

## Meeting of the Federal Open Market Committee June 26-27, 2001 Presentation Materials -- Text Version

[Presentation Materials \(2.01 MB PDF\)](#)

### APPENDIX 1

#### Charts used by Mr. Kos.

##### Page 1

###### Top panel

**Title:** 3-Month Deposit Rates and Rates Implied by Traded Forward Rate Agreements

**Series:** U.S. dollar Libor fixing, 3M forward, and 9M forward rates

**Horizon:** March 1, 2001 through June 25, 2001

**Description:** U.S. forward rates declined steadily over the period shown.

###### Middle panel

**Title:** Continuation of Top Panel

**Series:** Euro Libor fixing, 3M forward, and 9M forward rates

**Horizon:** March 1, 2001 through June 25, 2001

**Description:** Euro forward rates each declined over 25 percent over the period shown.

###### Bottom panel

**Title:** Japanese Government Yield Curve

**Series:** The yield curve, including Japanese 3-month, 6-month, and 1-year through 10-year yields

**Horizon:** There are three curves shown for the dates of 3/1/2001, 5/15/2001, and 6/25/2001.

**Description:** From 3/1/2001 to 5/15/2001 the yield curve shifted lower and steepened modestly.

However, since then the curve has shifted lower further as seen at levels on 6/25/2001.

##### Page 2

###### Top panel

**Title:** 2-Year Government Yields minus Central Bank Policy Rates

**Series:** 2-Year government yields minus central bank policy rates for the U.S., Germany, Japan, U.K., and Canada

**Horizon:** September 1, 2000 through June 25, 2001

**Description:** All 2-year government yields minus central bank policy rates finished close to zero basis points by the end of the period shown.

###### Bottom panel

**Title:** 2-Year Swap Rates minus Central Bank Policy Rates

**Series:** 2-year swap rates minus central bank policy rates for the U.S., Euro-area, Japan, U.K., and Canada

**Horizon:** September 1, 2000 through June 25, 2001

**Description:** Euro-area 2-year swap rates minus the central bank policy rate declined significantly over the period shown. The remaining countries' 2-year swap rates minus the central bank policy rates declined modestly toward the end of 2000, however have since gone back to levels as seen in early September 2000.

Policy Rates: US: Federal Funds Rate (O/N), Euro area: Main refinancing rate (2-week), Japan: Overnight Call Rate, U.K.: Base Rate (O/N repo), Canada: Overnight Target (midpoint of bank rate and discount rate)

Source: Bloomberg

## Page 3

### Top panel

**Title:** U.S. Treasury Yields

**Series:** Target federal funds rate, yields on benchmark 2-year, 10- year, and 30-year U.S. Treasury securities

**Horizon:** March 1, 2001 to June 25, 2001

**Description:** The 2-year Treasury note declined modestly as the target federal funds rate decreased over the period shown, whereas the 10-year and 30-year Treasuries increased by roughly 25 basis points.

### Middle panel

**Title:** U.S. Credit Spreads over Treasuries

**Series:** 10-year A1 industrial corporates, 10-year interest rate swaps, and 10-year Fannie Mae benchmark

**Horizon:** March 1, 2001 to June 25, 2001

**Description:** All credit spreads tightened over the period shown.

### Bottom panel

**Title:** High Yield and EMBI+ Spreads over Treasuries

**Series:** Merrill Lynch high yield spread and EMBI+ index spread

**Horizon:** March 1, 2001 to June 25, 2001

**Description:** Both spreads fluctuated over the period shown with the EMBI+ finishing relatively unchanged and the Merrill Lynch High Yield widening by roughly 50 basis points.

## Page 4

### Top panel

**Title:** U.S. Equities

**Series:** Dow Jones Industrial Average, NASDAQ composite index, Russell 2000 index, and S&P 500 index

**Horizon:** April 17, 2001 to June 25, 2001

**Description:** All equity indices had positive returns over the period shown with the NASDAQ composite and Russell 2000 indices increasing the most.

### Middle panel

**Title:** Foreign Equities

**Series:** Nikkei index, CAC 40 index, DAX index, and FTSE 100 index

**Horizon:** April 17, 2001 to June 25, 2001

**Description:** All foreign equity indices declined over the period shown.

### **Bottom panel**

**Title:** Implied Volatility on the S&P 100 Futures

**Series:** VIX index

**Horizon:** April 17, 2001 to June 25, 2001

**Description:** Implied volatility significantly declined over the period shown with the majority of the decline coming directly after the -50 basis points move by the FOMC at the 5/15/2001 meeting (labeled with a tripwire).

## **Page 5**

### **Top panel**

**Title:** Euro-Dollar Exchange Rate

**Series:** Euro currency performance in dollars/euro

**Horizon:** January 1, 1999 to June 25, 2001

**Description:** The dollar significantly appreciated continually over the course of the period shown.

### **Middle panel**

**Title:** Dollar minus Euro Interest Rate Differentials

**Series:** 3-month Libor deposit rate spread, 2-year swap spread, and 10-year swap spread

**Horizon:** January 1, 1999 to June 25, 2001

**Description:** All interest rate differential spreads have declined significantly over the period shown with the 3-month Libor deposit rate spread decreasing the most.

### **Bottom panel**

**Title:** One-Month and Twelve-Month Euro-Dollar Implied Volatilities

**Series:** One-month and twelve-month euro-dollar implied volatilities

**Horizon:** January 1, 1999 to June 25, 2001

**Description:** Implied volatility increased over the majority of the period shown until late 2000 where it has since declined back to levels similar to early 1999.

## **Page 6**

### **Top panel**

**Title:** Currency Component of M1 (excludes vault cash)

**Series:** Actual currency component of M1, current estimates (7% growth over forecast period), and estimates as of May 15, 2001 FOMC meeting (5% growth over period)

**Horizon:** December 2000 through December 2001 (forecasts)

**Description:** Current estimates for currency growth have increased since the May 15, 2001 FOMC meeting from 5% to 7%.

### **Bottom panel**

**Title:** Total Outright Purchases and Net SOMA Expansion

**Series:** Net portfolio expansion and purchases to offset redemptions

**Horizon:** 1996 through 2001 (forecast)

**Description:** Current forecasts for outright purchases have increased since the May 15, 2001 FOMC meeting.

## APPENDIX 2

### Charts used by Messrs. Sichel, Struckmeyer, Fuhrer, and Steindel.

#### STRICTLY CONFIDENTIAL (FR) CLASS II-FOMC

Material for Staff Briefings on Productivity Developments

June 26, 2001

### Chart 1

#### Top panel

##### Labor Productivity, Nonfarm Business

#### Top-left panel

Labor productivity in the nonfarm business sector, 1959-2000. Data plotted as a bar chart. Units are percent changes. This chart shows bars for the average annual rate of growth of labor productivity in the nonfarm business sector over three periods: 1959 to 1973, 1973 to 1995, and 1995 to 2000. In the period from 1959 to 1973, the average annual growth rate was 3.0 percent; from 1973 to 1995 the average growth rate was 1.5 percent; and from 1995 to 2000 the average growth rate was 2.8 percent.

#### Top-right panel

Labor productivity in the nonfarm business sector, 1995-2000. Data plotted as a line graph. Units are percent changes. This figure plots four-quarter percent changes in labor productivity in the nonfarm business sector from the first quarter of 1995 to the first quarter of 2001. This figure shows that the four-quarter change in labor productivity growth picked up from less than 1 percent in the first quarter of 1995 to about 2 1/2 percent by the middle of 1996. The four-quarter change in labor productivity growth fluctuated in a range around 2 1/2 percent through the middle of 1999 and then surged in the middle of 2000, reaching a peak above 5 percent. The four-quarter change in labor productivity growth then dropped back to a pace just a bit above 2 percent by the first quarter of 2001.

#### Bottom panel

##### Key Issues

- What are the sources of the pickup during 1995-2000?
- What is the role of information technology?
- How much of recent productivity growth is cyclical and how much is structural?
- Given today's economic situation, what is the outlook for structural productivity and potential output?

### Chart 2

#### Growth Accounting

#### Top panel

## Decomposition of Output and Labor Productivity Growth

$$\begin{aligned} (1) \text{ Output Growth Equation} & \quad \dot{Q}_t = s_t \dot{K}_t + (1-s_t) \dot{L}_t + \dot{MFP}_t \\ (2) \text{ Labor Productivity Growth Equation} & \quad \dot{LP}_t = s_t (\dot{K}_t - \dot{L}_t) + \dot{MFP}_t \\ & \quad = s_t (\text{Capital Deepening})_t + \dot{MFP}_t \end{aligned}$$

Q = Output

K = Capital services

L = Hours

MFP = Multifactor productivity

s = Income share of capital

LP = Output per hour

### Bottom panel

#### Strengths and Weaknesses of Growth Accounting

##### Strengths

- Based on microeconomic theory of the firm, applied to the overall economy.
- Straightforward and intuitive.
- Can help to identify the sources of growth in a period of structural change.

##### Weaknesses

- Requires several strong assumptions.
- Heavy data requirements.
- Ignores the costs of adjusting capital stocks, and supply shocks may cause the model to go off track.

### Chart 3

#### Empirical Implementation of Growth Accounting

##### Top panel

###### Data and Concepts

- Use MFP dataset from BLS that extends to 1999.
- BLS uses annual data for output, hours, labor composition, and capital services to calculate MFP as a residual.
- We extend the MFP data to 2000 using published data on output and hours and our own estimate of capital services.
- We interpolate annuals to estimate quarterly figures.

##### Middle panel

###### Capital Services

- Capital services growth is a weighted average of growth in individual capital stocks.  
$$\dot{K}_t = \sum_i w_{it} \dot{K}_{it}$$
- Weights reflect the marginal product, or relative efficiency, of a particular asset.

## Bottom panel

### Decomposition of Labor Productivity Growth, Nonfarm Business

(percent change, annual rate)

	1973-95	1995-2000	Acceleration
1. Labor productivity	1.5	2.8	1.3
<i>Contributions of:</i>			
2. Capital deepening	.7	1.2	.5
3. IT	.4	1.2	.7
4. Non-IT	.3	.1	-.2
5. Labor composition	.3	.3	.0
6. MFP	.5	1.2	.7
7. Computer and related semiconductor production	.2	.5	.3
8. Other	.3	.7	.4

Note. Rows and columns may not sum due to rounding.

## Chart 4

### Estimating Structural Productivity Growth

#### Top panel

- The growth of labor productivity is procyclical. It rises rapidly during the recovery phase of the business cycle, slows down in the expansion phase, and declines during recessions.
- For our medium- to long-run analysis, we define **structural productivity growth** as the component of productivity growth that can be sustained over a complete business cycle.
- We do not distinguish between actual and structural growth in capital services.
- Initial estimates of structural MFP growth are generated using several econometric models.
- These estimates are refined using other information about technological developments and supply shocks that influence the choice of production technologies.

#### Middle panel

##### Multifactor Productivity

Multifactor productivity growth in the nonfarm business sector. The data are plotted as line graphs. The units are simple percent changes, calculated from annual averages. The time period of the chart is from 1990 through 2000. One line shows the behavior of actual multifactor productivity (MFP) growth over this period: Starting from 0 percent in 1990, MFP dips to -1 percent in 1991 before jumping to 2 percent in 1992. Actual MFP growth then gradually moves up from about 1/2 percent in 1993 to just over 1 percent in 1998; it then dips to 1/2 percent in 1999 before jumping to just over 2 percent in 2000. The second line shows the staff's estimate of structural MFP growth. Structural MFP growth is constant at about 1/2 percent from 1990 through 1995; it ratchets up to 3/4 percent over the 1995 to 1997 period before stepping up to slightly more than 1 percent from 1998 to 2000.

