upward, with the slope increasing to 6.22.

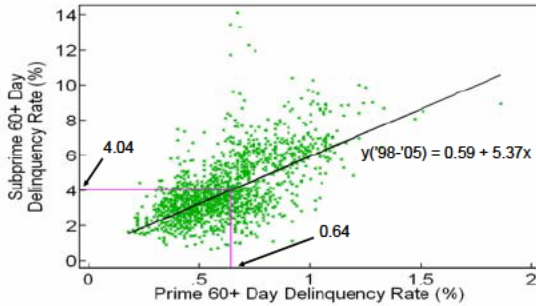
At the same time, however, conditions in the local markets worsened somewhat, with the average prime delinquency rate rising from 0.64% to 0.72%.

Chart 3 uses the regression results to offer one answer to the question of how much of the rise in subprime delinquencies was the result of bad luck (shocks to local markets) instead of bad underwriting. If underwriting standards had remained unchanged on average, the 8 basis point rise in the average prime delinquency rate would have been expected to result in a 43 basis point rise in the average subprime delinquency rate, 41% of the observed increase. The worsening of underwriting standards (as captured by the upward rotation of the regression line) accounts for 61 basis points or 59% of the observed increase.

Somewhat like the teenagers in the Broadway play *West Side Story*, the poor performance of recent vintages of subprime mortgages appears to be the result of a mix of bad loans and bad luck.

Chart 1

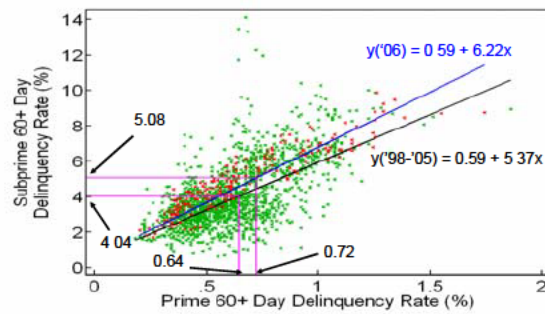
Subprime v Prime: 60+ Day Delinquency Rate, SA
Slope: 1998-2005



Source: Mortgage Bankers Association, Economy.com

Chart 2

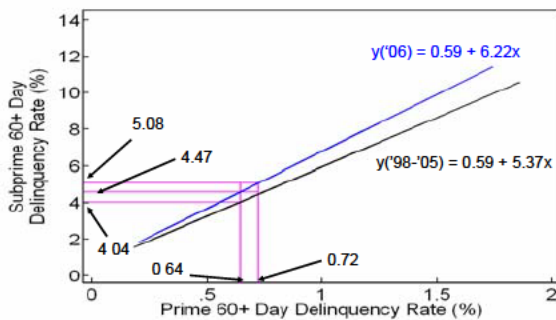
Subprime v Prime: 60+ Day Delinquency Rate, SA
Slope Change: 2006 v 1998-2005



Source: Mortgage Bankers Association, Economy.com

Chart 3

Subprime v Prime: 60+ Day Delinquency Rate, SA
Slope Change (Breakdown)



Source: Mortgage Bankers Association, Economy.com

2.2 Financial Markets

With indications that global economic growth remained solid and that the problems in the U.S. subprime mortgage market have not spilled over substantially into other asset classes and have not so far affected the aggregate U.S. economy, financial market participants appeared to reduce their concerns about the possibility of a severe decline in real economic activity that had been manifested in late February and early March. Consequently, many markets returned to their levels from before that period.

With less concern of a near-term decline in real activity, expectations of the FFR path implied by futures markets rose somewhat during the inter-meeting period. Near term, markets expect little change in the FFR, as the implied probability of a 25 basis point rate cut at either the June or August FOMC meeting dropped considerably during the period and is now fairly low [Exhibit B-4]. Medium-term expectations rose modestly, although the path still indicates cuts in the FFR target beginning in late 2007 and through 2008, with about 75 basis points of easing by August 2009 [Exhibit B-4]. This path is consistent with expectations of the FOMC moving the FFR toward “neutral” over the medium term as inflation moderates; however, it also incorporates some probability of additional cuts if real growth remains substantially below its potential rate. With market participants having somewhat greater confidence about the outlook, implied volatility around expected interest rates, as measured by the 6-month LIBOR probability interval, declined [Exhibit B-6]. Implied interest rate skewness remained quite negative [Exhibit B-5]. This suggests that market participants remained concerned about an unexpected policy rate cut over the near term, reflecting the risk of the FOMC responding to signs of real activity weakness by cutting rates aggressively (as it did in 2001).

Long-term nominal interest rates increased somewhat during the inter-meeting period, and the term spread became less negative: the 10-year to 3-month spread moved from -46 basis points to -23 basis points [Exhibit B-1]. The decline in the term spread is another indication that markets became somewhat less concerned about the possibility of a contraction (though the extended period of inversion nevertheless raises the probability of

recession according to some statistical models). Consistent with this interpretation, real long-term interest rates also rose during the inter-meeting period [Exhibit B-1].

With less concern about a real contraction over the near and intermediate term and corporate profit growth indicators remaining solid, equity prices rose during the inter-meeting period, with many indices hitting multi-year or historic highs [Exhibit B-7]. Following typical patterns, implied volatility in equity markets fell during the period. The strength in equities was worldwide, as most global stock markets rose strongly on signs of sustained economic and profit growth in many countries and attained or exceeded their late February levels [Exhibit B-9]. With markets recovering fairly quickly after the turmoil in late February and early March, some commentators expressed concern about possible over-valuation in equity markets. At least in the major U.S. markets, indicators do not suggest over-valuation: price-earnings ratios remain well below their late-1990s levels and are near their long-term averages.

Although spreads on subprime mortgage-backed securities remained elevated, other credit spreads have not indicated much spillover from subprime mortgages. Spreads on other consumer asset-backed securities remained near their levels prior to late February. Spreads on speculative grade corporate securities remained fairly low compared to historical levels [Exhibit B-8].

Even though concerns about a U.S. economic contraction appeared to have subsided during the period, foreign exchange markets suggested that market participants expect U.S. real growth and interest rate path to be somewhat weaker relative to other economies than it has been in the recent past. The dollar depreciated in effective terms, as the euro reached a historic high versus the dollar and many emerging market currencies appreciated against the dollar [Exhibit B-9]. The major exception to this trend was the Japanese yen, against which the dollar appreciated marginally. The behavior of the yen reflected the reinstatement of many carry positions as market turmoil subsided and expectations of tighter Japanese policy were reduced. Reserve accumulation in Asia and some Latin American countries continued at a rapid pace.

2.3 Global Monetary Policy

Although there were no changes in policy rates among major foreign central banks over the inter-meeting period, indications of general tightening worldwide remained as global growth stayed firm. ECB communications suggest that they are likely to raise policy rates in June. However, indications that deflation in Japan has returned, along with a reduction in the inflation outlook for the coming year, suggests that the Bank of Japan may be more cautious in its tightening cycle.

With concerns about overheating in the Chinese economy, the People's Bank of China tightened policy further, raising the policy rate and reserve requirements, although it appears that policy changes so far have not been sufficient to slow credit growth as it attempts to sterilize the large reserve accumulation. Outside of policy rate increases in Mexico and New Zealand, policy rates were unchanged in other countries, although inflationary pressures have surfaced in the United Kingdom, Canada, and some emerging economies.

3. Evolution of Outlook and Risks

3.1 Central Forecast

Conditioning assumptions. The only significant change in our conditioning assumptions is a change in the composition of potential GDP growth. We have maintained our assumption that the potential GDP growth rate is 3%. However, we have lowered our assumption of trend productivity growth from 2% to 1¾% (GDP basis—1¾% is approximately equivalent to 2¼% on a nonfarm business sector basis). This reduction was in response to the recent lower levels of productivity growth as well as downward revisions to prior years and is generally consistent with recent estimates of long-term productivity growth. This change in assumption is tentative; it is possible that because of the upward revisions to payroll employment and the faster growth of gross domestic income relative to GDP we may see some upward revisions to output (and thus to productivity) in the summer benchmark revisions. Consequently, we intend to revisit this assumption in the summer after those benchmark revisions.

At the same time, we have raised our estimate of trend hours growth from 1% to 1¼%. This increase was in response to the continued strength in payroll and hours growth over the past year. With this change and a similar change by the Board staff, our estimate of trend productivity growth remains essentially the same as that of the Greenbook. At the same time, our assumption of somewhat faster trend growth of hours widens the gap between our labor market outlook and that of the Board staff, who expect hours growth to slow substantially as the labor force participation rate declines over the medium term.

With real GDP growth below our estimate of the potential GDP growth rate for four consecutive quarters, we believe that a small output gap may have opened. Still, it is not sufficiently large to affect our assumption that in the absence of large shocks and with the expected paths of monetary and fiscal policy, medium-term growth will be near this potential rate.

With economic developments raising our confidence in the central scenario somewhat and reducing concern about some of the more extreme downside risks, we have not changed our assumption about the path of monetary policy substantially [Exhibit A-3]. Our central forecast is consistent with a fed funds target rate of 5.25% through 2007Q3, after which it declines to 5.00% by the end of 2007, and to 4.75% by the end of 2008. This path is lower than that underlying the Greenbook forecast, as it has been for some time. This gap has widened somewhat because the Board staff has eliminated the 25 basis point cut in 2008 assumed in the March Greenbook. In contrast, our assumed path remains above the expected path implied by futures markets, particularly in 2008. However, this gap has narrowed some during the inter-meeting period, especially for horizons up to one year. The continued gap between our path (which reflects only our central forecast and not the risks to our outlook) and the market-implied path likely reflects the downside risk to real activity perceived by market participants that could result in a series of quick rate cuts.

Our assumptions concerning inflation dynamics are unchanged. Long-run inflation expectations are assumed to remain contained near current levels. The modest changes in

financial market expectations are consistent with this assumption, but the rise in household expectations in the Michigan survey lends a note of caution; nevertheless, previous increases like this one have tended to be reversed quickly. We also expect the lower persistence of inflation evident since the early 1990s to continue; this assumption is in contrast to the greater inflation persistence assumed in the Greenbook forecast. The moderation in core inflation measures in March after the increases in January and February is consistent with this assumption. Consequently, we expect that, in the absence of large shocks, inflation will move gradually toward the implicit target of 1½%.

Our assumptions concerning financial markets and fiscal policy are similar to those in the last Blackbook. We continue to expect the term premium to remain low. The modest rise in the term premium (as measured by the Kim and Wright methods) during the inter-meeting period is consistent with this assumption. Fiscal policy is assumed to provide a small impetus to real GDP growth in 2007 and 2008, similar to that in the last Blackbook. The decline in federal government expenditures in 2007Q1 probably resulted from some shifting of expenditures across quarters and thus had no impact on this assumption; volatility in the quarterly growth rates of federal government spending is not unusual. As is our standard practice, paths of equity prices, home prices, and exchange rates are assumed not to differ significantly from those in the Greenbook. Based on average futures prices in the two-week period ending April 27, the spot price of West Texas intermediate crude oil is assumed to rise to \$68.75 in 2007Q4 (\$66.00 in the last Blackbook) and to \$70.50 in 2008Q4 (\$67.50 in the last Blackbook).

Foreign real GDP growth is expected to increase 3.1% (GDP-weighted) in 2007 (Q4/Q4), unchanged from the last Blackbook. Most data released during the inter-meeting period were generally consistent with our global outlook.

Inflation. The moderation of core inflation measures in March was consistent with our view that the elevated January and February inflation rates largely reflected transitory factors. The behavior of our UIG and smoothed inflation measures as well as financial market expectations is consistent with core inflation gradually moderating over the

forecast horizon. Therefore, we have not changed our inflation forecast significantly. We continue to project core PCE inflation at 2.0% in 2007 (Q4/Q4) and 1.8% in 2008 [Exhibits A-1 and A-2].

Although we have slightly increased the upside risk to our inflation forecast, developments generally have been consistent with the moderation we expect. The rate of increase of medical care prices, a major source of the more rapid January and February inflation rates, moderated significantly in March. After firming in recent months, core goods inflation also moderated in March, reducing the concern, mentioned in prior Blackbooks, that goods prices might firm before we saw noticeable slowing in services inflation. Also, OER inflation continued to show some moderation, which is consistent with theory suggesting that the rising inventory of vacant homes for sale and for rent should begin to depress the rate of increase of shelter prices. In this regard, the increase of the rental and homeownership vacancy rates in 2007Q1 suggest further moderation in OER inflation in coming months as well as the start of moderation in tenant rent inflation; given their large weight in inflation measures, these developments should support further inflation moderation.

Real activity. Although real GDP growth in 2007Q1 was tepid at 1.3% (annual rate), we see this sluggishness as the result of a number of factors that should begin to subside in upcoming quarters. Consequently, we expect real growth to rebound to close to potential growth in 2007Q2 and subsequent quarters [Exhibit A-4], putting the 2007 (Q4/Q4) growth rate at 2.6% and the 2008 growth rate at 3.0%, both near their estimates from the last Blackbook [Exhibit A-5].

Two factors that held down 2007Q1 growth were inventory investment and net exports, both of which were drags in the quarter. We expect that much of the inventory correction has been completed, resulting in inventory investment having a small positive GDP growth contribution in 2007Q2 and 2007Q3 before its contribution shifts to neutral in the final quarter of the year. Given that global economic growth is expected to remain fairly robust, the sluggishness of exports in 2007Q1 should not persist, leading to stronger

export growth and considerably less drag from net exports over the remaining quarters of 2007. The expected continued depreciation of the dollar also supports this shift in net exports.

Another factor that has held down growth in recent quarters has been equipment and software expenditures. We expect that growth in these expenditures will rebound to a somewhat faster pace in the coming quarters (although still notably below the increases in the 1990s). Two factors support this expectation. First, much of the weakness in equipment expenditures has been in transportation and construction equipment, which probably reflects the impact of the housing correction. Investment in heavy trucks had also been temporarily depressed due to a rush to invest over the second half of 2006 in advance of stricter emissions standards for diesel engines. With the housing correction largely behind us, the weakness in these equipment categories also should subside. At the same time, the strength in IT production and orders suggest that these equipment expenditures should continue to grow solidly. Second, with growth expected to rebound to near potential, accelerator effects should help to support capital spending.

Finally, we continue to expect that the housing market is nearing the end of its correction, meaning that it will be less of a drag on real growth in the second half of 2007 and a neutral factor in 2008. The recent stabilization of housing starts and building permits as well as continued stable mortgage applications supports this projection. Nevertheless, this sector continues to be a source of downside risk for real activity. The continued high level of the new home inventory-sales ratio and increases in rental and homeowner vacancy rates suggest that a substantial overhang remains in the market, which could lead to an even deeper and more persistent contraction in homebuilding activity. Moreover, the apparent tightening of credit in mortgage markets after the subprime problems may be contributing to weaker sales and to a longer and more severe correction in the market.

We also continue to assume that any spillover effects from the housing and mortgage markets into consumer spending will be relatively small. This assumption reflects our view that a wealth effect from housing did not inordinately raise consumption growth

over recent years. The consumption data for 2007Q1 is consistent with this assumption, but the slower pace of growth in the latter part of the quarter suggests that such effects remain possible downside risks to real activity.

3.2 Alternative Scenarios and Risks

A small increase in our confidence in the central forecast scenario has resulted in a decrease in the uncertainty around inflation and output outcomes over the forecast horizon [Exhibit C-3]. Measuring the risks as the difference between our central forecast and the mean of the forecast distribution, we have reduced the downside risk to the output forecast, but we have raised the upside risk to the inflation forecast. For both inflation and output, these changes in the risk and uncertainty profiles largely reflect a reduction in the more extreme downside risks.

For inflation, most of the drop in uncertainty is reflected in the 5th percentile. The 95th percentile has shifted in slightly at shorter horizons, but it is little changed from 2007Q4 onward; consequently, the probability of inflation above 2.5% has not changed substantially over the period. The 5th percentile, in contrast, has moved in considerably over the entire forecast horizon, leading to a higher mean in the forecast distribution and the increase of upside risk to inflation. These changes also decreased the probability of core PCE inflation below 2% at the end of 2007 from 45% in the March Blackbook to 42% [Exhibit C-3].

The increase in the mean of the inflation forecast distribution, despite little change in the 95th percentile, reflects a combination of two factors. First, the increase in the weight on the *Effects of Overheating* and *Productivity Slump* scenarios raises the probability of inflation somewhat above our central forecast [Exhibit C-1]. Second, the decrease in the weight on the *Over-Tightening* and *Productivity Boom* scenarios has reduced the probability that inflation will fall below 1.5%.

In the output distribution, both the 5th and 95th percentiles have shifted inward somewhat over the forecast horizon. The inward shift of the 5th percentile illustrates the reduction

of some of the more extreme downside real activity risks, particularly at shorter horizons. With the reduction of these risks, our current probability of continued expansion through 2008 is 89%, up from 85% in March [Exhibit C-3].

Changes in the probabilities of the *Productivity Boom* and *Over-Tightening* scenarios were important factors in these changes in the output forecast distribution. The downward shift of the 95th percentile largely reflected the reduced weight on the *Productivity Boom* scenario, while the upward shift of the 5th percentile was caused primarily by the drop in the weight on the *Over-Tightening* scenario and increased weight on the central scenario. We reduced the weight on the *Over-Tightening* scenario because the continued stability of the labor market and the strong signals from financial markets (aside from the yield curve) are not consistent with it.

The decrease in the weight of this scenario, however, was not sufficient to significantly diminish our downside real activity risk. Recent weak productivity growth, lackluster equipment and software expenditure growth, and further deterioration in the housing market led us to raise the weights on the *Effects of Overheating* and *Productivity Slump* scenarios, which kept the expected value of output growth from the forecast distribution well below the central scenario forecast.

The most significant change in the probabilities of the alternative scenarios was the reduction in weight attached to the *Productivity Boom* scenario; we have diminished the probability of this scenario for two consecutive cycles, though we continue to attach some probability to it. This reduction reflects the continued weakness in capital spending over the inter-meeting period combined with our re-analysis of the robust productivity growth from 2002-2004; we now believe that one-off factors produced a considerable portion of that strength. However, we maintain some weight on this scenario because labor market and consumption indicators remain solid and recent quarters' productivity growth has shown somewhat of a rebound. The Kahn-Rich model interprets these most recent developments as lowering the probability of a return to the low productivity regime relative to earlier this year.

4. Forecast Comparison

4.1 Greenbook Comparison

As they did in March and have for some time, the Board staff projects higher inflation and weaker real growth than we project.

Conditioning assumptions. In light of the increase in their inflation projections, the Board staff eliminated the 25 basis point rate cut in 2008 that was assumed in the March Greenbook. This change returned the path to that of the January Greenbook, which held the policy rate at 5.25% through the end of 2008. This path is above our path and well above the expected path implied by futures markets [Exhibit A-3].

The Board staff estimates of the potential growth rate remained at 2.6% for 2007 and 2.5% in 2008, both below our estimate of 3%. (However, they did lower their estimates of historical potential GDP growth in 2005-06 by 0.1 percentage points in each year, while our estimate for that period remains 3.0%.) As we did, they reduced their estimate of structural (trend) labor productivity growth by about $\frac{1}{4}$ of a percentage point in both 2007 and 2008. They also offset the lower trend productivity growth as we did with an increase in trend hours growth, reflecting the fact that labor force participation and average weekly hours have been above their projections for some time. They also raised their projection of the labor force participation rate 0.1 percentage points in 2007 and 2008.

The Board's staff forecast for global growth in 2007 is slightly higher than ours. We forecast foreign growth to slow to 3.1% in 2007, while the Board forecasts 3.2% growth (using our weights). The Board expects somewhat faster growth for Japan and China and slower growth for Korea. Projections for other major economies are similar.

Inflation. The Board staff's expected trajectory for core inflation is slightly higher than it was in the March Greenbook, increasing the gap between our forecast and theirs. They project core PCE inflation of 2.3% in 2007 (Q4/Q4) (up from 2.2%) and 2.1% in 2008 (up from 2.0%). This increase reflects a combination of higher projected prices for non-

fuel imports and probably some pass-through of the recent increase in energy prices. The re-assessment of structural productivity growth and a tighter labor market also play a role.

