

## Meeting of the Federal Open Market Committee January 29-30, 2002 Presentation Materials -- Text Version

[Presentation Materials \(1.32 MB PDF\)](#)

Pages 150 to 194 of the Transcript

### Appendix 1: Materials used by Mr. Kos

#### Page 1

##### Top panel

**Title:** Current Deposit Rates and Rates Implied by Traded Forward Rate Agreements

**Series:** LIBOR Fixings, 3 Month Forward and 9 Month Forward for the United States and Euro-area

**Horizon:** October 1, 2001 to January 28, 2002

**Description:** In the U.S., LIBOR fixings and 3 Month Forward rates declined, while 9M Forward rates increased. In the Euro-area, LIBOR fixings declined, 3M Forward rates was little changed, and 9M Forward rates increased.

Source: Bloomberg

##### Bottom panel

**Title:** Current Deposit Rates and Rates Implied by Traded Forward Rate Agreements

**Series:** LIBOR Fixings, 3 Month Forward and 9 Month Forward for Japan

**Horizon:** October 1, 2001 to January 28, 2002

**Description:** In Japan, LIBOR fixings were little changed, while 3M and 9M Forward rates were a little higher.

Source: Bloomberg

#### Page 2

##### Top panel

**Title:** Fed Funds and Treasury Coupon Yields

**Series:** Fed funds target rate and yields for the, 2- year, 10- year, and 30- year bonds.

**Horizon:** October 1, 2001 to January 28, 2002

**Description:** The Fed funds target was cut three times to 2.75 percent, while 2- year and 10- year yields increased. Thirty year yields were little changed over the time horizon.

Source: Bloomberg

##### Bottom panel

**Title:** Performance of U.S. Equity Indices

**Series:** NASDAQ, Dow Jones Industrial Average, and S&P 500

**Horizon:** October 1, 2001 to January 28, 2002

**Description:** All three equity indices increased, with the NASDAQ outperforming the Dow and the S&P 500

Source: Bloomberg

## Page 3

### Top panel

**Title:** The Euro Against the U.S. Dollar

**Series:** U.S. dollar per Euro

**Horizon:** October 1, 2001 to January 28, 2002

**Description:** The euro appreciated against the dollar over the time period.

Source: Bloomberg

### Middle panel

**Title:** Japanese Yen Against Major Currencies

**Series:** Euros per yen, U.K. pounds per yen, Taiwan dollars per yen, Korean won per yen, U.S. dollars per yen.

**Horizon:** October 1, 2001 to January 28, 2002

**Description:** The yen depreciated against each currency over the time period.

Source: Bloomberg

### Bottom panel

**Title:** 10- Year Japanese Government Bond Yield

**Series:** 10- Year Japanese Government Bond Yield

**Horizon:** October 1, 2001 to January 28, 2002

**Description:** The yield on the 10- year JGB declined until the BOJ changed its target reserves on December 19<sup>th</sup>, after which yields steadily increased.

Source: Bloomberg

## Page 4

### Top panel

**Title:** Sub-Components of the EMBI+ Spread

**Series:** Brazil and Mexico Components of the EMBI+

**Horizon:** October 1, 2001 to January 28, 2002

**Description:** Spreads in both components tightened over the time period.

Source: Bloomberg

### Middle panel

**Title:** Brazilian Real and Mexican Peso Against the Dollar

**Series:** Brazilian real and Mexican peso

**Horizon:** October 1, 2001 to January 28, 2002

**Description:** Both the real and the peso broadly appreciated over the time horizon, with the real outperforming the peso.

Source: Bloomberg

### **Bottom panel**

**Title:** 30-Day Local Swap Rates

**Series:** Brazilian and Mexican 30-day swap rates

**Horizon:** October 1, 2001 to January 28, 2002

**Description:** Swap rates in both Brazil and Mexico declined over the time horizon.

Source: Bloomberg

## **Page 5**

### **Top panel**

**Title:** Average Daily Value of RPs Outstanding, by Collateral Tranche

**Series:** Composition of the average daily value of short-term and long-term RPs between Mortgage-backed eligible, Agency eligible, and Treasury only.

**Horizon:** 2000 and 2001

**Description:** Both in 2000 and 2001, the average daily value of long-term RPs was greater than short-term RPs. In both years, the breakdown between mortgage-backed, agency and treasury was consistent.

## **Appendix 2: Materials used by Mr. Reifschneider and Mr. Williams**

Material for Board Staff Presentation on the Implications of the Zero Bound on Nominal Interest Rates

Division of Research and Statistics

January 29, 2002

### **Exhibit 1**

#### **An Illustration of How the Funds Rate Could Hit Zero**

##### **Top-left panel**

##### **Nominal Funds Rate**

Nominal federal funds rate. Data plotted as curves. The period covered is from the first quarter of 2000 through the fourth quarter of 2006, and the data are in percent. The panel presents three different paths for the nominal federal funds rate. The first path shows the actual course of the federal funds rate from early 2000 through late 2001, followed by the Greenbook baseline projection for this series from early 2002 through the end of 2006. In the baseline case, the funds rate falls from a peak of 6½ percent in late 2000 to a low of 2 percent in 2002; thereafter it gradually recovers and eventually settles down at 4 percent from mid-2005 on. The second path illustrates what might happen to interest rates in the event of a stock market crash that lowers stock market prices 50 percent during the first half of 2002. Because monetary policy responds aggressively to the crash, the funds rate falls quickly to zero percent--its lowest possible value--and remains pinned there through mid-2004; interest rates thereafter slowly rise to 1½ percent. The third path shows what might happen if it were possible to push nominal interest rates below zero. In this unconstrained case, the funds rate falls to -1 percent in 2002 and remains below zero through the middle of 2003; past this point it gradually rises to 1¾ percent.

## **Top-right panel**

### **Unemployment Rate**

Unemployment rate. Data plotted as curves. The period covered is from the first quarter of 2000 through the fourth quarter of 2006, and the data are in percent. The panel presents three different paths for the unemployment rate. The first path shows the actual course of the unemployment rate from early 2000 through late 2001, followed by the Greenbook baseline projection for this series from early 2002 through the end of 2006. In the baseline case, the unemployment rate rises from a low of 4 percent in 2000 to a peak of 6 percent in early 2002; thereafter it slowly declines to 5¼ percent, the Greenbook estimate of its sustainable level. The second path illustrates what might happen to the unemployment rate in the event of a stock market crash that lowers stock market prices 50 percent during the first half of 2002. Because monetary policy responds aggressively to the crash and quickly lowers the funds rate to the zero lower bound, the unemployment rate peaks at 6½ percent in 2003 and then slowly declines to 5¼ percent. The third path shows what might happen if it were possible to push nominal interest rates below zero for a time. In this hypothetical unconstrained case, the unemployment rate peaks at only 6¼ percent in 2003 before declining to 5¼ percent.

## **Middle-left panel**

### **Core CPI Inflation (4-qtr)**

Core CPI inflation, four-quarter average. Data plotted as curves. The period covered is from the first quarter of 2000 through the fourth quarter of 2006, and the data are in percent. The panel presents three different paths for core inflation. The first path shows the actual course of core inflation from early 2000 through late 2001, followed by the Greenbook baseline projection for this series from early 2002 through the end of 2006. In the baseline case, inflation rises from 2.2 percent in early 2000 to about 2.7 percent by late 2000; thereafter it slowly declines to 1.6 percent by 2006. The second path illustrates what might happen to core inflation in the event of a stock market crash that lowers stock market prices 50 percent during the first half of 2002. Because monetary policy responds aggressively to the crash and quickly lowers the funds rate to the zero lower bound, core inflation moderates more rapidly than in the baseline case and falls to 1.1 percent by late 2006. The third path shows what might happen if it were possible to push nominal interest rates below zero for a time. In this hypothetical unconstrained case, core inflation declines to only 1.3 percent by late 2006.

## **Middle-right panel**

### **Real Funds Rate**

Real funds rate.\* Data plotted as curves. The period covered is from the first quarter of 2000 through the fourth quarter of 2006, and the data are in percent. The panel presents three different paths for the real funds rate. The first path shows the actual course of the real funds rate from early 2000 through late 2001, followed by the Greenbook baseline projection for this series from early 2002 through the end of 2006. In the baseline case, the real funds rate declines from 4 percent in 2000 to about -¾ percent by early 2002; thereafter it slowly rises, leveling out at 2¼ percent in 2005 and 2006. The second path illustrates what might happen to the real funds rate in the event of a stock market crash that lowers stock market prices 50 percent during the first half of 2002. Because monetary policy responds aggressively to the crash and quickly lowers the nominal funds rate to the zero lower bound, the real funds rate falls to -2¼ percent in mid-2002 and then slowly rises back to zero over the next four years. The third path shows what might happen if it were possible to push nominal interest rates below zero for a time. In this hypothetical unconstrained case, the real funds rate declines to -3 percent in 2002 and then slowly rises back to zero over the next four years.

\*Nominal federal funds rate less the four-quarter moving average of core CPI inflation. [Return to text](#)

## Bottom panel

- If the stock market crashes, the extent of monetary stimulus that could be put in place immediately might be less than desired.
- Worse, falling inflation would cause real rates to rise while the nominal funds rate is stuck at zero, exacerbating the situation.
- In this example the economy can recover because the baseline path incorporates enough potential stimulus to offset a major shock.
- But if the baseline outlook for the funds rate had been flat at its current level, the unemployment rate would have remained high and deflation would have set in.

## Exhibit 2

### The Economics of the Zero Bound

#### Top panel

- Key assumptions for our analysis:
  - monetary policy affects real activity primarily through its ability to alter the real funds rate, and thereby influence asset prices through arbitrage
  - "quantity" effects of monetary policy are not that important
  - inflation displays inertia and depends on expectation and resource utilization
- Under such conditions, the zero bound:
  - limits the magnitude of the monetary stimulus immediately available to offset shocks
  - leads to an erosion in monetary stimulus as inflation falls
  - destabilizes the economy if the erosion problem is severe enough -- a deflationary trap
- Practical importance of the stability threat depends on several factors:
  - responsiveness of output and inflation to changes in the real funds rate
  - magnitude and persistence of disturbances to the economy
  - responsiveness of monetary policy to changes in output and inflation
  - extent of average maneuvering room -- inflation target plus  $R^{\ast}$

## Exhibit 3

### Quantitative Implications of the Zero Bound for Economic Stability

#### Top panel

- Goal -- estimate the effect on average economic performance of lowering the target rate of inflation (which makes the zero bound more of a constraint on policy)
- Approach -- simulate the FRB/US model under rational expectations, subject to shocks like those experienced over the past 35 years
- Policy assumption -- the Taylor rule
  - $I_t = R^{\ast}_t + \pi_t + .5 \text{ GAP}_t + .5 (\pi_t - \pi^{\ast})$
  - $I$  is the nominal funds rate,  $R^{\ast}$  is the equilibrium real rate,  $\text{GAP}$  is the output gap,  $\pi$  is the four-quarter rate of core inflation, and  $\pi^{\ast}$  is the inflation target.

#### Middle panel

#### Main Lessons from Stochastic Simulation Analysis

- At low target rates of inflation, the funds rate falls to zero frequently.
- Because policy is often constrained, economic performance deteriorates for inflation targets below 2 percent or so.

## Bottom panel

### Average Macroeconomic Performance Under the Taylor Rule

	core CPI inflation target		
	0	2	4
1. Percent of time funds rate bounded at zero	28	9	3
2. Standard deviation of the unemployment rate (percent)	1.8	1.5	1.4
3. Frequency of deep recessions (number per 100 years) <sup>1</sup>	5.2	4.6	4.4

1. Deep recessions defined as downturns during which the unemployment rate peaks at or above 7-1/2 percent (2-1/4 percentage points above the long-run NAIRU in the simulations). [Return to table](#)

## Exhibit 4

### Policy Design in a Low Inflation Environment -- More Responsive Rules

#### Top panel

More responsive rules:

- Adjust the funds rate by more than the Taylor rule following a change in output.
- May also be more responsive to movements in inflation, if desired.

