

# The Japanese System of National Accounts (JSNA) and Related Challenges

(For ESRI meeting on the JSNA, March 24, 2005)

Department of National Accounts  
Economic and Social Research Institute,  
Cabinet Office of Japan

# 1. Recent context of JSNA compilation

- Structural change in the economy
  - IT revolution during the latter half of the 1990s
- Low economic growth after the “bubble burst”
- Re-examination of Japan’s statistical system
  - Major concerns about the reliability of economic statistics
- International trends
  - Increasing adoption of chain indexes
  - Further developments in the U.S., Canada, and Europe

## 2. More demands on JSNA

- More comprehensive and updated concepts to show a broad range of activities in the economy
- More accurate measures of economic growth
- More timely and detailed estimates to give useful information for policymaking
- More comparable to international figures

## Recent development of JSNA

August 2002	Introduction of new flash estimates
April 2004	Set-up of new Advisory Committee
December 2004	Introduction of a chain index
Around the end of 2005	Benchmark revision (new benchmark year will be 2000)
...	Priority issues (see 17)

# The new estimation of quarterly GDP (August 2002)

## (1) Incorporation of supply-side data

- The new method utilizes enriched supply-side data, especially concerning the service sector, and supplements the expenditure-based QE using such data.
- The household survey has had some difficulties in achieving an accurate picture of consumption expenditure (expenditure for expensive goods, increasing single families).
- Constancy with annual estimates (use of supply-side data only)

## (2) Earlier release

- Before August 2002  
+ approximately 2 months and 7 days
- After August 2002  
+ approximately 1 month and 2 weeks