#### Bottom panel

### Structural Productivity Growth

(percent change, annual rate)

	1973-95	1995-2000	1998	1999	2000
1. Structural Productivity	1.4	2.7	2.9	3.1	3.2
<i>Contributions of:</i>					
2. Capital deepening	.6	1.3	1.4	1.6	1.7
3. Labor composition	.3	.3	.3	.3	.3
4. MFP	.6	1.1	1.2	1.2	1.2

## Chart 5 Potential GDP

### Top panel

#### Potential GDP

(percent change, annual rate)

	1973-95	1995-2000	2000	2001	2002
1. <b>Potential GDP</b>	2.9	3.8	4.3	3.4	3.4
2. Potential labor hours	1.6	1.1	1.1	.9	.9
3. Population	1.4	1.0	1.1	1.1	1.1
4. Labor force participation	.4	.0	.0	.0	.0
5. Employment rate	.0	.1	.0	-.2	-.2
6. Workweek	-.2	.0	.0	.0	.0
7. Structural Labor Productivity	1.4	2.7	3.2	2.5	2.5
8. Capital deepening	.6	1.3	1.7	1.0	1.0
9. Labor composition	.3	.3	.3	.3	.3
10. MFP	.6	1.1	1.2	1.2	1.2
11. Technical factors	-.1	.0	.0	.0	.0
<b>Memo:</b>					
12. NAIRU	5.8	5.0	4.8	5.0	5.2

### Bottom-left panel

#### Research and Development Expenditures

Research and development expenditures. The data are plotted on a ratio scale as a line graph; the source is the NSF and the Battelle Institute. The units are billions of 1996 dollars. The single line shows a period of rapid growth in R&S expenditures from the 1950s through 1970. R&S expenditures flatten out from 1970 to 1980 and then resume growth over the 1980 to 2000 period, although at a rate less than that posted in the 1960s.

### Bottom-right panel

#### Okun's Law

Okun's Law. The data are plotted as a line graph. The units are percent. The time period is 1995 to

2001. One line plots the unemployment rate over this period; the second line plots the forecasts of the unemployment rate from a model of Okun's law. The data indicate that the Okun's law model tracked the actual unemployment rate fairly tightly from 1995 to the beginning of 1999. The Okun's law model overpredicted the unemployment rate by about 1/4 percentage point in 1999 and underpredicted the unemployment rate by about 1/2 percentage point in 2000. However, the model was back on track with the unemployment rate in the first part of 2001.

## Figure 1

### Top panel

#### Distribution of Quarterly Productivity Growth Rates 1995-2001:Q1, Nonfarm Business Sector

Labor productivity growth in the nonfarm business sector, 1995 to first-quarter 2001. Data plotted as a bar chart. Units are annualized percent growth rates. The chart displays four bars depicting the frequency distribution of productivity growth rates in four bins of less than 1.1 percent, 1.1 percent to 3.4 percent, 3.4 percent to 5.8 percent, and greater than 5.8 percent. The chart shows that the average productivity growth rate over this period is about 2.5 percent. Most of the observations--18 of 25--fall at or below 3.4 percent, and only two are 5.8 percent or above.

### Bottom panel

#### Quarterly Growth of Nonfarm Business Sector Productivity, 1995-2001:Q1

Labor productivity growth in the nonfarm business sector, 1995 to first-quarter 2001. Data plotted as a bar chart. Units are annualized percent growth rates. The chart displays the quarterly growth rates in labor productivity over time, color-coding each bar to indicate whether the growth rate falls in the range less than 1.1 percent, 1.1 to 3.4 percent, 3.4 to 5.8 percent, or greater than 5.8 percent. The chart shows that both slower- and faster-than-average growth rates have been fairly evenly distributed across this time period.

Source: U.S. Bureau of Labor Statistics: Nonfarm Business Sector, Output per Hour (SAAR, percent change).

## Figure 2

### Results of Multiple Breakpoint Tests for Shifts in Trend Productivity Growth

#### Top panel

##### Simple regression: $\text{Log}(\text{prod}) = c + b \text{ Time}_t$

Labor productivity growth in the nonfarm business sector, 1972 to first-quarter 2001. Data plotted as a mixed bar and line chart. Units are annualized growth rates. The chart displays bars depicting the quarterly growth rate of productivity, along with a line representing an estimate of the trend rate of productivity growth, which changes across the period. The chart indicates that the estimated trend growth rate of productivity rose from a low of 1.2 percent in the early 1980s to 2.4 percent in the last five years of the sample.

#### Middle panel

##### Cyclical controls added<sup>a</sup>

Labor productivity growth in the nonfarm business sector, 1972 to first-quarter 2001. Data plotted as a mixed bar and line chart. Units are annualized growth rates. The chart displays bars depicting the quarterly growth rate of productivity, along with a line representing an estimate of the trend rate of productivity growth, which changes across the period. The trend estimate in this panel includes variables that attempt to control for cyclical influences on productivity growth. The chart indicates



that the estimated trend growth rate of productivity rose from a low of 1.0 percent in the early 1980s to 2.4 percent in the last five years of the sample.

**Bottom panel**  
**Including capital services per hour<sup>b</sup>**

Labor productivity growth in the nonfarm business sector, 1972 to first-quarter 2001. Data plotted as a bar chart. Units are annualized growth rates. The chart displays bars depicting the quarterly growth rate of productivity, along with a line representing an estimate of the trend rate of productivity growth, which changes across the period. The trend estimate in this panel includes variables that attempt to control for cyclical influences on productivity growth, as well as the influence of so-called "capital deepening," which is proxied in these estimates by a measure of capital services per hour. The chart indicates that the estimated trend growth rate of productivity, apart from capital deepening, rose from a low of 0.7 percent in the early 1980s to 1.7 percent in the early 1990s, and remained at the rate through the end of the sample.

a Cyclical regressors include the growth rate in real GDP and the civilian unemployment rate. [Return to text](#)

b Capital services per hour are log-detrended interpolated values of the BLS annual series. An HP-filtered series yields nearly identical breakpoints and estimated trend rates of growth. [Return to text](#)

Note: Minimum spacing between breakpoints is 23 quarters (20% of sample).

Source: U.S. Bureau of Labor Statistics: Nonfarm Business Sector, Output per Hour (quarter-to-quarter percent change, SAAR).

**Figure 3**  
**Structural Labor Productivity Growth**  
**Greenbook Forecasts vs. Real-Time "Actual" Productivity Data**

Labor productivity growth in the nonfarm business sector, by Greenbook forecast date from January 1995 to May 2001. Data are plotted as a line chart. Units are annualized growth rates. The chart displays the trailing four-quarter average growth rate in actual labor productivity known to the Greenbook authors as of the publication of the Greenbook. The chart superimposes a dotted line depicting the Greenbook's estimate of structural labor productivity growth for each of the Greenbook forecast dates in the period. The chart shows a fairly close correspondence between growth in actual productivity for the four quarters prior to the publication of the Greenbook and the Greenbook staff's estimate of structural labor productivity growth. The chart highlights in red a 1.4 percentage point increase in the staff's estimate of structural labor productivity growth between September 29, 1999 and August 16, 2000, followed by a 1.2 percentage point decrease from August 16, 2000 to June 21, 2001.

Source: Federal Reserve Board of Governors: Greenbook, Part 1; Nonfarm Business Sector, Output per Hour. Real-time data series is actual output per hour (seasonally adjusted, at an annual rate), and is the average of the last 4 quarters available at the Greenbook's publication. Forecasts are taken from the Greenbook, either from tables or from references to trends in structural labor productivity growth.

**Table 1**

**Productivity Trends, 1960-2000**

	1960-1966	1967-1973	1974-1995	1996-2000
Labor Productivity Growth:				
Nonfarm Business	3.4	2.6	1.4	2.8
Nonfinancial Corporations	2.9	1.9	1.5	3.1
Manufacturing	2.7	3.0	2.7	4.9

Multifactor Productivity Growth				
BLS Estimates (Nonfarm Business):	2.5	1.6	0.4	1.1
Jorgenson-Stiroh Estimates (Private Economy):	1.4	0.9	0.3	1.0 (1996-1999)

## Table 2

### Comments on Trend Productivity from Reports of the Council of Economic Advisors

"...the trend rate of increase in output per man-hour in the total economy is just over 2 1/2 percent per year." 1967, p. 44.

"...the trend rate of increase in output per man-hour in the total economy--private and public--is just over 2 1/2 percent a year." 1968, p.68.

"...the trend rate of increase in aggregate productivity--private and public--has been about 2 1/2 percent per year." 1969, p.66.

"In the private sector of the economy, [potential] output per man-hour is estimated to grow [from 1970 to 1975] by about 3.1 percent per year..." 1970, p.84.

"The principal element in this computation [of the gross national product available] is an assumed 3-percent trend rate of increase of productivity (output per labor-hour) in the private economy." 1971, p.94.

## Chart 1

### Multifactor Productivity of Nonfarm Business

Multifactor productivity in the nonfarm business sector, 1959-2000. Data plotted as a line graph, units are percent changes, recessions indicated by shaded bars. The figure shows that multifactor productivity growth was negative in several years prior to 1973.

Source: Bureau of Labor Statistics.

## Chart 2

### Nonfarm Productivity Growth: Actual and Forecast

Labor productivity growth in the nonfarm business sector, 1966-1978, actual and forecast. Data plotted as line graphs, units are percent changes. The comparison of the forecast and actual lines suggests that productivity growth in the late 1960s was consistently less than the amount that would have been forecast given output growth, with the widest difference being more than 2 percentage points in 1969.

## Chart 3

### Nonfinancial Corporate Profits as a Percentage of Sector Gross Product

Nonfinancial corporate profits as a percentage of sector gross product, 1960Q1-1980Q4. Data plotted as a line graph, units are percent. The figure shows a sharp drop in the profit share of product in the late 1960s and early 1970s, from more than 5 percent in 1966 to a low point around 3 1/2 percent in 1971.

## Chart 4

### Real Interest Rates and the S&P Earnings/Price Ratio

Real interest rates and the S&P earnings/price ratio, 1960Q1-1981Q4. Data plotted as line graphs, units are percent for the interest rates and a pure number for the earnings price ratio. There are three measures of the real interest rate plotted. The real funds rate is the federal funds rate less four quarter growth in the core PCE price index, the real 10-year rate is the constant maturity rate on 10-year Treasury bonds less four quarter growth in the core PCE price index, and the equilibrium real funds rate is a transformation of the real funds rate derived by the Federal Reserve Board staff using a statistical filter. The figure shows that the S&P earnings price ratio was close to stable at around .06 in the years prior, and then generally rose for the remainder of the period illustrated. All the interest rate measures appear to have peaked roughly in the middle 1960s, at values ranging from about 2 to 4 percent and then seem to have trended down (subject to considerable year-to-year volatility) through the middle 1970s, with trough values around and under zero.