Real activity. The Board staff slightly decreased their output growth forecast for 2007 (Q4/Q4) from 2.1% to 2.0%, while slightly increasing their 2008 forecast by 0.1 percentage points to 2.4%. Both projections are lower than our 2007 and 2008 projections of 2.6% and 3.0%, respectively [Exhibit A-7]. In large part, these differences reflect our differing estimates of potential growth.

Despite the differences in potential growth estimates, the projected output gap in 2008 is virtually the same in the FRBNY and the Greenbook forecasts. However, we expect to see some differences in overall economic conditions depending upon the evolution of potential growth. For example, if potential growth is closer to the Board's estimate while GDP growth is close to our central forecast, evidence of tighter resource constraints (e.g., higher wage growth) should become more apparent. In contrast, if potential growth is closer to our estimate but GDP growth is close to the Greenbook forecast, a more significant output gap with evidence of looser resource constraints (e.g., lower wage growth) would arise.

The Board staff has placed greater emphasis than in the March Greenbook on the developments in the subprime mortgage market (through rising delinquencies and tighter credit standards) and on generally weaker housing demand, leading them to reduce their housing starts projection by 100,000 units in 2007 and 200,000 units in 2008.

Consequently, they project the housing sector slump will persist into 2008 so that residential investment falls more in 2007 than was projected in the March Greenbook forecast and also falls slightly (rather than increasing modestly as in the March Greenbook) in 2008. This forecast is somewhat weaker than ours, particularly in 2008 [Exhibit A-3], though we recognize the uncertainty around our current projection and see some likelihood that we will need to modify this portion of our forecast depending upon the evolution of the market.

The Board staff also continues to forecast more weakness in the equipment and software investment than we do, estimating a GDP growth contribution of 0.2 percentage points in 2007, below our 0.4 percentage points. The difference appears to reflect their assumption that the weakness in transportation equipment persists into the current quarter.

The discrepancy between the Board staff labor market forecast and ours has widened, particularly in 2007 [Exhibit A-7]. They project a lower monthly increase in payroll employment (100,000 per month for 2007, below our 158,000 per month for that year, with a similar gap in 2008), which is consistent with their lower profile of GDP growth. Also, they see current employment above that justified by the level of production (i.e., the unemployment rate is below their estimate of NAIRU), and thus they expect firms to restrain payroll growth to put payrolls into better alignment with projected production. As a result, they expect productivity growth in 2008 to be above its structural level. In contrast, we expect productivity growth in 2008 to be near our estimate of its trend; with growth of GDP also near potential, we expect payroll growth also to be near trend.

Because of the similar forecasts for global growth, our projections for export growth are similar. However, the net exports forecasts differ somewhat for 2007, largely because of differing expectations for domestic demand. The Board staff expects a net exports contribution of 0.1 percentage points to real GDP growth in 2007 because import growth is weaker in their forecast. In contrast, our projection of stronger domestic demand growth leads to a stronger import growth projection and a 0.2 percentage point drag.

Uncertainty around forecasts. There were few substantial changes since March in the uncertainty around either our forecast or the Board staff forecast. The 70% probability intervals for inflation and output in 2007 and 2008 are shown in Table 1 below, with the March values in parentheses. For core PCE inflation, our probability intervals are wider than those in the Greenbook in 2007: for example, the width of the Greenbook's 70% probability interval is 0.9 percentage points (0.8 in March), while the width of our 70% interval is 1.2 percentage points (1.5 in March). Our wider probability interval and lower

point forecast implies that the 85th percentiles of the two distributions are about the same, a situation that has prevailed over the past few cycles.

In contrast to 2007, the widths of the 2008 probability intervals for core PCE inflation in the two forecasts are about the same: for example, the width of the 70% probability interval is 1.6 percentage points in each forecast. As we have stated in the past, the source of this pattern of relative probability interval widths (ours being wider in the short term and becoming relatively narrower in the longer term) is the differing assumptions about inflation persistence in the two forecasts. Because the Board staff assumes more persistent inflation dynamics, the probability intervals around their shorter-horizon forecasts are narrower than those for our forecast; however, the greater assumed persistence means that forecast errors persist longer, resulting in the intervals around their longer-horizon forecasts typically being wider.

For real GDP growth, our probability intervals are somewhat narrower than those in the Greenbook forecast in both 2007 and 2008. In 2007, the width of our 70% probability interval is about 2.1 percentage points compared to 2.3 percentage points for the Greenbook. In 2008, the width of our 70% probability interval is about 2.8 percentage points while that of the Greenbook is about 3.1 percentage points. Because of the wider interval around the Greenbook forecast as well as the downside risk to our central forecast, the 85th percentile of the Greenbook forecast in 2008 is above that of our forecast distribution even though our central forecast 0.6 percentage points higher.

Table 1: Comparison of 70% Intervals around FRBNY and Board Forecasts

	Core PCE Inflation		Real GDP Growth	
	<i>FRBNY</i>	<i>Board</i>	<i>FRBNY</i>	<i>Board</i>
2007	1.5-2.7 (1.2-2.7)	1.8-2.7 (1.6-2.8)	1.2-3.2 (0.8-3.4)	0.8-3.1 (0.6-3.6)
2008	1.1-2.7 (1.0-2.7)	1.3-2.9 (1.1-3.0)	1.0-3.7 (0.9-3.8)	0.8-3.9 (0.8-3.8)

To gauge the importance of the differences between our outlook and the Greenbook forecast we calculate the percentile of the baseline Greenbook forecasts for inflation and output in our forecast distributions. The results are shown in Table 2, with March values appearing in parentheses. Using this metric, our forecasts remain fairly close when our risk assessment is taken into account, though they have diverged slightly on 2007 inflation and 2008 growth. In particular, with the Greenbook core PCE inflation forecast in 2007 somewhat higher, it is now more firmly in the upper half of our distribution. The divergence of the inflation forecasts appear more striking in 2009, with the Greenbook forecast in the 64th percentile of our distribution. This reflects the fact that the Greenbook forecast has less moderation in inflation because they see inflation expectations as anchored near 2%; in contrast, we see inflation continuing to moderate in 2009 toward the implicit target of 1.5%.

With its reduction to 2.0%, the Greenbook's real GDP growth point forecast for 2007 is in the lower half of our forecast distribution, rather than the upper half, though it remains close to our median. For 2008, their real GDP growth projection has moved further into the upper half of our distribution even though their forecast remains well below our central forecast. This pattern is another reflection of the downside risk in our real activity forecast.

Table 2: Percentile of Greenbook Forecast in FRBNY Forecast Distribution

	Core PCE Inflation	Real GDP Growth
2007	59 (55)	47 (55)
2008	53 (52)	57 (52)
2009*	64	53

*2009 percentiles not computed in March.

Alternative Greenbook forecasting scenarios. The Greenbook's alternative scenarios are mostly the same as those considered in the March Greenbook and, as is typical, tend to have a larger impact on output and unemployment (relative to the baseline) and a

lesser impact on inflation over the relatively short (now less than two years) horizon of the simulations.

The only scenario that was not in the March Greenbook, and the one with the most adverse impact on inflation, is the *Unanchored inflation expectations* scenario. The scenario assumes that the recent string of high headline inflation data causes long-run inflation expectations, which were held stable in the baseline scenario, to increase about 50 basis points over 2007 and 2008. The rising expectations push core PCE inflation above the baseline beginning in late 2007, and monetary policy responds by beginning to tighten in late 2008. The increase of core inflation to about 2.5% over the second half of 2007 and 2008 has virtually no effect on output and unemployment, despite lower real short-term rates. This behavior reflects an increase in nominal long rates in anticipation of further monetary policy tightening.

The scenario with a sizable favorable impact on inflation is the *Lower NAIRU* scenario. This scenario, which was in the March Greenbook, assumes that the NAIRU has declined from 5% to 4¼% over the past few years, implying more slack in the labor market than assumed in the baseline. Core PCE inflation thus declines to 1¾% by 2008H2, generating a lower trajectory for the FFR. Lower rates stimulate real economic activity, leading to a small increase in output growth relative to the baseline.

A significant downside risk to real activity is illustrated in the *Business caution with financial spillovers* scenario, which couples low business spending with slower job growth and a fall in equity prices. Real GDP growth slows to about 1¼% over 2007-08, implying an FFR of 4.1% by the end of 2008, far below the baseline FFR and somewhat below financial market expectations.

The *Stronger aggregate demand* scenario generates a sizable deviation of FFR from the baseline path in the opposite direction. This scenario assumes households and firms display a greater willingness to spend than in the Greenbook baseline. With stronger real activity, the FFR rises to 6.5% by the end of 2008; real GDP growth still rises above the

baseline and the unemployment rate is below its baseline, but inflation remains near its baseline.

4.2 Comparison with Private Forecasters

As in March, though our near-term outlook for inflation is comparable, our near-term outlook for real growth is somewhat more optimistic than the projections of private forecasters [Exhibit A-9]. Compared to Macro Advisers and Blue Chip Economic Indicators, our growth projections are slightly higher for 2007Q2 and significantly higher (0.5 – 0.7 percentage points) for 2007Q3. The significant gap that has opened between our Q3 projection and those of private forecasters since March reflects the fact that we were the only forecaster included here to move up his Q3 forecast between March and May.

As a result of these quarterly differences, our 2007 (Q4/Q4) projection is 0.2-0.3 percentage points higher than those of Macro Advisers (2.4%) and Blue Chip (2.3%). Projections from the PSI model are the lowest among all the forecasts for real activity, principally due to fairly pessimistic signals from indices of business conditions/sentiment over the past three months. However, it should be noted that the PSI forecasts at this point in the data cycle are associated with a high degree of imprecision and should be taken with caution.

Differences between our projections and those of private forecasters for total CPI inflation likely reflect differences in energy price inflation assumptions. Considering core CPI inflation instead, however, we can see that Macro Advisers' projections have a different quarterly pattern, but their inflation for 2007 as a whole is identical to ours, suggesting that their overall outlook is comparable.

5. Robustness of Policy Recommendation

5.1 Sensitivity to Alternative Scenarios and Policy Rules

Our policy recommendation is almost identical to March and is fairly close to the policy prescription of the *Baseline* rule in three of the four alternative scenarios. The exception

continues to be the *Over-Tightening* scenario, under which the *Baseline* rule prescribes aggressive cuts in the FFR that push it below 4% by the end of 2007 [Exhibit D-1]. Even though the nominal FFR paths are similar for the three remaining alternative scenarios and the central scenario under the *Baseline* rule, the real FFR paths are quite different, reflecting the differences in inflation outcomes in the alternative scenarios and the resulting policy stances.

We consider the same three alternative policy rules that we considered in the March Blackbook: the *Dove* rule, the *Opportunistic Disinflation* rule, and the *Outcome-Based* rule. As can be seen in Exhibit D-2, the *Outcome-Based* rule, combined with our downside risk to output growth, recommends very aggressive cuts in the FFR. The main reason for the aggressive easing under this rule is its greater sensitivity to output gap fluctuations relative to our standard policy rules (it is important to note that we do not adjust the rule for changes in potential GDP in some of the alternative scenarios). This sensitivity is also evident in the FFR distributions; the *Outcome-Based* rule, which is centered at the Greenbook baseline forecast in the diagram, exhibits substantially more variability than any of distributions implied by our other rules or the market-implied distribution [Exhibit D-5].

All of the alternative rules, like the *Baseline*, react substantially to the *Over-Tightening* scenario, prescribing significant rate cuts over the forecast horizon [Exhibit D-3]. Both the *Dove* and *Outcome-Based* rules, in particular, produce very aggressive easing. The *Over-Tightening* scenario pushes down substantially the expected value of the FFR under all rules, including the *Baseline* rule [Exhibit D-2]. Therefore, much of the difference between the overall prescription of the *Baseline* rule (which factors in our risk assessment) and our policy recommendation stems from the impact of a low probability low-growth, low-inflation event on the *Baseline* prescription. The effects of such an event can be seen in the negative skewness of the FFR distribution using the *Baseline* rule for 2008Q1 and 2008Q2 [Exhibit D-5].

The prescription of the *Opportunistic Disinflation* rule, which keeps the FFR above 5% over much of the forecast horizon in the central scenario and the alternative scenarios aside from the *Over-Tightening* scenario, continues to be close to our short-run policy recommendation [Exhibit D-3]. This rule would better preserve Fed credibility, if *ex post* it appears that either of the *Productivity Slump* or *Effects of Overheating* scenarios explains recent developments well. However, the behavior of the nominal FFR in the *Over-Tightening* scenario using this rule suggests the importance of a policymaker having the option of a significant FFR adjustment if economic evidence suggested that an low-growth, low-inflation event of this type were occurring.

5.2 Comparison to Market Expectations

Since March the implied path for the FFR priced into financial markets has moved up; the expected FFR through early 2008 has returned to its January 2007 levels. With the reduction the downside risk to real activity and increase in the upside risk to inflation (measured as the difference between the expected value and central scenario forecast) in our outlook, all of our policy rules similarly indicate that the future path of policy should be slightly higher than at the time of the March Blackbook.

The increase in market expectations is almost exactly matched by the increase in the recommendation of our *Baseline* rule under the expected value of our forecast distribution [Exhibit D-2]. A smaller parallel shift upward can be seen when we consider the path using the *Baseline* rule under our central forecast scenario [Exhibit D-1]. Here again, the prescription of the rule remains above the market-implied path, though less so than in March, as the market path has moved up by more than the *Baseline* prescription. The path using *Opportunistic Disinflation* rule still is well above the market path over most of the forecast horizon [Exhibit D-2]. The *Dove* and *Outcome-Based* rule are well below the market path, reflecting their stronger responses to below-potential output growth [Exhibit D-2].

The shifts in the paths prescribed by our policy rules, then, largely mirror those in the market. The implied distributions of most rules [Exhibit D-5] also capture the negative

skewness priced into markets, which is evident in our skewness measure [Exhibit B-5]. Implied volatility around the market-implied path, as well as that around our policy rules, is little changed from March; both remain above the low levels seen in January.

Overall, our analysis suggests that the increase in market expectations is consistent with our decrease in downside real activity risk and increase in upside inflation risk over the inter-meeting period. We attribute the decrease in the size of the gap between our policy recommendation and the market-implied expectations partly to the markets' risk assessment moving closer to ours and/or markets placing less relative weight on policy rules more sensitive to output fluctuations (*Dove* and *Outcome-Based*) and more relative weight on rules that are more sensitive to inflation fluctuations (*Opportunistic Disinflation*).

6. Key Upcoming Issues

The economic developments during the inter-meeting period generally were in accord with our outlook and thus have led to only minor changes in our outlook and risk assessment. We have reduced slightly our real GDP growth forecast for 2007, largely reflecting Q1 growth, which came in lower than we expected in March, and reduced the downside risk to the growth outlook somewhat. We have maintained our 2007 core PCE inflation projection and increased the upside inflation risk modestly. With market participants interpreting the economic developments in a similar manner, our outlook and risk assessment are roughly consistent with the view embedded in market expectations of the monetary policy path.

Looking forward, many of the key issues that can impact the economic outlook and policy are the same as those we identified in March. One is the housing market slump and subprime mortgage problems as well as any potential spillovers into the rest of the economy. The recent data suggest that the spillovers have been fairly minor so far, consistent with our assumptions. Nevertheless, weak home sales indicate that the subprime mortgage problems may be exacerbating the housing market slump. The Board staff responded to these developments by reducing their path of housing starts in 2007

and 2008. After doing so in the March Blackbook, we have not made such a change in this forecast but see some likelihood that we may do so in the future.

Consequently, in some directions, the evolution of the housing market continued along the lines expected by more pessimistic analysts. As such, it is possible that there will be a more severe and persistent drop in housing activity as well as weaker home prices than we expect. Developments along such lines have the potential to generate the negative effects on consumer spending envisioned by such analysts and would be consistent with the *Effects of Overheating* or the *Over-Tightening* alternative scenarios.

A second continuing issue is the tepid growth in equipment and software expenditures. At the moment it appears that the weakness has been concentrated in more traditional (non-high-tech) sectors, reflecting some temporary factors that we expect to subside. Some analysts have cited greater uncertainty as another factor, but the continued relative strength of payroll growth would seem to be at odds with that explanation. Nevertheless, there are possible reasons for the capital spending slowdown with substantive implications for policy: the weakness in capital spending may signal that firms either see future demand as weaker than previously expected or expect that productivity growth will be lower, both of which would suggest lower returns on real investment and make financial investments relatively more profitable. Such explanations would be consistent with *Effects of Overheating* or the *Productivity Slump* alternative scenarios.

The third continuing issue is the slower productivity growth of the past year. The 2007Q1 data was something of an improvement, and the probability of the low productivity growth state in the Kahn-Rich model declined. Nevertheless, our analysis of the recent revisions led us to lower temporarily our estimate of trend productivity growth. At this time, we believe that the recent slow growth is more of a cyclical slowdown than an indication of a further decline in trend productivity growth. The revisions to GDP in the summer will be important in assessing this issue. Because of the upward revisions to payroll growth and the stronger growth of gross domestic income compared to GDP, it is possible that GDP will be revised upward and lead to upward revisions to productivity. If

not, this may increase the probability of the *Productivity Slump* scenario, with its lower trend productivity and potential GDP growth.

Beyond the continuing issues, the developments in financial markets during the inter-meeting period have once again raised a long-standing issue. The continued inversion of the yield curve and the futures-implied path of the FFR both imply considerable downside risk to real activity. At the same time, equity markets have recovered from the market turmoil of late February/early March and many market indices are near multi-year or historic highs, which is typically an indicator of stronger real conditions. Resolution of this apparent inconsistency is an issue that may influence our outlook and risk assessment.

A last issue of great policy relevance is the incoming data on inflation. The March core inflation data were consistent with our optimistic view that the January and February readings were aberrations to our projection of slowly moderating core inflation toward the implicit target. Nevertheless, headline inflation remains elevated because of higher food and energy prices, particularly for gasoline, and the feed-through of energy prices into the core may be greater than we allow for in our framework. Also, with the recent developments in foreign exchange markets, the depreciation of the dollar and rising import prices could be potential upside risks to the inflation outlook. These issues thus may need further scrutiny.

A. Forecast Details

Exhibit A-1: Quarterly and Annual Projections of Key Variables

	Core PCE Inflation			Real GDP Growth			Unemployment Rate*			Fed Funds Rate**		
	Jan	Mar	May	Jan	Mar	May	Jan	Mar	May	Jan	Mar	May
2006												
Q1	2.0	2.0	2.0	5.6	5.6	5.6	4.7	4.7	4.7	4.4	4.4	4.4
Q2	2.7	2.7	2.7	2.6	2.6	2.6	4.6	4.6	4.6	4.9	4.9	4.9
Q3	2.1	2.1	2.1	2.0	2.0	2.0	4.7	4.7	4.7	5.3	5.3	5.3
Q4	2.1	1.9	1.8	3.5	2.2	2.5	4.5	4.5	4.5	5.3	5.3	5.3
2007												
Q1	2.2	2.3	2.2	2.5	2.0	1.3	4.6	4.6	4.5	5.3	5.3	5.3
Q2	1.9	2.0	2.0	3.0	2.7	2.7	4.6	4.6	4.6	5.3	5.3	5.3
Q3	1.8	1.9	1.9	3.3	3.0	3.3	4.6	4.6	4.6	5.0	5.0	5.3
Q4	1.8	1.9	1.9	3.2	3.0	3.1	4.6	4.6	4.6	5.0	5.0	5.0
2008												
Q1	1.9	1.9	1.9	3.0	3.0	2.8	4.6	4.6	4.6	5.0	5.0	5.0
Q2	1.9	1.8	1.8	3.0	3.0	3.2	4.6	4.6	4.6	5.0	5.0	5.0
Q3	1.8	1.8	1.8	3.0	2.9	3.1	4.6	4.6	4.6	4.8	4.8	4.8
Q4	1.8	1.8	1.8	3.0	3.0	3.1	4.6	4.6	4.6	4.8	4.8	4.8
Q4/Q4												
2005	2.1	2.1	2.1	3.1	3.1	3.1	-0.4	-0.4	-0.4	2.0	2.0	2.0
2006	2.3	2.2	2.2	3.4	3.1	3.1	-0.5	-0.5	-0.5	1.0	1.0	1.0
2007	1.9	2.0	2.0	3.0	2.7	2.6	0.1	0.1	0.1	-0.3	-0.3	-0.3
2008	1.8	1.8	1.8	3.0	3.0	3.0	0.0	0.0	0.0	-0.3	-0.3	-0.3

*Quarterly values are the average rate for the quarter. Yearly values are the difference between Q4 of the previous year and Q4 of the listed year.