Advantages:

- Inflation tends to be closer to target when shocks hit, making deflation less likely.
- Policy moves more quickly and thereby limits the severity of recessions, making deflation less likely.

#### Middle panel

### Economic Performance Under Rules With Alternative Degrees of Responsiveness<sup>1</sup>

	Core CPI inflation target		
	0	2	4
<i>Standard deviation of the unemployment rate (percent)</i>			
1. Taylor rule	1.8	1.5	1.4
2. More responsive rule	1.3	1.1	1.1
<i>Frequency of deep recessions (number per 100 years)</i>			
3. Taylor rule	5.2	4.6	4.4
4. More responsive rule	3.1	2.6	2.3

1. Output gap coefficient equals 1.0 in the more responsive rule, 0.5 in the Taylor rule. [Return to table](#)

#### Bottom panel

### Potential Drawbacks of More Responsive Rules

- Heightened funds rate variability and more frequent policy reversals
- Greater risk of policy mistakes because of data errors and supply-side mismeasurement
- Increased risk of confidence crisis if investors become unnerved by Fed "impotence"

## Exhibit 5 Another Policy Option -- Asymmetric Responsiveness

### Top panel

Asymmetric rules (illustrative example):

- Under most conditions respond according to the Taylor rule.
- But if the Taylor rule wants a funds rate below 1 percent, drop immediately to zero.

Advantages:

- Reduces the stabilization costs associated with the zero bound.
- Minimizes funds rate variability and the frequency of policy reversals.

### Middle panel

#### Economic Performance Under the Taylor and Asymmetric Funds Rate Rules

	Core CPI inflation target		
	0	2	4
<i>Standard deviation of the unemployment rate (percent)</i>			
1. Taylor rule	1.8	<b>1.5</b>	1.4
2. Asymmetric rule <sup>1</sup>	1.5	<b>1.4</b>	1.4
<i>Frequency of deep recessions (number per 100 years)</i>			
3. Taylor rule	5.2	<b>4.6</b>	4.4
4. Asymmetric rule <sup>1</sup>	4.8	<b>4.5</b>	4.4

1. Asymmetric rule is the same as the Taylor rule, except that when the Taylor rule prescribes a nominal funds rate below 1 percent, the asymmetric rule reduces the funds rate immediately to zero. [Return to table](#)

### Bottom panel

#### Potential Drawbacks of Asymmetric Rules

- To be effective, investor expectations must correctly incorporate the implications of asymmetric behavior.
- But asymmetric rules may be difficult to understand in practice.

## Exhibit 6 Price-Level Targeting and Other Policies that Promise Above-Average Inflation in the Future

### Top panel

Price-level targeting and similar strategies:

- Pledge to keep the funds rate unusually low following a zero bound episode in order to keep inflation above average for a time.

- Automatic under price-level targeting, because bygones are not bygones -- any fall in the price level below target must be made up later.

#### Advantages:

- By creating the expectation that the *future* stance of policy will be "easy" for a time, real bond rates *today* are reduced during zero bound episodes.
- As a result, the severity of recessions and the risk of deflation decreases.
- Research indicates potential effectiveness.

#### Disadvantages:

- Such strategies imply periodically taking "unusual" actions, such as allowing inflation to drift well above its long-run target.
- For this reason, the public may doubt the likelihood that the central bank will actually deliver on its promises, rendering the strategy ineffective.

## Exhibit 7 Main Lessons

### Top panel

- In low inflation environments, the nominal funds rate falls to zero frequently.
- Usually this only delays economic recovery because most disturbances are sufficiently transitory and moderate in magnitude.
- But the economy can become severely destabilized if significant deflation sets in.
- Monetary policy can mitigate the effects of the zero bound in several ways:
  - Aim for a long-run average rate of CPI inflation that is not too low.
  - Respond relatively aggressively to movements in output and inflation.
  - Pursue policies that promise higher inflation following zero bound episodes.
- FRB/US analysis suggests no advantage in "keeping your powder dry."

## Appendix 3: Materials used by Mr. Goodfriend

### Slide 1

#### Monetary Policy at the Zero Bound on Nominal Interest Rates

Marvin Goodfriend  
Federal Reserve Bank of Richmond  
January 29, 2002

### Slide 2

#### Quantitative Monetary Policy at the Zero Bound

- Usually, open market operations constrained to accommodate demand for monetary base at opportunity cost spread between intended funds rate and zero bound
- Monetary base free to expand further at the zero bound
- Central bank can pursue quantitative monetary policy at the zero bound

## Slide 3

### Narrow and Broad Liquidity

- To appreciate power of quantitative policy at the zero bound--distinguish between narrow and broad liquidity services
- Narrow liquidity services provided by the medium of exchange allow banks and the public to economize on transactions costs
- At zero interest, narrow liquidity is no longer scarce and that channel of monetary transmission is exhausted

## Slide 4

### Broad Liquidity Services

- Broad liquidity services are not exhausted, and provide the leverage for quantitative monetary policy
- Broad liquidity is a service yield provided by assets according to how easily they can be turned into cash either by sale or by serving as collateral for external finance

## Slide 5

### Broad Liquidity Services (2)

- Broad liquidity services are valued because they minimize the exposure of households and firms to the external finance premium
- The existence of an external finance premium gives rise to a demand for broadly liquid assets variously referred to as--precautionary savings, a liquid buffer stock, or self-insurance

## Slide 6

### Expanding Broad Liquidity

- Quantitative policy must expand broad liquidity to be stimulative at the zero bound
- Open market purchases of short-term bonds would not expand broad liquidity much
- Open market purchases of long-term bonds, other assets could increase broad liquidity
- Broad liquidity could be created by monetizing a government budget deficit

## Slide 7

### The Transmission Mechanism

- The portfolio rebalancing channel--
- Increase in broad liquidity reduces the marginal implicit broad liquidity services yield on monetary assets
- Portfolio balance requires a similar fall in the explicit yield on non-monetary assets
- Prices of non-monetary assets bid up to restore the required return differential.

## Slide 8

### The Transmission Mechanism (2)

- Higher asset prices raise desired consumption out of current income

- Higher asset prices relative to their cost of production revive investment
- Reduced saving rate and increased investment demand raise employment
- Higher utilization rates and profits raise asset prices further

## Slide 9

### The Transmission Mechanism (3)

- The credit channel--
- Higher asset prices raise collateral values, increase net worth, and raise bank capital
- The external finance premium comes down
- Credit spreads narrow, bank lending revives, spending rises as cost of borrowing against future income prospects falls

## Slide 10

### Implementation Problems

- Injection of monetary base can provide impulse to get recovery going
- Self-sustaining recovery requires confidence that base money will be expanded as much and for as long as needed
- To acquire such credibility, must overcome perception of central bank concern with inflationary risk of high money growth

## Slide 11

### Implementation Problems (2)

- Relatively small changes in bank reserves suffice to support interest rate policy
- At the zero bound, policy must exert its effect through broad liquidity
- This will require large-scale injections of base money, substantially increasing the size of the central bank balance sheet

## Slide 12

### Fiscal Support for Quantitative Policy

- Full credibility for quantitative policy at the zero bound requires more support from the fiscal authorities than usual
- There might not be enough long bonds to buy in order to expand the monetary base; central bank could buy other assets, but...
- Either way, capital losses might leave central bank with insufficient assets to reverse excess base money

## Slide 13

### Fiscal Support for Quantitative Policy (2)

- Fiscal authorities could provide the central bank with additional government debt to sell to drain excess base money
- Alternatively, fiscal authorities could agree to run a budget deficit at the central bank's request as means of injecting broad liquidity

## Slide 14

### Fiscal Support for Quantitative Policy (3)

- Central bank could monetize short-term debt issued to finance the deficit, and withdraw excess base money later by selling that debt to the public
- In any case, the government must accept that quantitative policy actions at the zero bound could significantly increase government debt in the hands of the public

## Slide 15

### Fiscal Support for Quantitative Policy (4)

- An inadequate commitment by the fiscal authorities to support the central bank could block the use of quantitative policy at the zero bound
- A prearranged agreement could enable quantitative policy to act credibly, flexibly, and effectively at the zero bound

## Slide 16

### Other Policy Options

- Do nothing unusual
- Commit to holding the funds rate at zero
- Buy foreign exchange/depreciate the exchange rate
- Expand credit policy
- Pursue deliberately inflationary policy

## Slide 17

### Do Nothing Unusual

- Keep funds rate at zero without increasing the monetary base more than necessary
- Contraction likely deeper than usual
- Two risks of more protracted downturn--
- Distressed banking system, less elastic inside supply of broad liquidity than usual
- Policy vacuum encourages ill-advised fiscal actions

## Slide 18

### Commit to Holding the Funds Rate at Zero

- Central bank would write options on future short rates to give itself an incentive to keep rates down
- Advantage, acts directly on long rates
- Disadvantage, at best small effect
- Credibility doubtful given overwhelming pressure to take interest rate policy actions deemed correct at a point in time

## Slide 19

### Buy Foreign Assets/Depreciate the Exchange Rate

- Different, but both make use of openness
- Could buy foreign government securities to help increase broad liquidity--
- Authorized to do so, but exchange rate risk
- Depreciate exchange rate--
- Conventional policy instrument, but US large, not that open, might export deflation and recession without helping itself much

## Slide 20

### Expand Credit Policy

- Expand DW lending or buy private debt
- Reduce private credit spreads and help finance credit-constrained firms
- Wide latitude to lend to banks on collateral, need legislation to buy private debt
- Central bank would make a poor financial intermediary--use to stabilize financial markets but not for general policy stimulus

## Slide 21

### Expand Credit Policy (2)

- Quantitative monetary policy would facilitate intermediation
- Would reduce external finance premium by raising collateral values and net worth
- Central bank could improve the flow of credit without becoming financial intermediary itself

## Slide 22

### Pursue Deliberately Inflationary Policy

- Quantitative monetary policy could stimulate economy at zero bound without creating inflation or expected inflation
- Unleashing inflation would buy little and could be counterproductive
- Temporary inflation would be desirable to reverse prior deflation that raised real value of nominal debt

## Slide 23

### Pursue Deliberately Deflationary Policy (2)

- Committing to a path for the price level could help avoid deflation, and build credibility for reflation if deflation occurs

## Appendix 4: Materials used by Mr. Wilcox, Mr. Slifman, and Ms. Johnson

Material for Staff Presentation on the Economic Outlook  
January 29, 2002

### Chart 1 Forecast Overview

#### Top panel

## Real GDP

### Top-left panel

Four-quarter percent change

	Real GDP	Forecast
1987:Q1	2.64	ND
1987:Q2	3.30	ND
1987:Q3	3.20	ND
1987:Q4	4.44	ND
1988:Q1	4.37	ND
1988:Q2	4.49	ND
1988:Q3	4.15	ND
1988:Q4	3.70	ND
1989:Q1	4.27	ND
1989:Q2	3.62	ND
1989:Q3	3.58	ND
1989:Q4	2.60	ND
1990:Q1	2.64	ND
1990:Q2	2.32	ND
1990:Q3	1.65	ND
1990:Q4	0.46	ND
1991:Q1	-1.26	ND
1991:Q2	-0.94	ND
1991:Q3	-0.51	ND
1991:Q4	0.85	ND
1992:Q1	2.29	ND
1992:Q2	2.67	ND
1992:Q3	3.21	ND
1992:Q4	4.01	ND
1993:Q1	3.03	ND
1993:Q2	2.69	ND
1993:Q3	2.35	ND
1993:Q4	2.55	ND
1994:Q1	3.44	ND
1994:Q2	4.25	ND
1994:Q3	4.36	ND
1994:Q4	4.08	ND
1995:Q1	3.59	ND
1995:Q2	2.36	ND
1995:Q3	2.59	ND
1995:Q4	2.16	ND
1996:Q1	2.51	ND
1996:Q2	3.99	ND
1996:Q3	3.71	ND
1996:Q4	4.06	ND
1997:Q1	4.43	ND

	<b>Real GDP</b>	<b>Forecast</b>
1997:Q2	4.22	ND
1997:Q3	4.78	ND
1997:Q4	4.31	ND
1998:Q1	4.74	ND
1998:Q2	3.82	ND
1998:Q3	3.80	ND
1998:Q4	4.77	ND
1999:Q1	4.02	ND
1999:Q2	3.89	ND
1999:Q3	4.02	ND
1999:Q4	4.41	ND
2000:Q1	4.23	ND
2000:Q2	5.22	ND
2000:Q3	4.38	ND
2000:Q4	2.81	ND
2001:Q1	2.55	ND
2001:Q2	1.22	ND
2001:Q3	0.54	ND
2001:Q4	0.13	0.00
2002:Q1	ND	0.05
2002:Q2	ND	0.59
2002:Q3	ND	1.80
2002:Q4	ND	2.70
2003:Q1	ND	3.17
2003:Q2	ND	3.42
2003:Q3	ND	3.45
2003:Q4	ND	3.56

Note: As shown in the chart, a shaded bar denotes the recession period of 1990:Q3-1991:Q1, as defined by the National Bureau of Economic Research (NBER), and a vertical line indicates the NBER peak in March 2001 for the recession beginning in 2001:Q1.