## APPENDIX 3

### Charts used by Mr. Stockton, Mr. Wilcox, and Ms. Johnson.

#### STRICTLY CONFIDENTIAL (FR) CLASS II-FOMC

Material for Staff Presentation on the Economic Outlook

June 26, 2001

#### Chart 1

#### Forecast Overview

#### Top-left panel

Table for chart of Real GDP and Final Sales

Four-quarter percent change

Period	Real GDP	Final sales
96:Q1	2.51	3.26
96:Q2	3.99	4.07
96:Q3	3.71	3.21
96:Q4	4.06	3.88
97:Q1	4.43	3.87
97:Q2	4.22	3.47
97:Q3	4.78	4.78
97:Q4	4.31	3.91
98:Q1	4.85	4.05
98:Q2	4.10	4.47
98:Q3	3.91	3.66
98:Q4	4.61	4.62
99:Q1	3.87	4.72
99:Q2	3.75	4.31
99:Q3	4.31	4.71
99:Q4	4.96	4.84
00:Q1	5.29	5.39
00:Q2	6.10	5.37

00:Q3	5.21	4.84
00:Q4	3.41	3.66
01:Q1	2.51	3.15
01:Q2	1.27	2.08
01:Q3	1.04	1.76
01:Q4	1.50	2.07
02:Q1	1.98	1.38
02:Q2	2.63	2.09
02:Q3	3.24	2.71
02:Q4	3.47	2.98

Note: Data for 2001:Q1 forward are staff forecasts

### Top-right panel

**Table for Real GDP**  
Percent change, annual rate

<b>Period</b>	<b>Real GDP</b>
2001:Q1	0.80
2001:Q1, June GB	1.20
2001:Q2	0.60
2001:Q2, June GB	0.60
2001:Q4/Q4	1.40
2001:Q4/Q4, June GB	1.50

### Middle-left panel

**Table for chart of Unemployment Rate**  
Percent

<b>Period</b>	<b>Unemployment rate</b>
96:Q1	5.60
96:Q2	5.50
96:Q3	5.30
96:Q4	5.30
97:Q1	5.30
97:Q2	5.00
97:Q3	4.80
97:Q4	4.70
98:Q1	4.70
98:Q2	4.40
98:Q3	4.50
98:Q4	4.40

99:Q1	4.30
99:Q2	4.30
99:Q3	4.20
99:Q4	4.10
00:Q1	4.10
00:Q2	4.00
00:Q3	4.00
00:Q4	4.00
01:Q1	4.23
01:Q2	4.50
01:Q3	4.86
01:Q4	5.22
02:Q1	5.38
02:Q2	5.52
02:Q3	5.55
02:Q4	5.64

Note: Data for 2001:Q1 forward are staff forecasts

### Middle-right panel

**Table for chart of Total and Core PCE Price Inflation**

Four-quarter percent change

<b>Period</b>	<b>Total</b>	<b>Core</b>
96:Q1	2.06	2.04
96:Q2	2.12	1.87
96:Q3	2.06	1.74
96:Q4	2.34	1.83
97:Q1	2.35	1.97
97:Q2	1.99	2.11
97:Q3	1.90	1.98
97:Q4	1.54	1.73
98:Q1	1.02	1.45
98:Q2	1.04	1.33
98:Q3	1.09	1.50
98:Q4	1.12	1.61
99:Q1	1.46	1.76
99:Q2	1.72	1.64
99:Q3	1.84	1.52
99:Q4	2.02	1.51
00:Q1	2.46	1.60

00:Q2	2.41	1.64
00:Q3	2.39	1.59
00:Q4	2.32	1.57
01:Q1	2.24	1.67
01:Q2	2.26	1.71
01:Q3	2.12	1.87
01:Q4	2.00	1.96
02:Q1	1.60	1.79
02:Q2	1.48	1.86
02:Q3	1.60	1.91
02:Q4	1.68	1.90

Note: Data for 2001:Q1 forward are staff forecasts

### Bottom-left panel

#### Table for Revision to Blue Chip

Percent change, Q4/Q4

Period	GDP	CPI
2001:June	1.80	3.00
2001:January	2.70	2.40
2002:June	3.40	2.50
2002:January	3.50	2.50

### Bottom-right panel

#### Table for Revision to Staff Projection

Percent change, Q4/Q4

Period	GDP	CPI
2001:June	1.40	2.60
2001:January	1.80	2.30
2002:June	3.50	2.00
2002:January	3.80	2.00

## Chart 2

### Near-term Dynamics and the Industrial Sector

#### Top-left panel

#### Inventory-Sales Ratio (Industrial Production system)

The top-left panel shows the inventory-sales ratio for the tech sector, measured in days' supply, derived from the Industrial Production system from January 1998 through May 2001. The series begins at about 44 in January 1998, gradually declines to around 37 in early 2000, then rises to about 46 in May 2001.

### **Top-right panel**

#### **Inventory-Sales Ratio (Industrial Production system, excludes transportation)**

The top-right panel shows the inventory-sales ratio for the non-tech sector excluding transportation, measured in days' supply, derived from the Industrial Production system from January 1998 through May 2001. The series begins at about 58 in January 1998, rises to almost 59 in late 1998, gradually declines to about 57-1/2 in mid-2000, then rises to about 58 in May 2001.

### **Middle-left panel**

#### **Computers and Communication Equipment**

The middle-left panel shows three-month moving averages of two series in billions of dollars from January 1998 to May 2001. One series is orders for computers and communication equipment; the other series is shipments of computers and communication equipment. Orders begin at about 16, rise gradually to about 22-1/2 in mid-2000, then decline to about 17 in May 2001. Shipments begin at about 16, gradually rise to 21 in late 2000, then decline to about 17 in May 2001.

### **Middle-right panel**

#### **Other Equipment (ex. aircraft)**

The middle-right panel shows three-month moving averages of two series in billions of dollars from January 1998 to May 2001. One series is orders for equipment other than computers, communication equipment, and aircraft; the other series is shipments of equipment other than computers, communication equipment, and aircraft. Orders begin at about 41, rise gradually to about 47 in mid-2000, then decline to about 44 in May 2001. Shipments begin at about 41, gradually rise to just over 46 in early 2001, then decline to about 45-1/2 in May 2001.

### **Bottom-left panel**

**Table for chart of Manufacturing Industrial Production**

Percent change, annual rate

<b>Period</b>	<b>Tech (Computers, Communications and Semiconductors)</b>
98:Q1	37.90
98:Q2	18.90
98:Q3	53.50
98:Q4	40.70
99:Q1	42.10
99:Q2	48.80
99:Q3	40.20
99:Q4	31.90
00:Q1	73.70
00:Q2	70.40
00:Q3	56.90
00:Q4	25.20
01:Q1	-5.70
01:Q2	-16.10
01:Q3	-4.70

01:Q4	7.30
02:Q1	19.70
02:Q2	31.80
02:Q3	33.20
02:Q4	33.20

Note: Data for 2001:Q2 forward are staff forecasts

### Bottom-right panel

**Table for chart of Manufacturing Industrial Production**

Percent change, annual rate

Period	Non-tech ex. Motor Vehicles
98:Q1	3.10
98:Q2	2.20
98:Q3	-0.30
98:Q4	-0.60
99:Q1	0.80
99:Q2	0.90
99:Q3	1.90
99:Q4	4.40
00:Q1	1.30
00:Q2	1.80
00:Q3	-0.60
00:Q4	-2.80
01:Q1	-6.59
01:Q2	-7.64
01:Q3	-4.16
01:Q4	0.58
02:Q1	1.87
02:Q2	1.57
02:Q3	1.61
02:Q4	1.52

Note: Data for 2001:Q2 forward are staff forecasts

### Chart 3

#### Near-Term Developments

#### Top-left panel

**Table for chart of Sales of Light Vehicles**

Millions of units, annual rate

Period	Domestic	Foreign	Total
--------	----------	---------	-------



98:Q1	13.07	1.93	14.99
98:Q2	14.04	1.97	16.01
98:Q3	12.53	2.02	14.55
98:Q4	14.07	2.17	16.24
99:Q1	13.87	2.31	16.18
99:Q2	14.34	2.45	16.79
99:Q3	14.61	2.47	17.08
99:Q4	14.31	2.69	17.00
00:Q1	15.32	2.88	18.20
00:Q2	14.36	2.88	17.24
00:Q3	14.54	2.84	17.38
00:Q4	13.30	2.87	16.17
01:Q1	14.19	2.93	17.12
01:Q2	13.46	3.00	16.45
01:Q3	13.02	2.88	15.90
01:Q4	12.74	2.96	15.70

Note: Data for 2001:Q1 forward are staff forecasts.

### Top-right panel

#### Table for chart of Production and Days' Supply of Light Vehicles

##### Domestic production

Millions of units, annual rate

Period	Domestic production
98:Q1	11.75
98:Q2	11.03
98:Q3	11.24
98:Q4	12.25
99:Q1	12.41
99:Q2	12.48
99:Q3	12.94
99:Q4	12.60
00:Q1	12.98
00:Q2	12.73
00:Q3	12.44
00:Q4	11.24
01:Q1	10.64
01:Q2	11.34
01:Q3	10.85
01:Q4	10.14

Note: Data for 2001:Q1 forward are staff forecasts.

**Table for chart of Production and Days' Supply of Light Vehicles**  
**Days' supply**  
 Days

<b>Period</b>	<b>Days' supply</b>
98:Q1	68.5
98:Q2	54.6
98:Q3	62.2
98:Q4	57.1
99:Q1	60.4
99:Q2	60.2
99:Q3	60.0
99:Q4	63.0
00:Q1	57.9
00:Q2	65.2
00:Q3	66.0
00:Q4	72.3
01:Q1	60.7
01:Q2	62.3
01:Q3	63.5
01:Q4	61.7

Note: Data for 2001:Q1 forward are staff forecasts.

**Middle-left panel**

**Table for chart of Housing Starts**  
 Millions of units, annual rate

<b>Period</b>	<b>Single-family</b>	<b>Multifamily</b>	<b>Total</b>
98:Q1	1.23	0.33	1.56
98:Q2	1.24	0.33	1.57
98:Q3	1.28	0.35	1.63
98:Q4	1.36	0.36	1.72
99:Q1	1.34	0.37	1.71
99:Q2	1.27	0.31	1.57
99:Q3	1.29	0.37	1.65
99:Q4	1.34	0.32	1.66
00:Q1	1.29	0.38	1.67
00:Q2	1.23	0.35	1.59
00:Q3	1.19	0.31	1.51
00:Q4	1.22	0.32	1.54

01:Q1	1.28	0.35	1.63
01:Q2	1.28	0.33	1.62
01:Q3	1.28	0.33	1.61
01:Q4	1.29	0.33	1.62

Note: Data for 2001:Q1 forward are staff forecasts.

### **Middle-right panel**

#### **Total Real PCE**

The middle-right panel shows total real personal consumption expenditures in billion of 1996 dollars from January 1998 to May 1998. The plot is extended through December 2001 in two segments. One is the forecast of total real personal consumption expenditures; the other is the total excluding the estimated effects of the tax cuts. The series for total real personal consumption expenditures begins at around 5530 and rises to around 6550 in December 2001. The series excluding the effects of the tax cuts rises more slowly from June 2001 to December 2001; its endpoint is about 6500.