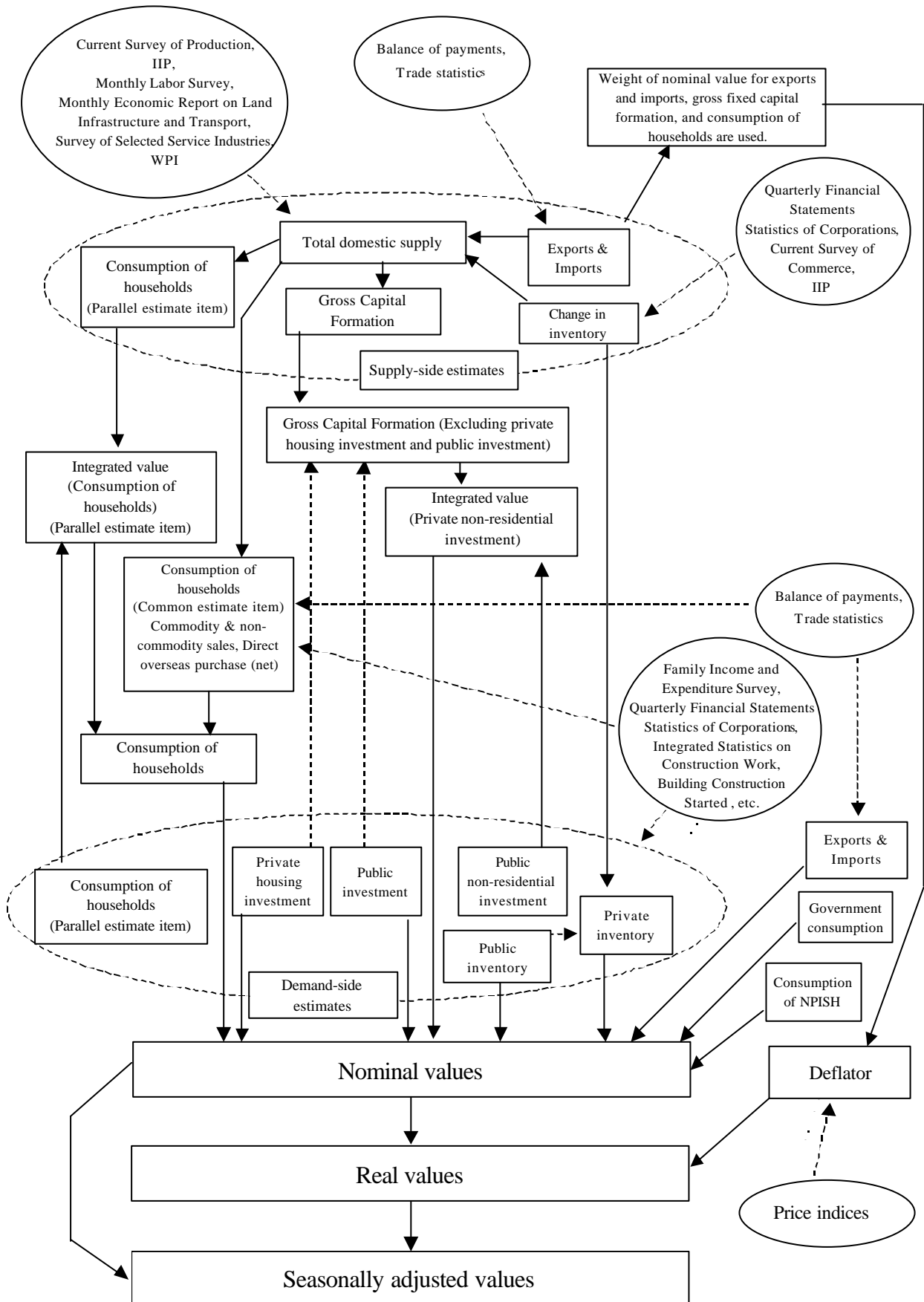
cf. U.K. + 3.5 weeks

U.S. + 1 month

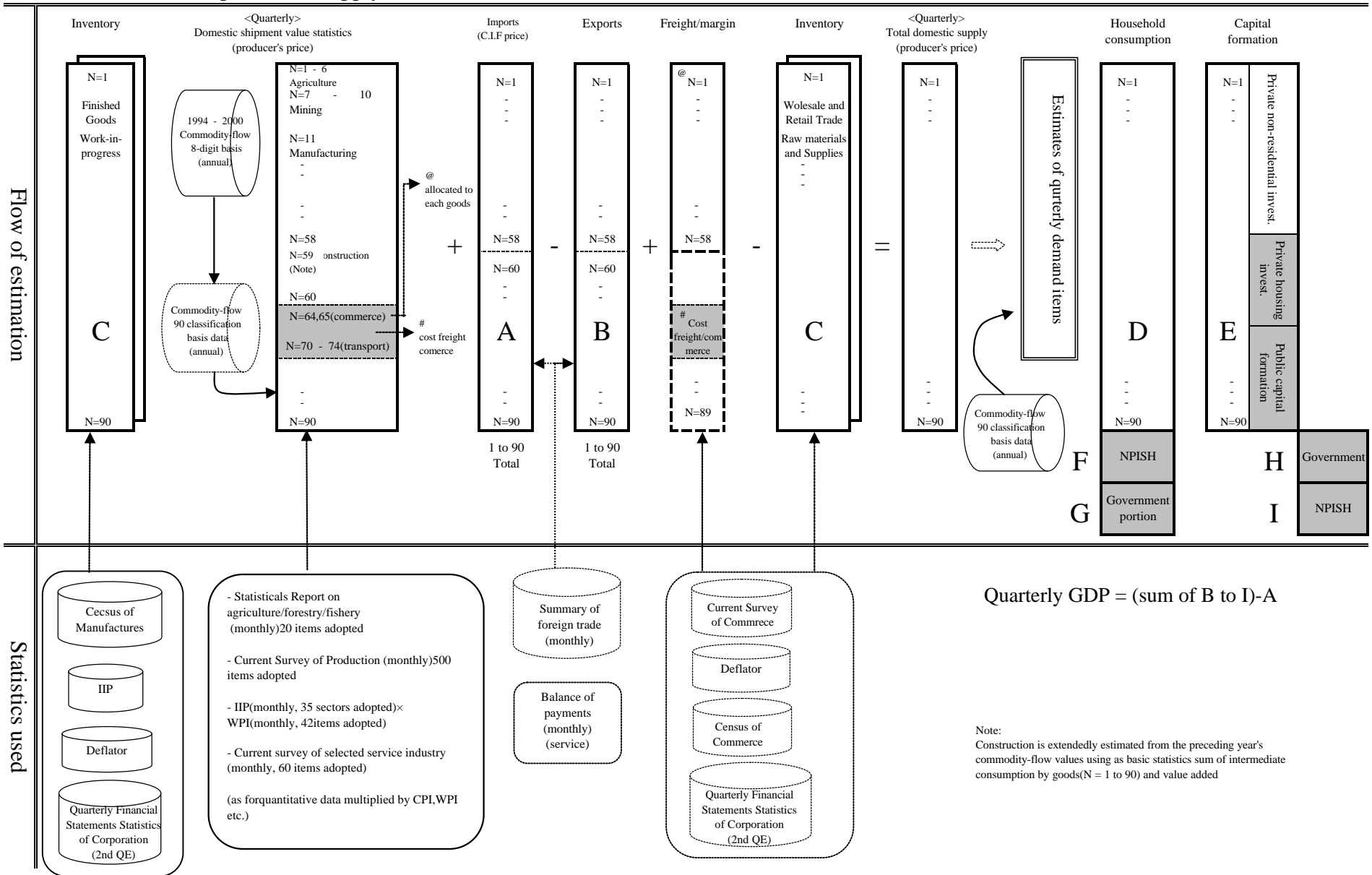
Germany, France + 1 month and 2 weeks

Canada + 2 months

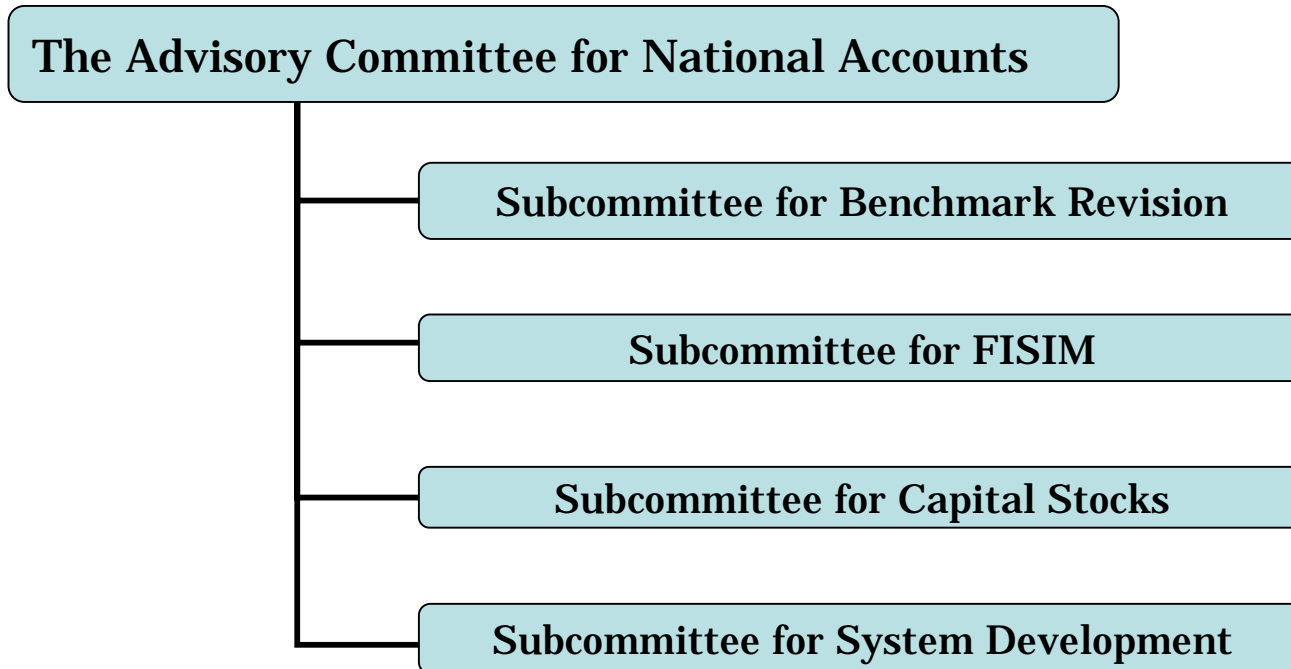
**Chart 1 Image of New Estimation of QE**



# Reference 1 Concept chart of supply-side estimation



# JSNA review framework



# Adoption of chain indexes

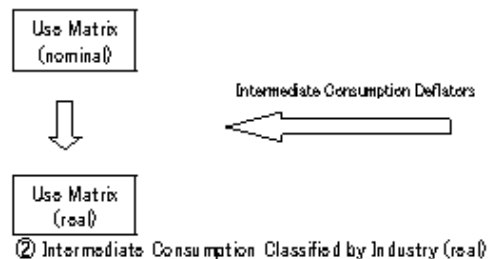
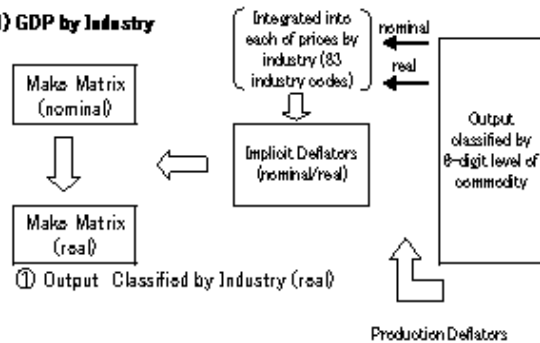
- **Background to the introduction (Figs. 2 and 3)**
  - Plummeting prices of IT goods and services
  - Introduction of the hedonic approach into price indexes
  - The conventional benchmark revision took place every five years (10-year delay at maximum).
  - The so-called substitution bias has probably increased in this IT-led recovery.
- **Effects of the introduction (Figs. 4, 5, 6, and 7)**
  - The fixed-based year method (baseyear=1995) → Chain indexes (Laspeyres/Paasche type) based on previous years (reference year=2000)
  - Introduction almost one year earlier
  - Smooth transition (welcomed by users)
- **Comparison of different chain-type indexes (Figs. 8, 9, and 10)**