**Quarterly values are the end-of-quarter value. Yearly values are the difference between the end-of-year value in the previous year and the end-of-year value in the listed year.

Note: Columns reflect the forecast dates. Numbers in gray are from previous Blackbooks, and numbers in italics are released data.

A. Forecast Details

Exhibit A-2: Evolution of Projected Quarterly Paths of Key Indicators

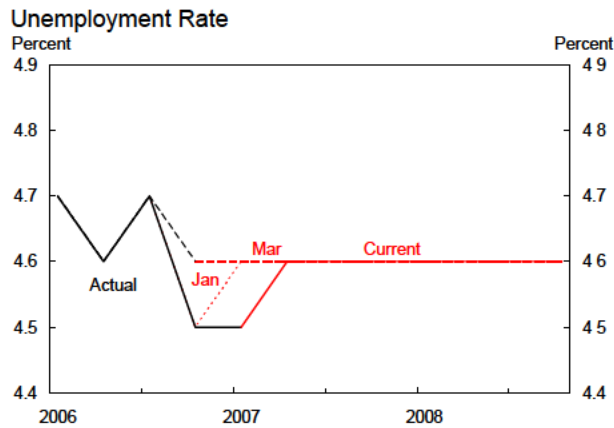
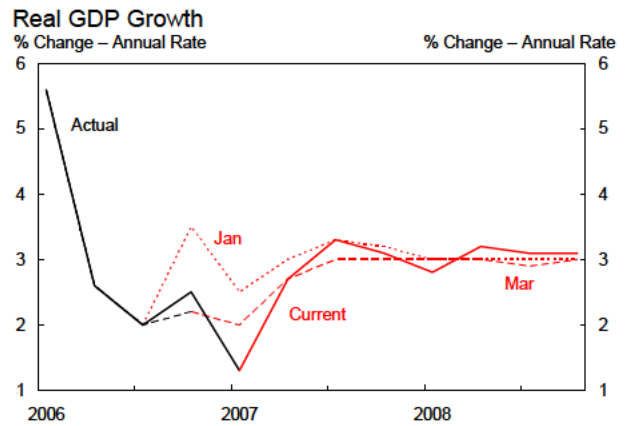
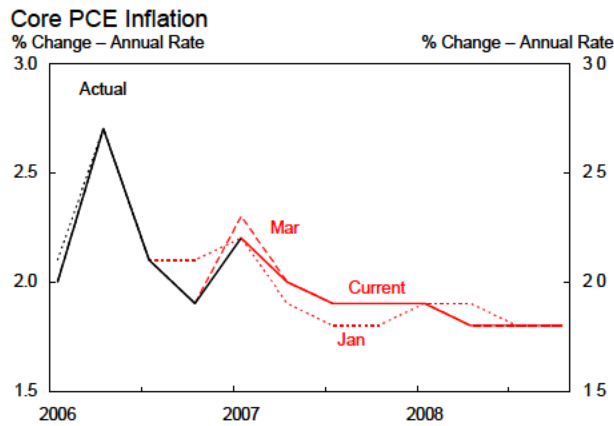
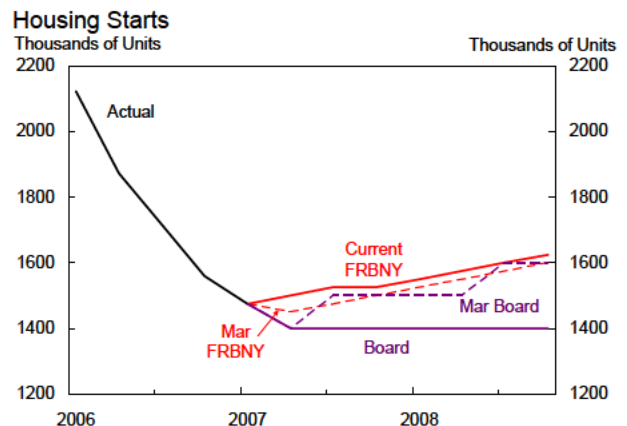
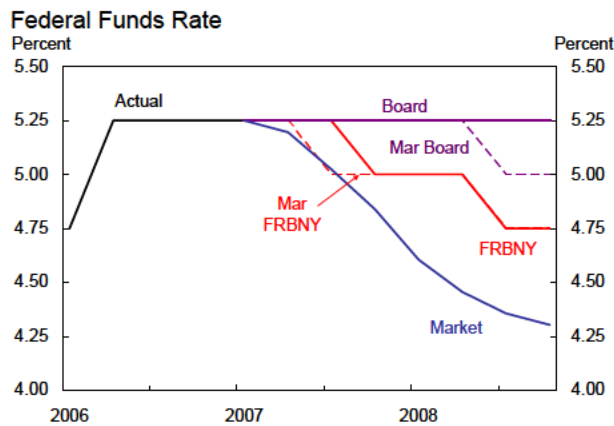


Exhibit A-3: Comparison of Projected Quarterly Paths of Key Forecast Assumptions



A. Forecast Details

Exhibit A-4: Near-Term Projections

	Quarterly Growth Rates (AR)		Quarterly Growth Contributions (AR)	
	2007Q2	2007Q3	2007Q2	2007Q3
OUTPUT				
Real GDP	2.7 (2.7)	3.3 (3.0)	2.7 (2.7)	3.3 (3.0)
Final Sales to Domestic Purchasers	2.4 (2.3)	2.8 (2.7)	2.5 (2.4)	2.9 (2.8)
Consumption	3.0 (3.0)	3.0 (3.0)	2.1 (2.1)	2.1 (2.1)
BFI: Equipment and Software	6.0 (6.0)	6.0 (6.0)	0.4 (0.4)	0.4 (0.4)
BFI: Nonresidential Structures	8.0 (8.0)	8.0 (8.0)	0.2 (0.3)	0.3 (0.3)
Residential Investment	-16.0 (-16.0)	-10.0 (-16.0)	-0.9 (-0.9)	-0.5 (-0.5)
Government: Federal	3.0 (1.5)	3.0 (2.0)	0.2 (0.1)	0.2 (0.1)
Government: State and Local	3.0 (3.0)	3.0 (3.0)	0.4 (0.4)	0.4 (0.4)
Inventory Investment	-- --	-- --	0.3 (0.2)	0.3 (0.1)
Net Exports	-- --	-- --	-0.2 (0.1)	0.1 (0.1)
INFLATION				
Total PCE Deflator	3.5 (2.5)	2.1 (2.1)		
Core PCE Deflator	2.0 (2.0)	1.9 (1.9)		
PRODUCTIVITY AND LABOR COSTS*				
Output per Hour	2.1 (2.5)	2.3 (2.5)		
Compensation per Hour	3.7 (4.0)	6.3 (4.5)		
Unit Labor Costs	1.6 (1.5)	4.1 (2.0)		

*Nonfarm business sector

Note: Numbers in parentheses are from the previous Blackbook.

A. Forecast Details

Exhibit A-5: Real GDP and Inflation Projections

	Q4/Q4 Growth Rates			Q4/Q4 Growth Contributions		
	2006	2007	2008	2006	2007	2008
OUTPUT						
Real GDP	<i>3.1</i> (3.1)	<i>2.6</i> (2.7)	<i>3.0</i> (3.0)	<i>3.1</i> (3.1)	<i>2.6</i> (2.7)	<i>3.0</i> (3.0)
Final Sales to Domestic Purchasers	<i>2.7</i> (2.7)	<i>2.5</i> (2.6)	<i>3.1</i> (3.1)	<i>2.8</i> (2.9)	<i>2.7</i> (2.7)	<i>3.3</i> (3.3)
Consumption	<i>3.6</i> (3.6)	<i>3.2</i> (3.2)	<i>3.0</i> (3.0)	<i>2.5</i> (2.5)	<i>2.3</i> (2.2)	<i>2.1</i> (2.1)
BFI: Equipment and Software	<i>4.0</i> (4.4)	<i>5.0</i> (5.0)	<i>5.0</i> (5.0)	<i>0.3</i> (0.3)	<i>0.4</i> (0.4)	<i>0.4</i> (0.4)
BFI: Nonresidential Structures	<i>11.2</i> (10.7)	<i>8.5</i> (8.5)	<i>6.0</i> (6.0)	<i>0.3</i> (0.3)	<i>0.2</i> (0.3)	<i>0.2</i> (0.2)
Residential Investment	<i>-12.8</i> (-12.6)	<i>-12.1</i> (-11.9)	<i>3.0</i> (3.0)	<i>-0.8</i> (-0.8)	<i>-0.6</i> (-0.6)	<i>0.1</i> (0.1)
Government: Federal	<i>2.4</i> (2.4)	<i>1.5</i> (1.9)	<i>2.0</i> (2.0)	<i>0.2</i> (0.2)	<i>0.1</i> (0.1)	<i>0.1</i> (0.1)
Government: State and Local	<i>2.8</i> (2.8)	<i>3.1</i> (3.1)	<i>2.5</i> (2.5)	<i>0.3</i> (0.3)	<i>0.4</i> (0.4)	<i>0.3</i> (0.3)
Inventory Investment	--	--	--	<i>-0.2</i> (-0.2)	<i>0.1</i> (0.1)	<i>-0.2</i> (-0.1)
Net Exports	--	--	--	<i>0.5</i> (0.4)	<i>-0.2</i> (-0.1)	<i>-0.1</i> (-0.2)
INFLATION						
Total PCE Deflator	<i>1.9</i> (1.9)	<i>2.8</i> (2.4)	<i>2.1</i> (2.1)			
Core PCE Deflator	<i>2.2</i> (2.2)	<i>2.0</i> (2.0)	<i>1.8</i> (1.8)			
Total CPI	<i>1.9</i> (1.9)	<i>3.1</i> (2.7)	<i>2.3</i> (2.3)			
Core CPI	<i>2.7</i> (2.7)	<i>2.3</i> (2.4)	<i>2.1</i> (2.2)			
GDP Deflator	<i>2.5</i> (2.5)	<i>2.7</i> (2.4)	<i>2.4</i> (2.2)			

Note: Numbers in parentheses are from the previous Blackbook, and numbers in italics are released data.

A. Forecast Details

Exhibit A-6: Projections of Other Key Economic Variables

	Q4/Q4 Growth Rates		
	2006	2007	2008
INTEREST RATE ASSUMPTIONS			
Federal Funds Rate (End-of-Year)	5.25 <i>(5.25)</i>	5.00 <i>(5.00)</i>	4.75 <i>(4.75)</i>
10-Year Treasury Yield (Avg. Q4 Level)	4.6 <i>(4.6)</i>	4.9 <i>(4.9)</i>	5.0 <i>(5.0)</i>
PRODUCTIVITY AND LABOR COSTS*			
Output	3.5 <i>(3.4)</i>	2.9 <i>(3.1)</i>	3.4 <i>(3.4)</i>
Hours	1.9 <i>(2.0)</i>	0.8 <i>(0.6)</i>	1.1 <i>(0.9)</i>
Output per Hour	1.6 <i>(1.4)</i>	2.1 <i>(2.5)</i>	2.2 <i>(2.5)</i>
Compensation per Hour	5.0 <i>(4.9)</i>	4.0 <i>(4.7)</i>	4.7 <i>(4.7)</i>
Unit Labor Costs	3.4 <i>(3.4)</i>	2.0 <i>(2.2)</i>	2.4 <i>(2.2)</i>
LABOR MARKET			
Unemployment Rate (Avg. Q4 Level)	4.5 <i>(4.5)</i>	4.6 <i>(4.6)</i>	4.6 <i>(4.6)</i>
Participation Rate (Avg. Q4 Level)	66.3 <i>(66.3)</i>	66.3 <i>(66.3)</i>	66.3 <i>(66.3)</i>
Monthly Nonfarm Payroll Growth (Thous.)	192 <i>(192)</i>	158 <i>(80)</i>	132 <i>(88)</i>
INCOME			
Personal Income	5.5 <i>(5.6)</i>	6.0 <i>(5.8)</i>	5.9 <i>(5.6)</i>
Real Disposable Personal Income	2.9 <i>(2.9)</i>	3.3 <i>(3.5)</i>	4.0 <i>(3.7)</i>
Corporate Profits Before Taxes	18.3 <i>(12.7)</i>	4.3 <i>(1.1)</i>	0.5 <i>(-0.1)</i>

*Nonfarm business sector

Note: Numbers in parentheses are from the previous Blackbook, and numbers in italics are released data.

A. Forecast Details

Exhibit A-7: FRBNY and Greenbook Forecast Comparison

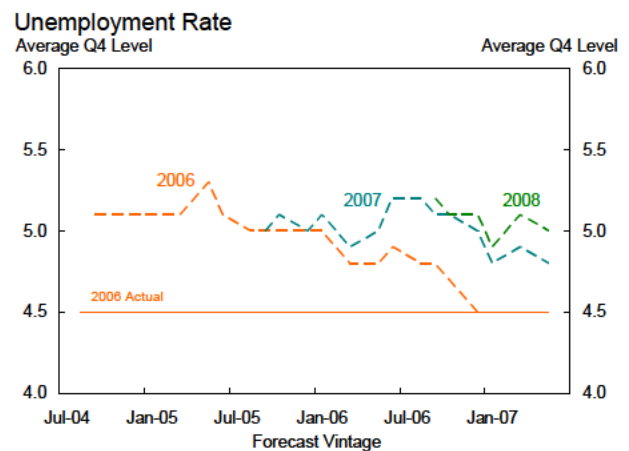
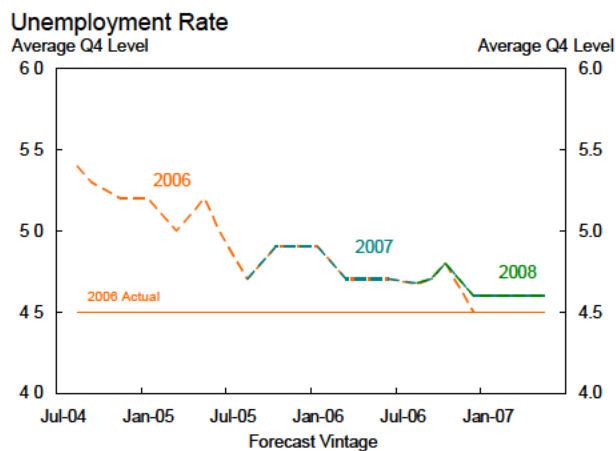
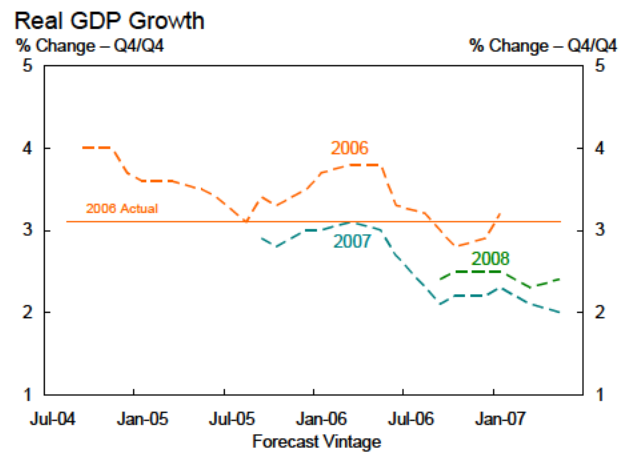
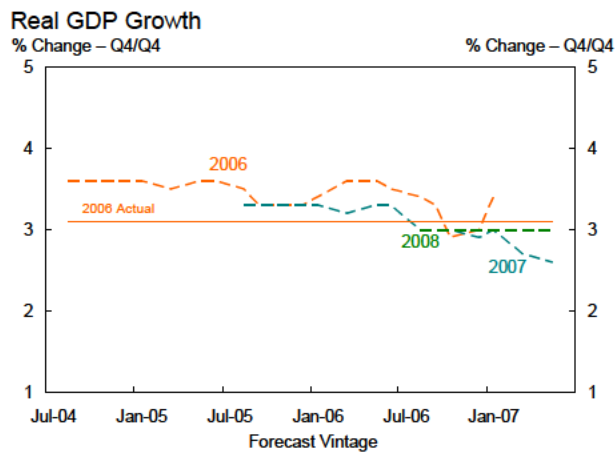
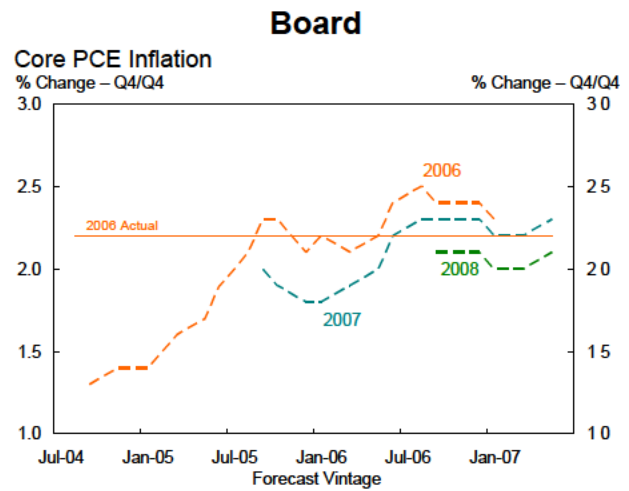
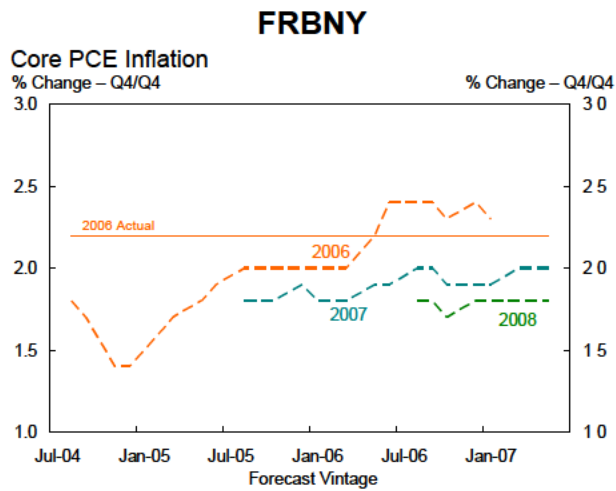
	FRBNY		Board	
	2007	2008	2007	2008
OUTPUT				
Real GDP	2.6 (2.7)	3.0 (3.0)	2.0 (2.1)	2.4 (2.3)
GDP Growth Contributions				
Final Sales to Domestic Purchasers	2.7 (2.7)	3.3 (3.3)	1.8 (2.0)	2.5 (2.6)
Consumption	2.3 (2.2)	2.1 (2.1)	1.7 (1.8)	1.7 (1.7)
BFI	0.6 (0.6)	0.6 (0.6)	0.3 (0.3)	0.4 (0.4)
Residential Investment	-0.6 (-0.6)	0.1 (0.1)	-0.8 (-0.7)	0.0 (0.1)
Government	0.5 (0.5)	0.4 (0.4)	0.6 (0.5)	0.4 (0.4)
Inventory Investment	0.1 (0.1)	-0.2 (-0.1)	0.1 (0.2)	-0.1 (-0.1)
Net Exports	-0.2 (-0.1)	-0.1 (-0.2)	0.1 (-0.1)	0.0 (-0.2)
INFLATION				
Total PCE Deflator	2.8 (2.4)	2.1 (2.1)	2.9 (2.5)	2.1 (2.1)
Core PCE Deflator	2.0 (2.0)	1.8 (1.8)	2.3 (2.2)	2.1 (2.0)
INTEREST RATE ASSUMPTION				
Fed Funds Rate (End-of-Year)	5.00 (5.00)	4.75 (4.75)	5.25 (5.25)	5.25 (5.00)
PRODUCTIVITY AND LABOR COSTS*				
Output per Hour	2.1 (2.5)	2.2 (2.5)	1.9 (2.1)	2.6 (2.6)
Compensation per Hour	4.0 (4.7)	4.7 (4.7)	3.9 (4.1)	4.9 (4.8)
Unit Labor Costs	2.0 (2.2)	2.4 (2.2)	1.9 (2.0)	2.2 (2.2)
LABOR MARKET				
Unemployment Rate (Avg. Q4 Level)	4.6 (4.6)	4.6 (4.6)	4.8 (4.9)	5.0 (5.1)
Participation Rate (Avg. Q4 Level)	66.3 (66.3)	66.3 (66.3)	66.1 (66.0)	65.8 (65.7)
Monthly Nonfarm Payroll Growth (Thous.)	158 (80)	132 (88)	100 (92)	50 (50)
HOUSING				
Housing Starts (Avg. Q4 Level, Thous.)	1500 (1463)	1525 (1563)	1400 (1500)	1400 (1600)

*Nonfarm business sector

Note: All values are values are Q4/Q4 percent change, unless indicated otherwise. Numbers in parentheses are from the previous Blackbook or Greenbook.