ND no data [Return to table](#)

### Top-right panel

#### Real GDP

(percent change, annual rate)

2001:Q4	-.3
2002:Q1	1.5
2002:Q2	2.5
2002:H2	3.4
2003	3.6

**Middle-left panel**  
**Unemployment Rate**

Percent

	<b>Unemployment Rate</b>	<b>Forecast</b>
1997:Q1	5.20	ND
1997:Q2	5.00	ND
1997:Q3	4.90	ND
1997:Q4	4.70	ND
1998:Q1	4.60	ND
1998:Q2	4.40	ND
1998:Q3	4.50	ND
1998:Q4	4.40	ND
1999:Q1	4.30	ND
1999:Q2	4.30	ND
1999:Q3	4.20	ND
1999:Q4	4.10	ND
2000:Q1	4.00	ND
2000:Q2	4.00	ND
2000:Q3	4.10	ND
2000:Q4	4.00	ND
2001:Q1	4.20	ND
2001:Q2	4.50	ND
2001:Q3	4.80	ND
2001:Q4	5.60	5.61
2002:Q1	ND	5.94
2002:Q2	ND	6.05
2002:Q3	ND	6.03
2002:Q4	ND	6.00
2003:Q1	ND	5.94
2003:Q2	ND	5.89
2003:Q3	ND	5.85
2003:Q4	ND	5.80

**Middle-right panel**  
**PCE Price Indexes**

Four-quarter percent change

	<b>Total</b>	<b>Total-Forecast</b>	<b>Core</b>	<b>Core-Forecast</b>
1997:Q1	2.35	ND	1.97	ND
1997:Q2	1.99	ND	2.11	ND
1997:Q3	1.90	ND	1.98	ND
1997:Q4	1.54	ND	1.73	ND
1998:Q1	1.08	ND	1.54	ND
1998:Q2	1.04	ND	1.39	ND
1998:Q3	1.07	ND	1.52	ND

	<b>Total</b>	<b>Total-Forecast</b>	<b>Core</b>	<b>Core-Forecast</b>
1998:Q4	1.09	ND	1.58	ND
1999:Q1	1.27	ND	1.53	ND
1999:Q2	1.53	ND	1.42	ND
1999:Q3	1.75	ND	1.41	ND
1999:Q4	2.01	ND	1.48	ND
2000:Q1	2.67	ND	1.85	ND
2000:Q2	2.69	ND	1.97	ND
2000:Q3	2.73	ND	1.99	ND
2000:Q4	2.61	ND	1.93	ND
2001:Q1	2.41	ND	1.85	ND
2001:Q2	2.22	ND	1.59	ND
2001:Q3	1.56	ND	1.29	ND
2001:Q4	1.28	1.28	1.61	1.60
2002:Q1	ND	0.64	ND	1.30
2002:Q2	ND	0.67	ND	1.48
2002:Q3	ND	1.10	ND	1.69
2002:Q4	ND	1.24	ND	1.32
2003:Q1	ND	1.40	ND	1.26
2003:Q2	ND	1.33	ND	1.19
2003:Q3	ND	1.26	ND	1.13
2003:Q4	ND	1.21	ND	1.09

## Bottom panel

### Major Forces Shaping the Outlook

- Monetary and fiscal stimulus will be substantial enough to offset restraint from the stock market and the dollar.
- The inventory correction should be coming to an end.
- Excess capacity is likely to weigh on the strength of the recovery in equipment spending.
- Inflationary pressures remain in check.

## Chart 2

### Perspectives on the Recession

#### Top panel

#### Length of Postwar Recessions

	<b>Months</b>
Recession average	10.7
1948/9	11.0
1952/4	10.0
1957/8	8.0
1960/1	10.0

	Months
1969/70	11.0
1973/5	16.0
1980	6.0
1981/2	16.0
1990/1	8.0
Current	10.0
Current projection	11.0

## Middle panel

### Depth of Postwar Recessions

<i>Change from own peak to own trough in:</i>	Average in previous recessions	This recession
1. Real GDP (percent)	-2.2	-.4
2. GDP gap <sup>a</sup> (percentage points)	-6.4	-4.0
3. Unemployment rate <sup>b</sup> (percentage points)	3.1	2.1
4. Industrial production (percent)	-9.4	-7.1

a. GDP gap is defined as actual GDP less potential GDP, divided by potential GDP. [Return to table](#)

b. Change from own low point to own high point. [Return to table](#)

## Bottom panel

### Three-month Diffusion Index for Payroll Employment

Three-month Diffusion Index for Payroll Employment, total private nonfarm. Data plotted as a curve. The period covered is from 1977 through November 2001, and the data are percentage values. A horizontal line is drawn at 50 percent. The index moves in a range of about 30 percent to 80 percent over the period shown. Also shown are three shaded bars denoting the recession periods of 1980, 1981-82, and 1990-91, as defined by the National Bureau of Economic Research (NBER), and a vertical line indicating the NBER peak for the recession beginning in 2001:Q1. The series begins in 1977 at about 70 percent and rises within the year to nearly 80 percent. The series enters the first recession (1980:Q1-Q3) at about 57 percent and exits the recession at about 50 percent. The index then jumps to about 68 percent in 1980:Q4. The series enters the next recession (1981:Q3-1982:Q4) at about 60 percent and exits the recession at about 32 percent. The index then jumps to about 75 percent in early 1983, after which it fluctuates in the range of about 50 percent to 75 percent until 1990:Q2. The series enters the third recession (1990:Q3-1991:Q1) at about 45 percent and exits the recession at about 30 percent. The index rises above the 50 percent mark in 1992 and remains above that level until 2001:Q1, when a new recession begins. At the NBER peak for the 2001 recession, the index is at about 49 percent and then drops steadily to about 34 percent in November 2001.

## Chart 3

### Key Assumptions

## Top panel

### Real Federal Funds Rate\*

## Percent; Quarterly

	<b>Rate</b>	<b>Forecast</b>
1970:Q1	3.98	ND
1970:Q2	3.45	ND
1970:Q3	2.30	ND
1970:Q4	0.82	ND
1971:Q1	-1.08	ND
1971:Q2	-0.50	ND
1971:Q3	0.59	ND
1971:Q4	0.80	ND
1972:Q1	-0.18	ND
1972:Q2	1.06	ND
1972:Q3	1.72	ND
1972:Q4	2.08	ND
1973:Q1	3.79	ND
1973:Q2	4.45	ND
1973:Q3	6.69	ND
1973:Q4	5.55	ND
1974:Q1	3.89	ND
1974:Q2	4.68	ND
1974:Q3	3.91	ND
1974:Q4	-0.11	ND
1975:Q1	-3.41	ND
1975:Q2	-3.34	ND
1975:Q3	-1.24	ND
1975:Q4	-1.12	ND
1976:Q1	-1.24	ND
1976:Q2	-0.57	ND
1976:Q3	-0.67	ND
1976:Q4	-1.24	ND
1977:Q1	-1.62	ND
1977:Q2	-1.49	ND
1977:Q3	-0.88	ND
1977:Q4	0.04	ND
1978:Q1	0.26	ND
1978:Q2	0.55	ND
1978:Q3	1.34	ND
1978:Q4	2.59	ND
1979:Q1	3.17	ND
1979:Q2	3.30	ND
1979:Q3	4.00	ND
1979:Q4	6.16	ND
1980:Q1	6.54	ND
1980:Q2	3.56	ND
1980:Q3	0.23	ND
1980:Q4	6.24	ND

	<b>Rate</b>	<b>Forecast</b>
1981:Q1	7.51	ND
1981:Q2	9.16	ND
1981:Q3	9.12	ND
1981:Q4	5.39	ND
1982:Q1	6.65	ND
1982:Q2	7.47	ND
1982:Q3	4.50	ND
1982:Q4	3.35	ND
1983:Q1	2.89	ND
1983:Q2	3.38	ND
1983:Q3	4.41	ND
1983:Q4	4.74	ND
1984:Q1	5.41	ND
1984:Q2	6.34	ND
1984:Q3	7.49	ND
1984:Q4	5.56	ND
1985:Q1	4.49	ND
1985:Q2	3.96	ND
1985:Q3	3.92	ND
1985:Q4	3.92	ND
1986:Q1	3.95	ND
1986:Q2	3.23	ND
1986:Q3	2.48	ND
1986:Q4	2.59	ND
1987:Q1	2.30	ND
1987:Q2	2.47	ND
1987:Q3	2.70	ND
1987:Q4	2.56	ND
1988:Q1	2.63	ND
1988:Q2	2.94	ND
1988:Q3	3.56	ND
1988:Q4	4.15	ND
1989:Q1	4.83	ND
1989:Q2	5.51	ND
1989:Q3	5.24	ND
1989:Q4	4.74	ND
1990:Q1	4.45	ND
1990:Q2	3.99	ND
1990:Q3	3.53	ND
1990:Q4	3.24	ND
1991:Q1	1.81	ND
1991:Q2	1.70	ND
1991:Q3	1.70	ND
1991:Q4	0.89	ND

	<b>Rate</b>	<b>Forecast</b>
1992:Q1	0.08	ND
1992:Q2	-0.06	ND
1992:Q3	-0.18	ND
1992:Q4	-0.25	ND
1993:Q1	0.25	ND
1993:Q2	0.27	ND
1993:Q3	0.40	ND
1993:Q4	0.59	ND
1994:Q1	1.09	ND
1994:Q2	1.88	ND
1994:Q3	2.10	ND
1994:Q4	2.90	ND
1995:Q1	3.22	ND
1995:Q2	3.49	ND
1995:Q3	3.52	ND
1995:Q4	3.45	ND
1996:Q1	3.32	ND
1996:Q2	3.37	ND
1996:Q3	3.57	ND
1996:Q4	3.45	ND
1997:Q1	3.31	ND
1997:Q2	3.41	ND
1997:Q3	3.56	ND
1997:Q4	3.78	ND
1998:Q1	3.98	ND
1998:Q2	4.11	ND
1998:Q3	4.01	ND
1998:Q4	3.28	ND
1999:Q1	3.21	ND
1999:Q2	3.33	ND
1999:Q3	3.68	ND
1999:Q4	3.82	ND
2000:Q1	3.83	ND
2000:Q2	4.30	ND
2000:Q3	4.53	ND
2000:Q4	4.55	ND
2001:Q1	3.74	ND
2001:Q2	2.74	ND
2001:Q3	2.20	ND
2001:Q4	0.53	0.53
2002:Q1	ND	0.45
2002:Q2	ND	0.27
2002:Q3	ND	0.06
2002:Q4	ND	0.68

	Rate	Forecast
2003:Q1	ND	0.99
2003:Q2	ND	1.31
2003:Q3	ND	1.62
2003:Q4	ND	1.91

Note: As shown in the chart, shaded bars denote the recession periods of 1969:Q4-1970:Q4, 1973:Q4-1975:Q1, 1980:Q1-1980:Q3, 1981:Q3-1982:Q4, and 1990:Q3-1991:Q1, as defined by the National Bureau of Economic Research (NBER), and a vertical line indicates the NBER peak in March 2001 for the recession beginning in 2001:Q1.

