Appendix 1: Materials used by Messrs. Wilcox, Elmendorf, and Reinhart

# RESTRICTED CONTROLLED (FR) CLASS I (FOMC) 

Material for Board Staff Presentation on:

> Considerations Pertaining to the Establishment of a Specific, Numerical, Price-Related Objective for Monetary Policy

Divisions of Research \& Statistics and Monetary Affairs

February 1, 2005

## A Specific, Numerical, Price-Related Objective for Monetary Policy?



## Key characteristics of a specific, numerical, price-related objective:

- Numerical rather than qualitative;
- Stated in terms of a particular published index; and
- Either inflation control or price-level control.

A premise of the paper:

- A price objective should be chosen to minimize the costs of deviations from price stability.
- The premise suggests that the objective should be defined with respect to the price index most closely related to such costs.


## Potential Benefits and Costs of Adopting a Specific Price-Related Objective

## Potential Benefits:

- Could help preserve the present commitment to price stability.
- Could better anchor long-run inflation expectations and thereby reduce the volatility of both inflation and real activity.
- Could improve public understanding of monetary policy.
- Could help focus policy debates within the FOMC.


## Potential Costs:

- Could mislead the public into believing that emphasis had shifted toward the price objective.
- Could cause the FOMC inadvertently to place more emphasis on the price objective.
- Could diminish the FOMC's credibility when inflation differed from the stated objective.
- Could constrain future actions of the FOMC in an unhelpful manner.


## Empirical Evidence:

- Little to no evidence regarding the likely influence on FOMC decision-making or the quality of communications with the public.
- Some hints from foreign experience that specific price objectives have helped anchor long-term inflation expectations.
- Disputed evidence that the reduced volatility of inflation and real output owes to improved conduct of U.S. monetary policy.
- Simulation-based evidence that better-anchored inflation expectations would reduce the volatility of inflation and real output.


## Operational Issues Related to Specifying a Numerical Price-Related Objective

| A checklist for policymakers: <br> - Which price index? <br> - The inflation rate or the price level? <br> - What average rate? <br> - Point objective or range? | For index, we favor consumer prices on the grounds of: <br> - Familiarity. <br> - Quality of measurement. <br> - Empirical result that inflation rates move together in the long run. |
| :---: | :---: |

## If an inflation objective, at what rate?

- Measurement bias: Nearly 1 percentage point for CPI; about $1 / 2$ percentage point for PCE prices.
- Rationales for aiming for zero true inflation: Traditional costs of inflation.
- Rationales for aiming for positive true inflation: Downward nominal wage rigidity; zero lower bound on nominal interest rates.

Effect of zero lower bound under an updated Taylor rule:

|  | Target PCE inflation rate (measured rate, with bias-adjusted rate in parentheses) |  |  |
| :---: | :---: | :---: | :---: |
|  | 1/2 (0) | $11 / 2$ (1) | 2112 (2) |
| Fraction of time with funds rate at zero | . 16 | . 10 | . 06 |
| Standard deviation of output gap* | 2.53 | 2.31 | 2.21 |
| Standard deviation of unemployment rate* <br> *measured in percentage points | 1.40 | 1.27 | 1.22 |

## Accuracy in Achieving an Inflation Objective

## Imperfect controllability:

- Inflation is volatile, and monetary policy influences it only indirectly and with a lag.
- The FOMC could not hit a point objective precisely or guarantee a narrow range.

| Percent of time that PCE inflation averaged over four quarters could be held within $\pm 1$ percentage point of desired rate: |  |  |
| :---: | :---: | :---: |
|  | Total | Core |
| Volatility of economic shocks matters: |  |  |
| 1. Drawn from 1968 to 2004 experience | 59 | 64 |
| 2. Drawn from 1984 to 2004 experience | 68 | 73 |
| Expectations formation matters: |  |  |
| 3. VAR-based expectations with imperfect credibility | 68 | 73 |
| 4. VAR-based expectations with perfect credibility | 80 | 89 |

[^0]
## Governance Issues Related to the Specification of Price Stabilty



## Key Questions for Today's Discussion

## How do you define price stability?

- Is it known by inference about behavior of by a numerical specification?
- If the latter,
- What price index do you prefer?
- Should the objective be stated in terms of a path for the price level or as the rate of inflation?
- What are the desired point estimates or ranges for the inflation objective?