A. Forecast Details

Exhibit A-8: Evolution of FRBNY and Board Forecasts since Mid-2004



Note: Forecast vintage is the date the forecast was produced.

A. Forecast Details

Exhibit A-9: Alternative GDP and Inflation Forecasts

	Release Date	Real GDP Growth		
		2007Q2	2007Q3	2007 Q4/Q4
FRBNY	5/4/2007	2.7 (2.7)	3.3 (3.0)	2.6 (2.7)
PSI Model	5/4/2007	1.8 (2.9)	2.1 --	-- --
Blue Chip	5/10/2007	2.4 (2.6)	2.6 (2.9)	2.3 (2.7)
Median SPF	2/13/2007	2.7 (2.9)	3.0 (2.9)	2.8 (2.6)
Macro Advisers	5/2/2007	2.5 (2.6)	2.8 (3.0)	2.4 (2.7)

	Release Date	Core PCE Inflation		
		2007Q2	2007Q3	2007 Q4/Q4
FRBNY	5/4/2007	2.0 (2.0)	1.9 (1.9)	2.0 (2.0)
Median SPF	2/13/2007	2.0 --	2.0 --	2.0 --

	Release Date	CPI Inflation		
		2007Q2	2007Q3	2007 Q4/Q4
FRBNY	5/4/2007	4.0 (2.5)	2.4 (2.4)	3.1 (2.7)
Blue Chip	5/10/2007	3.7 (2.7)	2.3 (2.5)	3.0 (2.6)
Median SPF	2/13/2007	2.6 (2.6)	2.5 (2.5)	2.5 (2.6)
Macro Advisers	5/2/2007	5.6 (3.0)	2.7 (2.6)	3.6 (2.8)

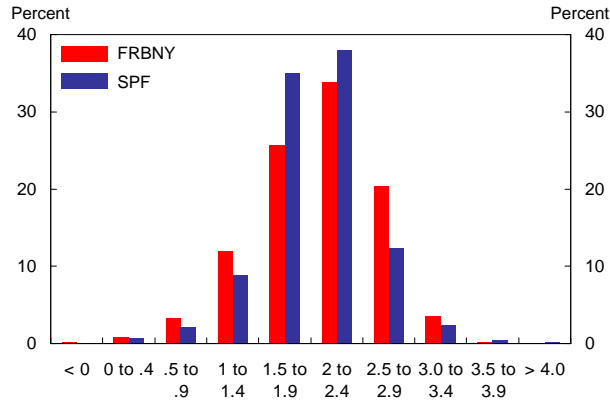
	Release Date	Core CPI Inflation		
		2007Q2	2007Q3	2007 Q4/Q4
FRBNY	5/4/2007	2.2 (2.4)	2.3 (2.4)	2.3 (2.4)
Macro Advisers	5/2/2007	2.0 (2.4)	2.4 (2.3)	2.3 (2.4)

Note: Numbers in parentheses are from previous releases. Previous release of SPF is November and of all others is March. All values are quarterly percent changes at an annual rate.

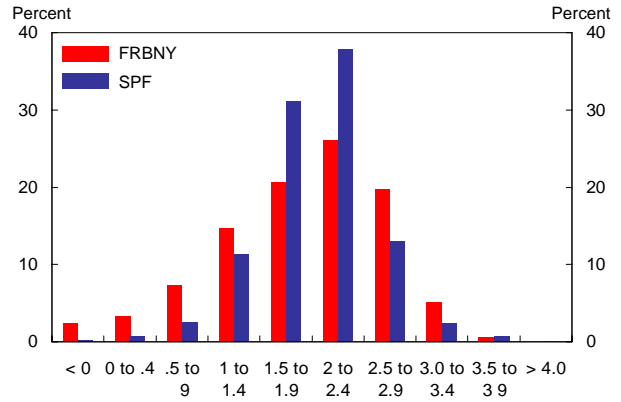
A. Forecast Details

Exhibit A-10: FRBNY, SPF, and Board Forecast Comparison

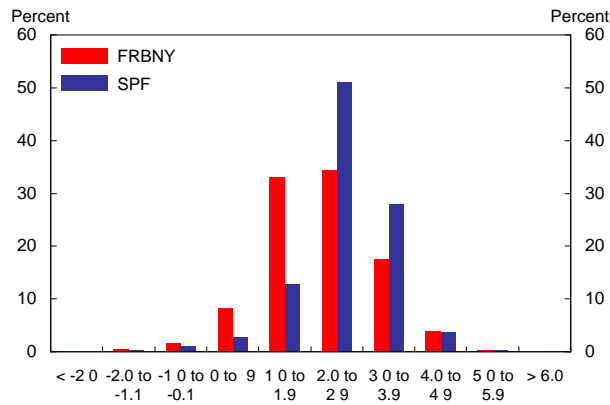
2007Q4/Q4 Core PCE Inflation Probabilities



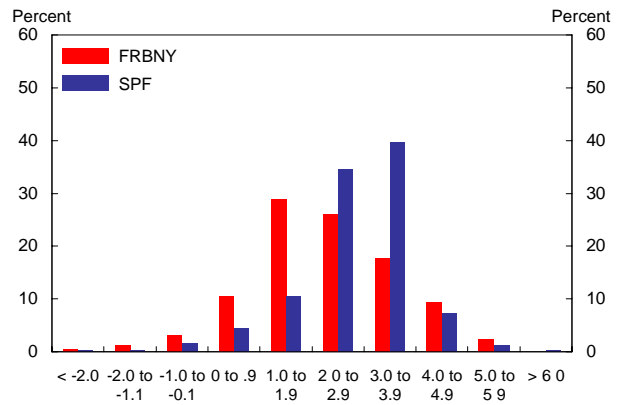
2008Q4/Q4 Core PCE Inflation Probabilities



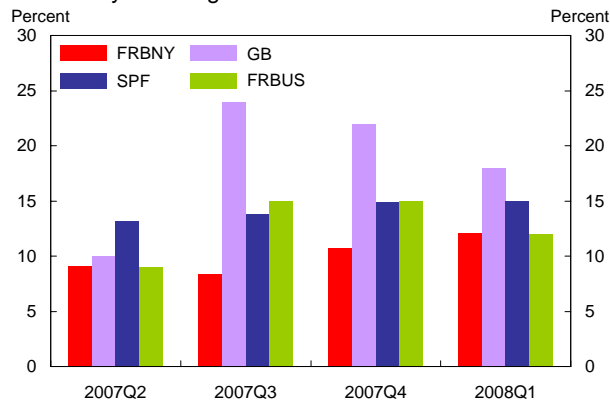
2007/2006 Real GDP Growth Probabilities



2008/2007 Real GDP Growth Probabilities



Probability of a Negative-Growth Quarter



Note: SPF forecast was released February 13, 2007. Board forecasts are from the Greenbook.
 Source: MMS Function (FRBNY), FRB Philadelphia Survey of Professional Forecasters, and Federal Reserve Board

A. Forecast Details

Exhibit A-11: PCE and CPI Data

PCE Deflator Data (percent change at an annual rate)

	24 Month	12 Month	6 Month	3 Month	1 Month
PCE Deflator	2.6	2.4	2.3	4.2	5.4
Market-Based	2.5	2.3	2.3	4.5	6.0
Durable Goods	-1.5	-1.5	-1.7	-0.6	-1.4
Motor Vehicles and Parts	-0.2	-1.0	-1.9	-0.1	2.8
Nondurable Goods	2.9	2.3	2.0	7.2	14.8
Clothing and Shoes	-0.8	-0.1	-1.9	-1.7	-10.3
Services	3.3	3.1	3.2	3.7	2.5
Housing	3.5	4.1	3.6	3.1	2.1
Transportation	3.5	2.6	2.2	2.8	6.0
Medical Care	3.0	3.2	3.7	4.9	0.0
PCE Deflator Excluding Food and Energy	2.1	2.1	1.9	2.4	0.6
Market-Based	1.8	2.0	1.8	2.4	0.2
Personal Business Services-MB	2.6	2.8	3.3	2.5	2.7
Personal Business Services-NMB	2.5	1.6	1.4	0.9	1.7

Consumer Price Data (percent change at an annual rate)

	24 Month	12 Month	6 Month	3 Month	1 Month
Consumer Price Index	3.1	2.8	2.4	4.7	7.5
Energy	10.7	4.4	4.3	22.9	99.7
All Items Ex. Energy	2.4	2.6	2.2	2.9	1.1
Food	2.9	3.3	3.9	7.3	3.4
Food Away From Home (NSA)	3.2	3.3	3.6	3.8	1.0
All Items Ex. Food and Energy	2.3	2.5	1.9	2.3	0.7
Core Chain-Weight CPI (NSA)	2.1	2.1	2.2	4.9	4.7
Core Goods	0.0	-0.3	-1.1	0.4	-0.9
Apparel	-0.4	0.5	-1.3	-0.9	-11.9
Medical Care Commodities	2.5	0.9	-0.5	0.0	-3.7
Durable Goods	-1.1	-1.7	-2.4	-1.4	1.0
New Vehicles	-0.7	-1.2	-1.3	0.6	3.6
Used Vehicles	-1.2	-4.0	-9.2	-5.2	-1.9
Core Services	3.2	3.6	3.1	2.9	1.4
Rent of Primary Residence	3.9	4.6	4.8	4.7	4.2
Owners' Equivalent Rent	3.4	4.1	3.6	3.1	3.3
Lodging Away from Home	1.3	1.3	-0.6	-4.5	-24.3
Medical Care Services	4.5	4.9	5.7	7.3	2.5
Transportation Services	2.0	1.5	0.6	1.5	0.0

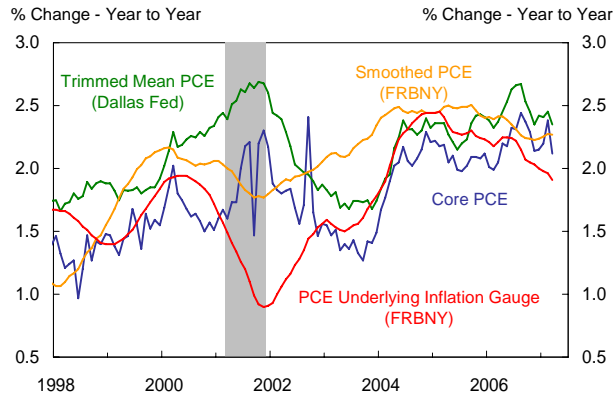
Note: Data as of March 2007

Source: Bureau of Economic Analysis and Bureau of Labor Statistics

A. Forecast Details

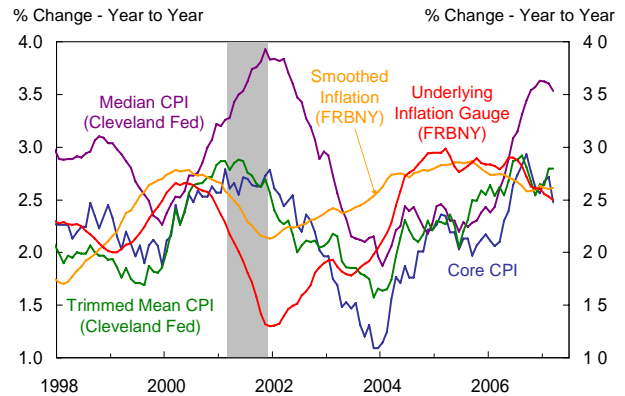
Exhibit A-12: Measures of Trend Inflation

Alternative Measures of PCE Inflation



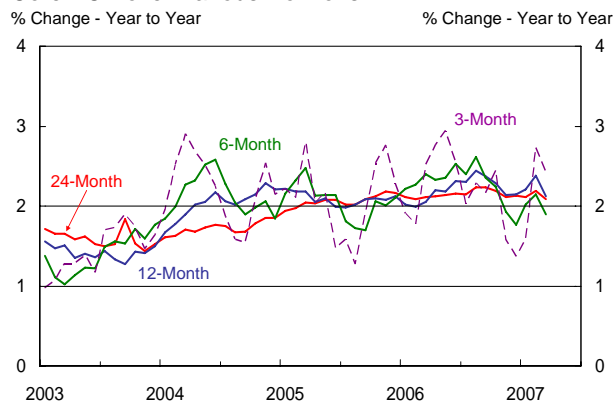
Source: Bureau of Economic Analysis, Dallas Fed, and FRBNY

Alternative Measures of CPI Inflation



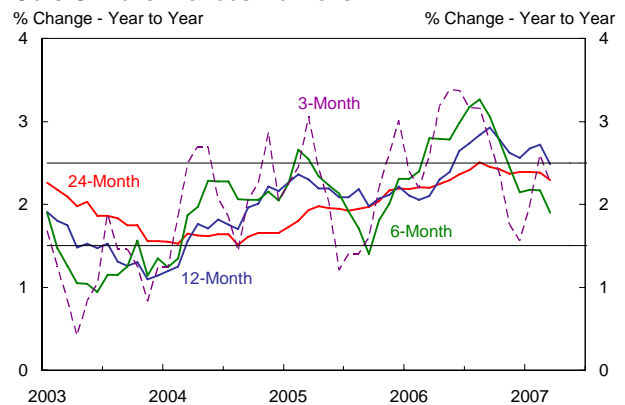
Source: Bureau of Labor Statistics, Cleveland Fed, and FRBNY

Core PCE over Various Horizons



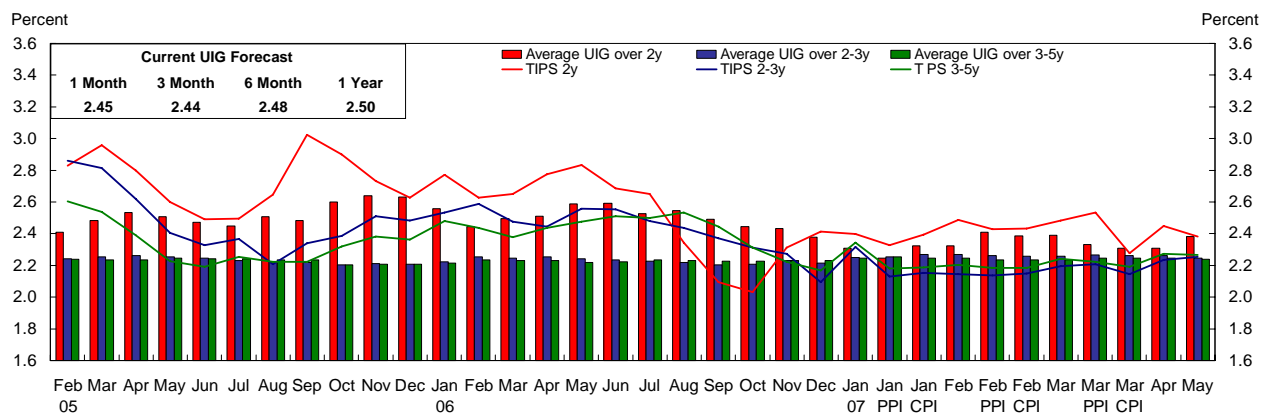
Source: Bureau of Economic Analysis

Core CPI over Various Horizons



Source: Bureau of Labor Statistics

Exhibit A-13: Underlying Inflation Gauge (UIG) and TIPS Implied Inflation

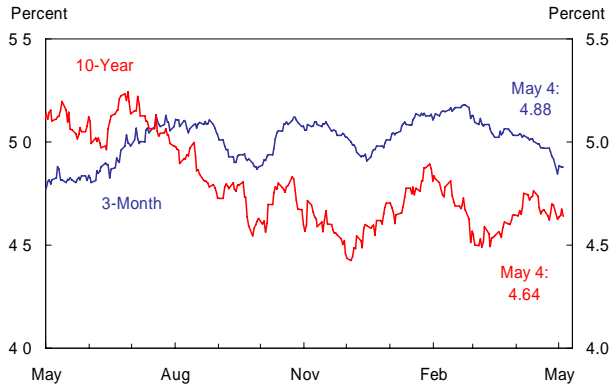


Source: MMS Function (FRBNY), Federal Reserve Board, and Swiss National Bank

B. Financial Markets

Exhibit B-1: Treasury Yields

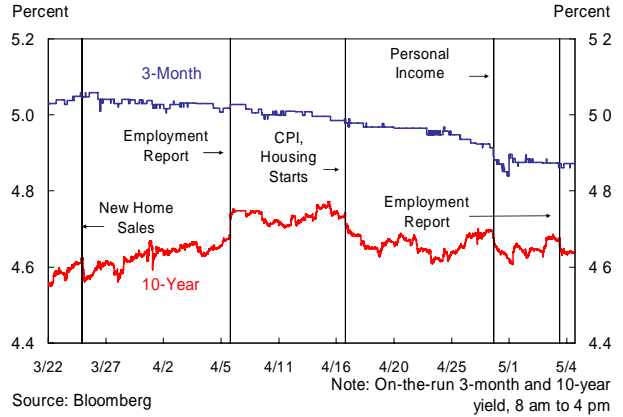
Short- and Long-Term Rates



Source: Bloomberg

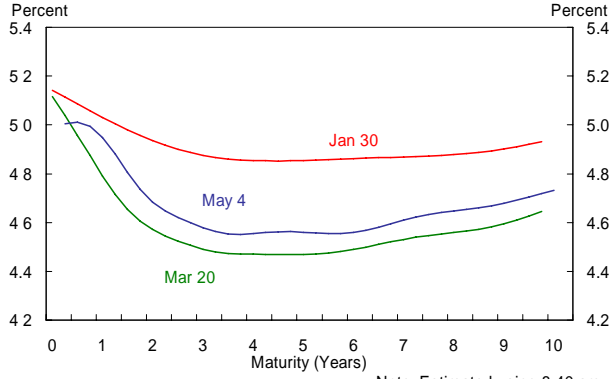
Note: Yields of on-the-run securities

Short- and Long-Term Rates (Intraday)