# Fig. 1: Outline of compilation of deflators and real figures

(Deflation for Production Series, fixed-based)

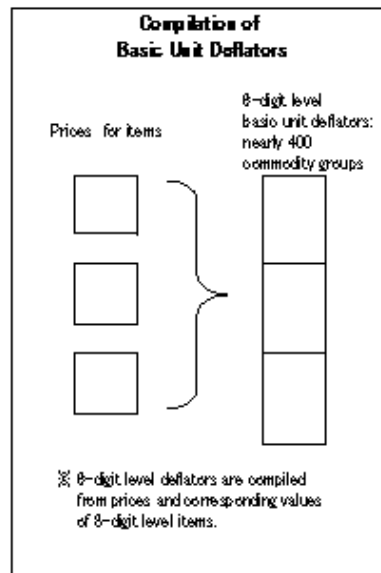
(Deflation for Expenditure Series, chain-linked)

## (1) GDP by Industry



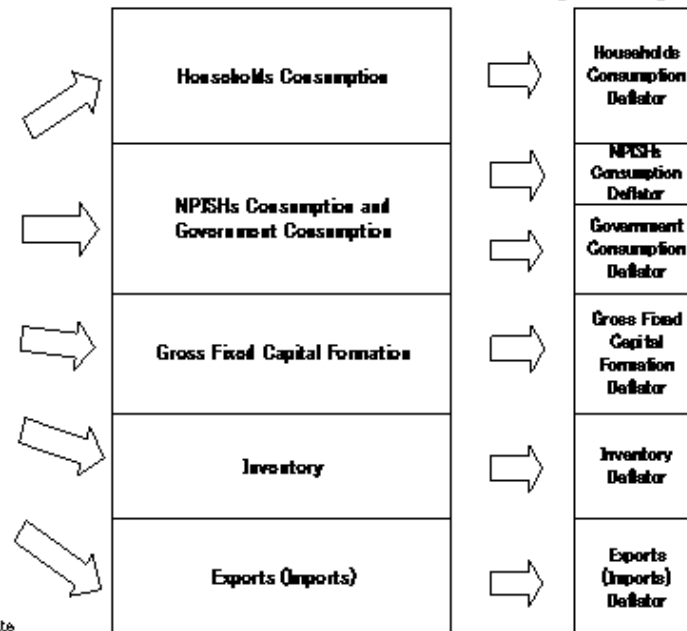
### Real GDP Classified by Industry

- = ① Output Classified by Industry (real)
- ② Intermediate Consumption Classified by Industry (real)



## (Implicit Deflators)

Nominal Figures / Real Figures



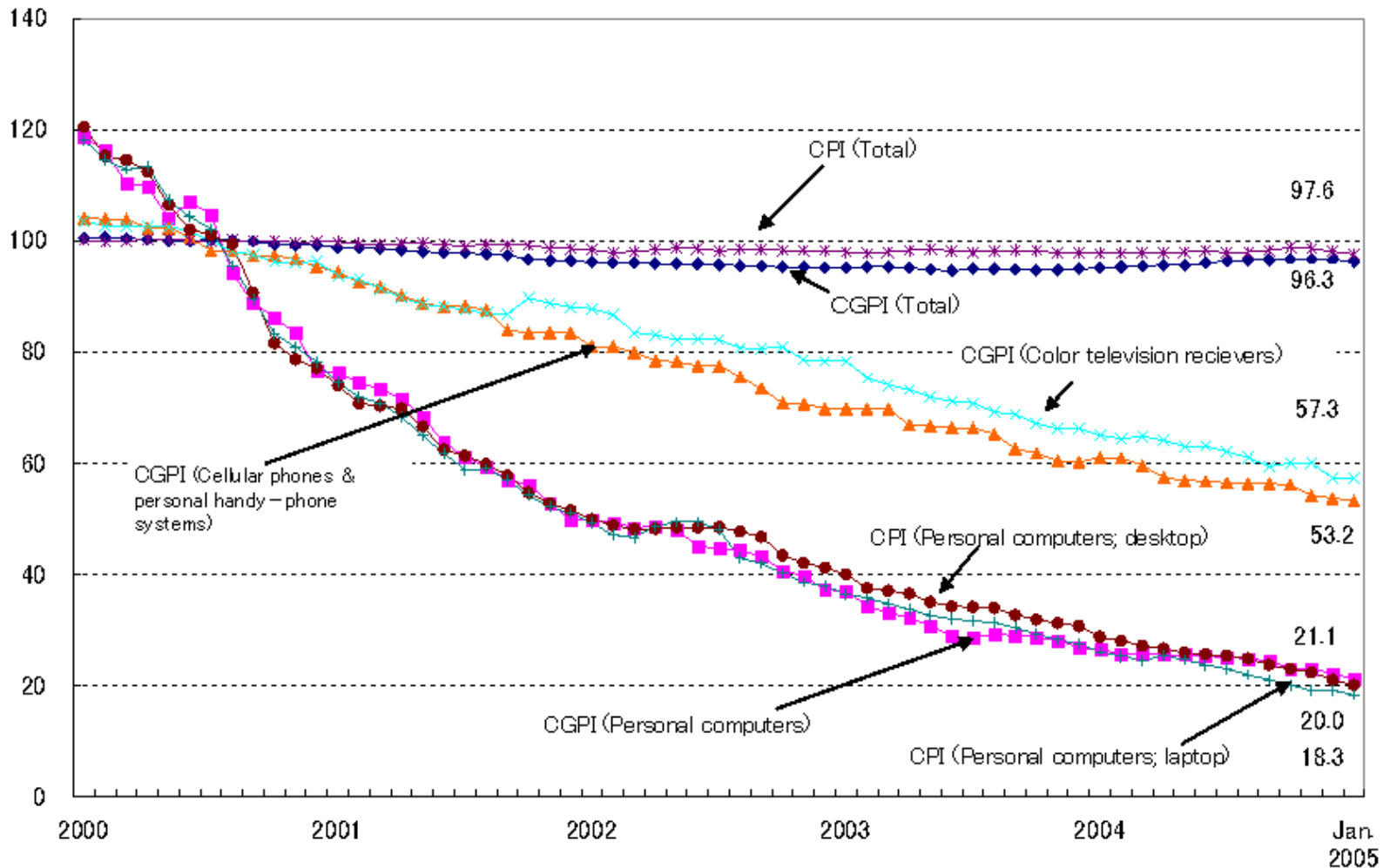
## (2) Producers of Government Services and Producers of Private Non-profit Services to Households