What role should the price objective play in the Committee's policy process?

- Alternative I: Maintain the status quo
- Perhaps provide more information to the public over time as to your attitudes toward prevailing and prospective inflation
- Alternative II: Vote formally on a numerical inflation goal
- Alternative III: Survey participants as to the appropriate inflation objective


## Appendix 2: Materials used by Mr. Kos

## Current U.S. 3-Month Deposit Rates and

 Rates Implied by Traded Forward Rate AgreementsDecember 1, 2004 - January 31, 2005


2-Year Treasury Yield
December 1, 2004 - January 31, 2005


Yield Spread Between 2-and 10-Year
Treasury Notes
December 1, 2004-January 31, 2005


Percent
-3.4
-3.0

2.8
2.8
20


Yield Spread Between 10- and 30-Year
Treasury Notes
December 1, 2004 - January 31, 2005


10-Year Swap Spread
June 30, 2004 - January 28, 2005


Basis Points

Basis Points
June 30, 2004 - January 28, 2005


High Yield and EMBI+ Spreads
June 30, 2004 - January 28, 2005


Basis Points

Basis Points
Basis Points


MBS Spreads

Implied Swaption Volatility
May 3, 1999 - January 28, 2005
Percent
Percent


## Euro-Area 3-Month Deposit Rates and

 Rates Implied by Traded Forward Rate AgreementsDecember 1, 2004 - January 31, 2005


## Euro-Dollar Currency Pair

December 1, 2004 - January 31, 2005

## Dollar-Yen Currency Pair

December 1, 2004 - January 31, 2005


Dollar-Yuan Exchange Value Implied by the NDF Market
July 1, 2004 - January 31, 2005
Yuan per Dollar



Current Account Balances (CAB) at the Bank of Japan and the Overnight Call Rate

April 30, 1998 - December 31, 2004


Apr- Apr- Apr- Apr- Apr- Apr- Apr$98 \quad 99 \quad 00 \quad 01 \quad 02 \quad 03 \quad 04$

1-month Rolling Average of the 3-month Bill Auction History
April 30, 2002 - January 19, 2005


## Bid-to-Cover on BoJ Outright Purchases of FB/TBs

April 8, 2004 - January 13, 2005


Japanese Call Market
Page 4 Uncollateralized Amount Outstanding January 4, 1999 - January 28, 2005

$\begin{array}{ccccccccc}\text { Jan- } & \text { Oct- } & \text { Jul- } & \text { Apr- } & \text { Jan- } & \text { Oct- } & \text { Jul- } & \text { Apr- } & \text { Jan- } \\ 99 & 99 & 00 & 01 & 02 & 02 & 03 & 04 & 05\end{array}$
BoJ Securities Holdings
July 31, 1996 - December 31, 2004


* Source: BoJ
* Tegata Bills from financial institutions incl. bills utilizing corp debt obligations * Japanese Government Securities (JGS): amount outstanding of JGBs, TBs, and FBs purchased from financial institutions


## Changes in the Japanese Government Bill

 Curve Since the Start of Quantitative Easing

Daily Intra-Day Standard Deviations of the Federal Funds Rate


Average Intraday Standard Deviation of Federal Funds Rates (Maintenance Period Averages)
Basis Points For Maintenance Periods Ending January 21, 2004 - January 19, 2005


February 1-2, 2005

Appendix 3: Materials used by Messrs. Slifman and Struckmeyer, and Ms. Johnson

## STRICTLY CONFIDENTIAL (FR) CLASS I-FOMC*

## Material for

## Staff Presentation on the Economic Outlook

February 2, 2005
*Downgraded to Class II upon release of the February 2005 Monetary Policy Report.

Chart 1
Recent Indicators

Private Payroll Employment


Real PCE exc. Motor Vehicles*

*In this and subsequent charts, NIPA series in 2004:Q4 are from the January Greenbook.

Orders and Shipments of Nondefense Capital Goods*

*Excluding aircraft.