### **Bottom-left panel**

#### **Initial Claims**

The bottom-left panel shows the four-week moving average level of initial claims for unemployment insurance in thousands from the week ending January 7, 1989 to the week ending June 16, 2001. The series rises from around 300,000 in January 7, 1989 to just over 500,000 in early 1991. The series then generally declines to around 280,000 during May 2000 before rising to around 425,000 in early June 2001.

### **Bottom-right panel**

#### **Payroll Employment Changes**

The bottom-right panel shows the three-month moving average of the net change in payroll employment from January 1998 to May 2001 for two series: Private service-producing industries excluding wholesale trade and help supply; the other is the total employment in the manufacturing, wholesale trade, and help supply industries. The private service-producing series fluctuates close to 180,000 from 1998 until early 2000, declines to around 75,000 in mid-2000, then rises to just over 150,000 in late 2000 before declining to about 80,000 in May 2001. For the manufacturing, wholesale trade, and help supply industries, it begins at about 90,000 in January 1998, declines to around 20,000 from late 1998 through mid-2000, and then declines steadily to negative 160,000 in May 2001.

## **Chart 4**

### **Financial Conditions**

#### **Top panel**

**Table for chart of Ten-Year Treasury Rate and Federal Funds Rate**

Percent

<b>Period</b>	<b>Ten-year Treasury rate</b>	<b>Federal Funds rate</b>
89:Q1	9.21	9.45
89:Q2	8.76	9.73
89:Q3	8.11	9.08

89:Q4	7.91	8.61
90:Q1	8.42	8.25
90:Q2	8.67	8.24
90:Q3	8.70	8.16
90:Q4	8.41	7.74
91:Q1	8.02	6.43
91:Q2	8.13	5.86
91:Q3	7.95	5.65
91:Q4	7.35	4.82
92:Q1	7.31	4.02
92:Q2	7.38	3.77
92:Q3	6.62	3.26
92:Q4	6.74	3.03
93:Q1	6.26	3.04
93:Q2	5.99	3.00
93:Q3	5.62	3.06
93:Q4	5.62	2.99
94:Q1	6.09	3.21
94:Q2	7.09	3.94
94:Q3	7.33	4.49
94:Q4	7.84	5.17
95:Q1	7.47	5.80
95:Q2	6.60	6.02
95:Q3	6.33	5.80
95:Q4	5.90	5.72
96:Q1	5.91	5.37
96:Q2	6.71	5.24
96:Q3	6.78	5.31
96:Q4	6.35	5.28
97:Q1	6.57	5.28
97:Q2	6.70	5.52
97:Q3	6.24	5.53
97:Q4	5.91	5.51
98:Q1	5.59	5.52
98:Q2	5.59	5.50
98:Q3	5.21	5.53
98:Q4	4.66	4.86
99:Q1	5.00	4.73
99:Q2	5.54	4.75

99:Q3	5.88	5.10
99:Q4	6.14	5.30
00:Q1	6.47	5.68
00:Q2	6.18	6.27
00:Q3	5.89	6.52
00:Q4	5.57	6.47
01:Q1	5.04	5.61
01:Q2	5.30	4.40
01:Q3	5.30	4.00
01:Q4	5.30	4.00
02:Q1	5.20	4.00
02:Q2	5.10	4.00
02:Q3	5.10	4.00
02:Q4	5.00	4.00

Note: Data for 2001:Q2 forward are staff forecasts.

### Middle-left panel

Table for chart of S&P Price-Earnings Ratio

Period	Ratio
January 1989	10.28
February 1989	10.41
March 1989	10.35
April 1989	10.67
May 1989	10.96
June 1989	11.11
July 1989	11.49
August 1989	11.83
September 1989	11.78
October 1989	11.78
November 1989	11.78
December 1989	12.20
January 1990	11.78
February 1990	11.52
March 1990	11.74
April 1990	11.88
May 1990	12.30
June 1990	12.63
July 1990	12.59
August 1990	11.70

September 1990	10.96
October 1990	10.44
November 1990	11.39
December 1990	11.88
January 1991	11.43
February 1991	13.55
March 1991	13.89
April 1991	14.60
May 1991	13.77
June 1991	14.03
July 1991	14.22
August 1991	14.47
September 1991	14.27
October 1991	14.41
November 1991	14.53
December 1991	14.08
January 1992	15.50
February 1992	15.13
March 1992	15.02
April 1992	14.99
May 1992	14.93
June 1992	14.25
July 1992	14.60
August 1992	14.62
September 1992	14.58
October 1992	14.18
November 1992	14.73
December 1992	14.99
January 1993	14.93
February 1993	14.93
March 1993	15.31
April 1993	15.31
May 1993	15.08
June 1993	14.88
July 1993	14.86
August 1993	14.97
September 1993	15.02
October 1993	14.90
November 1993	14.86

December 1993	14.68
January 1994	14.99
February 1994	14.75
March 1994	14.51
April 1994	13.64
May 1994	13.62
June 1994	13.70
July 1994	13.19
August 1994	13.39
September 1994	13.30
October 1994	13.09
November 1994	12.72
December 1994	12.27
January 1995	12.47
February 1995	12.71
March 1995	12.77
April 1995	12.97
May 1995	13.25
June 1995	13.37
July 1995	13.59
August 1995	13.61
September 1995	13.93
October 1995	14.01
November 1995	14.03
December 1995	14.58
January 1996	14.27
February 1996	15.36
March 1996	14.95
April 1996	14.97
May 1996	15.36
June 1996	15.15
July 1996	14.45
August 1996	14.99
September 1996	15.31
October 1996	15.67
November 1996	16.13
December 1996	15.95
January 1997	16.53
February 1997	17.36

March 1997	16.72
April 1997	16.05
May 1997	17.39
June 1997	18.38
July 1997	19.16
August 1997	18.66
September 1997	18.98
October 1997	19.27
November 1997	18.73
December 1997	19.05
January 1998	18.80
February 1998	20.33
March 1998	21.46
April 1998	22.08
May 1998	21.83
June 1998	21.55
July 1998	22.73
August 1998	21.19
September 1998	20.04
October 1998	19.42
November 1998	22.17
December 1998	22.68
January 1999	24.04
February 1999	23.58
March 1999	24.88
April 1999	25.06
May 1999	24.88
June 1999	24.27
July 1999	25.32
August 1999	23.70
September 1999	23.26
October 1999	22.47
November 1999	24.57
December 1999	24.63
January 2000	25.06
February 2000	23.42
March 2000	23.20
April 2000	23.64
May 2000	23.64



June 2000	23.81
July 2000	23.75
August 2000	23.70
September 2000	23.70
October 2000	21.46
November 2000	22.42
December 2000	22.37
January 2001	22.32
February 2001	22.27
March 2001	20.08
April 2001	21.88
May 2001	22.78
June 2001	21.93

Note. Using expected earnings for 12 months ahead.

Source. I/B/E/S.

### Middle-right panel

#### Real Exchange Value of the Dollar

Real Exchange Value of the Dollar, 1989-2001. The data are plotted monthly from January 1989 to June 2001. The series is an index with the March 1973 value equal to 100. The series begins at 90, declines to just over 80 in mid-1995, rises to about 105 in mid-1998, declines to less than 100 in late 1998, and then rises to about 110 in June 2001.

### Bottom-left panel

#### Equilibrium and Actual Real Interest Rate

Equilibrium and Actual Real Interest Rate, 1989-2001. Data are plotted as one curve, one horizontal dotted line, and one shaded region. The curve shows the actual real funds rate; the series begins at about 4.8 in 1989, moves down to reach just below 0 by late 1992, moves up to reach almost 5 by late 2000, and then drops to reach about 2.3 by 2001. The horizontal dotted line shows the historical average, 1966:Q1 to 2001:Q1, for the actual real funds rate, at 2.81 percent. The shaded region shows a range for the estimated equilibrium real funds rate; the region is demarcated by an upper and lower boundary curve. The upper curve begins at about 3, moves down to reach about 1.8 by 1992, moves up to reach about 4.6 in late 1999, and moves down to reach about 4 in June 2002; the lower curve begins at about 2.8, moves down to reach about 1.0 by 1992, moves up to reach about 3.5 in late 1999, and moves down to reach about 2.8 in June 2002. The curve for the actual real funds rate at various time points from 1989 to 2001 is above, within, or below this shaded region.

### Bottom-right panel

Table for Revision of Equilibrium Real Rate, 2000:Q2 to 2001:Q2

Percentage points

Measure	Rate
Total revision	-1.20
Equity premium	-0.50

Exchange rate	-0.10
Trend growth	-0.50
Other	-0.10

Note. FRB/US measure.

## Chart 5 Fiscal Policy

### Top-left panel

#### Key Elements of Tax Cut

- Tax rebate of \$38 billion to be paid July through September.
- "Permanent" tax reduction of \$3 billion in FY2001.
- "Permanent" tax reduction of \$71 billion in FY2002.

### Top-right panel

#### Key Assumptions

- For some households, consumption tracks cash flow.
- Other households very gradually spend rebates and adjust spending slowly to higher after-tax income.
- Initially, spending increase is partly offset by drawdown of inventories.

### Middle-left panel

**Table for chart of Contribution of Tax Cut to Level of Real GDP**

Billions of dollars

Period	Inventory investment	Final sales	GDP
2001:Q3	-10.00	27.00	18.00
2001:Q4	-15.00	54.00	39.00
2002:Q1	3.00	52.00	56.00
2002:Q2	16.00	51.00	67.00
2002:Q3	12.00	70.00	82.00
2002:Q4	1.00	80.00	81.00

### Middle-right panel

**Table for chart of Contribution of Tax Cut to Growth of Real GDP**

Percent change, annual rate

Period	Contribution of tax cut
2001:Q3	0.80
2001:Q4	1.00
2002:Q1	0.70
2002:Q2	0.50
2002:Q3	0.50

2002:Q4	0.00
---------	------

### Bottom-left panel

**Table for chart of Real Government Purchases**

Percent change, Q4/Q4

Period	State and local	Federal
1998	3.61	0.76
1999	4.18	4.83
2000	2.66	-1.28
2001	3.37	3.01
2002	3.49	3.57

### Bottom-right panel

**Table for Federal Budget Surplus**

Billions of dollars

Period	Unified	On-budget
FY2001	185	21
FY2002	214	40

## Chart 6

### The Household Sector

### Top-left panel

**Table for chart of Impetus to Level of Real PCE from Tax Cut**

Billions of 1996 Dollars

Period	From rebates	From "permanent" cuts	Subtotal
2001:Q3	24.20	2.50	26.70
2001:Q4	49.00	5.40	54.30
2002:Q1	26.20	26.10	52.30
2002:Q2	0.80	50.40	51.30
2002:Q3	0.90	65.90	66.80
2002:Q4	1.00	73.40	74.40

### Top-right panel

**Table for chart of Real PCE Growth**

Percent change, annual rate

Period	With the tax cut effect	Excluding the tax cut effect
2001:Q1	3.00	3.00
2001:Q2	1.60	1.60
2001:Q3	2.30	0.70

2001:Q4	3.30	1.60
2002:Q1	1.90	2.00
2002:Q2	2.20	2.30
2002:Q3	3.50	2.50
2002:Q4	3.10	2.60

### **Middle-left panel**

#### **Influences on the Saving Rate**

- Underestimated pension contributions
- Underestimated wage and salary income
- Tax cut
- Reverse wealth effect

### **Middle-right panel**

#### **The Saving Rate**

The Saving Rate, 1995-2002. Data are plotted as two curves, one dotted curve that begins in 2000:Q1, and two shaded regions. A vertical line demarks the first quarter of 2001. One curve shows the actual personal saving rate, and the other curve shows an estimate of the personal saving rate with additional pension contributions; both are plotted from 1995:Q1 to 2001:Q1. The series for the personal saving rate begins at about 6.3 in 1995:Q1 and moves down to reach about -1.0 in 2001:Q1; the series for the personal saving rate with additional contributions begins at about 6.3 in 1995:Q1 and moves down to reach just below 0 in 2001:Q1. A shaded region demarks the difference between the two curves. The dashed curve shows the estimated the personal saving rate with both additional pension contributions and additional wage and salary income; it is plotted from 2000:Q1 to 2002:Q4; it begins at about 0.8 and reaches about 2.0 in 2002:Q4. The second shaded region demarks the area between the dashed curve and the curve representing the personal saving rate with additional pension contributions; it is shown for 2000:Q1 to 2000:Q4.