\*Nominal federal funds rate less the percent change in the core PCE price index over the previous four quarters. [Return to text](#)

## Middle-left panel

### Cyclical Comparison: Real Federal Funds Rate

Cyclical Comparison: Real Federal Funds Rate. The chart shows the level of the real federal funds rate over a period centered on its recent peak (the series is labeled "current") and compares those levels to the level, relative to peak quarters, averaged over a longer (unstated) period and to the historical range of the real rate, also relative to peak quarters, over the same longer period. The "current" series extends from 1999:Q1 to 2001:Q4 and then continues as a projection through 2003:Q1, a total of 16 quarters. A vertical line labeled "peak quarter" divides a series of 16 quarters, 8 to the left of the peak line (labeled "P minus 1" through "P minus 8") and 8 to the right (labeled "P plus 1" through "P plus 8"). The peak for the "current" series is at 2001:Q1.

Broadly, the figure shows that the "current" rate was above the average real rate at the beginning of the period, moved below the average real rate at about "P minus 3," and was projected to remain below the average through the end of the projection period. Likewise the "current" rate began the period in the middle of the average range, was at about the bottom of the range beginning around "P minus 3," and was projected to remain at or near the bottom of the range through the end of the projection period.

In more detail, the figure shows that the "current" rate for the quarters "P minus 8" to "P minus 3" rose gradually from about 3 percent to about 4 percent and was about 1 to 2 percentage points above the average rate for those quarters and about in the middle of the historical range. From "P minus 3" (2000:Q2 for the "current" rate) through the peak quarter, it stayed at about 4 percent; but at "P minus 3" it had begun to move below the average to reach, at the peak quarter, about 1 percentage point below the average and the bottom of the historical range. By "P plus 3" (2001:Q4 for the "current" rate), it had moved further down, to almost zero; it was about 3 percentage points below the average for that quarter, and it was at the bottom of the historical range for that quarter. From "P plus 3" to "P plus 6," the beginning of the projection period for the "current" rate, it levels out, staying 1 to 2 percentage points below the average for those quarters but now is about one-third of the way toward the top of the historical range. From "P plus 6" to "P plus 8," the remainder of the projection period, the "current" rate rises to about 1 percent, still about 1 percent below the average for those quarters and still about one-third of the way toward the top of the historical range.

## Middle-right panel

### Sources of Projected Fiscal Impetus in 2002

	Percent of GDP
--	----------------

	Percent of GDP
• Last year's tax cuts	0.4
• Enacted spending increases	0.6
• Assumed additional spending initiatives	0.2

## Bottom panel Fiscal Impetus

Percent of GDP; Annual

	Fiscal Impetus	Forecast
1970	0.02	ND
1971	-0.24	ND
1972	0.99	ND
1973	-0.61	ND
1974	-0.06	ND
1975	0.75	ND
1976	0.19	ND
1977	0.22	ND
1978	0.44	ND
1979	0.08	ND
1980	0.07	ND
1981	-0.46	ND
1982	0.85	ND
1983	1.03	ND
1984	0.39	ND
1985	0.41	ND
1986	0.06	ND
1987	0.27	ND
1988	-0.13	ND
1989	-0.31	ND
1990	-0.25	ND
1991	-0.49	ND
1992	-0.28	ND
1993	-0.36	ND
1994	-0.46	ND
1995	-0.38	ND
1996	-0.17	ND
1997	-0.06	ND
1998	-0.01	ND
1999	0.29	ND
2000	0.10	ND
2001	0.43	0.43
2002	ND	1.03
2003	ND	0.15

Note: As shown in the chart, shaded bars denote the recession periods of 1969:Q4-1970:Q4, 1973:Q4-1975:Q1,

1980:Q1-1980:Q3, 1981:Q3-1982:Q4, and 1990:Q3-1991:Q1, as defined by the National Bureau of Economic Research (NBER), and a vertical line indicates the NBER peak in March 2001 for the recession beginning in 2001:Q1.

## Chart 4 Key Assumptions, Continued

### Top panel Broad Real Exchange Value of the Dollar

Index, 1996=100; Quarterly

	Value	Forecast
1973:Q1	119.70	ND
1973:Q2	113.14	ND
1973:Q3	109.70	ND
1973:Q4	111.50	ND
1974:Q1	113.30	ND
1974:Q2	109.17	ND
1974:Q3	110.66	ND
1974:Q4	110.58	ND
1975:Q1	108.26	ND
1975:Q2	107.44	ND
1975:Q3	109.90	ND
1975:Q4	110.40	ND
1976:Q1	108.75	ND
1976:Q2	107.78	ND
1976:Q3	107.37	ND
1976:Q4	107.84	ND
1977:Q1	107.66	ND
1977:Q2	106.80	ND
1977:Q3	105.63	ND
1977:Q4	103.76	ND
1978:Q1	101.43	ND
1978:Q2	101.21	ND
1978:Q3	97.56	ND
1978:Q4	97.36	ND
1979:Q1	99.28	ND
1979:Q2	101.46	ND
1979:Q3	100.73	ND
1979:Q4	102.80	ND
1980:Q1	104.63	ND
1980:Q2	104.61	ND
1980:Q3	101.82	ND
1980:Q4	103.33	ND
1981:Q1	105.53	ND
1981:Q2	110.48	ND
1981:Q3	115.55	ND

	<b>Value</b>	<b>Forecast</b>
1981:Q4	112.71	ND
1982:Q1	116.20	ND
1982:Q2	120.15	ND
1982:Q3	125.55	ND
1982:Q4	125.41	ND
1983:Q1	122.77	ND
1983:Q2	125.76	ND
1983:Q3	128.63	ND
1983:Q4	128.48	ND
1984:Q1	129.86	ND
1984:Q2	131.59	ND
1984:Q3	136.93	ND
1984:Q4	139.88	ND
1985:Q1	145.39	ND
1985:Q2	143.46	ND
1985:Q3	139.49	ND
1985:Q4	133.51	ND
1986:Q1	128.62	ND
1986:Q2	123.32	ND
1986:Q3	119.94	ND
1986:Q4	120.19	ND
1987:Q1	116.85	ND
1987:Q2	113.61	ND
1987:Q3	114.36	ND
1987:Q4	109.13	ND
1988:Q1	106.22	ND
1988:Q2	105.15	ND
1988:Q3	108.58	ND
1988:Q4	104.46	ND
1989:Q1	105.99	ND
1989:Q2	109.13	ND
1989:Q3	108.99	ND
1989:Q4	107.34	ND
1990:Q1	107.12	ND
1990:Q2	107.15	ND
1990:Q3	103.55	ND
1990:Q4	100.43	ND
1991:Q1	101.50	ND
1991:Q2	104.97	ND
1991:Q3	104.17	ND
1991:Q4	100.89	ND
1992:Q1	101.40	ND
1992:Q2	101.72	ND
1992:Q3	98.98	ND

	<b>Value</b>	<b>Forecast</b>
1992:Q4	102.42	ND
1993:Q1	104.20	ND
1993:Q2	102.31	ND
1993:Q3	102.20	ND
1993:Q4	102.53	ND
1994:Q1	102.83	ND
1994:Q2	101.98	ND
1994:Q3	99.21	ND
1994:Q4	98.16	ND
1995:Q1	100.22	ND
1995:Q2	95.49	ND
1995:Q3	96.63	ND
1995:Q4	98.48	ND
1996:Q1	99.76	ND
1996:Q2	100.04	ND
1996:Q3	99.78	ND
1996:Q4	100.43	ND
1997:Q1	103.19	ND
1997:Q2	103.71	ND
1997:Q3	105.23	ND
1997:Q4	109.44	ND
1998:Q1	114.23	ND
1998:Q2	114.10	ND
1998:Q3	116.80	ND
1998:Q4	112.35	ND
1999:Q1	113.29	ND
1999:Q2	114.13	ND
1999:Q3	113.67	ND
1999:Q4	112.71	ND
2000:Q1	114.06	ND
2000:Q2	116.58	ND
2000:Q3	117.74	ND
2000:Q4	120.84	ND
2001:Q1	122.49	ND
2001:Q2	124.95	ND
2001:Q3	124.28	ND
2001:Q4	124.81	124.81
2002:Q1	ND	126.64
2002:Q2	ND	126.88
2002:Q3	ND	126.91
2002:Q4	ND	126.90
2003:Q1	ND	126.81
2003:Q2	ND	126.67
2003:Q3	ND	126.52

	Value	Forecast
2003:Q4	ND	126.35

Note: As shown in the chart, shaded bars denote the recession periods of 1973:Q4-1975:Q1, 1980:Q1-1980:Q3, 1981:Q3-1982:Q4, and 1990:Q3-1991:Q1, as defined by the National Bureau of Economic Research (NBER), and a vertical line indicates the NBER peak in March 2001 for the recession beginning in 2001:Q1.

### Middle-left panel

#### Cyclical Comparison: Real Exchange Rate

### Middle-right panel

#### Cyclical Comparison: S&P 500 Price Index

Cyclical Comparison: S&P 500 Price Index. The chart shows the level of the S&P price index over a period centered on its recent peak (the series is labeled "current") and compares those levels to the level, relative to peak quarters, averaged over a longer (unstated) period and to the historical range of the index, also relative to peak quarters, over the same longer period. The "current" series extends from 1999:Q1 to 2001:Q4 and then continues as a projection through 2003:Q1, a total of 16 quarters. A vertical line labeled "peak quarter" divides a series of 16 quarters, 8 to the left of the peak line (labeled "P minus 1" through "P minus 8") and 8 to the right (labeled "P plus 1" through "P plus 8"). The peak for the "current" series is at 2001:Q1.

Broadly, the figure shows that the "current" index was above the average index rate at the beginning of the period, met the average at the peak quarter, rose slightly above the average at "P plus 1," and then dropped below the average from "P plus 2" through "P plus 3." Afterward, the index was projected to remain below the average through the end of the projection period. Likewise the "current" index began the period above the historical range, dropped to the bottom of the range around "P plus 2," and was projected to remain near the bottom of the range through the end of the projection period.

In more detail, in 1998:Q1, the index was at 110 and rose steadily to nearly 130 at its peak before dropping sharply to about 90 two quarters after the peak. The index rebounded to about 95 in 2000:Q4; afterward, it is projected to rise slowly and steadily to about 105 in 2004:Q4.

### Bottom panel

#### S&P 500 Price-Earnings Ratio\*

Quarterly

	Ratio
1979:Q1	7.74
1979:Q2	7.17
1979:Q3	7.32
1979:Q4	7.08
1980:Q1	7.19
1980:Q2	7.08
1980:Q3	7.57
1980:Q4	7.79
1981:Q1	7.64
1981:Q2	7.20
1981:Q3	6.22

	<b>Ratio</b>
1981:Q4	6.62
1982:Q1	6.30
1982:Q2	6.37
1982:Q3	7.24
1982:Q4	8.49
1983:Q1	9.17
1983:Q2	9.83
1983:Q3	9.28
1983:Q4	8.84
1984:Q1	8.20
1984:Q2	7.65
1984:Q3	8.19
1984:Q4	8.21
1985:Q1	8.97
1985:Q2	9.71
1985:Q3	9.27
1985:Q4	10.14
1986:Q1	11.50
1986:Q2	12.64
1986:Q3	12.92
1986:Q4	12.48
1987:Q1	13.85
1987:Q2	13.56
1987:Q3	13.37
1987:Q4	10.62
1988:Q1	11.30
1988:Q2	10.75
1988:Q3	10.12
1988:Q4	10.05
1989:Q1	10.35
1989:Q2	11.11
1989:Q3	11.77
1989:Q4	12.20
1990:Q1	11.73
1990:Q2	12.63
1990:Q3	10.97
1990:Q4	11.87
1991:Q1	13.88
1991:Q2	14.02
1991:Q3	14.26
1991:Q4	14.09
1992:Q1	15.01
1992:Q2	14.24
1992:Q3	14.57

	<b>Ratio</b>
1992:Q4	15.00
1993:Q1	15.30
1993:Q2	14.89
1993:Q3	15.02
1993:Q4	14.68
1994:Q1	14.52
1994:Q2	13.70
1994:Q3	13.30
1994:Q4	12.28
1995:Q1	12.78
1995:Q2	13.37
1995:Q3	13.92
1995:Q4	14.57
1996:Q1	14.95
1996:Q2	15.16
1996:Q3	15.32
1996:Q4	15.95
1997:Q1	16.71
1997:Q2	18.37
1997:Q3	18.96
1997:Q4	19.06
1998:Q1	21.45
1998:Q2	21.54
1998:Q3	20.04
1998:Q4	22.69
1999:Q1	24.88
1999:Q2	24.30
1999:Q3	23.27
1999:Q4	24.60
2000:Q1	23.20
2000:Q2	23.78
2000:Q3	23.69
2000:Q4	22.37
2001:Q1	20.07
2001:Q2	21.94
2001:Q3	18.03
2001:Q4	22.00

Note: As shown in the chart, shaded bars denote the recession periods of 1980:Q1-1980:Q3, 1981:Q3-1982:Q4, and 1990:Q3-1991:Q1, as defined by the National Bureau of Economic Research (NBER).