Manufacturing Industrial Production


Sales of Light Vehicles


Real GDP

$\left[\right.$|  | Percent change, a.r. |  |
| :---: | :---: | :---: |
|  | 2004:Q4 |  |
| 1. Real GDP | 3.5 | 3.1 |
| Contributions (percentage points) |  |  |
| 2. Final sales | 2.7 | 2.7 |
| 3. Inventories | .8 | .4 |
|  |  |  |$]$

Chart 2

## Overview

Key Background Factors

- Monetary policy: We assume a continuing withdrawal of monetary accommodation over the next two years. The federal funds rate reaches 3 percent in the fourth quarter of this year and $3-1 / 2$ percent in the latter part of 2006 - a path quite similar to that implied by futures quotes.
- Fiscal policy: FI is expected to be neutral in 2005 and provide only a small positive impetus to GDP growth in 2006.
- Oil prices: We continue to be guided in our forecast by futures markets, which expect prices to drift down over the next two years.
- Dollar: The foreign exchange value of the dollar is expected to drift down.
- Stock market: Prices are assumed to rise $6-1 / 2$ per cent per year, which would roughly maintain risk-adjusted parity with the yield on long-term bonds.
- House prices: The rate of increase is expected to slow from last year's torrid pace.

Real Gross Domestic Product


## What Keeps Growth Above Potential Through 2006?

- Monetary policy: The real fed funds rate is projected to still be below its long-run average over the projection period and on the stimulative side of the short-run measures of $r$-star shown in the Bluebook.
- Other financial market conditions:
- Nominal long-term rates are projected to be little changed, despite the assumed rise in short-term rates.
- Corporate balance sheets are quite strong: Cash is abundant and interest expenses relative to cash flow are at low levels.
- Defaults, delinquencies and risk spreads are quite low.
- Banks continue to ease lending standards.
- Oil prices: Higher oil prices reduced GDP growth $3 / 4$ percentage point in 2004. The negative effects wane to $-1 / 4$ percentage point in 2005 as oil prices begin to recede; the projected decline in prices boosts GDP growth slightly in 2006.

Real Federal Funds Rate*


## Bank Lending Standards for C\&I Loans


*Percentage of banks reporting tighter standards less percentage of banks reporting easier standards. Source: Sr. Loan Officer Survey.

Interest Expense to Cash Flow


Crude Oil Prices - WTI


Chart 4

## Household Sector

Real PCE and DPI


Household Net Worth to DPI


Single-family Housing Starts


Financial Obligations Ratio


House Prices*


Weighted Average Mortgage Rate*


## Business Sector

Equipment and Software exc. Transportation


Rate of Return on Capital for
Nonfinancial Corporate Business*

*Nonfinancial corporate profits with IVA and CADJ plus interest, divided by nonfinancial stock of fixed assets.

Equipment and Software


Capacity Utilization Rate


Reserve Bank Queries on Capital Spending Plans
(Percent)
$\left[\begin{array}{lcc}\hline & & \\ \hline & \begin{array}{c}\text { Jan } \\ 2004\end{array} & \begin{array}{c}\text { Jan } \\ 2005\end{array} \\ \hline \begin{array}{l}\text { Plan to increase spending } \\ \text { over next } 6 \text { to 12 months }\end{array} & 51.7 & 47.3 \\ \text { Reasons cited for increase:* } & & \\ \text { Expected sales growth } & 53.6 & 47.7 \\ \text { Replace IT equip. } & 41.1 & 39.9 \\ \text { Replace other equip. } & 42.3 & 41.5 \\ \hline\end{array}\right]$
*Percent of respondents planning to increase spending.