### **Bottom panel**

#### **Wealth-Income Ratio and the Saving Rate**

Wealth-Income Ratio and the Saving Rate, 1985-2002. Data are plotted for two curves; one shows the saving rate adjusted for additional pension contributions and wage and salary income, and the other curve shows the smoothed ratio of household net worth to disposable income; the data for all the series have been adjusted for estimates of additional pension contributions and wage and salary income. The adjusted saving rate begins at about 9 in 1985:Q1, declines to about 1 in 2001:Q1, and then increases to 2 in 2002:Q4. The curve for ratio of adjusted household net worth to disposable income is plotted as its inverse; it begins at about 4.4 in 1985:Q1, declines to 5.9 in mid-2000, and rises to about 5.5 in 2002:Q4.

## **Chart 7**

### **Is There A Capital Overhang?**

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

##### **High-tech Equipment**

High-tech Equipment, 1973-2002. Data are plotted as two curves in billions of 1996 dollars on a

ratio scale. One curve represents actual real business outlays for high-tech equipment; the other curve represents the target level of real business outlays for high-tech equipment estimated as a function of variables such as the level of output and the cost of capital. The actual series begins at about 50 in 1973:Q1 and rises to about 1375 in 2002:Q4. The target series, which is more variable than that actual, begins at a level of about 100 in 1973:Q1 and rises to a level of about 1150 in 2002:Q4. Three areas in which the actual curve lies above the target curve are shaded and represent overhangs; they are 1982, 1985-91, and 2000-2002. The shaded area for 2000-2002 represents a gap of 20 percent between the two curves and is larger than during the earlier periods.

### **Top-right panel**

#### **Other Equipment**

Other Equipment, 1973-2002. Data are plotted as two curves in billions of 1996 dollars on a ratio scale. One curve represents actual real business outlays for other equipment; the second curve represents the target level of real business outlays for other equipment estimated as a function of variables such as the level of output and the cost of capital. The actual series begins at about 1400 in 1973:Q1 and rises to about 3420 in 2002:Q4. The target series, which is more variable than that actual, begins at a level of about 1850 in 1973:Q1 and rises to a level of about 3150 in 2002:Q4. Three areas in which the actual curve lies above the target curve are shaded and represent overhangs; they are 1980-1992, 1994-97, and 1999-2002. The shaded area for 1999-2002 represents a gap of 10 percent between the two curves and is smaller than the large gap during 1980-1992.

### **Middle-left panel**

#### **Network-type Markets**

- Network-type markets tend to tip toward one provider.
- Each competitor has a strong incentive to invest aggressively.
- If several markets aim to serve most of the market, a capital overhang is almost sure to result.

### **Middle-right panel**

#### **Capacity of the Long-Haul Fiber Optic Network**

Capacity of the Long-Haul Fiber Optic Network, 1992-2000. Data are plotted as two curves in millions of channel miles on a ratio scale. One curve represents installed channel miles; it begins at an annual level of about 5 in 1992 and rises to about 150 in 2000. The other curve represents the possible number of channel miles that could be placed on installed fiber; it begins at an annual level of about 9.5 in 1992 and rises to about 1,000 in 2000.

### **Bottom panel**

#### **Key Conclusions of the Staff Study**

- There is an overhang today.
- The overhang disproportionately involves high-tech equipment.
- For most firms, financial factors are not a major drag on investment.
- Implications for monetary policy:
  - only a moderately negative influence on the outlook;
  - not likely to impair the effectiveness of monetary policy.

## **Chart 8**

### **The Outlook for Business Investment**

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

## Interest Expense to Cash Flow

Interest Expense to Cash Flow, 1992-2000. Data are plotted annually as percent for two curves; circles for projections for 2001:Q1 are also plotted. The source of the data is Compustat, and cash flow is defined as operating income before depreciation. One curve represents interest expense as a percent of cash flow for the nonfinancial sector; it begins at about 21 in 1992, declines to about 15 in 1996 and 1997, and then rises for about 17 from 1998 to 2000; the 2002:Q1 circle is also plotted at about 17. The other curve represents interest expense as a percent of cash flow for telecom service firms; it begins at about 15 in 1992, declines in about 12 in 1996, and then rises to 21 in 2000; the 2002:Q1 circle is plotted at about 24.

## Top-right panel

### Expected Default Frequencies

Expected Default Frequencies, 1997-2001. Data are plotted monthly in percent for two curves representing expected default frequencies; the source of the data is the KMV Corporation. One curve represents the expected default frequency for the nonfinancial sector; it begins at 0.5 in January 1997 and rises to about 2.3 in mid-2001. The other curve represents the expected default frequency for telecom service firms; it begins at about 0.4 in January 1997 and rises to about 3.8 in mid-2001.

## Middle panel

### Investment and the Acceleration of Business Output

Investment and the Acceleration of Business Output, 1987-2002. Data are plotted for two curves. One is the four-quarter percent change in real equipment and software spending other than high-tech. It begins at about -4 in 1987:Q1, rises to about 7 in late 1988, declines to about 4 in 1991, rises to about 12 in late 1993, falls to about -5 in early 1996, rises to about 10 in early 1998, declines to about -5 in mid-2001, and then rises to about 2 in 2002:Q4. The other curve is the accelerator, which is defined as the difference in percentage points between the eight-quarter percent change in business output and the year-earlier eight-quarter percent change. It begins at about -0.8 in 1987:Q1, rises to about 1 in early 1989, declines to about -3.8 in early 1991, rises to about 3 in early 1993, declines to about -0.3 in mid-1995, rises to 0.3 in 1997, declines to about -2.2 in late 2001, and then rises to about 0 in 2002:Q4. The scales of the two plots are aligned so that 0 for the accelerator is at the same level as 3 on real equipment and software spending other than high tech.

## Bottom-left panel

Table for Composition of Nonresidential Investment

	Percent
Drilling and Mining	11.00
Utilities	9.10
Other	79.90

## Bottom-right panel

Table for Investment in Nonresidential Structures

Four-quarter percent change

Period	Investment
90:Q1	4.00
90:Q2	4.77

90:Q3	0.64
90:Q4	-3.37
91:Q1	-7.37
91:Q2	-9.32
91:Q3	-14.83
91:Q4	-12.69
92:Q1	-11.62
92:Q2	-9.43
92:Q3	-2.67
92:Q4	0.30
93:Q1	1.05
93:Q2	0.70
93:Q3	0.19
93:Q4	1.20
94:Q1	-2.70
94:Q2	2.66
94:Q3	2.27
94:Q4	1.14
95:Q1	7.70
95:Q2	4.02
95:Q3	4.21
95:Q4	3.28
96:Q1	3.75
96:Q2	4.89
96:Q3	6.88
96:Q4	12.79
97:Q1	11.67
97:Q2	8.10
97:Q3	10.25
97:Q4	6.47
98:Q1	6.84
98:Q2	11.24
98:Q3	5.84
98:Q4	4.92
99:Q1	2.08
99:Q2	-2.78
99:Q3	-3.17
99:Q4	-1.72
00:Q1	4.23

00:Q2	7.06
00:Q3	12.56
00:Q4	12.74
01:Q1	11.07
01:Q2	11.38
01:Q3	7.97
01:Q4	5.45
02:Q1	1.81
02:Q2	0.68
02:Q3	0.88
02:Q4	1.42

Note: Data for 2001:Q2 forward are staff forecasts.

## Chart 9 Outlook for Inflation

### Top-left panel

**Table for chart of Actual and Structural Productivity Growth**  
Four-quarter percent change

<b>Period</b>	<b>Actual productivity growth</b>	<b>Structural productivity growth</b>
88:Q1	1.50	1.40
88:Q2	1.10	1.40
88:Q3	1.50	1.40
88:Q4	1.10	1.40
89:Q1	1.10	1.40
89:Q2	0.80	1.40
89:Q3	0.70	1.40
89:Q4	0.50	1.40
90:Q1	1.20	1.40
90:Q2	1.50	1.40
90:Q3	1.50	1.40
90:Q4	0.30	1.40
91:Q1	0.20	1.40
91:Q2	0.90	1.40
91:Q3	1.10	1.40
91:Q4	2.60	1.40
92:Q1	4.10	1.40
92:Q2	3.40	1.40
92:Q3	3.00	1.40
92:Q4	4.20	1.40



93:Q1	1.00	1.40
93:Q2	0.40	1.40
93:Q3	0.70	1.40
93:Q4	-0.20	1.40
94:Q1	1.30	1.40
94:Q2	1.80	1.40
94:Q3	1.20	1.40
94:Q4	1.10	1.40
95:Q1	0.80	1.40
95:Q2	0.70	1.40
95:Q3	1.20	1.57
95:Q4	1.10	1.75
96:Q1	2.30	1.92
96:Q2	2.90	2.10
96:Q3	2.70	2.10
96:Q4	2.30	2.10
97:Q1	1.60	2.17
97:Q2	1.70	2.25
97:Q3	2.50	2.32
97:Q4	2.30	2.40
98:Q1	3.20	2.53
98:Q2	2.60	2.66
98:Q3	2.20	2.80
98:Q4	2.80	2.93
99:Q1	2.10	2.97
99:Q2	1.70	3.01
99:Q3	2.60	3.06
99:Q4	3.80	3.10
00:Q1	3.80	3.11
00:Q2	5.30	3.13
00:Q3	4.80	3.14
00:Q4	3.30	3.16
01:Q1	2.53	3.00
01:Q2	1.53	2.85
01:Q3	1.17	2.69
01:Q4	1.46	2.54
02:Q1	2.46	2.53
02:Q2	2.58	2.52
02:Q3	2.93	2.52

02:Q4	2.91	2.51
-------	------	------

Note: Data for 2001:Q1 forward are staff forecasts.

### Top-right panel

#### Unemployment Rate

Unemployment Rate, 1988-2002. Data are plotted for two curves, quarterly, in percent. One curve represents the actual unemployment rate; it begins at 5.7 in 1988:Q1, rises to 7.6 in mid-1992, declines to 4 in mid-to-late 2000, and rises to 5.6 in 2002:Q4. The other curve represents the estimate of the short-run effective non-accelerating rate of unemployment; it begins at 5.5 in 1988:Q1, remains at about that level until 1995, declines to 4.7 in 1999 and 2000, and then rises to 5.2 percent in 2002:Q4.