\*Price over I/B/E/S year-ahead earnings. Quarterly observations are last month of quarter. [Return to text](#)

## **Chart 5**

### **Perspectives on the Projected Recovery**

**Top panel****Speed of Postwar Recoveries**

<i>Change over the first four quarters after the NBER trough in:</i>	<b>Average in previous recoveries</b>	<b>Projected recovery</b>
1. Real GDP (percent)	7.0	3.2
2. GDP gap (percentage points)	1.9	.5
3. Unemployment rate (percentage points)	-1.1	.0
4. Industrial production (percent)	11.7	3.7

**Middle panel****GDP Gap at the NBER Trough**

Percent

	<b>GDP Gap</b>
1960/1	-2.35
1969/70	-1.68
1973/5	-5.44
1980	-4.86
1981/2	-9.62
1990/1	-3.40
Current	-1.75

**Bottom panel****Contributions to the Initial Recovery in Real GDP****Bottom-left panel****PCE Durables and Residential Investment**

Percentage points

	<b>Investment</b>
1948/9	2.81
1952/4	3.11
1957/8	2.90
1960/1	1.46
1969/70	2.82
1973/5	2.32
1980	0.28
1981/2	2.95
1990/1	0.69
Current	0.75

**Bottom-right panel****Business Fixed Investment**

Percentage points

	<b>BFI</b>
1948/9	1.96
1952/4	0.98
1957/8	0.78
1960/1	0.77
1969/70	0.49
1973/5	0.10
1980	1.07
1981/2	1.22
1990/1	-0.24
Current	0.21

## Chart 6 Near Term Production Indicators

### Top-left panel Private Nonfarm Payroll Employment

Average monthly change, thousands

	<b>Change</b>
2000	149.08
2001:H1	-25.00
2001:Q3	-118.00
Oct 2001	-465.00
Nov 2001	-363.00
Dec 2001	-187.00

### Top-right panel Initial Claims (FRB Seasonals)

Initial Claims, Seasonally Adjusted Data. The period covered is January 2000 through January 19, 2002. Data are plotted as two curves. One curve is the 4-week moving average for unemployment insurance claims; the second curve is the weekly claims. The 4-week moving average for claims starts at slightly under 300,000 at the start of 2000, oscillates somewhat, reaches about 290,000 by midyear, and rises to about 350,000 by year-end. It drops slightly to about 340,000 after the start of 2001, rises to 520,000 by mid-2001, and drops to 390,000 by January 19, 2002. The weekly average for unemployment claims closely mirrors the 4-week moving average, but it shows increasing volatility as the number of claims rise, with the greatest volatility as the average series comes off its late 2001 peak.

### Middle-left panel Motor Vehicle Assemblies

Millions of units, annual rate

	<b>Assemblies</b>	<b>Forecast</b>

	<b>Assemblies</b>	<b>Forecast</b>
Jan 2000	13.50	ND
Feb 2000	13.29	ND
Mar 2000	13.17	ND
Apr 2000	13.30	ND
May 2000	13.35	ND
Jun 2000	13.15	ND
Jul 2000	12.22	ND
Aug 2000	12.56	ND
Sep 2000	12.96	ND
Oct 2000	12.12	ND
Nov 2000	11.72	ND
Dec 2000	11.21	ND
Jan 2001	10.73	ND
Feb 2001	10.84	ND
Mar 2001	11.47	ND
Apr 2001	11.56	ND
May 2001	11.77	ND
Jun 2001	11.63	ND
Jul 2001	12.06	ND
Aug 2001	11.55	ND
Sep 2001	11.22	ND
Oct 2001	10.70	ND
Nov 2001	11.80	ND
Dec 2001	12.33	ND
Jan 2002	12.16	12.10
Feb 2002	ND	11.90

**Middle-right panel**  
**Industrial Production**

(Average monthly percent change)

Manufacturing, ex. motor vehicles

	<b>Percent</b>
2000:H1	0.54
2000:H2	-0.19
2001:H1	-0.69
2001:Q3	-0.46
Oct 2001	-0.26
Nov 2001	-0.62
Dec 2001	-0.69

**Bottom-left panel**  
**Index of Weekly Physical Product Data**

Index of Weekly Physical Product Data, Excluding Motor Vehicles and Electricity Generation. Data plotted as a curve and a bar chart. The period covered is from July 2001 through January 2002. Data are in IP index points and are plotted as a weekly index, which is the sum of total IP points for thirteen components, and as the monthly aggregate of the weekly index. The monthly aggregate is slightly above 9.2 index points in July, August, and September. It then falls to about slightly above 9.0 points in October, declines to slightly below 9.0 points in November, and decreases further to about 8.8 points in December 2001 and remains at about that level in January 2002. The January 2002 level is a staff estimate. In July 2001, the weekly index is slightly below 9.4 points, slightly above 9.2 points in August and September 2001, and slightly below 9.2 points in October and November 2001. In December 2001, it oscillates a bit, drops to 8.8 points, then jumps up above 9.2 points, and drops to below 8.6 points. In January 2002, it rises to just above 8.8 points.

### Bottom-right panel

#### ISM New Orders Index

Institute of Supply Management New Orders Index. Data plotted as a curve. The period covered is January 2000 through December 2001. Data are diffusion index values in percent. A horizontal line is drawn at 50 percent. The series begins in January 2000 at just above 60 percent, declines steadily to about 48 percent by December 2000, and drops dramatically to about 37 percent by the next month. After January 2001, it climbs steadily, reaching about 47 percent by midyear. It rises to about 53 percent, drops to about 38 percent in the fourth quarter, and then increases to about 55 percent in December 2001.

### Chart 7

#### The Near Term Outlook for Sales, Inventories and Output

#### Top panel

	2001			2002
	October	November	December	January
<b>Final demand indicators</b>				
1. MV sales (millions of units)	21.6	18.3	16.8	15.4 <sup>e</sup>
2. Real PCE control (percent change)	1.5	.6	.9	
3. Single family housing starts (millions of units)	1.23	1.25	1.29	
4. Shipments of nondefense capital goods, ex. aircraft and IT (percent change)	3.0	-2.9	.2	
5. Orders of nondefense capital goods, ex. aircraft and IT (percent change)	-.3	3.0	1.5	

e. Estimate. [Return to table](#)

### Middle-left panel

#### Days' Supply\*

Days' Supply, Tech Sector. Data plotted as a curve. The period covered is 1997 through December 2001. Data are inventory levels for the tech sector measured in days worth of sales as estimated by staff economists. The series starts at the beginning of 1997 at just above 42 days and decreases slightly to below 42 days by midyear. The series decreases to about 41 days at the beginning of 1998 and increases to about 43 days by midyear. At the start of 1999, it remains at about 43 days and then drops to just below 42 days by midyear. At the beginning of 2000, it drops to about 41 days and

increases to just below 42 days by midyear. At the start of 2001, it increases to 46 days and rises to just above 50 days by midyear. In December 2001, it drops to about 47 days.

\*IP system. [Return to text](#)

## Middle-right panel

### Days' Supply

Days' Supply, Other.\* Data plotted as a curve. The period covered is 1997 through December 2001. Data are inventory levels, excluding the tech and transportation sectors, measured in days worth of sales as estimated by staff economists. The series starts at the beginning of 1997 at just above 55 days, oscillates between 56 and just under 55 until mid-1998. By the start of 1999, it climbs above 56 days, and oscillates within a half day of 56 days, until the final quarter of 1999. Through the middle of 2000, the series oscillates downwards to below 55, then recovers briefly. At the start of 2001, it drops to just below 55 days and then is at a midpoint between 55 days and 56 days by midyear. It rises to just above 56 days by December 2001.

\*IP system, excluding transportation. [Return to text](#)

## Bottom panel

### Output and Final Sales

Billion of 1996 dollars

	GDP ex. motor vehicles	GDP ex. motor vehicles-Forecast	Final sales ex. motor vehicles	Final sales ex. motor vehicles-Forecast
2000:Q1	8738.45	ND	8708.11	ND
2000:Q2	8865.92	ND	8799.97	ND
2000:Q3	8908.70	ND	8862.25	ND
2000:Q4	8969.70	ND	8933.11	ND
2001:Q1	9013.62	ND	9019.18	ND
2001:Q2	9005.19	ND	9035.45	ND
2001:Q3	8967.50	ND	9033.26	ND

## Chart 8

### Outlook for Business and Household Spending

#### Top-left panel

#### Real Equipment and Software Investment

(Percent change, annual rate)

	2001	2002		2003
	Q4	H1	H2	
1. Equip. & software	.1	-4.9	6.0	12.0
2. Info. technology	1.4	4.8	13.4	23.9
3. Computers	30.2	20.2	33.2	49.0
4. Software	6.7	6.3	10.0	17.7
5. Comm. equip.	-28.9	-12.5	4.0	17.3
6. Other (ex. trans. equip)	-8.0	-4.2	-.6	4.8

Percent changes are calculated from final quarter of preceding period to final quarter of period indicated.

## Top-right panel

### Real Computer Shipments

Real Computer Shipments.\* Data plotted as a curve. The period covered is from the start of 2000 through December 2001. Data are three-month percent changes. A horizontal line is drawn at 0 percent. The series starts in 2000 at about 13 percent and decreases to about 6 percent by midyear. At the start of 2001, it is about 1 percent and decreases to about negative 13 percent by midyear. In December 2001, it increases to around 9 percent, down from about 17 in the previous month.