Source: Bloomberg

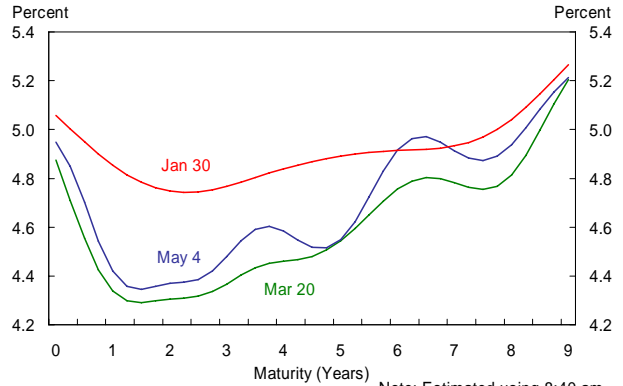
Yield Curves



Source: FRBNY calculations

Note: Estimated using 8:40 am quotes of off-the-run securities

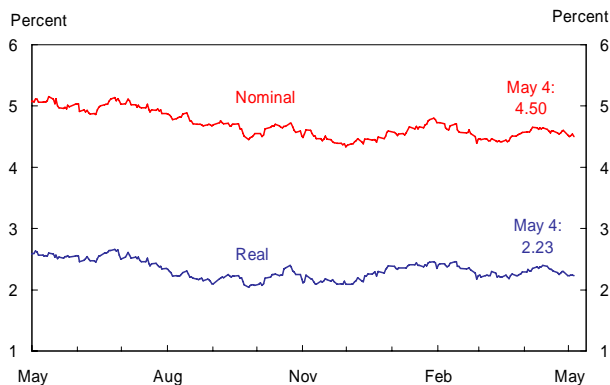
Yield Curves: Implied One-Year Forward Rates



Source: FRBNY calculations

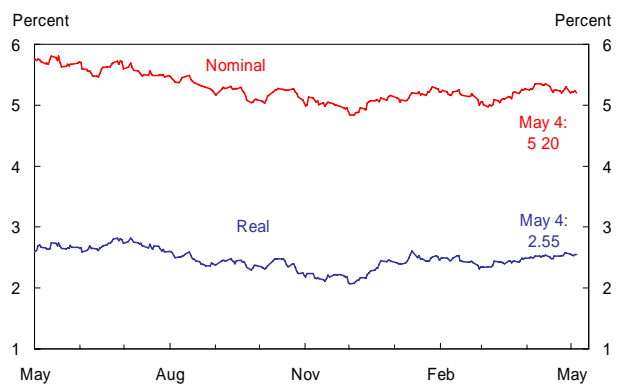
Note: Estimated using 8:40 am quotes of off-the-run securities

4-5 Year Forward Rates



Source: Federal Reserve Board

9-10 Year Forward Rates

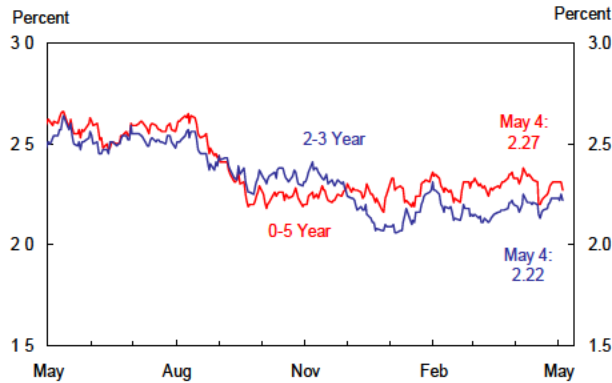


Source: Federal Reserve Board

B. Financial Markets

Exhibit B-2: Implied Inflation

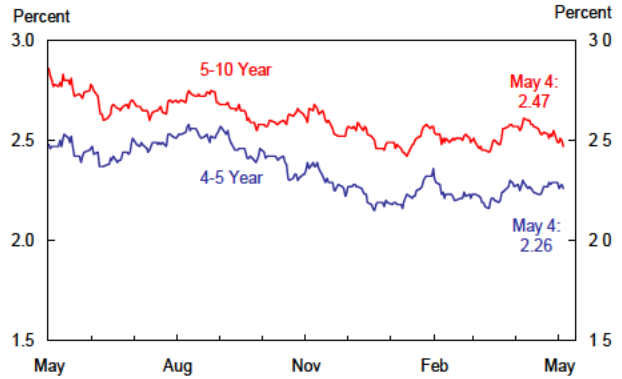
TIPS Implied Inflation: 2-3, 0-5 Year Horizons



Source: Federal Reserve Board

Note: Carry-adjusted

TIPS Implied Inflation: 4-5, 5-10 Year Horizons



Source: Federal Reserve Board

Note: Carry-adjusted

10-Year Breakeven Inflation Rate (Intraday)



Source: Bloomberg

Note: Calculated as difference between on-the-run 10-year Treasury and 10-year TIPS yield, 8 am to 4 pm.

Exhibit B-3: Economic Releases

Market reaction to macro releases, market expectations using economic derivatives

Release Type	Release Date	Survey Forecast	Actual Release	Market Expectation	Surprise	Surprise (σ 's)	Yield Change (bps)		
							June	Ten Year	Ten Year Breakeven
Change in Nonfarm Payrolls, 1000s	5/4	100	88	82	6	0.1	1	-3	-1
Initial Jobless Claims, 1000s	5/3	325	305	324	-19	-1.7	1	3	0
Initial Jobless Claims, 1000s	4/26	330	321	330	-9	-0.5	0	0	0
Initial Jobless Claims, 1000s	4/19	320	339	321	18	1.2	-1	-2	0
Core CPI, %	4/17	209.5	209.3	209.6	-0.3	-2	0	-3	-4
Advanced Retail Sales ex Autos, %	4/16	0.6	0.7	1.0	-0.3	-1	0	-1	0
Change in Nonfarm Payrolls, 1000s	4/6	130	180	137	43	0.6	1	6	1
Initial Jobless Claims, 1000s	4/5	315	321	320	1	0.1	1	0	0

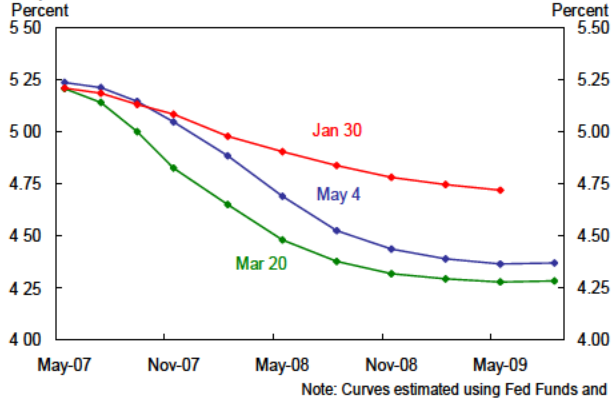
Source: Bloomberg and FRBNY calculations

Note: Market expectations are from the forward price from the most recent economic derivatives auction, which concludes 30-60 minutes before the release. Surprise in standard deviations is calculated using the at-the-money implied volatility from the auction. Yield changes are for the interval from 5 minutes before to 30 minutes after the release.

B. Financial Markets

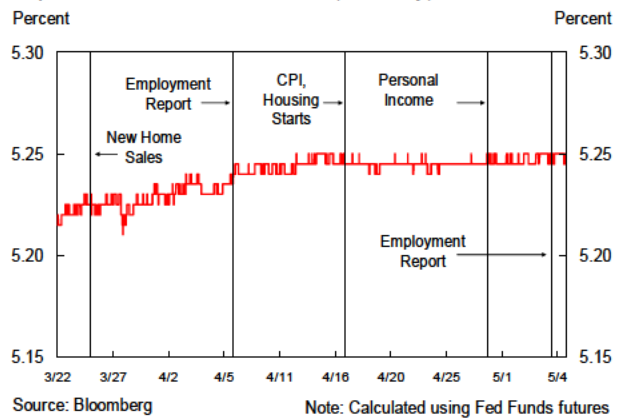
Exhibit B-4: Policy Expectations

Expected Fed Funds

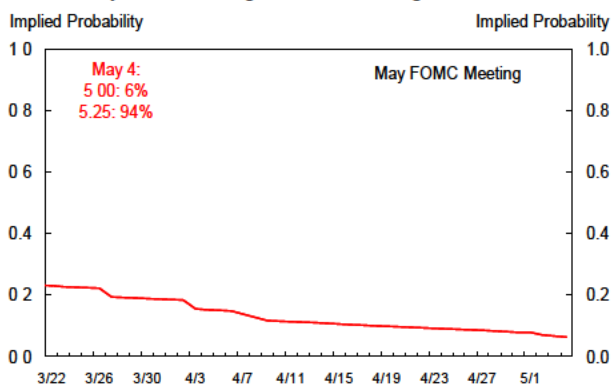


Source: Federal Reserve Board

Implied June Fed Funds Rate (Intraday)



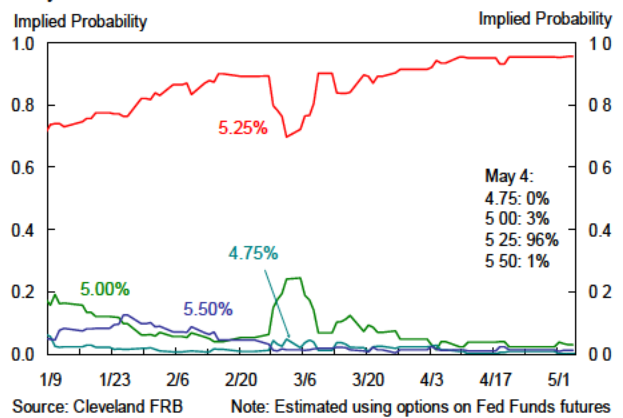
Probability of 5.00 Target vs. 5.25 Target



Source: FRBNY calculations

Note: Estimated using Fed Funds futures

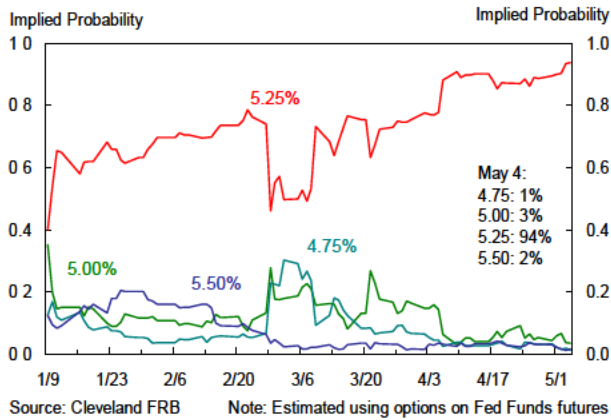
May 2007 FOMC



Source: Cleveland FRB

Note: Estimated using options on Fed Funds futures

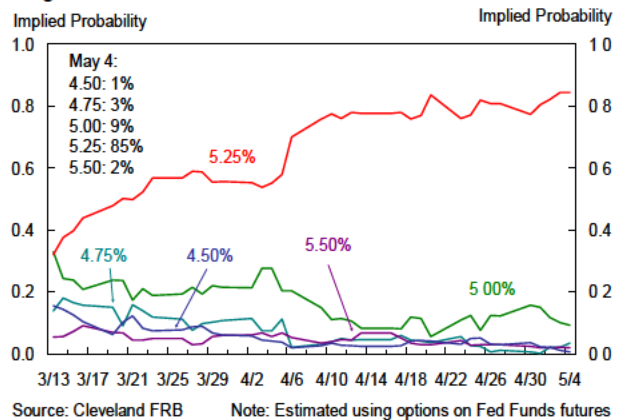
June 2007 FOMC



Source: Cleveland FRB

Note: Estimated using options on Fed Funds futures

August 2007 FOMC



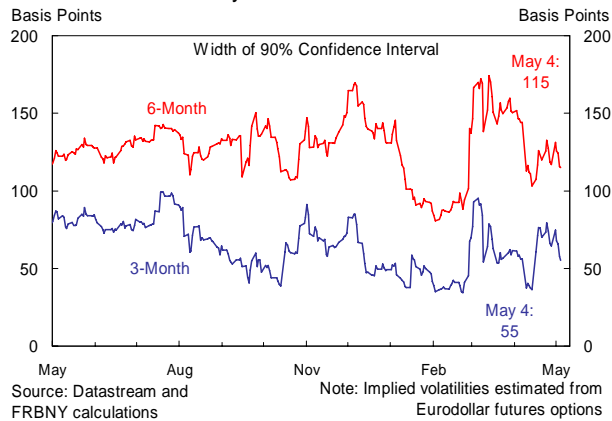
Source: Cleveland FRB

Note: Estimated using options on Fed Funds futures

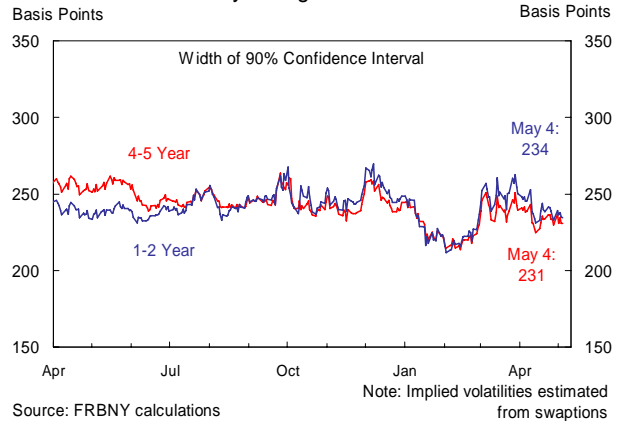
B. Financial Markets

Exhibit B-5: Policy Uncertainty I

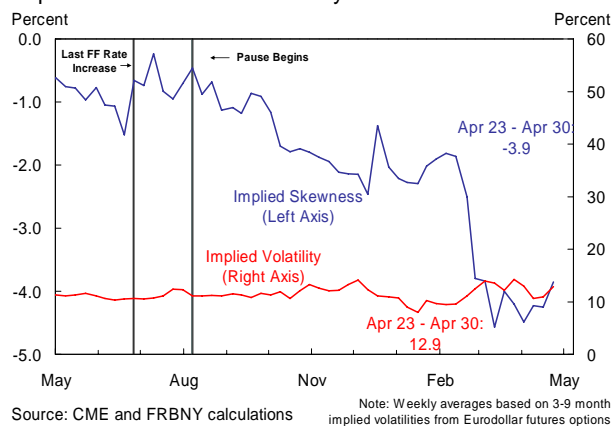
Interest Rate Volatility: Short-Term



Interest Rate Volatility: Long-Term



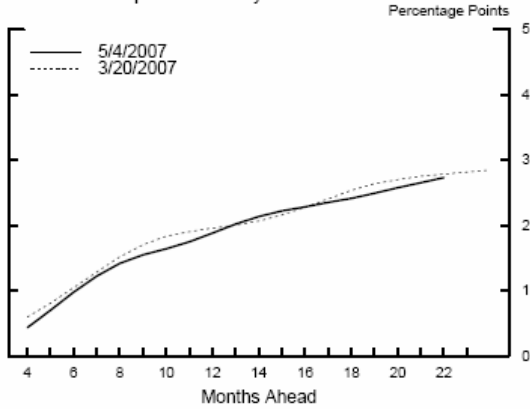
Implied Skewness and Volatility



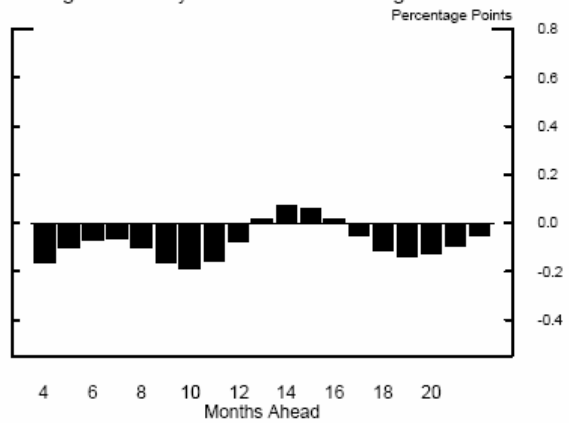
B. Financial Markets

**Exhibit B-6:
Policy Uncertainty II**

Eurodollar Implied Volatility Term Structure*

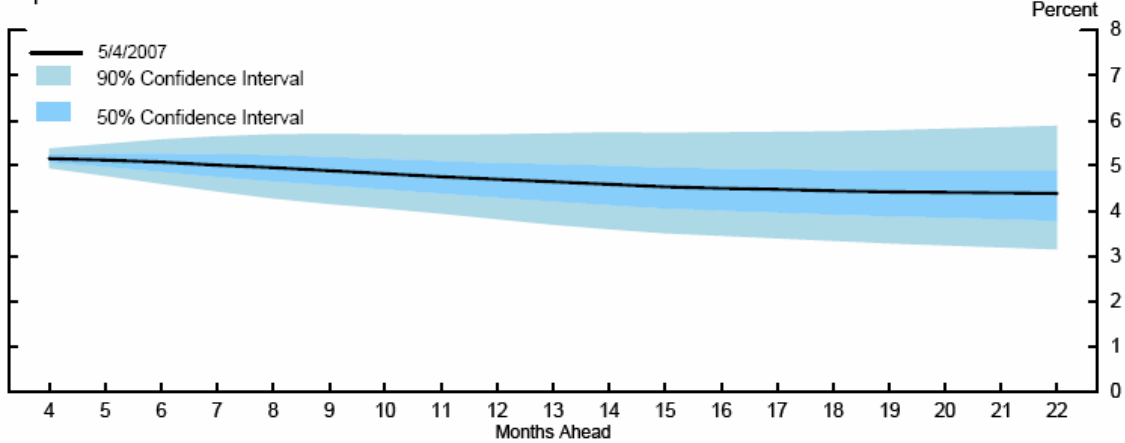


Change Since Day Before FOMC Meeting

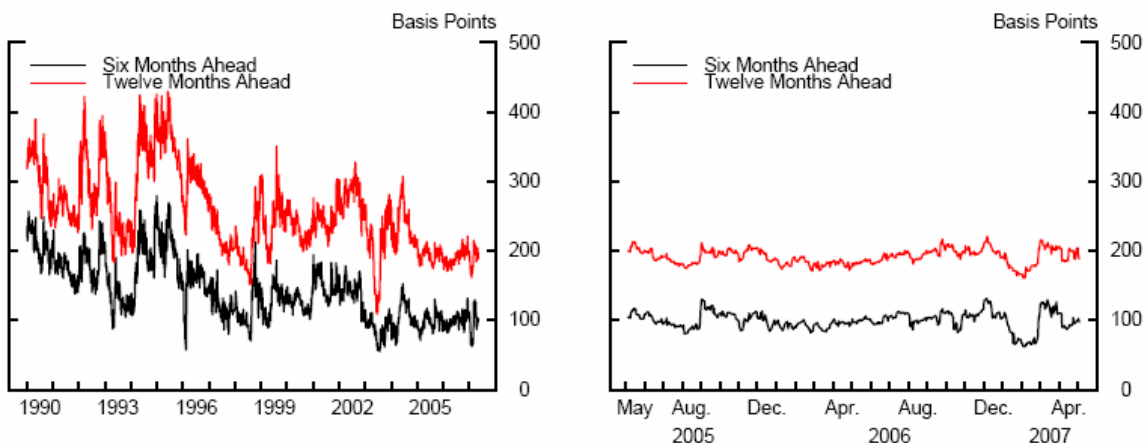


*Width of a 90 percent confidence interval computed from the term structures for the expected federal funds rate and implied volatility.

Expected Federal Funds Rate Path and Confidence Intervals



Eurodollar Implied Volatility at Selected Maturities*

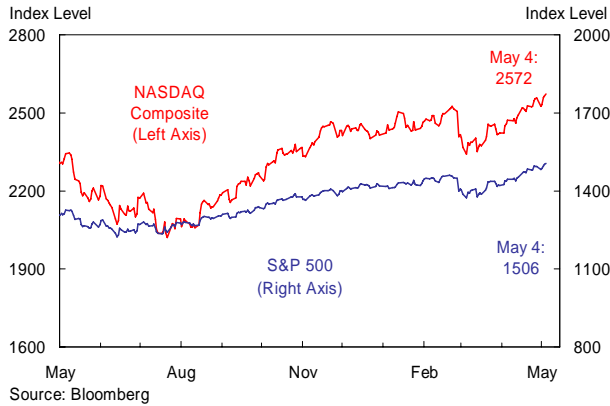


*Width of a 90 percent confidence interval computed from the term structures for the expected federal funds rate and implied volatility.