Price Index for Desktop Computers


Source: Staff estimates.
*First three quarters (latest data available)

## Labor Markets

Nonfarm Payroll Employment


Labor Productivity


Structural Labor Productivity


Labor Force Participation Rate



## Compensation

Hourly Labor Compensation


Inflation Expectations


Unemployment Gap


ECI Benefits


Chart 8

## Recent Price Developments

Consumer Prices


PCE Food Prices


Core PCE Components

$\left[\right.$|  | 12-month percent change |  |  |
| :---: | :---: | :---: | :---: |
| Core PCE | 2002 | 2003 | 2004 |
| Market based | 1.7 | 1.1 | 1.5 |
| Goods | -1.6 | -2.3 | 0.0 |
| Services | 3.0 | 2.9 | 2.6 |
| Nonmarket based | 3.6 | 1.3 | 0.5 |$]$

PCE Energy Prices


Core PCE Prices


PPI-Intermediate Materials less Food and Energy


## Inflation Outlook

PCE Prices


## Core PCE Prices



Price Markup over Trend Unit Labor Costs


PCE Energy Prices


Core Non-fuel Import Prices


Alternative Projections of Core PCE Prices


Chart 10

## Financial Developments

(Monthly data)


Term Structure of Three-Month Euro Futures


Three-Month Interest Rates


Term Structure of Three-Month Yen Futures


Broad Stock Price Indexes


Chart 11

## Foreign Outlook

Foreign Real GDP*


* Aggregates weighted by shares of U.S. exports.
${ }^{* *}$ Year is Q4/Q4; half year is Q4/Q2; quarters are percent change from previous quarter.


## Business Confidence



Consumer Confidence



## Chart 12

## Emerging Market Economies




## Trade Developments

Trade in Goods and Services
Goods Exports By Region
Billions of dollars, a.r.
$\left[\begin{array}{lrrr} & & \\ \hline & \text { Q3 } & \text { O-N** }^{*} \text { Change } \\ & & & \\ \text { 1. Balance } & -621 & -698 & -77 \\ & & & \\ \text { Imports: } & & & \\ \text { 2. G \& S } & 1780 & 1858 & 78 \\ \text { 3. Cons. Gds. } & 365 & 386 & 21 \\ \text { 4. Machinery } & 180 & 182 & 2 \\ \text { 5. Ind. Sup.* } & 241 & 244 & 3 \\ \text { 6. Oil } & 180 & 220 & 40 \\ \text { 7. Other } & 814 & 826 & 12 \\ \text { Exports: } & & & \\ \text { 8. G \& S } & 1158 & 1160 & 2 \\ \text { 9. Machinery } & 169 & 165 & -4 \\ \text { 10. Ind. Sup. } & 190 & 195 & 5 \\ \text { 11. Other } & 799 & 800 & 1 \\ \hline\end{array}\right.$

* Excludes oil.
** Average of October and November data.


Trade Prices

## Core Import Prices



## External Sector

Real Export Growth

*Excludes computers and semiconductors.

Contributions to U.S. GDP Growth


Real Import Growth

|  |  |  | Percent, Q4/Q4 |  |  |
| :--- | :--- | :--- | :--- | :--- | :---: |
|  | 2003 | 2004 | 2005 | 2006 |  |
|  |  |  |  |  |  |
| 1. Goods and <br> services | 4.9 | 9.3 | 5.2 | 7.6 |  |
| Percentage point contribution: <br> 2. Services | 0.6 | 0.3 | 0.6 | 0.7 |  |
| 3. Goods <br> of which | 4.2 | 9.0 | 4.6 | 6.9 |  |
| 4. Core* |  |  |  |  |  |

*Excludes computers, semiconductors, and oil.


Simulation Results
Billions of dollars

|  | 2004Q42006Q4 Change |  |  |
| :---: | :---: | :---: | :---: |
| Trade balance baseline weaker dollar |  |  |  |
|  | -689 | -720 | -31 |
|  | -689 | -689 | 0 |
| Current account balance |  |  |  |
| baseline | -774 | -881 | -107 |
| weaker dollar | -774 | -863 | -89 |