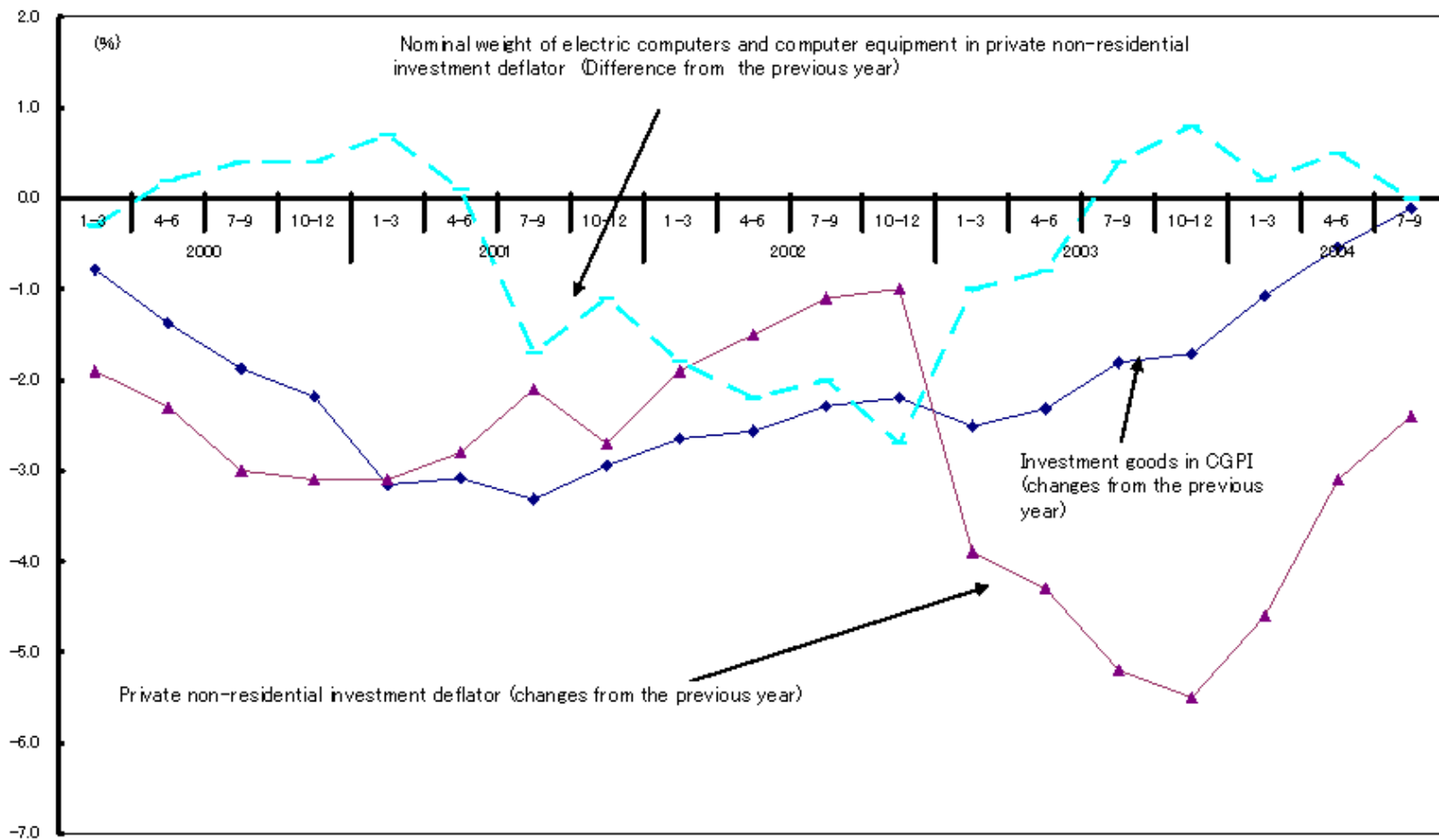
Real GDP = (1) + (2) + Taxes and Duties on Imports - Imputed Bank Service Charge + Consumption Taxes for Gross Capital Formation