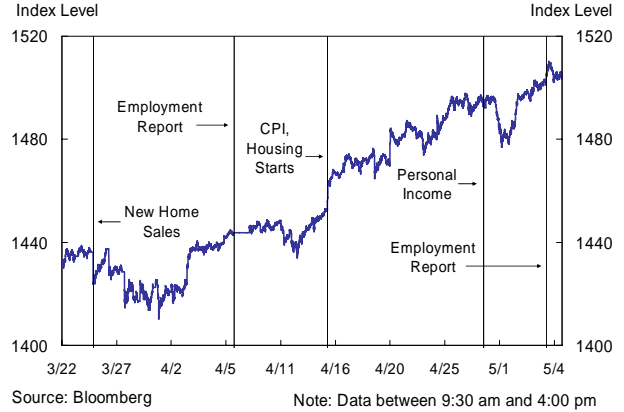
B. Financial Markets

Exhibit B-7: Equity Markets

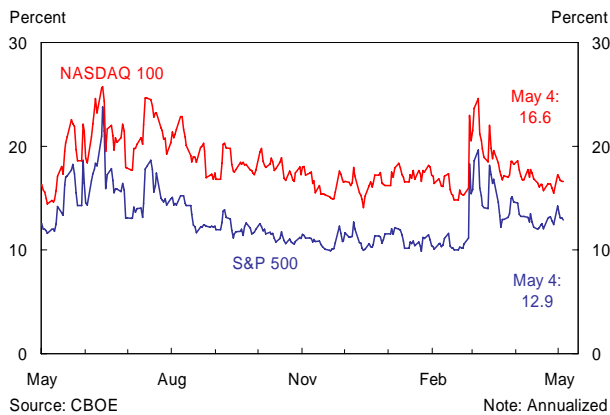
Performance



S&P 500 (Intraday)



Implied Volatility: 1 Month



Implied Volatility: 12 Months

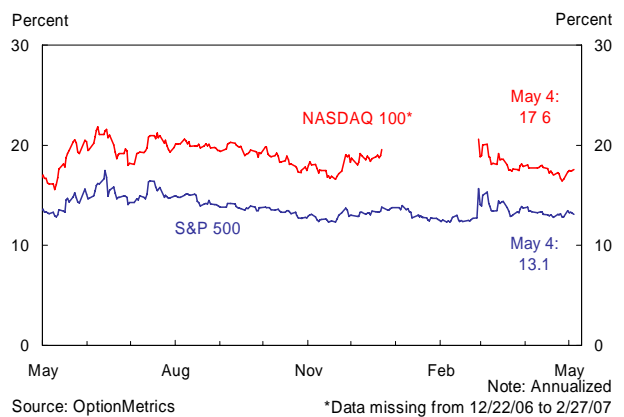
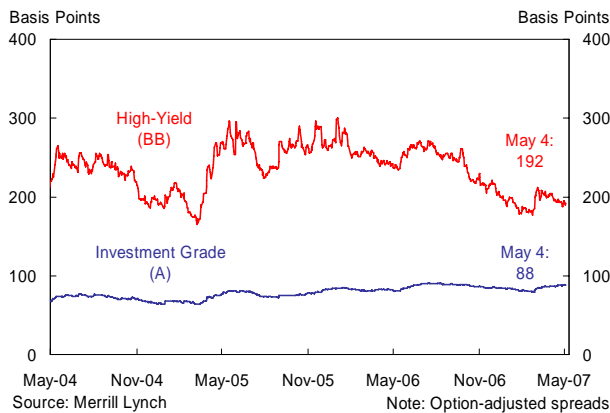
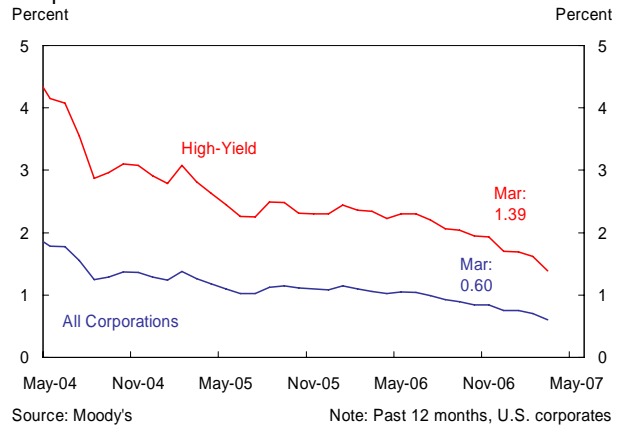


Exhibit B-8: Corporate Credit Risk

Corporate Credit Spreads



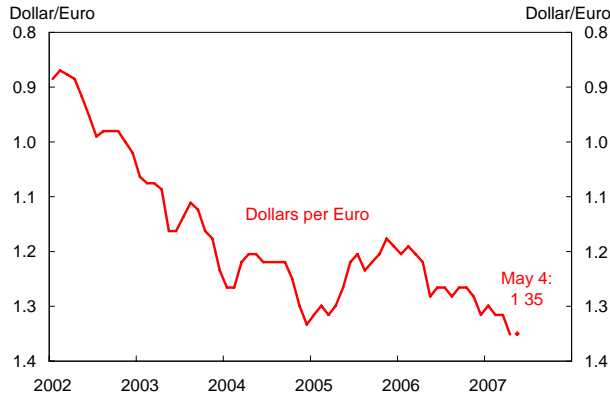
Corporate Bond Default Rates



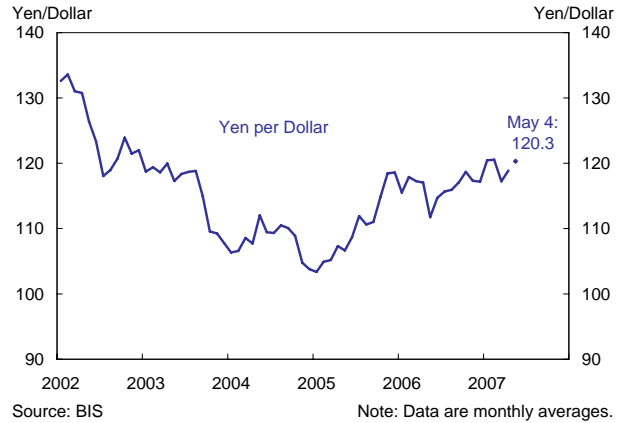
B. Financial Markets

Exhibit B-9: Exchange Rates, Foreign Equity, and Bond Spreads

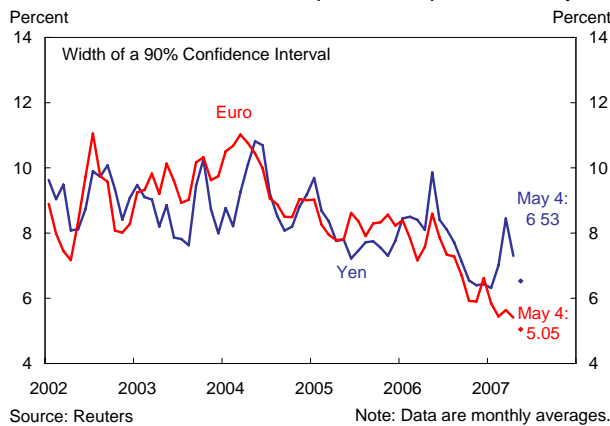
Euro-Dollar Exchange Rate



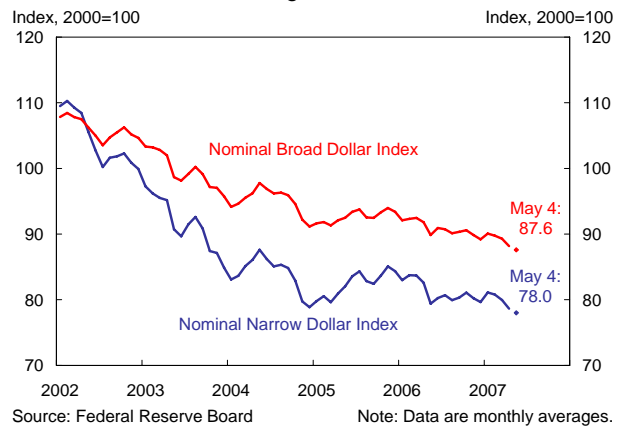
Yen-Dollar Exchange Rate



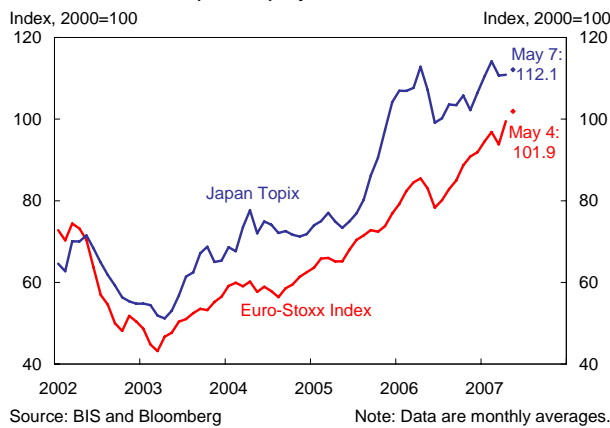
Euro and Yen One-Month Implied FX Option Volatility



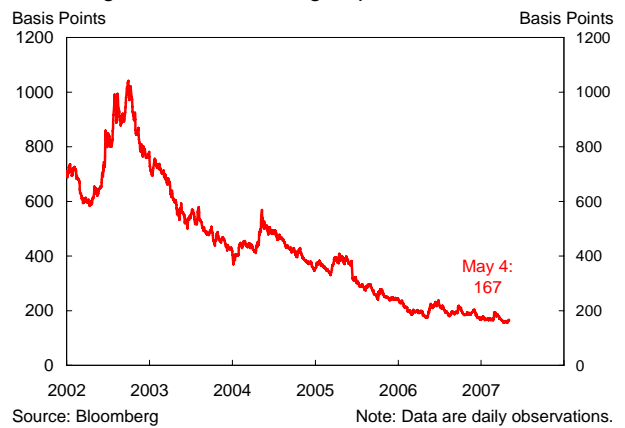
Nominal Effective Exchange Rates



Euro Area and Japan Equity Indices



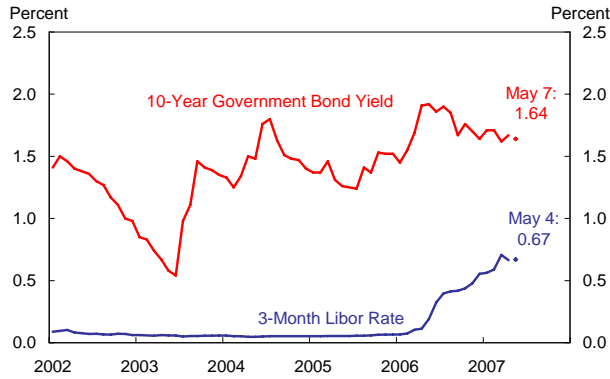
J.P. Morgan EMBI+ Sovereign Spread



B. Financial Markets

Exhibit B-10: Foreign Interest Rates

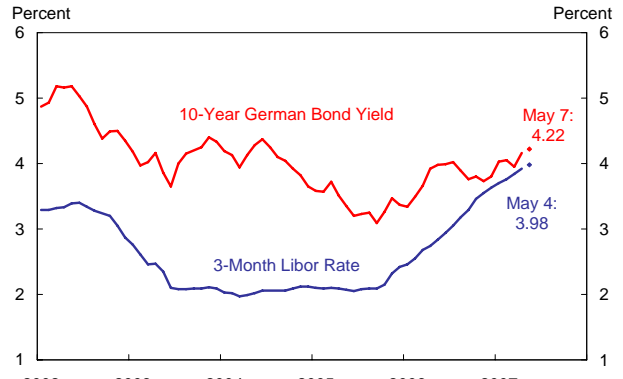
Japan Short-Term and Long-Term Interest Rates



Source: Bloomberg and Federal Reserve Board

Note: Data are monthly averages.

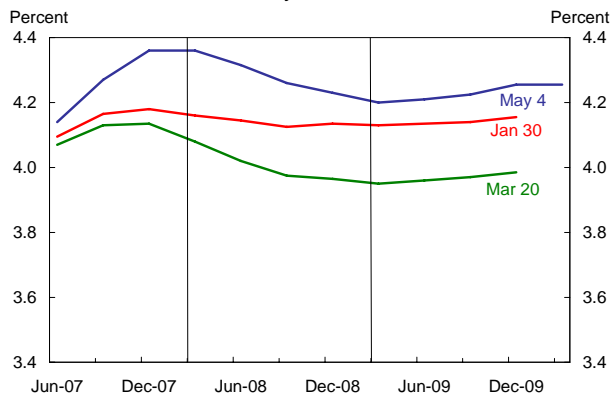
Euro Area Short-Term and Long-Term Interest Rates



Source: BIS and Federal Reserve Board

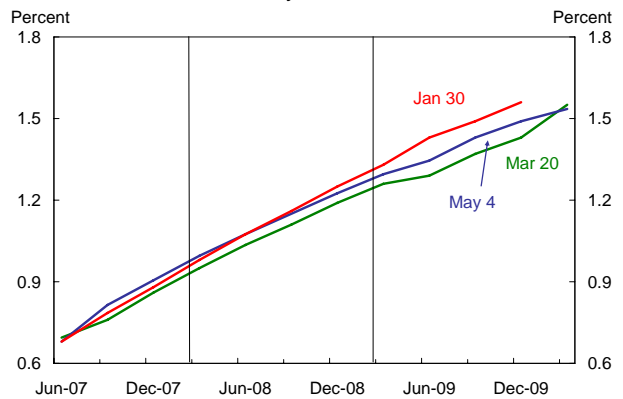
Note: Data are monthly averages.