## ECONOMIC PROJECTIONS FOR 2005

|  | FOMC |  | Staff |
| :---: | :---: | :---: | :---: |
|  | Range | Central Tendency |  |
|  | -------------Percentage change, Q4 to Q4----------- |  |  |
| Nominal GDP <br> July 2004 | $\begin{gathered} 5 \text { to } 6 \\ (43 / 4 \text { to } 61 / 2) \end{gathered}$ | $\begin{gathered} 51 / 2 \text { to } 53 / 4 \\ (51 / 4 \text { to } 6) \end{gathered}$ | $\begin{aligned} & 5.4 \\ & (5.0) \end{aligned}$ |
| Real GDP <br> July 2004 | $\begin{aligned} & 31 / 2 \text { to } 4 \\ & (31 / 2 \text { to } 4) \end{aligned}$ | $\begin{aligned} & 33 / 4 \text { to } 4 \\ & (31 / 2 \text { to } 4) \end{aligned}$ | $\begin{gathered} 3.9 \\ (3.6) \end{gathered}$ |
| Core PCE Prices <br> July 2004 | $\begin{gathered} 11 / 2 \text { to } 2 \\ (11 / 2 \text { to } 21 / 2) \end{gathered}$ | $\begin{aligned} & 11 / 2 \text { to } 13 / 4 \\ & (11 / 2 \text { to } 2) \end{aligned}$ | $\begin{gathered} 1.6 \\ (1.6) \end{gathered}$ |
|  | --------------Average level, Q4, percent-------------- |  |  |
| Unemployment rate July 2004 | 5 to $51 / 2$ ( 5 to $5^{1 / 2}$ ) | $\begin{gathered} 51 / 4 \\ (5 \text { to } 51 / 4) \end{gathered}$ | $\begin{gathered} 5.3 \\ (5.3) \end{gathered}$ |

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

ECONOMIC PROJECTIONS FOR 2006

|  | FOMC |  | Staff |
| :---: | :---: | :---: | :---: |
|  | Range | Central Tendency |  |
|  | -------------Percentage change, Q4 to Q4----------- |  |  |
| Nominal GDP | 5 to 53/4 | 5 to 51⁄2 | 5.3 |
| Real GDP | $31 / 4$ to $33 / 4$ | $31 / 2$ | 3.6 |
| Core PCE Prices | $11 / 2$ to 2 | $11 / 2$ to $13 / 4$ | 1.4 |
|  | -------------Average level, Q4, percent-------------- |  |  |
| Unemployment rate | 5 to $51 / 4$ | 5 to 51⁄4 | 5.1 |

February 1-2, 2005

## Appendix 4: Materials used by Mr. Olson

## Nonperforming Assets <br> All Insured Commercial Banks



Net Chargeoffs
All Insured Commercial Banks





## Loan Loss Provision

## Banks LT \$1 billion



| Seasonal Factors (Out of 100 percent) |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| All Insured Commercial Banks |  |  |  |  | Banks LT \$1 billion |  |  |  |  |
|  | 1Q | 2Q | 3Q | 4Q |  | 1Q | 2Q | 3Q | 4Q |
| NPA Ratio | 101.3 | 100.2 | 100.6 | 97.9 | NPA Ratio | 101.7 | 99.9 | 100.5 | 97.8 |
| Net <br> Charge-off <br> Ratio | 90.2 | 96.6 | 96.3 | 116.7 | Net Charge-off Ratio | 76.0 | 92.4 | 91.7 | 139.7 |
| Prov to Avg Loans | 91.9 | 94.6 | 98.9 | 114.3 | Prov to Avg Loans | 85.3 | 92.5 | 97.7 | 124.4 |
| Other Key Statistics |  |  |  |  |  |  |  |  |  |
|  | Total | Mean | S.D. |  |  | Total | Mean | S.D. |  |
| NPA Ratio | 105.94 | 1.80 | 1.32 |  | NPA Ratio | 80.55 | 1.37 | 0.74 |  |
| Net <br> Charge-off Ratio | 51.75 | 0.88 | 0.35 |  | Net Charge-off Ratio | 26.54 | 0.45 | 0.18 |  |
| Prov to Avg Loans | 54.21 | 0.92 | 0.38 |  | Prov to Avg Loans | 34.19 | 0.58 | 0.22 |  |

February 1-2, 2005

## Appendix 5: Materials used by Mr. Reinhart

Restricted Controlled (FR) Class I (FOMC)

## Material for <br> FOMC Briefing on Monetary Policy Alternatives

Vincent R. Reinhart
February 2, 2005

## Exhibit 1

## The Case for Tightening 25 Basis Points



Values from Policy Rules and Futures Markets


An explanatory note is provided in Chart 9 of the Bluebook.