### Middle-left panel

**Table for chart of PCE Energy Prices**

Four-quarter percent change

Period	PCE energy prices
95:Q4	-1.43
96:Q1	1.66
96:Q2	4.98
96:Q3	4.34
96:Q4	7.32
97:Q1	6.45
97:Q2	-1.12
97:Q3	0.50
97:Q4	-1.27
98:Q1	-7.82
98:Q2	-5.76
98:Q3	-7.91
98:Q4	-9.60
99:Q1	-5.67
99:Q2	2.26
99:Q3	7.42
99:Q4	12.04
00:Q1	21.46
00:Q2	17.96
00:Q3	16.67
00:Q4	15.92
01:Q1	10.31
01:Q2	9.47
01:Q3	4.25
01:Q4	-0.50

02:Q1	-4.60
02:Q2	-7.94
02:Q3	-6.18
02:Q4	-4.41

Note: Data for 2001:Q1 forward are staff forecasts.

## Middle-right panel

**Table 1 for chart of Inflation Expectations**

Percent

<b>Period</b>	<b>Michigan SRC, one year ahead, median</b>
1995:January	3.00
1995:February	3.00
1995:March	3.20
1995:April	3.30
1995:May	3.00
1995:June	2.90
1995:July	2.90
1995:August	2.90
1995:September	2.80
1995:October	2.90
1995:November	2.80
1995:December	2.70
1996:January	2.80
1996:February	2.80
1996:March	2.90
1996:April	3.00
1996:May	3.10
1996:June	2.90
1996:July	3.00
1996:August	3.10
1996:September	3.20
1996:October	3.00
1996:November	3.00
1996:December	3.00
1997:January	3.00
1997:February	3.00
1997:March	2.80
1997:April	3.00
1997:May	2.90

1997:June	2.80
1997:July	2.70
1997:August	2.70
1997:September	2.80
1997:October	2.80
1997:November	2.90
1997:December	2.80
1998:January	2.30
1998:February	2.40
1998:March	2.50
1998:April	2.40
1998:May	2.60
1998:June	2.70
1998:July	2.60
1998:August	2.40
1998:September	2.30
1998:October	2.50
1998:November	2.30
1998:December	2.50
1999:January	2.70
1999:February	2.50
1999:March	2.70
1999:April	2.70
1999:May	2.80
1999:June	2.50
1999:July	2.70
1999:August	2.80
1999:September	2.70
1999:October	2.90
1999:November	2.90
1999:December	3.00
2000:January	3.00
2000:February	2.90
2000:March	3.20
2000:April	3.20
2000:May	3.00
2000:June	2.90
2000:July	3.00
2000:August	2.70

2000:September	2.90
2000:October	3.20
2000:November	2.90
2000:December	2.80
2001:January	3.00
2001:February	2.80
2001:March	2.80
2001:April	3.10
2001:May	3.20
2001:June	3.00

**Table 2 for chart of Inflation Expectations**

Percent

<b>Period</b>	<b>FRB Philadelphia One-year ahead</b>
95:Q1	3.41
95:Q2	3.52
95:Q3	3.27
95:Q4	2.95
96:Q1	2.77
96:Q2	2.87
96:Q3	3.00
96:Q4	3.02
97:Q1	3.06
97:Q2	3.00
97:Q3	2.85
97:Q4	2.60
98:Q1	2.26
98:Q2	2.45
98:Q3	2.47
98:Q4	2.31
99:Q1	2.17
99:Q2	2.20
99:Q3	2.38
99:Q4	2.52
00:Q1	2.46
00:Q2	2.61
00:Q3	2.71
00:Q4	2.67
01:Q1	2.49

**Bottom panel**

**Table for chart of Inflation**  
Four-quarter percent change

<b>Period</b>	<b>Core CPI, current methods</b>	<b>Core GDP</b>	<b>Core PCE</b>
95:Q1	2.94	2.50	2.59
95:Q2	3.01	2.27	2.53
95:Q3	2.97	2.02	2.28
95:Q4	3.03	2.07	2.27
96:Q1	2.92	1.80	2.04
96:Q2	2.67	1.57	1.87
96:Q3	2.65	1.75	1.74
96:Q4	2.60	1.77	1.83
97:Q1	2.45	1.92	1.97
97:Q2	2.50	2.22	2.11
97:Q3	2.33	1.97	1.98
97:Q4	2.21	1.85	1.73
98:Q1	2.28	1.45	1.45
98:Q2	2.22	1.27	1.33
98:Q3	2.33	1.40	1.50
98:Q4	2.36	1.32	1.61
99:Q1	2.19	1.55	1.76
99:Q2	2.10	1.57	1.64
99:Q3	1.99	1.47	1.52
99:Q4	2.04	1.62	1.51
00:Q1	2.20	1.80	1.60
00:Q2	2.39	1.97	1.64
00:Q3	2.55	2.07	1.59
00:Q4	2.54	2.10	1.57
01:Q1	2.69	1.93	1.67
01:Q2	2.63	1.99	1.71
01:Q3	2.58	2.03	1.87
01:Q4	2.62	1.98	1.96
02:Q1	2.46	1.99	1.79
02:Q2	2.47	1.83	1.86
02:Q3	2.51	1.84	1.91
02:Q4	2.50	1.86	1.90

Note: Data for 2001:Q1 forward are staff forecasts.

**Chart 10**

## The Labor Market

### Top panel

#### Output and Unemployment Gaps

Output and Unemployment Gaps, 1990-2002. Data are plotted for two curves in percentage points; a horizontal line demarking 0. The first curve represents the gap between the actual unemployment rate and the estimate of the non-accelerating rate of unemployment; it begins at -0.2 in 1990:Q1, rises to about 2.2 in mid-1992, declines and crosses the horizontal line in early 1996, continues to decline to about 1.7 in late 2000, and rises to 0.1 in 2002:Q4. The second curve represents the gap between the estimate of potential real GDP and actual real GDP. It begins at -0.3 in 1990:Q1, rises to 3.7 in late 1991, declines and crosses the horizontal line in mid-1996, continues to decline to about -2.5 in mid-2000, rises to about 0.8 in mid-2001 and remains at that level through 2002:Q4.

### Middle-left panel

Table for chart of PCE Price Inflation

Percent change, Q4/Q4

Period	Contribution to ECI compensation growth from lagged inflation	PCE Price Inflation
1995	1.70	2.10
1996	1.80	2.30
1997	1.70	1.50
1998	1.20	1.10
1999	1.10	2.00
2000	1.70	2.30
2001	2.20	2.00
2002	1.80	1.70

### Middle-right panel

Table for chart of Structural Productivity Growth

Percent change, Q4/Q4

Period	Contribution to ECI compensation growth from productivity growth	Structural productivity growth
1995	1.20	1.80
1996	1.30	2.10
1997	1.40	2.40
1998	1.50	2.90
1999	1.70	3.10
2000	1.90	3.20
2001	2.00	2.80
2002	2.00	2.50

### Bottom panel

**Table for ECI Inflation**  
Four-quarter percent change

<b>Period</b>	<b>ECI, compensation</b>	<b>Contribution of: Resource Utilization</b>	<b>Contribution of: Lagged inflation</b>	<b>Contribution of: Productivity</b>	<b>Contribution of: Health Insurance</b>
1999	3.40	0.50	1.10	1.70	0.10
2000	4.40	0.60	1.70	1.90	0.20
2001	4.40	-0.10	2.20	2.00	0.30
2002	3.90	-0.20	1.80	2.00	0.30

## **Chart 11** **Exchange Rates and Interest Rates (Weekly data)**

Chart 11 is a three-by-two panel of graphs for nominal exchange rates (Figure 1), long-term interest rates (Figure 2), three-month interest rates (Figure 3), eurocurrency futures yield curves (Figure 4), broad stock price indexes (Figure 5), and high-tech stock price indexes (Figure 6).

### **Top-left panel** **Nominal Exchange Rates**

Figure 1 plots indexes for three nominal exchange rates from mid-1999 through mid-2001. The base period is July 2, 1999, with a value of 100; the y-axis ranges from 80 to 130; and each series is measured as foreign currency per U.S. dollar. 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 in mid-1999, dips to about 95 by late 1999, and then moves generally upward to about 110 by mid-2001. The Euro begins at 100, remains relatively constant through the remainder of 1999, increases to about 120 by late-2000, drops to about 110 by the end of 2000, and then increases to about 120 by mid-2001. The Yen starts at 100, drops to about 85 by the end of 1999, fluctuates around 90 during most of 2000, moves back to 100 by March 2001, and remains at around 100 through mid-2001.

### **Top-right panel** **Long-Term Interest Rates**

Figure 2 plots long-term interest rates (in percent) for the United States, Germany, and Japan from mid-1999 through mid-2001. The y-axis ranges from 0% to 8%. The U.S. rate starts at about 6%, remains at around 6% with modest volatility through mid-2000, gradually drops to just over 5% by early 2001, and increases slightly by mid-2001. The German rate remains relatively constant at around 5% and with modest volatility throughout the period graphed. The Japanese rate starts at just under 2%, remains at about that level through late 2000, and declines slightly to just over 1% by mid-2001.

### **Middle-left panel** **Three-Month Interest Rates**

Figure 3 plots three-month interest rates (in percent) for the United States, the Euro Area, and Japan from mid-1999 through mid-2001. The y-axis ranges from 0% to 8%. The U.S. rate starts at just over 5%, increases to just over 6% by mid-2000, remains around 6% through the end of 2000, and drops to just under 4% by mid-2001. The Euro Area rate starts at around 2.5%, gradually increases to



around 5% by end-2000, and drops slightly to around 4.5% by mid-2001. The Japanese rate remains near 0% throughout, with slight rises (followed by declines) in late 1999 and in late 2000 and early 2001.

### **Middle-right panel**

#### **Eurocurrency Futures Yield Curves**

Figure 4 plots Eurocurrency Futures Yield Curves (in percent) for the U.S. dollar, the Euro, and the Yen as of June 25, 2001, with the yield curves going from mid-2001 through 2002. The y-axis ranges from 0% to 6%. The dollar begins at just under 4%, remains flat for one quarter, and rises through 2002 to just over 5%. The Euro begins at about 4.5%, drops to around 4% in early 2002, and increases to around 4.5% by the end of 2002. The Yen remains just above 0% for the entire period.

### **Bottom-left panel**

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

Figure 5 plots three Broad Stock Price Indexes --- the S&P 500, the DJ Euro, and the TOPIX --- from mid-1999 through mid-2001. The base period is July 2, 1999, with a value of 100; and the y-axis ranges from 60 to 160. The S&P 500 starts at 100, remains near 100 through late 2000 with modest volatility, and declines gradually to about 90 in June 2001. The DJ Euro starts at 100, increases to around 140 by early 2000, and gradually declines to just above 100 by June 2001. The TOPIX starts at 100, rises steadily to about 120 by the end of 1999, and declines to around 90 by June 2001.

### **Bottom-right panel**

#### **High-Tech Stock Price Indexes**

Figure 6 plots High Tech Stock Price Indexes for the NASDAQ, Neuer Markt, and the JASDAQ from mid-1999 through mid-2001. The base period is July 2, 1999, with a value of 100; and the y-axis ranges from 40 to 240. The NASDAQ starts at 100, increases to about 180 by early 2000, and declines to around 80 by June 2001. Overall, the other two series (Neuer Markt and JASDAQ) move similarly to the NASDAQ. Differences include that JASDAQ and Neuer Markt peak somewhat higher (at around 210 and 240, respectively), JASDAQ ends at around 95, and Neuer Markt ends at around 40.