Three-Month Eurocurrency Futures Rates: Euro



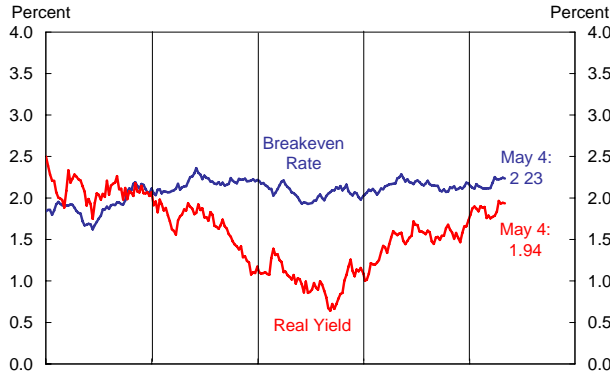
Source: Datastream

Three-Month Eurocurrency Futures Rates: Yen



Source: Datastream

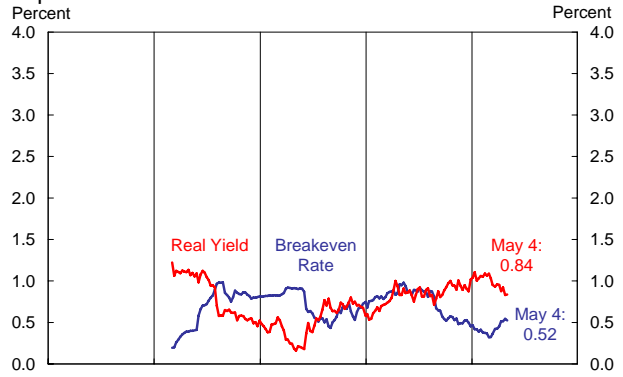
Euro Area



Source: Barclays

Note: OAT July 2012

Japan



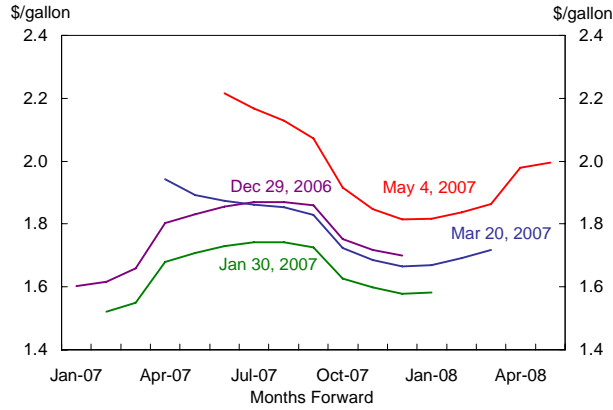
Source: Barclays

Note: JGB March 2014

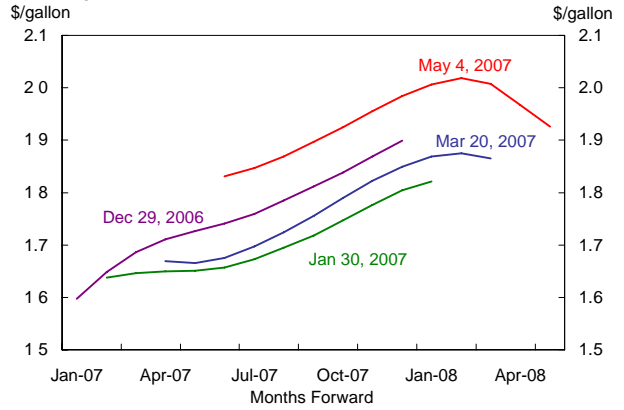
B. Financial Markets

Exhibit B-11: Energy Futures

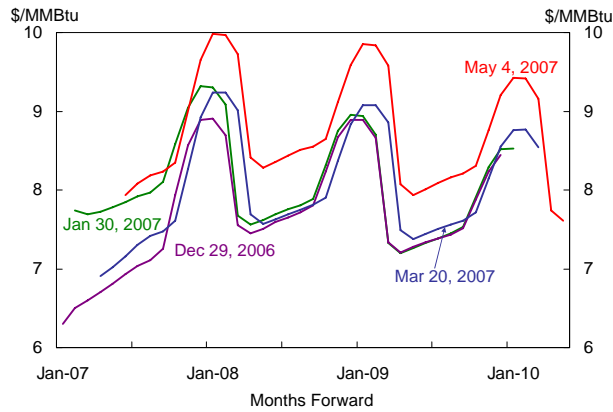
Gasoline Futures



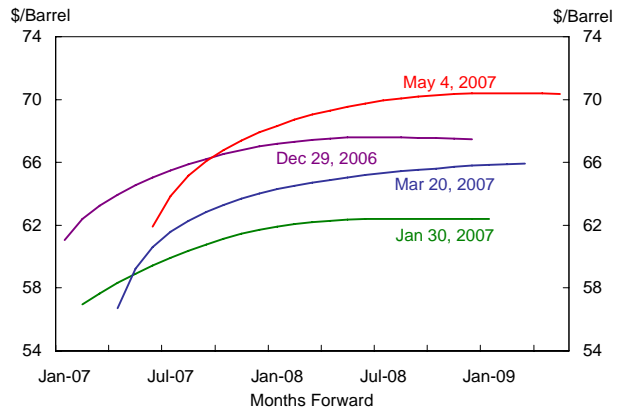
Heating Oil Futures



Natural Gas Futures



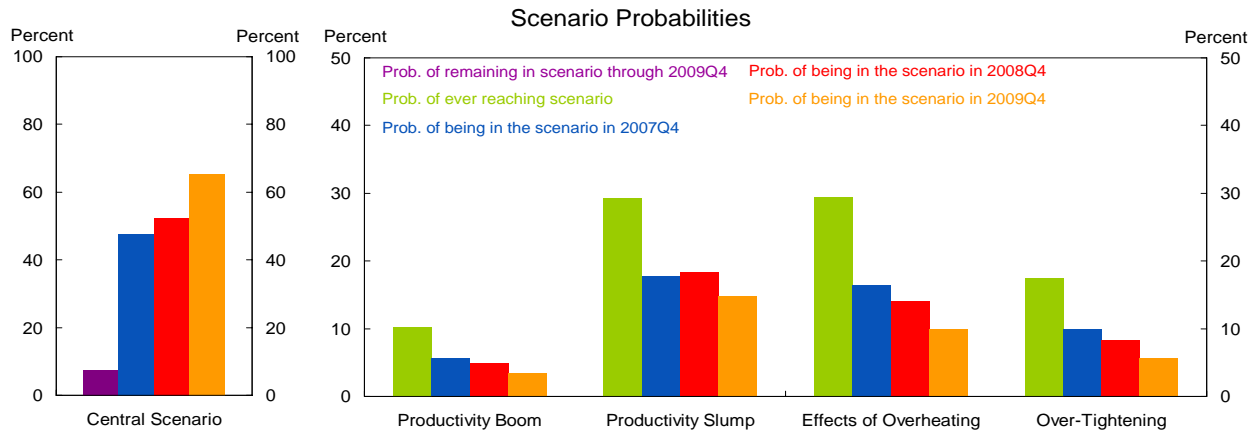
Crude Oil Futures



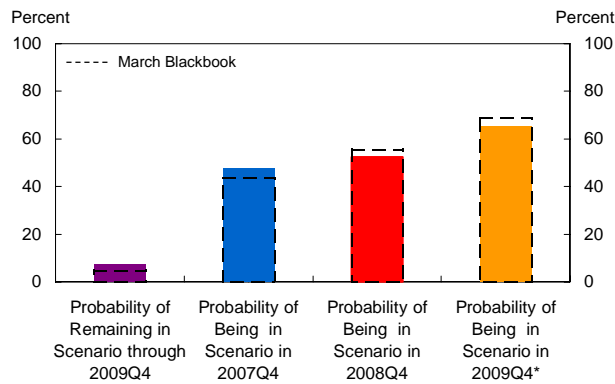
Source: Bloomberg

C. FRBNY Forecast Distributions

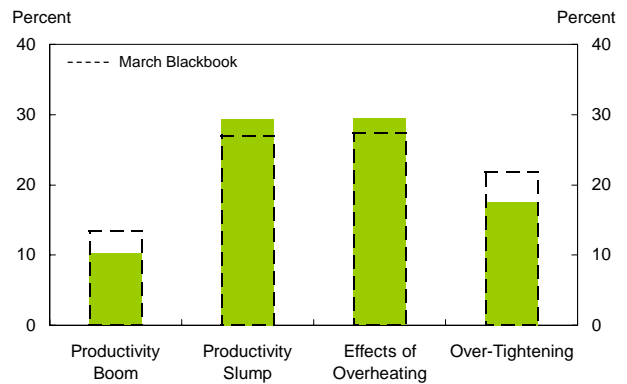
Exhibit C-1: Risks



Change in Central Scenario Probability



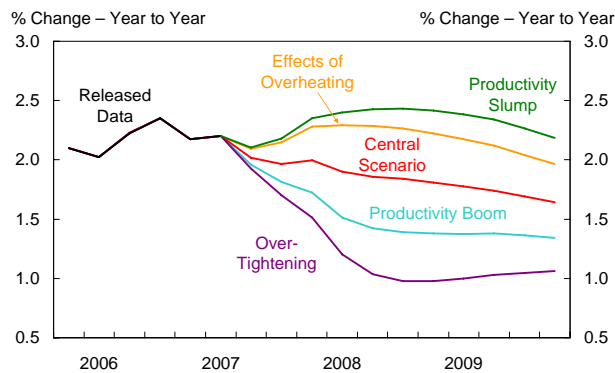
Change in Alternative Scenario Probabilities*



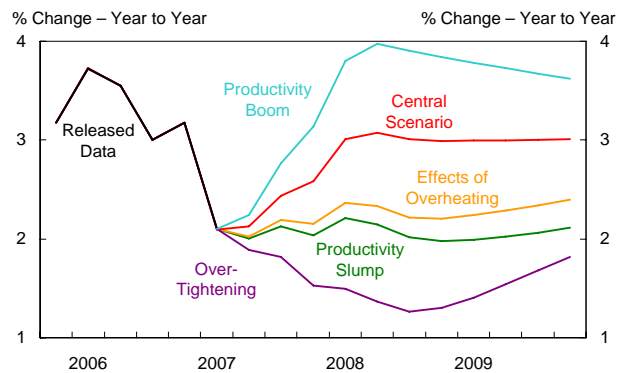
*Probability of ever reaching scenario

Exhibit C-2: Projections under Alternative Scenarios

Core PCE Inflation



Real GDP Growth

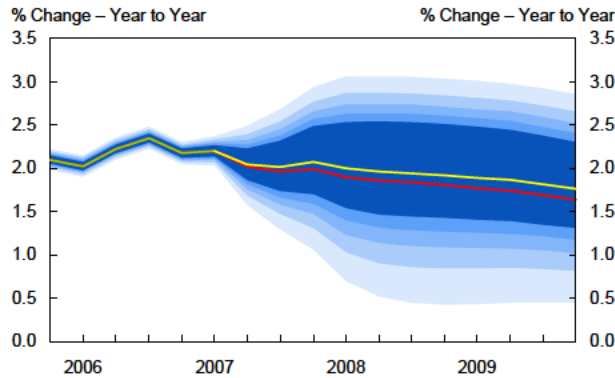


Source: MMS Function (FRBNY)

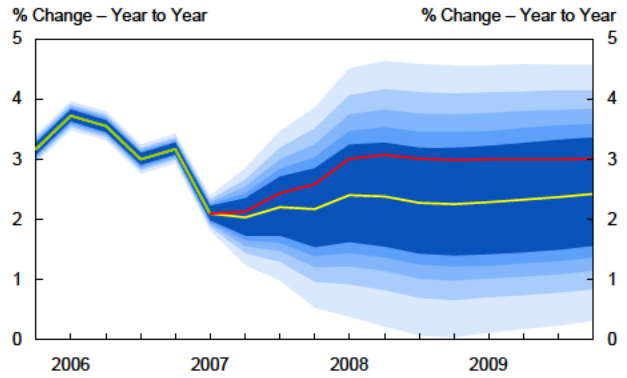
C. FRBNY Forecast Distributions

Exhibit C-3: Inflation and Output Forecast Distributions

Core PCE Inflation Forecast Distribution

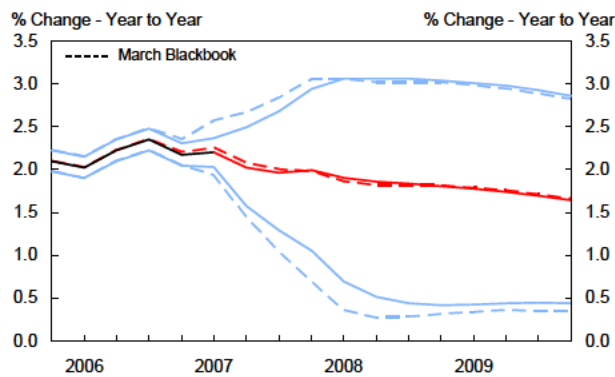


Real GDP Growth Forecast Distribution

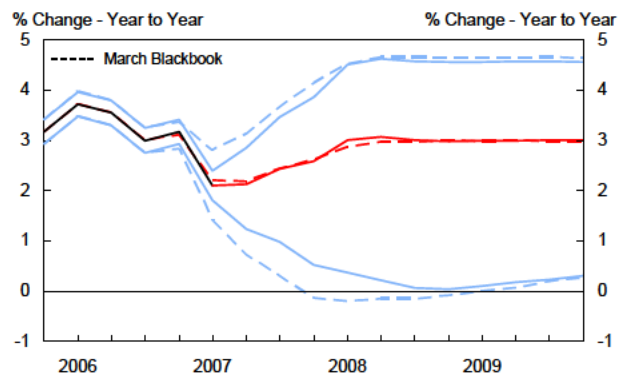


The yellow line is the expected value of the forecast distribution, the red line is the central scenario projection, and the black line is released data. The shading represents the 50, 60, 70, 80, and 90 percent chance that the four-quarter change will be within the respective range.

Change in Core PCE Inflation Forecast Distribution

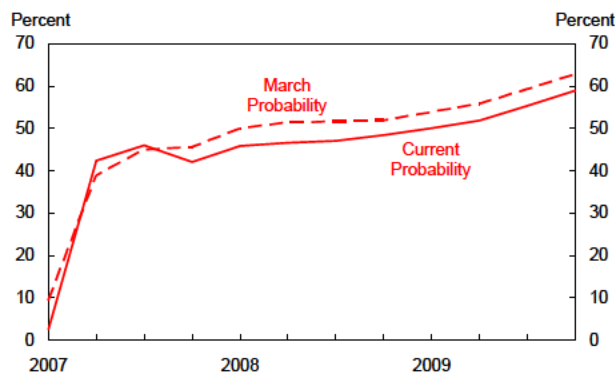


Change in Real GDP Growth Forecast Distribution

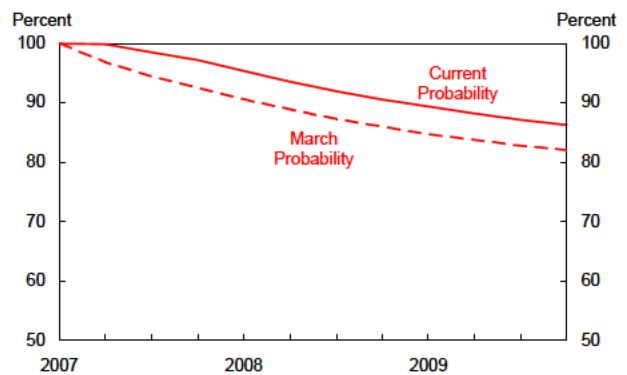


The blue lines are the 90% chance the four-quarter change will be within the lines, the red line is the central scenario projection, and the black line is released data. Dashed lines represent forecasts from previous Blackbook.

Probability of Four-Quarter Core PCE Inflation below 2%



Probability of Continuing Expansion*



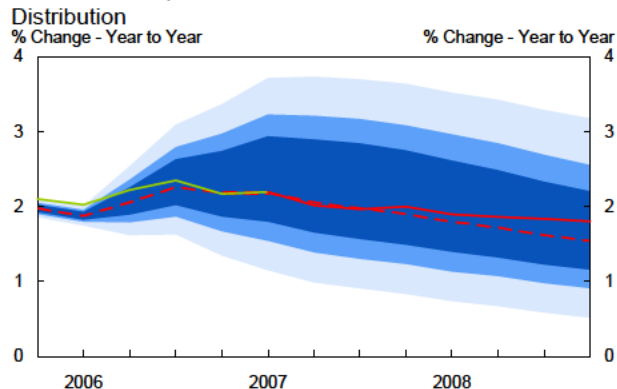
*No two consecutive quarters of negative growth

Source: MMS Function (FRBNY)

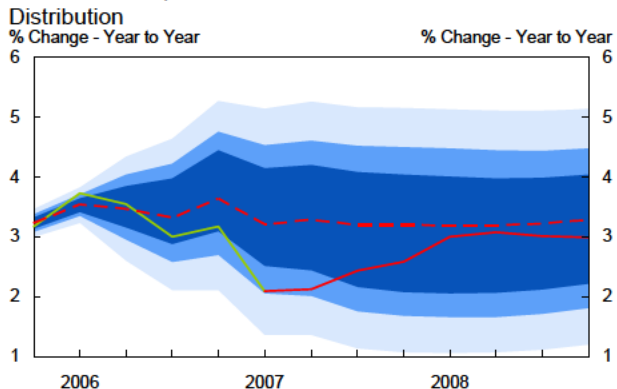
C. FRBNY Forecast Distributions

Exhibit C-4: Evolution and Performance of Inflation and Output Forecast Distributions

One-Year Comparison of Core PCE Inflation Forecast



One-Year Comparison of Real GDP Growth Forecast



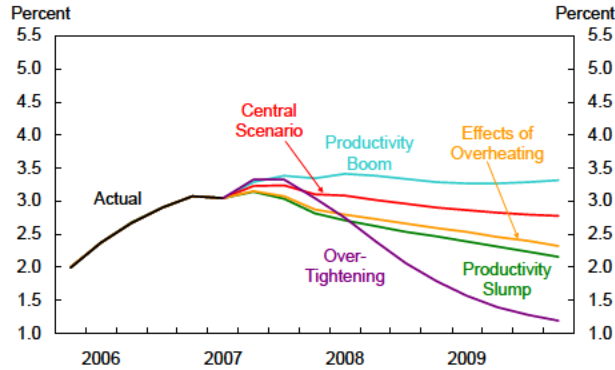
The solid red line is the **current** forecast, while the dashed red line is the **May 2006** forecast. The shading represents the 50, 75 and 90 percent probability intervals from the **May 2006** forecast. The green lines are released data.

Source: MMS Function (FRBNY)

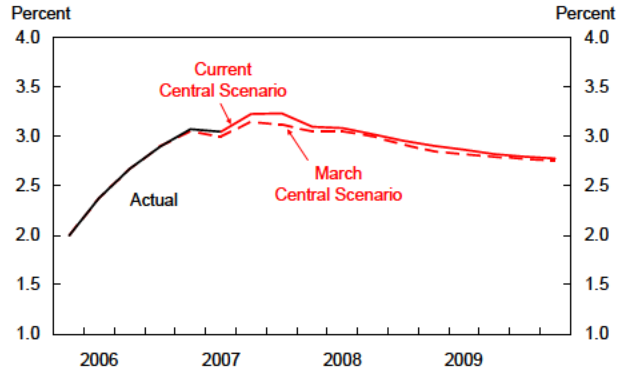
D. FRBNY Fed Funds Rate Projections

**Exhibit D-1: *Baseline*
Policy Rule Analysis**

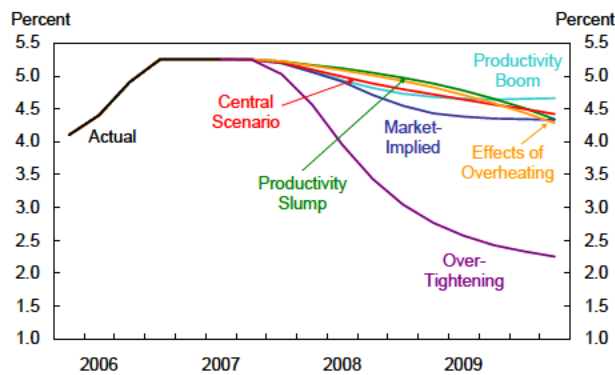
Real FFR under Alternative Scenarios



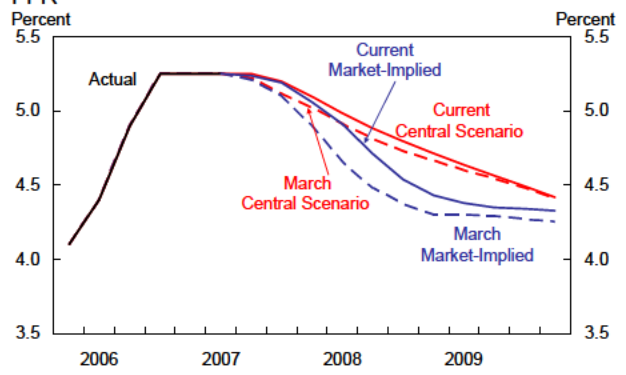
Change in Central Scenario Real FFR



Nominal FFR under Alternative Scenarios

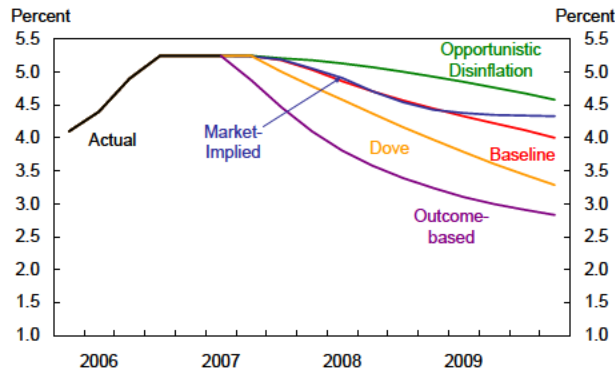


Change in Central Scenario and Market-Implied Nominal FFR



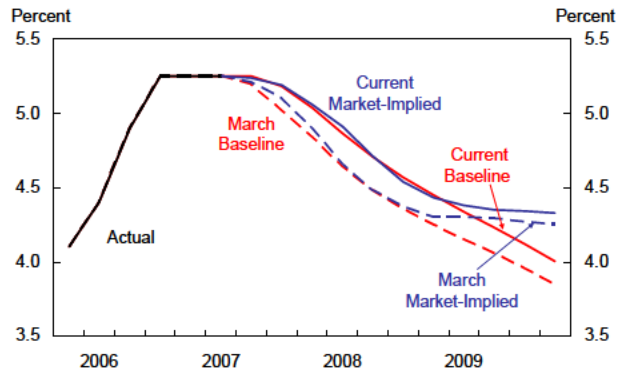
**Exhibit D-2: Alternative Policy Rules under
Expected Value of Forecast Distribution**

Nominal FFR using Alternative Policy Rules*



*Evaluated using yellow line from C-3

Change in *Baseline and Market-Implied Nominal FFR**



*Evaluated using yellow line from C-3

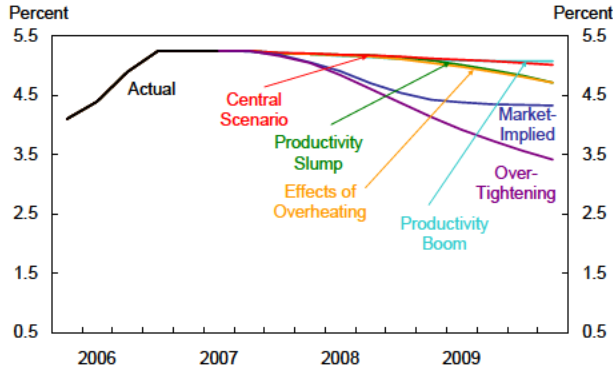
Source: MMS Function (FRBNY)

D. FRBNY Fed Funds Rate Projections

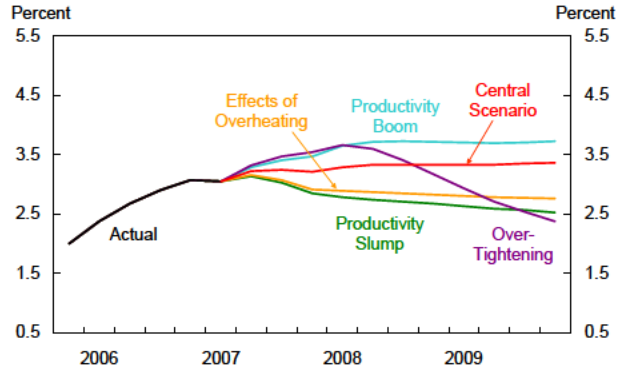
Exhibit D-3: Alternative Policy Rule Analysis