\*Includes storage devices and other peripherals. Deflated by PPI for computers. [Return to text](#)

## Middle-left panel

### Semiconductor Production

Index, 1992=100

	Production
Jan 2000	1506.91
Feb 2000	1578.33
Mar 2000	1685.27
Apr 2000	1774.62
May 2000	1855.74
Jun 2000	1910.11
Jul 2000	1950.11
Aug 2000	1967.27
Sep 2000	1983.27
Oct 2000	1999.50
Nov 2000	2024.05
Dec 2000	2035.15
Jan 2001	1960.18
Feb 2001	1934.99
Mar 2001	1901.20
Apr 2001	1823.57
May 2001	1775.39
Jun 2001	1706.22
Jul 2001	1655.29
Aug 2001	1650.88
Sep 2001	1676.91
Oct 2001	1714.39
Nov 2001	1723.27
Dec 2001	1746.63

## Middle-right panel

### Capacity Utilization Rate

**Manufacturing**

Percent; 81.1 is 1967-2000 average

	<b>CU Rate</b>	<b>Forecast</b>
1989:Q1	85.10	ND
1989:Q2	84.41	ND
1989:Q3	82.93	ND
1989:Q4	82.14	ND
1990:Q1	82.29	ND
1990:Q2	81.86	ND
1990:Q3	81.60	ND
1990:Q4	79.86	ND
1991:Q1	77.46	ND
1991:Q2	77.34	ND
1991:Q3	78.47	ND
1991:Q4	78.49	ND
1992:Q1	78.48	ND
1992:Q2	79.42	ND
1992:Q3	79.77	ND
1992:Q4	80.03	ND
1993:Q1	80.37	ND
1993:Q2	80.30	ND
1993:Q3	80.04	ND
1993:Q4	80.82	ND
1994:Q1	81.32	ND
1994:Q2	82.39	ND
1994:Q3	82.70	ND
1994:Q4	83.52	ND
1995:Q1	83.75	ND
1995:Q2	82.71	ND
1995:Q3	82.14	ND
1995:Q4	81.77	ND
1996:Q1	81.00	ND
1996:Q2	81.56	ND
1996:Q3	81.99	ND
1996:Q4	81.99	ND
1997:Q1	82.47	ND
1997:Q2	82.48	ND
1997:Q3	82.77	ND
1997:Q4	82.92	ND
1998:Q1	82.51	ND
1998:Q2	81.57	ND
1998:Q3	80.86	ND
1998:Q4	80.72	ND
1999:Q1	80.51	ND
1999:Q2	80.37	ND
1999:Q3	80.50	ND

	<b>CU Rate</b>	<b>Forecast</b>
1999:Q4	80.95	ND
2000:Q1	81.22	ND
2000:Q2	81.59	ND
2000:Q3	80.72	ND
2000:Q4	79.13	ND
2001:Q1	77.15	ND
2001:Q2	75.60	ND
2001:Q3	74.46	ND
2001:Q4	72.94	72.94
2002:Q1	ND	72.48
2002:Q2	ND	72.72
2002:Q3	ND	73.29
2002:Q4	ND	73.93
2003:Q1	ND	74.59
2003:Q2	ND	75.21
2003:Q3	ND	75.84
2003:Q4	ND	76.47

### Bottom-left panel

### Household Net Worth and PCE

Ratio

	<b>Consumer outlays to DPI</b>	<b>Net worth to DPI</b>
1980:Q1	87.60	4.33
1980:Q2	87.18	4.48
1980:Q3	87.45	4.54
1980:Q4	86.92	4.52
1981:Q1	87.06	4.49
1981:Q2	87.53	4.55
1981:Q3	86.06	4.38
1981:Q4	85.38	4.43
1982:Q1	86.07	4.45
1982:Q2	85.81	4.43
1982:Q3	86.19	4.45
1982:Q4	87.47	4.50
1983:Q1	87.70	4.58
1983:Q2	88.91	4.63
1983:Q3	88.70	4.54
1983:Q4	88.33	4.42
1984:Q1	87.25	4.31
1984:Q2	86.75	4.25
1984:Q3	85.79	4.26
1984:Q4	86.35	4.29
1985:Q1	87.62	4.39

	<b>Consumer outlays to DPI</b>	<b>Net worth to DPI</b>
1985:Q2	86.79	4.38
1985:Q3	88.83	4.41
1985:Q4	88.29	4.51
1986:Q1	87.93	4.61
1986:Q2	88.00	4.68
1986:Q3	89.17	4.63
1986:Q4	89.84	4.75
1987:Q1	88.87	4.86
1987:Q2	90.89	4.95
1987:Q3	90.14	4.92
1987:Q4	89.18	4.69
1988:Q1	89.50	4.73
1988:Q2	89.45	4.75
1988:Q3	89.37	4.72
1988:Q4	89.49	4.73
1989:Q1	88.86	4.75
1989:Q2	89.45	4.83
1989:Q3	90.02	4.92
1989:Q4	89.87	4.91
1990:Q1	89.29	4.78
1990:Q2	89.10	4.77
1990:Q3	89.33	4.60
1990:Q4	89.23	4.68
1991:Q1	88.76	4.79
1991:Q2	88.81	4.73
1991:Q3	88.88	4.75
1991:Q4	88.54	4.81
1992:Q1	88.44	4.70
1992:Q2	88.29	4.65
1992:Q3	88.91	4.66
1992:Q4	88.51	4.66
1993:Q1	90.23	4.78
1993:Q2	89.79	4.72
1993:Q3	90.70	4.76
1993:Q4	90.33	4.73
1994:Q1	91.94	4.73
1994:Q2	91.20	4.66
1994:Q3	91.21	4.66
1994:Q4	90.90	4.62
1995:Q1	90.86	4.69
1995:Q2	91.84	4.79
1995:Q3	91.93	4.88
1995:Q4	91.89	4.94
1996:Q1	92.04	4.99

	Consumer outlays to DPI	Net worth to DPI
1996:Q2	92.57	5.04
1996:Q3	92.02	5.02
1996:Q4	92.36	5.14
1997:Q1	92.70	5.11
1997:Q2	92.35	5.35
1997:Q3	92.94	5.47
1997:Q4	92.60	5.50
1998:Q1	91.95	5.68
1998:Q2	91.98	5.67
1998:Q3	92.01	5.38
1998:Q4	92.60	5.71
1999:Q1	93.39	5.79
1999:Q2	94.22	5.93
1999:Q3	94.75	5.78
1999:Q4	95.37	6.21
2000:Q1	95.96	6.24
2000:Q2	95.44	6.07
2000:Q3	95.82	6.01
2000:Q4	95.57	5.75
2001:Q1	95.65	5.44
2001:Q2	95.67	5.54
2001:Q3	93.15	5.12

**Bottom-right panel**  
**Real DPI and PCE Growth**

Percent

	DPI	DPI-Forecast	Effect of tax law changes on DPI	PCE	PCE-Forecast
2000	4.01	ND	ND	4.23	ND
2001	2.24	ND	2.46	2.80	ND
2002	ND	3.30	4.20	ND	2.73
2003	ND	2.27	ND	ND	3.18

**Chart 9**  
**Outlook for Inflation**

**Top-left panel**  
**Core PCE Price Index**

Four-quarter percent change

	Index	Forecast
1999	1.46	ND
2000	1.93	ND

	<b>Index</b>	<b>Forecast</b>
2001	1.59	ND
2002	ND	1.32
2003	ND	1.09

### **Top-right panel**

#### **Energy Input Prices**

Energy Input Prices.\* Data plotted as a curve. The period covered is from the start of 2000 through December 2001. Data are index values, with 1996 = 100. The series starts at about 110 at the start of 2000 and increases to just above 130 by midyear. It increases to just below 150 at the start of 2001 and by midyear declines to about 125. By December 2001, it is about 105.

\*Weighted input price to nonfinancial corporations, excluding energy producers. [Return to text](#)

### **Middle-left panel**

#### **GDP Gap**

Billions of 1996 dollars

	<b>Potential GDP</b>	<b>Potential GDP-Forecast</b>	<b>Actual GDP</b>	<b>Actual GDP-Forecast</b>
1995:Q1	7519.80	ND	7488.69	ND
1995:Q2	7562.80	ND	7503.30	ND
1995:Q3	7620.74	ND	7561.35	ND
1995:Q4	7679.13	ND	7621.90	ND
1996:Q1	7740.96	ND	7676.44	ND
1996:Q2	7803.29	ND	7802.94	ND
1996:Q3	7866.13	ND	7841.92	ND
1996:Q4	7929.47	ND	7931.31	ND
1997:Q1	7999.11	ND	8016.39	ND
1997:Q2	8069.38	ND	8131.95	ND
1997:Q3	8140.25	ND	8216.56	ND
1997:Q4	8211.75	ND	8272.90	ND
1998:Q1	8291.27	ND	8396.35	ND
1998:Q2	8371.56	ND	8442.91	ND
1998:Q3	8452.63	ND	8528.47	ND
1998:Q4	8534.48	ND	8667.85	ND
1999:Q1	8616.29	ND	8733.48	ND
1999:Q2	8698.89	ND	8771.22	ND
1999:Q3	8782.28	ND	8871.46	ND
1999:Q4	8866.47	ND	9049.92	ND
2000:Q1	8948.23	ND	9102.50	ND
2000:Q2	9030.75	ND	9229.39	ND
2000:Q3	9114.03	ND	9260.09	ND
2000:Q4	9198.07	ND	9303.92	ND
2001:Q1	9259.99	ND	9334.47	ND
2001:Q2	9322.33	ND	9341.74	ND

	Potential GDP	Potential GDP-Forecast	Actual GDP	Actual GDP-Forecast
2001:Q3	9385.08	ND	9310.41	ND
2001:Q4	9448.26	9448.26	9304.05	9304.05
2002:Q1	ND	9506.07	ND	9339.48
2002:Q2	ND	9564.24	ND	9397.19
2002:Q3	ND	9622.76	ND	9478.25
2002:Q4	ND	9681.63	ND	9555.24
2003:Q1	ND	9756.76	ND	9635.41
2003:Q2	ND	9832.46	ND	9718.73
2003:Q3	ND	9908.75	ND	9805.26
2003:Q4	ND	9985.64	ND	9895.29

## Middle-right panel

### Unit Labor Costs

#### Based on actual productivity

Four-quarter percent change

	Unit Labor Costs	Forecast
1999	1.50	ND
2000	5.00	ND
2001	2.44	ND
2002	ND	1.32
2003	ND	0.99

#### Based on structural productivity

Four-quarter percent change

	Unit Labor Costs	Forecast
1999:Q1	1.80	ND
1999:Q2	1.35	ND
1999:Q3	1.41	ND
1999:Q4	1.63	ND
2000:Q1	2.41	ND
2000:Q2	3.32	ND
2000:Q3	3.89	ND
2000:Q4	4.89	ND
2001:Q1	4.61	ND
2001:Q2	4.00	ND
2001:Q3	3.25	ND
2001:Q4	1.84	1.84
2002:Q1	ND	1.22
2002:Q2	ND	0.99
2002:Q3	ND	1.01
2002:Q4	ND	1.34
2003:Q1	ND	1.53
2003:Q2	ND	1.37

	<b>Unit Labor Costs</b>	<b>Forecast</b>
2003:Q3	ND	1.19
2003:Q4	ND	1.03

**Bottom panel**  
**Profit Share**

Percent

	<b>Nonfinancial Corporations (Economic profits)</b>	<b>Forecast</b>
1980:Q1	9.26	ND
1980:Q2	7.70	ND
1980:Q3	8.17	ND
1980:Q4	8.94	ND
1981:Q1	9.30	ND
1981:Q2	9.12	ND
1981:Q3	9.93	ND
1981:Q4	8.77	ND
1982:Q1	8.03	ND
1982:Q2	8.34	ND
1982:Q3	8.21	ND
1982:Q4	7.38	ND
1983:Q1	8.27	ND
1983:Q2	9.42	ND
1983:Q3	10.10	ND
1983:Q4	10.27	ND
1984:Q1	11.27	ND
1984:Q2	11.32	ND
1984:Q3	10.85	ND
1984:Q4	10.84	ND
1985:Q1	10.61	ND
1985:Q2	10.28	ND
1985:Q3	10.97	ND
1985:Q4	9.99	ND
1986:Q1	9.28	ND
1986:Q2	8.80	ND
1986:Q3	8.45	ND
1986:Q4	8.40	ND
1987:Q1	8.84	ND
1987:Q2	9.49	ND
1987:Q3	10.11	ND
1987:Q4	9.79	ND
1988:Q1	10.23	ND
1988:Q2	10.17	ND
1988:Q3	10.12	ND
1988:Q4	10.49	ND

	<b>Nonfinancial Corporations (Economic profits)</b>	<b>Forecast</b>
1989:Q1	9.40	ND
1989:Q2	9.07	ND
1989:Q3	8.87	ND
1989:Q4	8.35	ND
1990:Q1	8.49	ND
1990:Q2	8.90	ND
1990:Q3	8.15	ND
1990:Q4	7.87	ND
1991:Q1	8.12	ND
1991:Q2	8.06	ND
1991:Q3	7.98	ND
1991:Q4	7.94	ND
1992:Q1	8.32	ND
1992:Q2	8.57	ND
1992:Q3	8.00	ND
1992:Q4	9.02	ND
1993:Q1	8.56	ND
1993:Q2	9.35	ND
1993:Q3	9.32	ND
1993:Q4	10.36	ND
1994:Q1	9.83	ND
1994:Q2	10.78	ND
1994:Q3	11.00	ND
1994:Q4	11.42	ND
1995:Q1	10.86	ND
1995:Q2	10.86	ND
1995:Q3	11.57	ND
1995:Q4	11.55	ND
1996:Q1	12.11	ND
1996:Q2	12.20	ND
1996:Q3	12.21	ND
1996:Q4	12.43	ND
1997:Q1	12.38	ND
1997:Q2	12.41	ND
1997:Q3	12.81	ND
1997:Q4	12.50	ND
1998:Q1	11.45	ND
1998:Q2	11.19	ND
1998:Q3	11.52	ND
1998:Q4	10.94	ND
1999:Q1	11.23	ND
1999:Q2	10.72	ND
1999:Q3	10.12	ND
1999:Q4	10.33	ND

	<b>Nonfinancial Corporations (Economic profits)</b>	<b>Forecast</b>
2000:Q1	10.52	ND
2000:Q2	10.76	ND
2000:Q3	10.42	ND
2000:Q4	9.21	ND
2001:Q1	8.46	ND
2001:Q2	8.13	ND
2001:Q3	7.49	7.49
2001:Q4	ND	6.87
2002:Q1	ND	7.00
2002:Q2	ND	7.18
2002:Q3	ND	7.30
2002:Q4	ND	7.30
2003:Q1	ND	7.30
2003:Q2	ND	7.33
2003:Q3	ND	7.38
2003:Q4	ND	7.47

Note: As shown in the chart, shaded bars denote the recession periods of 1980:Q1-1980:Q3, 1981:Q3-1982:Q4, and 1990:Q3-1991:Q1, as defined by the National Bureau of Economic Research (NBER), and a vertical line indicates the NBER peak in March 2001 for the recession beginning in 2001:Q1.