## **Chart 12**

### **Trade Developments**

Chart 12 includes a panel that lists data on imports and exports (Panel 1), a two-by-two panel of graphs on Goods Exports by Region (Figures 1-4), a graph of oil prices (Figure 5), and a graph of the "Real Exchange Rate Outlook" (Figure 6).

### **Top-left panel**

#### **Recent Developments: Exports and Imports**

Panel 1 lists changes in billions of dollars (SAAR) for exports, imports, and components thereof over two periods: Q4-Q1, and March-April.

The first half of the panel lists the export component, Q4-Q1 change, and March-April change, as follows.

Line 1. Goods Exports, -5.2, -21.1;

Line 2. Capital goods, 1.5, -17.6; of which one component is Line 3:

Line 3. Computers and semi-conductors, -5.4, -8.6;

Line 4. Automotive, -5.5, 0.4;  
Line 5. Consumer goods, 3.3, 0.7;  
Line 6. Other, -4.5, -4.6;  
Line 7. Services, 1.8, -0.5; and  
Line 8. Total Goods and Services, -3.3, -21.6.

The second half of the panel lists the import component, Q4-Q1 change, and March-April change, as follows.

Line 9. Good Imports, -29.2, -32.5;  
Line 10. Oil, -10.1, 5.9;  
Line 11. Capital goods, -11.7, -33.2; of which one component is Line 12:  
Line 12. Computers and semi-conductors, -8.6, -13.7;  
Line 13. Automotive, -6.1, 7.7;  
Line 14. Consumer goods, -0.9, -14.3;  
Line 15. Other, -0.4, 1.4;  
Line 16. Services, 4.7, 0.1; and  
Line 17. Total Goods and Services, -24.4, -32.4.

### **Top-right panel**

#### **Goods Exports by Region**

Figures 1-4 plot Goods Exports by Region in billions of dollars (SAAR) from mid-1999 through mid-2001. Figure 1 plots goods exports to Canada, which fluctuate between 160 and 190. Figure 2 plots goods exports to Mexico, which trend upwards from 80 to around 110; and to Other Latin American Countries, which remain relatively constant at around 60. Figure 3 plots goods exports to Japan, which trend upward from about 55 to around 65; and to Other Asian Countries, which rise sharply from about 120 in mid-1999 to about 165 by the second half of 2000, dropping somewhat to about 155 by mid-2001. Figure 4 plots goods exports to Western Europe (excluding gold), which rise steadily from just under 160 to just under 190. In 2001, exports to all regions decline, except exports to Western Europe. The ranges of the y-axis for Figures 1, 2, and 4 are [120, 200], [40, 120], and [120, 200], respectively. In Figure 3, the range of the y-axis is [100, 180] for "Other Asia" (left y-axis) and [40, 120] for Japan (right y-axis).

### **Bottom-left panel**

#### **Oil Prices**

Figure 5 plots oil prices (West Texas Intermediate (WTI) crude oil, in dollars per barrel) from the beginning of 1999 through mid-2001, along with the January and current Greenbook WTI forecasts through the end of 2002. The range of the y-axis is [\$0/barrel, \$35/barrel]. Actual oil prices start at around \$12/barrel at the beginning of 1999, increase to about \$35/barrel near the end of 2000, drop to about \$28/barrel by January 2001, and remain close to that value through June 2001. The January Greenbook WTI forecast increases to around \$32/barrel during early 2001 and then declines gradually to about \$23/barrel by the end of 2002. The current (June) Greenbook WTI forecast declines gradually from about \$28/barrel to just under \$25/barrel by the end of 2002.

### **Bottom-right panel**

#### **Real Exchange Rate Outlook**

Figure 6 plots the real exchange rate outlook, measured as the import/export weighted average, where 1999Q1 is the base period with a value of 100. Two measures are plotted, one for "Major Foreign" and one for the "Broad Dollar." Both indexes start at 100, move little during 1999, and

trend upwards during 2000 and the first half of 2001, reaching about 116 and 110 respectively. The forecast of the "Major Foreign" index increases gradually, reaching about 118 by the end of 2002. The forecast of the "Broad Dollar" falls slightly to just under 110 by the end of 2002. The range of the y-axis is [95, 120].

## Chart 13

### Foreign Outlook

Chart 13 is a three-by-two panel including graphs of real GDP growth (Figure 1), foreign real GDP growth (Figure 2), nominal exchange rates (Figure 3), stripped Brady bond yield spreads over U.S. Treasuries (Figure 4), and industrial production (Figure 5), and a table of real GDP growth (Panel 1). The second and third rows are titled "Latin America."

#### Top-left panel

##### Real GDP Growth

Figure 1 (titled "Real GDP Growth, Percent change, SAAR") graphs real GDP growth for 2000 (actual), 2001 (projected), and 2002 (projected) as a bar chart, with half-year values given for 2001. Approximate values for the four periods are as follows.

United States (red): 3.5, 0.5, 2.0, 3.5.

Total foreign (blue): 4.1, 1.3, 2.2, 3.5.

The range of the y-axis is [0, 7]. Years are Q4/Q4; half years are Q2/Q4 or Q4/Q2. Total foreign GDP growth is calculated using U.S. export weights.

#### Top-right panel

##### Foreign Real GDP Growth

Figure 2 (titled "Foreign Real GDP Growth, Percent change, Q4/Q4") graphs real GDP growth for 2000 (actual), 2001 (projected), and 2002 (projected) as a bar chart. Approximate values for the three years are as follows.

Industrial countries (red): 3.2, 1.7, 2.8;

Asia (blue): 6, 1.9, 4.7;

Latin America (green): 4.8, 1.7, 4.1.

The range of the y-axis is [0, 7]. Foreign real GDP growth is calculated using U.S. export weights.

#### Latin America

#### Middle-left panel

##### Nominal Exchange Rates

Figure 3 plots "Nominal Exchange Rates, Foreign currency per U.S. dollar, July 2, 1999 = 100, Weekly" over 1999-2001 for Argentina, Brazil, and Mexico. The range of the y-axis is [90, 140]. The series for Argentina is flat, at 100. The series for Mexico fluctuates around 100, generally not deviating by more than 5, and drops to around 96 at the end of the sample. The series for Brazil starts at 100, increases to just over 110 by late 1999, declines to just under 100 by early 2000, and then rises increasingly rapidly to over 130 by the end of 2001.

#### Middle-right panel

##### Stripped Brady Bond Yield Spreads over U.S. Treasuries

Figure 4 plots "Stripped Brady Bond Yield Spreads over U.S. Treasuries, Percentage points, Weekly" over 1999-2001 for Argentina, Brazil, and Mexico. The range of the y-axis is [0, 20]. The series for Argentina fluctuates between about 8 and 14, with a U-shaped profile. The series for Brazil follows

much the same pattern, although typically being slightly higher during the first half of the period and slightly lower during the second half. The series for Mexico starts at around 8, trends downward to around 4 during 1999, and remains around 4 for the rest of the sample.

#### **Bottom-left panel** **Industrial Production**

Figure 5 plots "Industrial Production, July 1997 = 100, SA" over 1997H2-2001H1 for Argentina, Brazil, and Mexico. The range of the y-axis is [85, 120]. The series for Argentina fluctuates widely between 105 and 90, with dips near 90 in early 1999 and late 2000. The series for Brazil is similar but with less variation through 1999, and thereafter trending upward to around 113 by end-2000 and dropping to about 108 by the end of the sample. The series for Mexico trends smoothly upward from 100 to around 118 in mid-2000, falling to around 113 by the end of the sample.

#### **Bottom-right panel** **Real GDP Growth**

Panel 1 (titled "Real GDP Growth, Percent change, SAAR") lists real GDP growth for 2000, 2001H1, 2001H2, and 2002. Years are Q4/Q4; half years are Q2/Q4 or Q4/Q2; and calculations use U.S. export weights. The values for the four periods are as follows.

Line 1. Latin America: 4.8, 0.4, 2.9, 4.1;

of which:

Line 2. Mexico: 5.2, 0.1, 3.1, 4.4;

Line 3. Brazil: 4.2, 1.2, 2.0, 2.9;

Line 4. Argentina: -2.0, 1.0, 1.6, 1.9.

### **Chart 14** **Asia**

Chart 14 includes graphs of nominal exchange rates (Figure 1), offshore-dollar bond yield spreads over U.S. Treasuries (Figure 2), and worldwide semiconductor shipments versus Asian semiconductor producer IP (Figure 3), and tables of the share of high-tech goods (Panel 1) and real GDP growth (Panel 2).

#### **Top-left panel** **Nominal Exchange Rates**

Figure 1 plots "Nominal Exchange Rates, Foreign currency per U.S. dollar, July 2, 1999 = 100, Weekly" over 1999-2001 for China, Korea, Taiwan, and Thailand. The range of the y-axis is [90, 125]. The series for China is flat, at 100. The series for Korea is around 103 for most of 1999, drops to around 98 and remains at about that value through 2000, increases to around 117 and then drops to about 112 by the end of the sample. The series for Taiwan is similar, but only increases to around 107 by the end of the sample. The series for Thailand increases to around 110 in late 1999, drops back to near 100 by end-1999, and then trends generally upward to about 123 at the end of the sample.

#### **Top-right panel** **Offshore-Dollar Bond Yield Spreads over U.S. Treasuries**

Figure 2 plots "Offshore-Dollar Bond Yield Spreads over U.S. Treasuries, Percentage points, Daily" over 1999-2001 for Korea, the Philippines, and Thailand. The range of the y-axis is [0, 8]. The series for Korea is relatively flat throughout the sample, at around 2. The series for Thailand starts similarly, but falls to about 1 by the end of 2000 and then rises to about 3 by the end of the sample. The series for the Philippines starts at around 3 and remains near that value through 1999, increases

gradually to around 4 by late 2000, and then shifts to about 6 and remains near that value through the end of the sample.

### **Middle panel**

#### **Worldwide Semiconductor Shipments versus Asian Semiconductor Producer IP**

Figure 3 plots "Worldwide Semiconductor Shipments versus Asian Semiconductor Producer IP" over 1995-2001. The range of the y-axis is [8, 20] (billions of dollars, left axis, for Worldwide Semiconductor Shipments) and [90, 150] (June 1996 = 100, right axis, Asian Semiconductor Producer IP). The IP index is SA, 3-month moving average of Korean, Malaysian, Philippine, Singaporean, and Taiwanese IP weighted by shares of total U.S. exports. The series for Worldwide Semiconductor Shipments starts at just over \$10 billion, increases to over \$13 billion by end-1995, fluctuates around \$10-\$12 billion through mid-1999, increases steadily to about \$18 billion in late 2000, and decreases to around \$14 billion by the end of the sample. The series for the Asian Semiconductor Producer IP is qualitatively similar, except that it is relatively flat for 1995 and it does not decline so much in 2001. The series for the Asian Semiconductor Producer IP begins around 95 and ends at around 138.

### **Bottom-left panel**

#### **Share of High-Tech Goods**

Panel 1 (titled "Share of High-Tech Goods, Percent") lists the share of high-tech goods in IP and in total exports for five countries, as follows.