Note: Taxes and Duties on Imports, Imputed Bank Service Charge, and Consumption Taxes for Gross Capital Formation are deflated by the Basic Unit Deflators.

# Fig. 2 : Prices of IT-related goods

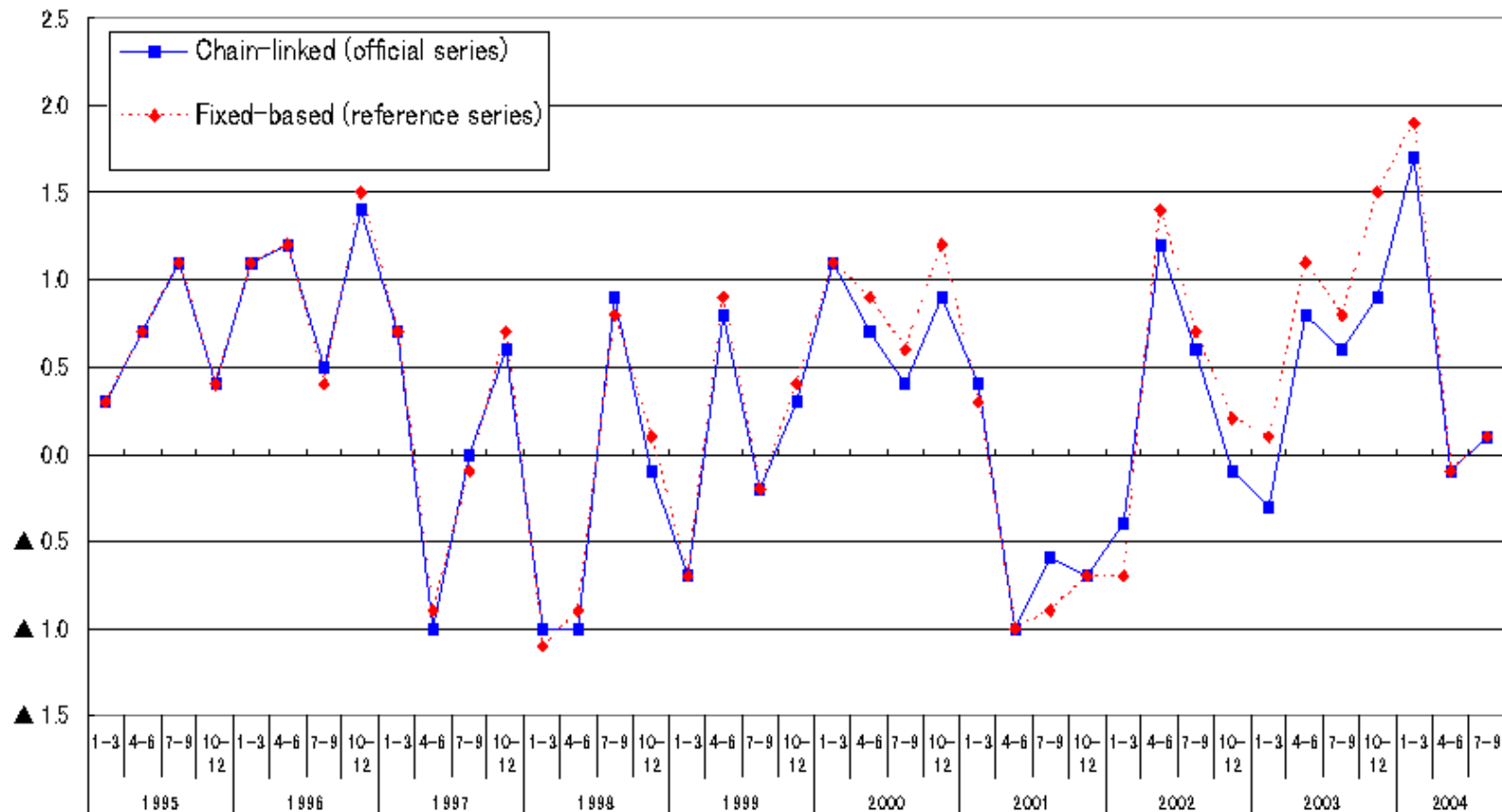