## **Chart 10**

### **Financial Developments (Weekly data)**

Chart 10 is a three-by-two array of panels, including graphs for nominal exchange rates, three-month eurocurrency futures rates, three-month interest rates, ten-year interest rates, broad stock price indexes, and expected 2002 earnings.

#### **Top-left panel**

##### **Nominal Exchange Rates**

Nominal Exchange Rates, Foreign currency/U.S. dollar, for 2000 through early 2002. The range of the y-axis is [90, 140]; index, Jan. 3, 2000 = 100. The three series are the euro, the yen, and a basket of "major currencies," where the last is the trade-weighted average against major currencies. The major currencies index starts at 100 and then moves generally upward to about 118 by early 2002. The euro begins at 100, increases to about 120 by late 2000, drops to about 110 by the end of 2000, increases to about 120 by mid-2001, drops to about 108 a few months later, and then climbs to about 116 by early 2002. The yen starts at 100, fluctuates around 105 during most of 2000 and then rises to slightly over 130 by early 2002.

#### **Top-right panel**

##### **Three-Month Eurocurrency Futures Rates**

Three-Month Eurocurrency Futures Rates for the U.S. dollar, the euro, and the yen, as of January 28, 2002, for 2002-2003. The range of the y-axis is [0, 6]; unit is percent. The dollar begins at about 2 percent and rises smoothly to nearly 5½ percent by the end of the period. The euro begins at just under 3½ percent and increases to nearly 5 percent by the end of 2003. The yen begins at just above 0 percent and rises slowly to about ½ percent by the end of 2003.

### **Middle-left panel**

#### **Three-Month Interest Rates**

Three-Month Interest Rates for the United States, the Euro Area, and Japan, for 2000 through early 2002. The range of the y-axis is [0, 8]; unit is percent. The U.S. rate starts at about 6 percent, rises to about 6¾ percent by mid-2000, remains there through the end of 2000, and then drops to just under 2 percent by early 2002. The Euro Area rate starts at around 3½ percent, gradually increases to around 5 percent by end-2000, and then gradually declines to just below 4 percent by early 2002. The Japanese rate remains near 0 percent throughout, with a slight rise in late 2000 followed by a slight decline in early 2001.

### **Middle-right panel**

#### **Ten-Year Interest Rates**

Ten-Year Interest Rates for the United States, Germany, and Japan, for 2000 through early 2002. The range of the y-axis is [0, 8]; unit is percent. The U.S. rate starts at about 6½ percent and gradually drops to about 5 percent by early 2002. The German rate starts at about 5½ percent and gradually declines to about 5 percent by early 2002. The Japanese rate begins and remains at just under 2 percent throughout the entire period, with a slight trend upward from mid-2001.

### **Bottom-left panel**

#### **Broad Stock Price Indexes**

Broad Stock Price Indexes for the S&P 500, the MSCI Euro Area, and the TOPIX, for 2000 through early 2002. The range of the y-axis is [50, 120]; index, Jan. 3, 2000 = 100. The S&P 500 starts at 100 and, with modest volatility, declines to just below 80 by early 2002. The MSCI Euro Area starts at 100, and, with modest volatility, increases to around 115 by early 2000 and then declines to about 80 by early 2002. The TOPIX starts at 100, and, with modest volatility, declines to about 60 by early 2002.

### **Bottom-right panel**

#### **Expected 2002 Earnings**

Expected 2002 Earnings\* for 2001 through early 2002. The range of the y-axis is [80, 110]; index, July 2001 = 100. The S&P 500 starts at 100 and declines to about 86 by early 2002. The MSCI Euro Area starts at 100 and declines to just above 80 by early 2002.

\*Average of equity analysts' earnings forecasts for 2002 company fiscal years from I/B/E/S mid-month surveys. [Return to text](#)

## **Chart 11**

### **U.S. Trade**

Chart 11 includes seven panels of graphs: exports by region, imports by region, the WTI spot price, import prices, determinants of core exports, determinants of core imports, and the contribution of exports and imports to U.S. GDP growth.

### **Top-left panel**

#### **Exports by Region**

Exports by Region--to Canada, Europe, Latin America, Developing Asia, and Japan--for 1999 through October/November 2001. Each series is plotted as a line graph, with the October/November

2001 average shown as a dot. The range of the y-axis is [0, 200]; unit is \$ billions, SAAR. U.S. exports to Canada start at about \$160 billion, rise to about \$175 billion in early 2000, and then decline to about \$165 billion by October/November 2001. U.S. exports to Europe start at about \$160 billion, rise to about \$180 billion in early 2001, and then decline to about \$155 billion by October/November 2001. U.S. exports to Latin America start at about \$140 billion, rise to about \$170 billion in mid-2000, and then decline to about \$155 billion by October/November 2001. U.S. exports to Developing Asia (which includes Korea, Hong Kong, Singapore, Taiwan, and China) start at about \$75 billion, rise to just over \$100 billion in mid-2000, and then decline to about \$80 billion by October/November 2001. U.S. exports to Japan start at about \$50 billion, gradually rise to about \$60 billion by late 2000, and then decline to just under \$50 billion in October/November 2001.

### **Top-right panel**

#### **Imports by Region**

Imports by Region--from Europe, Canada, Developing Asia, Latin America, and Japan--for 1999 through October/November 2001. Each series is plotted as a line graph, with the October/November 2001 average shown as a dot. The range of the y-axis is [100, 300]; unit is \$ billions, SAAR. U.S. imports from Europe start at about \$200 billion, rise to about \$260 billion in early 2001, and then decline to about \$240 billion by October/November 2001. U.S. imports from Canada start at about \$190 billion, rise to about \$235 billion in late 2000, and then decline to about \$210 billion by October/November 2001. U.S. imports from Developing Asia (which includes Korea, Hong Kong, Singapore, Taiwan, and China) start at about \$165 billion, rise to about \$220 billion in mid-2000, and then decline to about \$210 billion by October/November 2001. U.S. imports from Latin America start at about \$150 billion, rise to about \$210 billion in mid-2000, and then decline to just under \$200 billion by October/November 2001. U.S. imports from Japan start at about \$125 billion, rise to about \$150 billion in mid-2000, and then decline to about \$125 billion by October/November 2001.

### **Middle-left panel**

#### **WTI Spot Price**

WTI Spot Price for 1999 through early 2002 (actual), along with the June Greenbook WTI forecast from mid-2001 through the end of 2002 and the current Greenbook WTI forecast from early 2002 through the end of 2003. The range of the y-axis is [5, 35]; unit is dollars per barrel. Actual oil prices start at around \$13/barrel at the beginning of 1999, increase to about \$33/barrel near the end of 2000, and drop to about \$19/barrel by January 2002. The June Greenbook WTI forecast starts at about \$28/barrel in mid-2001 and decreases to around \$25/barrel by the end of 2002. The current (January) Greenbook WTI forecast increases slightly from about \$19/barrel in early 2002 to just over \$20/barrel by the end of 2003.

### **Middle-right panel**

#### **Import Prices**

Import Prices of core goods and of total goods and services. The graph shows the actual changes in import prices from 1999 through late 2001 and the forecast changes in import prices from late 2001 through end-2003. The range of the y-axis is [-20, 8]; unit is percent change, SAAR. The change in import prices of core goods (which exclude computers, semiconductors, and oil) starts at just below 0 percent, dips to about -1 percent by mid-1999, rises to about 1 percent by late 1999, stays at between 1-2 percent through early 2001, then drops to about -6 percent in late 2001. The forecast then shows the change in import prices of core goods rising to about 2 percent by mid-2002 and staying at about 2 percent through end-2003. The change in import prices of total goods and services starts at about -2 percent, rises to about 5 percent by mid-1999, stays at about 5-6 percent through

early 2000, then drops to around -18 percent in late 2001. The forecast then shows the change in import prices of total goods and services rising to about 2 percent by end-2001, dipping to about -4 percent by early 2002, rising to about 1 percent by mid-2002, and staying at about 1 percent through end-2003.

### Bottom-left panel

#### Determinants of Core Exports

Determinants of Core Exports\* as a bar chart for 2001 (actual), 2002 (projected), and 2003 (projected). The range of the y-axis is [-12, 12]; unit is percent change, Q4/Q4. Approximate values for the three years are as follows.

Percent change, Q4/Q4

	2001	2002	2003
Core export growth (red)	-9%	marginally positive	5.5%
Contribution of foreign GDP growth (blue)	marginally negative	2%	just under 4%
Industrial output gap growth (yellow)	-2%	-2.5%	0%
Contribution of relative prices (green)	-1%	-2%	-1.5%

\*Excludes computers and semiconductors. [Return to text](#)

### Bottom-center panel

#### Determinants of Core Imports

Determinants of Core Imports\* as a bar chart for 2001 (actual), 2002 (projected), and 2003 (projected). The range of the y-axis is [-12, 12]; unit is percent change, Q4/Q4. Approximate values for the three years are as follows.

Percent change, Q4/Q4

	2001	2002	2003
Core import growth (red)	-5%	9%	9.5%
Contribution of GDP growth (blue)	0.5%	4%	6.5%
Contribution of relative prices (green)	3.5%	3.5%	0.5%

\*Excludes computers, semiconductors, and oil. [Return to text](#)

### Bottom-right panel

#### Contribution to U.S. GDP Growth

Contribution to U.S. GDP Growth by exports and imports as a bar chart for 2001 (actual), 2002 (projected), and 2003 (projected) on a semi-annual basis. The range of the y-axis is [-3, 3]; unit is percentage points. Approximate values for the six half-year periods are as follows.

Percentage points

	2001		2002		2003	
	H1	H2	H1	H2	H1	H2
Exports (red)	-0.75	-1.6	0.2	0.4	0.6	0.9
Imports (blue)	1	1.2	-1.2	-1.1	-1.3	-1.3

## Chart 12

### Foreign Outlook

Chart 12 is a three-by-two array of panels, including graphs of real GDP, foreign real GDP, and industrial production, a table of real GDP growth for industrial countries, a graph of exports, and a table of real GDP growth for Developing Asia.

#### Top-left panel

##### Real GDP

Real GDP (percent change, SAAR<sup>\*</sup>), U.S. and total foreign,<sup>\*\*</sup> as a bar chart for 2001:H1 (actual), 2001:H2 (projected), 2002 (projected), and 2003 (projected). The range of the y-axis is [-3,5]. Approximate values for the four periods are as follows.