Line 1. Korea: 12, 31;

Line 2. Taiwan: 18, 31;

Line 3. Singapore: 47, 55;

Line 4. Malaysia: 20, 57;

Line 5. Philippines: 11, 57.

High-tech goods include semiconductors, computers and components, and telecommunications equipment and parts. Data for some countries include other electronic and electrical devices. Data for the share in total exports are 1998-2000 average. Data for Singapore are for 2000 only.

### **Bottom-right panel**

#### **Real GDP Growth**

Panel 2 (titled "Real GDP Growth, Percent change, SAAR") lists real GDP growth for 2000, 2001H1, 2001H2, and 2002. Years are Q4/Q4; half years are Q2/Q4 or Q4/Q2; and calculations use U.S. export weights. The values for the four periods are as follows.

Line 1. Developing Asia: 6.1, 0.7, 3.0, 4.7;

of which:

Line 2. China: 7.4, 7.0, 7.5, 7.6;

Line 3. Korea: 5.2, 1.6, 2.5, 4.2;

Line 4. Taiwan: 4.1, -1.4, 1.0, 3.8;

Line 5. Singapore: 11.0, -5.8, 4.0, 5.7;

Line 6. Hong Kong: 6.6, 1.2, 1.7, 4.0.

## **Chart 15**

### **Industrial Countries**

Chart 15 is a three-by-two panel including graphs of real industrial production (Figure 1), business confidence (Figure 2), employment (Figure 3), and consumer confidence (Figure 4), and tables of real GDP growth (Panel 1) and real domestic demand growth (Panel 2).

### **Top-left panel**

#### **Industrial Production**

Figure 1 plots "Industrial Production, July 1999 = 100, SA" over 1999-2001 for Canada, Japan, and the Euro area. The range of the y-axis is [98, 110]. All three series trend upward from 100 in 1999 to around 106 in the second half of 2000. For the remainder of the sample, the series for the Euro area trends upward to around 109 and then falls to around 107, the series for Canada falls off to around 105, and the series for Japan falls more sharply to around 100.

### **Top-right panel**

#### **Business Confidence**

Figure 2 plots "Business Confidence" over 1999-2001 for Canada, Japan, and the Euro area. The range of the y-axis is [70, 110] (left axis, 1999Q3 = 100, for Canada) and [-20, 10] (right axis, diffusion index, for Japan and for the Euro Area). The series for Canada starts at 100 and increases slightly before trending downward to about 78 by the end of the sample. The series for Japan starts at around -13, increases to around -7 by end-2000, and falls to around -19 by the end of the sample. The series for the Euro Area starts at around -7, increases to around 7 by mid-2000, and declines to around -5 by the end of the sample.

### **Middle-left panel**

#### **Employment**

Figure 3 plots "Employment, July 1999 = 100" over 1999-2001 for Canada, Japan, and the Euro area. The range of the y-axis is [98, 104]. The series for Japan fluctuates around 100 for the entire sample. The series for Canada trends upward from 100 in 1999 to just under 104 at the end of the sample. The series for the Euro area behaves similarly.

### **Middle-right panel**

#### **Consumer Confidence**

Figure 4 plots "Consumer Confidence" over 1999-2001 for Canada, Japan, and the Euro area. The range of the y-axis is [-6, 2] (left axis, diffusion index, for the Euro Area) and [90, 110] (right axis, 1999Q3=100, for Canada and Japan). The series for Canada fluctuates around 100, dipping to about 96 at the end of the sample. The series for Japan starts at 100, increases to around 108 by late 2000, and declines to around 100 by the end of the sample. The series for the Euro Area starts at around -3, increases to around 0 by end-1999, remains around 0 for the first half of 2000, declines to around -4 by end-2000, and fluctuates between -4 and -1 for the remainder of the sample.

### **Bottom-left panel**

#### **Real GDP Growth**

Panel 1 (titled "Real GDP Growth, Percent change, SAAR") lists real GDP growth for 2000, 2001H1, 2001H2, and 2002. Years are Q4/Q4; half years are Q2/Q4 or Q4/Q2; and calculations use U.S. export weights. The values for the four periods are as follows.

Line 1. Indust. Countries: 3.1, 1.4, 1.8, 2.7;

of which:

Line 2. Japan: 2.5, -1.0, -1.3, 1.0;

Line 3. Euro Area: 2.9, 1.8, 1.9, 2.6;

Line 4. United Kingdom: 2.6, 1.6, 2.4, 2.6;

Line 5. Canada: 3.5, 1.9, 2.4, 3.1.

## **Bottom-right panel**

### **Real Domestic Demand Growth**

Panel 2 (titled "Real Domestic Demand Growth, Percent change, SAAR") lists real domestic demand growth for 2000, 2001H1, 2001H2, and 2002. Years are Q4/Q4; half years are Q2/Q4 or Q4/Q2. The values for the four periods are as follows.

Line 1. Japan: 2.5, -0.6, -1.4, 0.9;

Line 2. Euro Area: 2.3, 0.8, 2.0, 2.5;

Line 3. United Kingdom: 2.9, 2.7, 2.8, 2.7;

Line 4. Canada: 2.7, 1.4, 2.8, 3.0.

## **Chart 16**

### **External Sector**

Chart 16 is a three-row panel of seven graphs and tables. The first row in the panel contains three bar graphs: determinants of core exports (Figure 1), determinants of core imports (Figure 2), and contribution to U.S. GDP growth (Figure 3). The second row contains tables of real export growth (Panel 1) and Real Import Growth (Panel 2). The third row contains a graph of the current account (Figure 4) and a table of capital flows (Panel 3).

## **Top-left panel**

### **Determinants of Core Exports**

Figure 1 (titled "Determinants of Core Exports, Percent change, Q4/Q4") graphs changes in determinants of core exports for 2000 (actual), 2001 (projected), and 2002 (projected). Approximate values for the three years are as follows.

Core export growth (red): almost 6%, slightly negative, just over 2%;

Contribution of foreign GDP growth (blue): just under 4%, 2%, 3%;

Contribution of relative prices (green): -1.5%, -1%, -1%;

Industrial output gap growth (yellow): 0.5%, -1%, less than -0.5%.

The range of the y-axis is [-4, 16].

## **Top-middle panel**

### **Determinants of Core Imports**

Figure 2 (titled "Determinants of Core Imports, Percent change, Q4/Q4") graphs changes in determinants of core imports for 2000 (actual), 2001 (projected), and 2002 (projected). Approximate values for the three years are as follows.

Core import growth (red): 10%, 1.5%, 7%;

Contribution of GDP growth (blue): 8%, 2%, 6%;

Contribution of relative prices (green): 1%, 2%, 0.5%.

The range of the y-axis is [0, 20].

## **Top-right panel**

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

Figure 3 (titled "Contribution to U.S. GDP Growth, Percentage points") graphs the contributions of exports and imports for 2000 (actual), 2001 (projected), and 2002 (projected) on a semi-annual basis. Approximate values for the six half-year periods are as follows.

Exports (red): 1, 0.3, -0.4, 0.3, 0.3, 0.8;

Imports (blue): -2, -1, 0.5, -0.6, -1, -1.

The range of the y-axis is [-3, 3].

### **Middle-left panel**

#### **Real Export Growth**

Panel 1 (titled "Real Export Growth, Percent change, Q4/Q4") lists percent changes for exports and the percentage point contribution from components thereof over 1999-2002. Values for each year are as follows.

Line 1. Growth of real exports, G & S: 4.3, 6.7, -0.9, 5.1.

Percentage point contribution

Line 2. Services: 0.1, 0.8, 0.3, 1.6;

Line 3. Goods: 4.2, 5.9, -1.2, 3.5; of which

Line 4. Core: 2.3, 3.6, -0.1, 1.3.

"Core" excludes computers and semiconductors.

### **Middle-right panel**

#### **Real Import Growth**

Panel 2 (titled "Real Import Growth, Percent change, Q4/Q4") lists percent changes for imports and the percentage point contribution from components thereof over 1999-2002. Values for each year are as follows.

Line 1. Growth of real imports, G & S: 12.0, 11.3, 0.5, 7.3.

Percentage point contribution

Line 2. Services: 0.4, 2.0, 0.7, 0.8;

Line 3. Goods: 11.6, 9.3, -0.2, 6.5; of which

Line 4. Core: 9.5, 6.9, 0.4, 4.5.

"Core" excludes computers, semiconductors, and oil.

### **Bottom-left panel**

#### **Current Account**

Figure 4 (titled "Current Account") plots the current account over 1990-2002, measured both in percent of GDP (left axis) and in billions of dollars (the "level," right axis). Except for a brief positive spike in 1991, the current account is approximately -100 billion from 1990 through 1997. Thereafter it trends downward to about -450 billion in 2000, with projections continuing down to about -600 billion by end-2002. On this figure's scaling, the data in percent nearly overlap those in billions of dollars. The range of the y-axis is [-6, 2] (left axis) and [-600, 200] (right axis).

### **Bottom-right panel**

#### **Capital Flows**

Panel 3 (titled "Capital Flows, Billions of dollars, AR") lists capital flows for 2000 and 2001Q1. The values for those two periods are as follows.

Official capital, net: 36, 17;

of which: Japan: 19, -11;

Private capital, net: 407, 295;

of which:

For. purch. of U.S. sec.: 433, 591;

of which: Treasuries: -53, 2;

U.S. purch. of for. sec.: -125, -114;

For. D.I. in U.S.: 288, 168;

U.S. D.I. abroad: -152, -144.

## **Chart 17**



## Top panel

**Table 1 for Economic Projections for 2001**

Percent change, Q4/Q4

Item, Period	FOMC: Range	FOMC: Central Tendency	Staff
Nominal GDP, July 2001	3 1/4 to 5	3 1/2 to 4 1/4	3.6
Nominal GDP, February 2001	3 3/4 to 5 1/4	4 to 5	3.8
Real GDP, July 2001	1 to 2	1 1/4 to 2	1.4
Real GDP, February 2001	2 to 2 3/4	2 to 2 1/2	1.8
PCE Prices, July 2001	2 to 3	2 to 2 1/2	2.0
PCE Prices, February 2001	1 3/4 to 2 1/2	1 3/4 to 2 1/4	1.8

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

**Table 2 for Economic Projections for 2001**

Average level, Q4, Percent

Item, Period	FOMC: Range	FOMC: Central Tendency	Staff
Unemployment rate, July 2001	4 3/4 to 5	4 3/4 to 5	5.2
Unemployment rate, February 2001	4 1/2 to 5	About 4 1/2	5.2

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

## Bottom panel

**Table 1 for Economic Projections for 2002**

Percent change, Q4/Q4

Item	FOMC: Range	FOMC: Central Tendency	Staff
Nominal GDP	4 1/2 to 6	5 1/4 to 5 1/2	5.3
Real GDP	3 to 3 1/2	3 to 3 1/4	3.5
PCE Prices	1 1/2 to 3	2 to 2 1/2	1.7

**Table 2 for Economic Projections for 2002**

Average level, Q4, Percent

Item	FOMC: Range	FOMC: Central Tendency	Staff
Unemployment rate	4 1/2 to 5 1/2	4 3/4 to 5 1/4	5.6

▲ [Return to top](#)

[Home](#) | [Monetary policy](#) | [FOMC](#) | [FOMC transcripts](#)

[Accessibility](#) | [Contact Us](#)

Last update: October 24, 2008