# Fig. 3: Private non-residential investment deflator and Corporate Goods Price Index

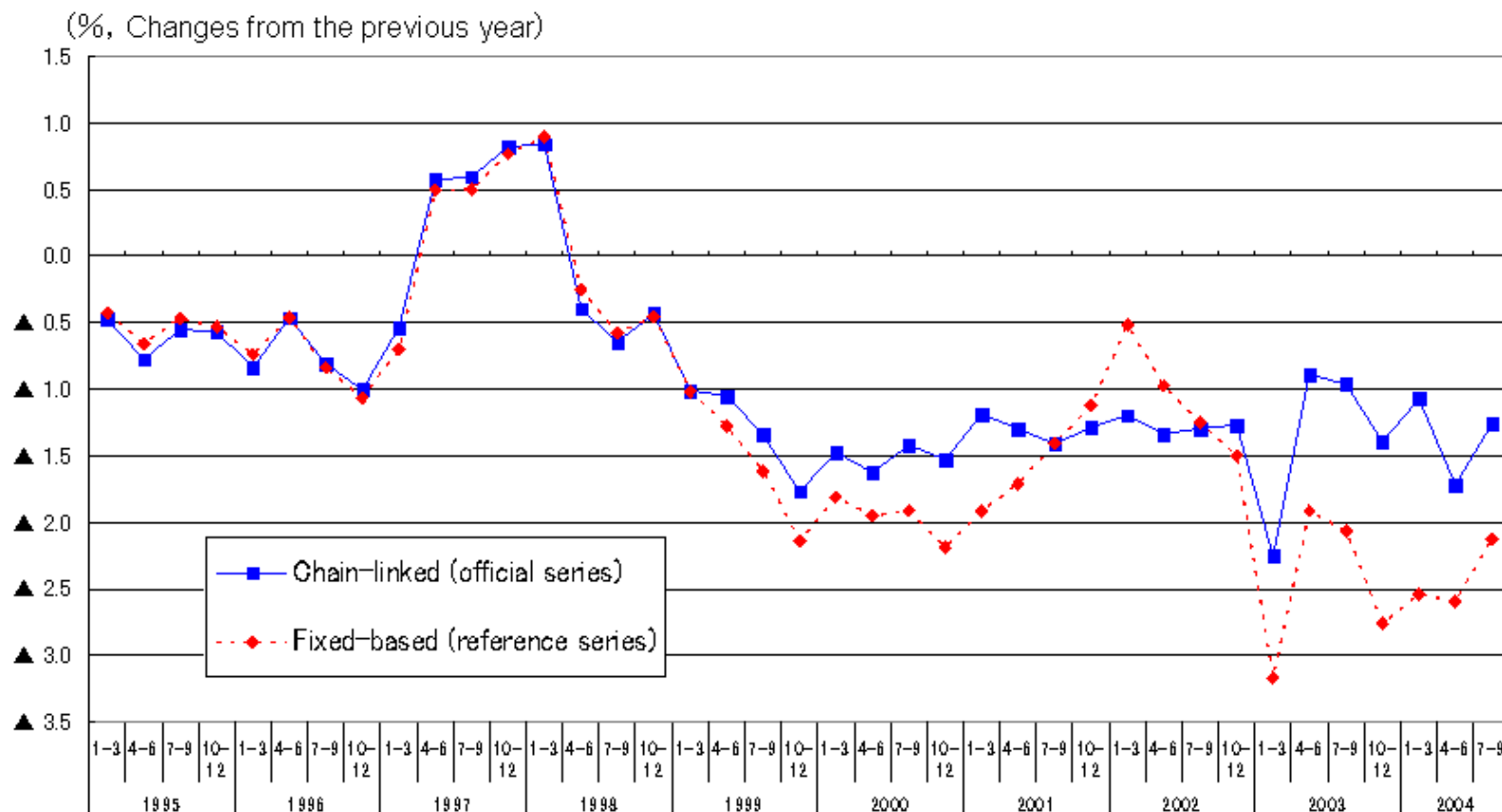


# Fig. 4: Effects of the introduction Real GDP growth

(%, Changes from the previous quarter, seasonally adjusted)