Policy Rule: *Opportunistic Disinflation*

Nominal FFR under Alternative Scenarios

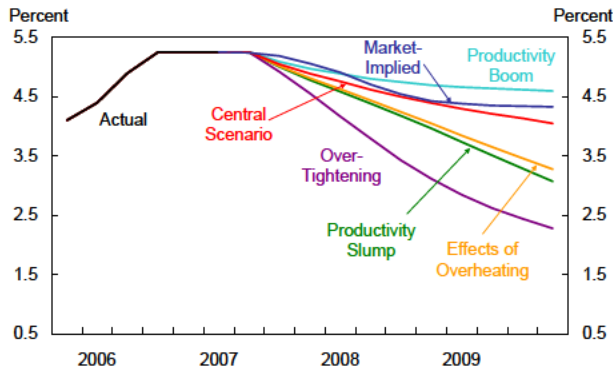


Real FFR under Alternative Scenarios

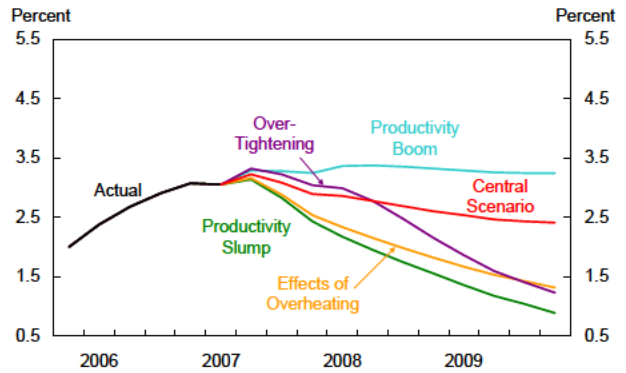


Policy Rule: *Dove*

Nominal FFR under Alternative Scenarios

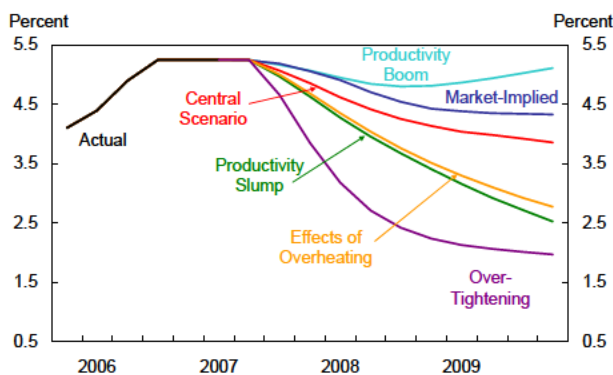


Real FFR under Alternative Scenarios

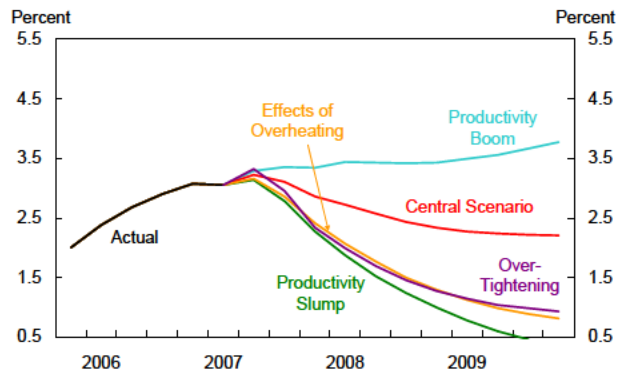


Policy Rule: *Outcome-based*

Nominal FFR under Alternative Scenarios



Real FFR under Alternative Scenarios



Source: MMS Function (FRBNY)

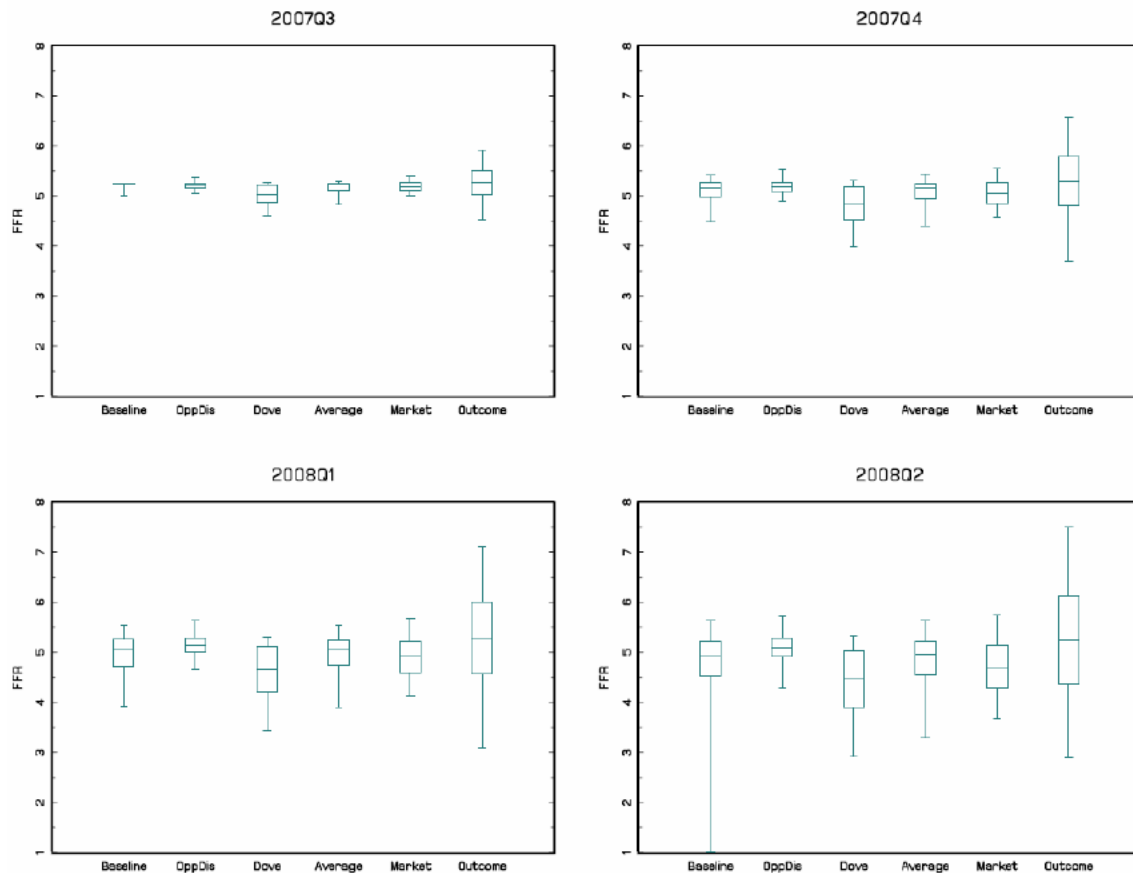
D. FRBNY Fed Funds Rate Projections

Exhibit D-4: Comparison between Market and Policy Rule FFR Expectations: 2008Q2

	Percentile of FRBNY Expectation in Market Distribution	Percentile of Market Expectation in FRBNY Distribution
<i>Baseline</i>	50 (49)	34 (32)
<i>Opportunistic Disinflation</i>	72 (71)	11 (11)
<i>Dove</i>	29 (34)	61 (58)
<i>Outcome-based</i>	81 (81)	33 (32)
<i>Average</i>	50 (50)	32 (36)

Note: "Average" weights baseline at .60, dove at .15, and opportunistic disinflation at .25. Numbers in parentheses represent data from the March Blackbook, with "Average" weighting baseline at .60, dove at .20 and opportunistic disinflation at .20.

Exhibit D-5: FFR Distributions



Note: The box represents the 50% probability interval, the line in the box the median, and the tails the 90% probability interval.

Source: MMS Function (FRBNY)

Exhibit C Documentation

In this abbreviated version of the Exhibit C documentation, we include descriptions of the forecast distribution methodology, as well as a brief description of the alternative scenarios used in this Blackbook. We also describe two additional changes to the charts since the March Blackbook. Full documentation is included in the Appendix.

Background

The FRBNY forecast distributions are a generalization of techniques used at the Bank of England and other central banks to present the uncertainties and balance of risks around a forecast. The generalization allows for a dynamic balance of risks that is jointly assessed over inflation and output; this dynamic assessment allows for the probability of a deviation from the central scenario to vary over time. We center long-run behavior at the implicit inflation target and potential growth rate. Furthermore, we assume that, after the economy moves into an alternative scenario, it eventually returns to this long-run behavior. Although this is not a substitute for a dynamic model with an explicit transmission mechanism for monetary policy, it can have good properties in mimicking the behavior of an economy in which the central bank has sufficient credibility to achieve its long-run inflation target while pursuing a short-run stabilization policy.

In this approach, we first define a central scenario with a distribution centered at our central forecast for inflation and output described in Exhibit A. We then define alternative scenarios based on the two classes of shocks that are of interest to central banks: supply shocks, which move inflation and output in opposite directions, and demand shocks, which move inflation and output in the same direction. We associate different configurations of shocks with various alternative scenarios that have different implications for monetary policy. This approach to quantifying uncertainty allows us to interpret the forecast distribution for output and inflation, as well as analyze the impact from changing the probabilities on the scenarios.

Our approach differs from the one in the Greenbook in that we attach probabilities to the alternative scenarios and generally maintain the same scenarios across FOMC cycles.

Once we introduce an alternative scenario, we retain it until we assess its likelihood to be minimal. For example, in the June 2006 Blackbook we removed the *Global Deflation* scenario introduced in May 2005 and replaced it with the *Over-Tightening* scenario. In January 2007, we recast the *Overheating* scenario as an *Effects of Overheating* scenario because we believed that the initial impact of this scenario (excess output growth) would have already passed, if it had occurred at all.

We also can generate forecast distributions that place a greater probability on a specific alternative scenario in order to examine its policy implications. We did this in January 2006 in response to the near inversion of the yield curve and the surprisingly low advance estimate of 2005Q4 GDP growth. To capture these developments, we produced a forecast distribution in which we doubled the probability of a productivity slowdown.

Having decided on these scenarios (central and alternatives), we begin by generating a large number of series of values, with each value corresponding to a quarter in the forecast horizon; for each of these series, each quarter's value indicates the prevailing scenario in that quarter. Note that at this point we have not yet defined the precise output and inflation implications of the alternative scenarios (see below); rather, these series indicate only the prevailing scenario in each period. We make three assumptions about each individual scenario indicator series:

- (1) Each begins in the central scenario;
- (2) Once the economy has entered an alternative scenario, it can either remain in that scenario or return to the central scenario;
- (3) Once the economy returns to the central scenario from an alternative scenario, it remains there over the forecast horizon.

These assumptions imply that no individual series can have transitions into more than one alternative scenario. Also, given a sufficiently long forecast horizon, all series end up in the central scenario.

To generate these series, we set two parameters: (1) an initial probability for each alternative scenario and (2) the persistence of each alternative scenario once realized.

Once we have constructed these scenario indicator series, we can generate the associated paths for inflation and output for each of the series. In each quarter, these paths reflect a draw from the joint distribution of inflation and output; we select the appropriate distribution based on that quarter's indicated scenario. If the series indicates that the economy is in the central scenario in a quarter, values for output and inflation are drawn from a distribution centered at the central forecast. If instead the scenario indicator series indicates that the economy is in an alternative scenario in a quarter, values are drawn from a joint distribution defined relative to the central forecast distribution.

To give a more concrete example, consider the case of a productivity slump scenario, characterized by inflation above the central forecast and output below the central forecast (see descriptions below). If the scenario indicator series had the economy in this scenario in a quarter, we would draw inflation and output values from a distribution whose inflation values are above the central forecast and whose output values are below the central forecast.

Once we have made these draws, the large number of paths for inflation and output generated can then be combined to characterize the distributions for inflation and output that reflect our overall forecast uncertainty, which indicates our balance of risks.

Descriptions of Alternative Scenarios

Our first two alternative scenarios consider the impact of above- and below-trend productivity growth, respectively. In the post-war era, the United States has experienced three productivity epochs (pre-1973, High I; 1973 to mid-1990s, Low I; and mid-1990s onward, High II). The July 2006 NIPA revisions prompted us to reduce the estimate of potential output growth in our central forecast; our current central projection for medium-term productivity growth is slightly lower than that of the pre-1973 epoch.

Alternative 1: *Productivity Boom*

The developments in the labor market and the sustained strength of labor productivity growth in the first part of this decade suggest that firms are using labor more efficiently.

As such, productivity growth above our assumed trend could return and persist, implying a higher potential growth rate and thus expected higher real growth than our current estimate. Strong productivity growth would limit labor cost pressures and thereby help to subdue inflation.

Alternative 2: *Productivity Slump*

It is possible that the upswing in productivity that began in the mid-1990s will not be sustained as the IT-driven surge runs its course, resulting in a period of productivity growth below the trend in our central forecast. Furthermore, we could also see lower productivity growth from increases in the level and volatility of energy and commodity prices, as occurred in the 1970s. Below-trend growth would not only imply a lower estimate of potential growth, but would also push inflation above the level projected in our central forecast.

We also consider two additional scenarios, both related to the impact of past monetary policy and possible misperceptions of its past and current stances.

Alternative 3: *Effects of Overheating*

We see two potentially connected forms of this alternative. The first is a more standard scenario in which the extremely accommodative policy stance that the U.S. and other countries adopted in response to the global slowdown of 2000-2003 produces a persistent rise in inflation above implicit targets and an abrupt slowdown in real output growth starting in mid-2006. If central banks have consistently underestimated the equilibrium real rate (i.e., overestimated the slack in the global economy), their misperception would have led to excess aggregate demand growth over 2005-06 and, ultimately, to an increase in both inflation and inflation expectations.

The second form of this scenario (described in the special topic *The Free Lunch* in the May 2006 Blackbook) highlights the possibility that the U.S. economy could be overheating but that the overheating might not manifest itself immediately in high domestic consumer inflation (i.e., a rate well above the FOMC's implicit target). If the

dollar is not freely floating and, moreover, if the dollar is being boosted by capital inflows of which purpose is to keep the dollar strong relative to other currencies, then it is possible that market interest rates could be held below the “true” equilibrium rate (i.e., the rate that would prevail without such inflows) for a significant period of time. The implications for output and inflation in this circumstance are similar to those of the above more standard scenario.

Alternative 4: *Over-Tightening*

We base our outlook on the assumption that the neutral policy rate is between 4% and 4.25%, with an implicit core PCE inflation target of 1.5%. Recent inflation data have core PCE inflation running above 2%. If sustained, this development is consistent with a fed funds rate above 5%; however, we see some risk that these higher inflation levels are a lagging indicator of demand pressures that have already subsided. This would imply that recent policy has been more restrictive than the central bank believed, causing the economy to slow significantly below potential.

The implications for inflation and output of the various scenarios can be summarized as follows:

1. *Productivity Boom*: inflation below central forecast, output above central forecast.
2. *Productivity Slump*: inflation above central forecast, output below central forecast.
3. *Effects of Overheating*: inflation above central forecast, output slightly below central forecast
4. *Over-Tightening*: inflation below central forecast, output far below central forecast.

Changes to Exhibit C

We have made two changes to Exhibit C this cycle to make clearer the evolution of our outlook and risk assessment over the inter-meeting period.

Exhibit C-3: Inflation and Output Forecast Distributions

The last two charts in this exhibit are new to this Blackbook. The bottom left chart shows the probability of having four-quarter core PCE inflation above two percent in each of the quarters from 2007Q1 to 2009Q4. The bottom right chart shows the probability of continuing expansion (i.e. no two consecutive quarters of negative growth) through each of the quarters from 2007Q1 to 2009Q4. Both of these charts compare the probabilities derived from the current forecast distribution to the probabilities derived from the forecast distribution from the previous Blackbook.

Exhibit C-4: Evolution and Performance of Inflation and Output Forecast Distributions

This part of Exhibit C was new to last Blackbook. The two charts in this exhibit compare the forecast and probability intervals for core PCE inflation (left chart) and real GDP growth (right chart) from the Blackbook of one year ago (eight FOMC cycles earlier) to the current forecast, as well as to the data released over the past year. In the prior Blackbook, the comparison only spanned three FOMC cycles.

Exhibit D Documentation

In this abbreviated version of the Exhibit C documentation, we include a description of the methodology and policy rules used in this Blackbook. Full documentation for Exhibit D is included in the Appendix.

Background

The exhibits in this section are constructed using the baseline specification of the policy rule detailed below, two modifications of the baseline policy rule, the forecast distribution, and information from fed funds and Eurodollar futures. The policy rules convert the uncertainty over future inflation and output growth into uncertainty about future values of the fed funds rate. This translation then allows us to use information from financial markets to calibrate the type and level of uncertainty around our outlook.

The paths for inflation and output growth generated in Exhibit C can easily be converted into FFR values using a standard policy rule. We also can make small adjustments to the parameters of a baseline rule to generate alternative rules reflecting different policymaker preferences. The large number of policy rate paths that we can generate for the standard and each of the alternative rules characterizes a distribution for each rule, which enables us to quantify the uncertainty around the policy associated with our outlook and risk assessment under various sets of preferences.

In all policy rule specifications based off the baseline rule, the policy rate responds to deviations of inflation from target and of output from potential, while incorporating some degree of inertia. Our future paths of these deviations come from the forecast distributions of inflation and output. In these rules, we specify an implicit inflation target of 1.5% and assume potential output growth is 3%.

Policy Rule – Baseline Specification:

$$i_t = \rho i_{t-1} + (1 - \rho) [i^* + \varphi_\pi (\pi_t - \pi^*) + \varphi_x x_t]$$

$\rho = 0.8$ (interest rate smoothing parameter)

$i_{2006Q4} = 5.25$ (initial FFR value)

$i^* = 4.125$ (neutral FFR)

$\pi^* = 1.5$ (core PCE inflation target)

$\varphi_\pi = 1.5$ (weight on inflation deviations)

$\varphi_x = 0.5$ (weight on output gap)

π_t : core PCE, 4 - quarter average

x_t : output gap, using 3% potential growth rate

For the next quarter we amend the prescription of the *Baseline* policy rule to capture some of the discreteness in the movement of the FFR. We translate the prescription of the *Baseline* rule using the following table, where r^* is the i_{2007Q2} calculated directly using the *Baseline* rule:

Baseline Policy Rule Prescription	Average FFR in 2007Q2
$r^* < 3.00$	r^*
$3.00 < r^* < 3.75$	4.00
$3.75 < r^* < 4.00$	4.50
$4.00 < r^* < 4.25$ $4.25 < r^* < 4.50$ $4.50 < r^* < 4.75$	4.75
$4.75 < r^* < 5.00$	5.00
$5.00 < r^* < 5.25$ $5.25 < r^* < 5.50$	5.25
$5.50 < r^* < 5.75$ $5.75 < r^* < 6.00$	5.50
$r^* > 6.00$	r^*

The two modifications of the *Baseline* rule that we use this cycle are the *Opportunistic Disinflation* and *Dove* rules. The *Opportunistic Disinflation* rule reacts more strongly than the *Baseline* policy rule to deviations of inflation from target when inflation is falling but still above the upper bound of the implicit target range (taken to be 2%). Its primary effect is thus to lower the policy rate more slowly in such circumstances than

does the *Baseline* rule. Specifically, in each quarter over the forecast horizon, if the four-quarter average of core PCE inflation in the prior quarter is above 2% and higher than the current quarter value, we substitute the previous quarter's core PCE inflation value for the current quarter's value in the *Baseline* policy rule specification (i.e. $\pi_t = \pi_{t-1}$). In all other cases we follow the *Baseline* rule. Thus, if the four-quarter average of inflation in the last quarter is below the value for the current quarter or simply below 2%, then the *Opportunistic Disinflation* rule offers the same prescription as the *Baseline* rule.

The *Dove* policy rule reacts more strongly to output below potential than the *Baseline* rule. If the output gap is negative, the *Dove* rule weights deviations of inflation from target and of output from potential more evenly ($\varphi_\pi = 1.5$ as usual, but $\varphi_x = 1$ instead of 0.5). Thus, the *Dove* rule no longer satisfies the Taylor Principle when output falls below potential.

We also want to compare the policy paths and distributions using these rules with the market-implied path. Throughout Exhibit D, we use the standard path of market policy expectations derived from fed funds and Eurodollar futures contracts and pictured in Exhibit B-4. We construct the distribution for the market-implied path by assuming it is a normal distribution centered at the path with a standard deviation derived from the data in Exhibit B-6.

Using a simple weighting scheme, it is possible to combine the *Baseline* and alternative policy rules into an *Average* rule that may better reflect market beliefs about FOMC preferences. (That is, we can think of the market-implied path as reflecting an amalgam of different perceived FOMC preferences.) Constructing this *Average* rule can also provide insight into the reasons behind shifts in the market path not explained by changes in the outlook. Each cycle we select the weights on the *Baseline* and two alternative policy rules to match the market-implied path as closely as possible. The weights from this cycle and last cycle are provided in the note to Exhibit D-4.

We also compare the above FFR paths with that generated by the Board's *Outcome-based* rule. The *Outcome-based* rule calculates an FFR for a given quarter as a function of the FFR in the previous two quarters, the current quarter's four-quarter core PCE inflation, and the output gap for the current and previous quarters using parameters estimated from real-time historical data (1988-2006)¹.

¹ *Outcome-based* rule: $i_t = 1.20*i_{t-1} - 0.39*i_{t-2} + 0.19*(1.17 + 1.73*\pi_t + 3.66*x_t - 2.72*x_{t-1})$