Percent change, SAAR

	2001		2002	2003
	H1	H2		
United States (red)	0.75	-0.75	2.5	3.5
Total foreign (blue)	slightly negative	-0.4	2.0	3.25

\*Years are Q4/Q4; half years are Q2/Q4 or Q4/Q2. [Return to text](#)

\*\*Total foreign GDP growth is calculated using U.S. total export weights. [Return to text](#)

#### Top-right panel

##### Foreign Real GDP

Foreign Real GDP<sup>\*</sup> (percent change, Q4/Q4), for industrial countries, Asia, and Latin America, as a bar chart for 2001 (projected), 2002 (projected), and 2003 (projected). The range of the y-axis is [-3,5]. Approximate values for the three years are as follows.

Percent change, Q4/Q4

	2001	2002	2003
Industrial countries (red)	0.3	1.7	2.8
Asia (blue)	-0.8	2.8	4.8
Latin America (green)	-1.0	1.8	3.2

\*Foreign real GDP growth is calculated using U.S. total export weights. [Return to text](#)

#### Middle-left panel

##### Industrial Production

Industrial Production for 1999-2001 for Canada, Germany, and Japan. The range of the y-axis is [90, 115]; index, Jan. 1999 = 100, SA. Industrial production for all three countries starts at 100 at the beginning of the period, rises to between 105 and 110 by the end of 2000, and then declines to just over 100 for Canada and Germany and to about 94 for Japan by the end of the period.

## Middle-right panel

### Real GDP

Percent change, SAAR\*

	2001	2002		2003
	H2	H1	H2	
1. Industrial countries**	-0.2	0.9	2.5	2.9
<i>of which:</i>				
2. Japan	-1.9	-1.4	-0.2	1.1
3. Euro Area	-0.1	0.6	2.5	2.8
4. United Kingdom	1.2	1.9	2.5	2.7
5. Canada	-0.5	1.4	3.1	3.4

\*Years are Q4/Q4; half years are Q2/Q4 or Q4/Q2. [Return to table](#)

\*\*Calculations use U.S. total export weights. [Return to table](#)

## Bottom-left panel

### Exports

Exports\* for 1999-2001 for China, Korea, and Singapore. The range of the y-axis is [90, 170]; index, Jan. 1999 = 100, SA. Industrial production for all three countries starts at 100 at the beginning of the period. The indexes for Korea and Singapore rise to about 140 by late 2000 and then decline to about 110 by the end of the period. With some volatility, the index for China rises from 100 at the beginning of the period to about 165 by early 2001 and then declines to about 145 by the end of the period.

\*Three-month moving average. [Return to text](#)

## Bottom-right panel

### Real GDP

Percent change, SAAR\*

	2001	2002		2003
	H2	H1	H2	
1. Developing Asia**	0.2	1.9	3.8	4.8
<i>of which:</i>				
2. China	7.1	7.0	7.7	7.5
3. Korea	2.5	1.2	2.7	4.6
4. Taiwan	-2.1	1.2	3.5	4.5
5. Singapore	-6.2	1.2	3.5	4.7
6. Hong Kong	0.0	1.0	3.5	4.5

\*Years are Q4/Q4; half years are Q2/Q4 or Q4/Q2. [Return to table](#)

\*\*Calculations use U.S. total export weights. [Return to table](#)

## Japan

Chart 13 highlights the problems confronting Japan and the scope for macroeconomic policies to address those problems. The chart includes seven panels of graphs: real GDP, consumer prices, deposits at the Bank of Japan, fiscal impulse, bank credit, corporate bankruptcies, and average bank financial strength.

### Top-left panel

#### Real GDP

Real GDP (percent change, SAAR<sup>\*</sup>) plots Japanese real GDP growth, along with the contributions of domestic demand and net exports to Japanese real GDP growth, as a bar chart for 1999 (actual), 2000 (actual), 2001:H1 (actual), 2001:H2 (projected), 2002:H1 (projected), 2002:H2 (projected), and 2003 (projected). The range of the y-axis is [-3, 3]. Approximate values for the seven periods are as follows.

Percent change, SAAR

	1999	2000	2001		2002		2003
			H1	H2	H1	H2	
GDP (red)	0.6	2.3	-0.4	-1.9	-1.4	-0.2	1.1
Domestic demand contribution (blue)	0.7	2.2	0.5	-1.9	-1.9	-0.7	0.7
Net export contribution (green)	-0.1	0.1	-0.9	0.0	0.5	0.5	0.4

\*Years are Q4/Q4; half years are Q2/Q4 or Q4/Q2. [Return to text](#)

### Top-right panel

#### Consumer Prices

Consumer Prices for 1999-2001 (actual) and 2002-2003 (forecast) for Japan. The range of the y-axis is [-3.0, 1.0]; unit is 12-month percent change. The 12-month percent change for consumer prices starts at just above 0 percent at the beginning of the period and falls to about -1.8 percent by beginning 2002. In the forecast period, it falls further to about -2.0 percent by mid-2002, then rises to about -1.2 percent by end-2003. Except for the beginning data point and one spike to about 0.4 percent in late 1999, the graph shows consumer prices in deflation for the entire period.

### Middle-left panel

#### Deposits at Bank of Japan

Deposits at Bank of Japan<sup>\*</sup> on a daily basis for 2001 and January 2002, The range of the y-axis is [0, 20]; unit is trillions of yen. Deposits are typically between 4-6 trillion yen for January-September; between 8-10 trillion for September-November, with two sharp spikes to over 12 trillion yen; and then between 15-16 trillion yen for January 2002.

\*Defined as current account balances at the Bank of Japan. [Return to text](#)

### Middle-right panel

#### Fiscal Impulse

Fiscal Impulse graphs the change in Japan's structural deficit as a bar chart for 1999 (actual), 2000 (actual), 2001 (actual), 2002 (projected), and 2003 (projected). The range of the y-axis is [-1, 2]; unit is percent of GDP. Positive entries indicate fiscal expansion and negative entries indicate contraction.

Approximate values for the five periods are as follows.

Percent of GDP

1999	2000	2001	2002	2003
1.4	-0.2	-0.2	-0.3	-0.5

### Bottom-left panel

#### Bank Credit

Bank Credit for 1999-2001 for Japan. The range of the y-axis is [-7, 1]; unit is 12-month percent change. The graph shows that bank credit contracted for the entire period. The 12-month percent change for bank credit starts at about -4½ percent at the beginning of the period, falls to about -6½ percent by mid-1999, remains there through early 2000, and then eases to about -4 percent from mid-2000 through end-2001.

### Bottom-center panel

#### Corporate Bankruptcies

Corporate Bankruptcies on a monthly basis for 1999-2001 for Japan. The range of the y-axis is [750,2000]; unit is number of cases. The graph shows corporate bankruptcies on the rise, with moderate volatility, for the entire period. The number of cases rose from just under 1000 at the beginning of the period to just over 1500 by end-2001, with a spike up to about 1800 near the end of 2001.

### Bottom-right panel

#### Average Bank Financial Strength

Average Bank Financial Strength graphs, as a bar chart for 1997-2001, Moody's average financial strength rating of the big four Japanese banks. The range of the y-axis is [E, A]. The graph show the steady downgrading by Moody's of these banks over this period. Values for the five periods are as follows.

1997	1998	1999	2000	2001
C	D+	D	E+	E+

## Chart 14

### Argentina

Chart 14 is a three-by-two array of panels focusing on the acute crisis taking place in Argentina and its effects on Brazil and Mexico. The chart includes graphs of nominal exchange rates and EMBI+ yield spreads over U.S. treasuries, a table on real GDP growth, a list of policy issues, and graphs of simulations of real GDP growth and of inflation.

### Top-left panel

#### Nominal Exchange Rates

Nominal Exchange Rates, Foreign currency/U.S. dollar, for Argentina, Brazil, and Mexico, on a weekly basis from 2000 through early 2002. The exchange rate for Argentina is a floating rate. The range of the y-axis is [80, 200]; index, January 3, 2000 = 100. The indexes for all the currencies start

at 100 at the beginning of 2000. The index for Argentina remains flat at 100 until the beginning of 2002, when the country ended its one-to-one peg to the U.S. dollar and the currency spiked to about 180. The index for Brazil rises from 100 at the beginning of the period to about 155 by late 2001 and then falls to just under 140 by the end of the period. The index for Mexico remains around 100 for the entire period.

### Top-right panel

#### EMBI+ Yield Spreads over U.S. Treasuries

EMBI+ Yield Spreads over U.S. Treasuries on a weekly basis for 2000 through early 2002 for Argentina, Brazil, and Mexico. The range of the y-axis is [0, 60]; unit is percentage points. The spreads for Argentina range from about 7-10 percentage points from the beginning of the period through mid-2001, rise steeply to over 50 percentage points by end-2001, and then decline a bit to just over 40 percentage points by the end of the period. There are two breaks in the series for Argentina at the end of 2001, reflecting reweightings of the index on December 4 and December 31, 2001. The spreads for Brazil range from about 8-11 percentage points for the entire period. The spreads for Mexico start at about 4 percentage points and trend slightly downward to about 2 percentage points by the end of the period.

### Middle-left panel

#### Real GDP

Percent change, SAAR\*

	2001	2002		2003
	H2	H1	H2	
1. Latin America**	-1.1	0.9	2.7	3.3
<i>of which:</i>				
2. Argentina	-15.0	-8.5	-4.0	0.2
3. Brazil	0.2	1.5	2.7	2.6
4. Mexico	-0.9	1.1	3.1	3.7

\*Years are Q4/Q4; half years are Q2/Q4 or Q4/Q2. [Return to table](#)

\*\*Calculations use U.S. total export weights. [Return to table](#)

### Middle-right panel

#### Policy Issues

A list of economic problems that need to be addressed within Argentina, in addition to the resolution of its international debt obligations.

- Fiscal elements
  - Tax system
  - Federal/provincial
  - Public employment
- Banking system
- Exchange rate regime and monetary policy

### Bottom panel

#### Simulation

## Bottom-left panel

### Real GDP

Real GDP for baseline and alternative simulations for Brazil and Mexico for 2001:H2 through 2003. The range of the y-axis is [95.0, 110.0]; index, 2001:H2 = 100, SAAR. The baseline simulation for Brazil starts at 100 and rises to nearly 105 by the end of the period. The alternative simulation for Brazil starts at 100, declines to about 96 by late 2002, and then rises to just over 100 by the end of the period. The baseline simulation for Mexico starts at 100 and rises to about 106 by the end of the period. The alternative simulation for Mexico starts at 100, dips to about 97.5 by late 2002, and then rises to about 105 by the end of the period.

## Bottom-right panel

### Inflation

Inflation for baseline and alternative simulations for Brazil and Mexico for 2002-2003. The range of the y-axis is [0, 10]; unit is percent. The baseline simulation for Brazil is nearly flat at just over 6 percent for the entire period. The alternative simulation for Brazil starts at about 9 percent and declines to about 7.5 percent by the end of the period. The baseline simulation for Mexico starts at just under 4 percent, rises to about 5 percent by late 2002, and then gradually declines to about 4 percent by the end of the period. The alternative simulation for Mexico starts at about 8 percent and declines to about 6 percent by the end of the period.

## Chart 15

### ECONOMIC PROJECTIONS FOR 2002

#### Top panel

1/29/02

	FOMC		Staff
	Range	Central Tendency	
<b>Percentage change, Q4 to Q4</b>			
<b>Nominal GDP</b>	<b>3¼ to 5½</b>	<b>4 to 4½</b>	<b>4.3</b>
(July 2001)	(4¾ to 6)	(5 to 5½)	(5.3)
<b>Real GDP</b>	<b>2 to 3½</b>	<b>2½ to 3</b>	<b>2.7</b>
(July 2001)	(3 to 3½)	(3 to 3¼)	(3.5)
<b>PCE Prices</b>	<b>1 to 2</b>	<b>about 1½</b>	<b>1.3</b>
(July 2001)	(1½ to 3)	(1¾ to 2½)	(1.7)
<b>Average level, Q4, percent</b>			
<b>Unemployment rate</b>	<b>5¾ to 6½</b>	<b>6 to 6¼</b>	<b>6</b>
(July 2001)	(4¾ to 5½)	(4¾ to 5¼)	(5.6)

Central tendencies calculated by dropping high and low three from ranges.

▲ [Return to top](#)