## Exhibit 2

When Will You Stop Tightening?

Market Participants Assume:



Range of Estimated Equilibrium Real Rates


An explanatory note is provided in Chart 8 of the Bluebook.

## Exhibit 3

## Assessing the Risk Assessment

## From the FOMC Statement released December $14^{\text {th }}$

The Committee perceives the upside and downside risks to the attainment of both sustainable growth and price stability for the next few quarters to be roughly equal. With underlying inflation expected to be relatively low, the Committee believes that policy accommodation can be removed at a pace that is likely to be measured. Nonetheless, the Committee will respond to changes in economic prospects as needed to fulfill its obligation to maintain price stability.

## Three alternatives

1. Get out of the business of hinting-either obliquely or directly-about future actions by dropping the entire paragraph.
2. Revive the first sentence assessing risks by basing it on the assumption of an unchanged stance of policy for the next few quarters and couching it in terms of probabilities, not risks.
3. Rely on the gradual evolution of the latter part of the paragraph to convey a sense of the future path of interest rates.

| Table 1: Alternative Language for the January FOMC Announcement |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | December FOMC | Alternative A | Alternative B | Alternative C |
| Policy Decision | 1. The Federal Open Market Committee decided today to raise its target for the federal funds rate by 25 basis points to $2 \frac{1}{4}$ percent. | The Federal Open Market Committee decided today to keep its target for the federal funds rate at $2^{1 / 4}$ percent. The Committee's policy actions since mid2004 have materially reduced the degree of monetary policy accommodation. | The Federal Open Market Committee decided today to raise its target for the federal funds rate by 25 basis points to $2^{1 / 2}$ percent. | The Federal Open Market Committee decided today to raise its target for the federal funds rate by 50 basis points to $23 / 4$ percent. |
| Rationale | 2. The Committee believes that, even after this action, the stance of monetary policy remains accommodative and, coupled with robust underlying growth in productivity, is providing ongoing support to economic activity. | The Committee believes that the stance of monetary policy remains somewhat accommodative and, coupled with robust underlying growth in productivity, is providing ongoing support to economic activity. | [Unchanged from December statement] | The Committee believes that the stance of monetary policy remains accommodative and, coupled with robust the underlying growth in productivity, is providing ongoing support to economic activity. |
|  | 3. Output appears to be growing at a moderate pace despite the earlier rise in energy prices, and labor market conditions continue to improve gradually. <br> 4. Inflation and longer-term inflation expectations remain well contained. | Output appears to be growing at a moderate pace despite the earlief rise in energy prices, and labor market conditions seem to be improving gradually. <br> [Unchanged from <br> December statement] | Output appears to be growing at a moderate pace despite the rise in energy prices, and labor market conditions continue to improve gradually. <br> [Unchanged from <br> December statement | Output appears to be growing at a moderate pace despite the earlier rise in energy prices, and labor market conditions continue to improve gradually. <br> Inflation and tenger-term inflation expectations remain well contained, but rising business costs have the potential to put upward pressure on prices. |
|  | 5. The Committee perceives the upside and downside risks to the attainment of both sustainable growth and price stability for the next few quarters to be roughly equal. | Unchanged from December statement] | Unchanged from December statement] | [Unchanged from December statement] |
| Assessment of Risk | 6. With underlying inflation expected to be relatively low, the Committee believes that policy accommodation can be removed at a pace that is likely to be measured. Nonetheless, the Committee will respond to changes in economic prospects as needed to fulfill its obligation to maintain price stability. | With underlying inflation expected to be relatively low, the Committee believes that policy accommodation can be removed at a pace that is likely to be measured. Nonetheless, the Committee will respond to changes in economic prospects as needed to fulfill its obligation to promote price stability and sustainable growth. | Unchanged from December statement] | [None] |


[^0]:    $\Gamma$

    ## Summary:

    - The FOMC could likely keep four-quarter total PCE inflation within a $\pm$ 1-percentage-point band about $2 / 3$ to $3 / 4$ of the time.