# Fig. 5: GDP deflator



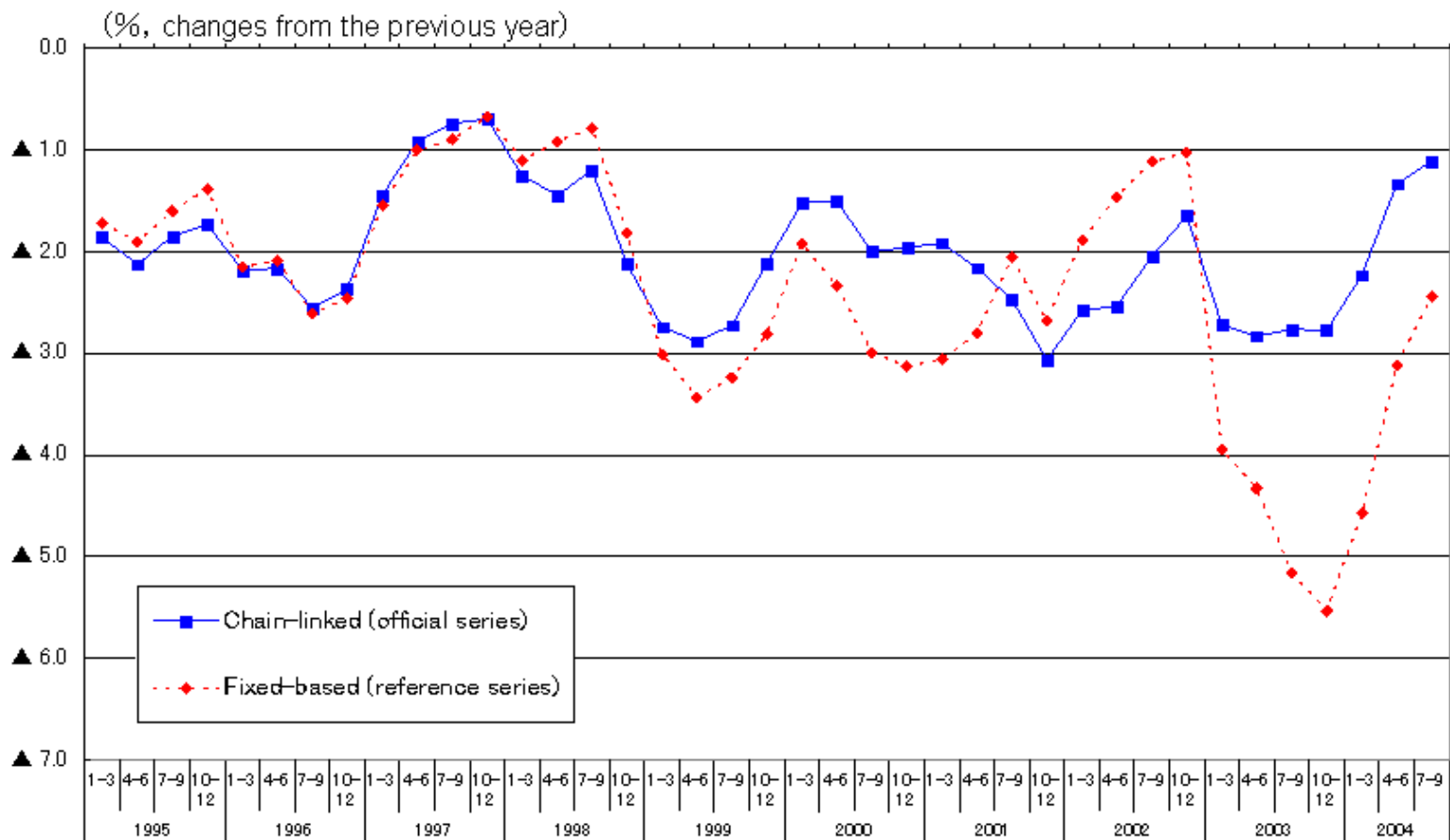
(Note) Changes in price indexes can be decomposed as follows.

$$\text{Chain-linked: } \frac{P_t^{CP}}{P_{t-1}^{CP}} \cong 1 + \sum w_{i,t} \pi_{i,t} \quad \text{Fixed-based: } \frac{P_t^F}{P_{t-1}^F} \cong 1 + \sum \left( \frac{P_{t-1}^F}{P_{i,t-1}^F} w_{i,t} \pi_{i,t} - \frac{P_{t-1}^F}{P_{i,t-1}^F} \Delta w_{i,t} \right)$$

$p_{i,t}$  is the price of  $i$  for time  $t$      $w_{i,t}$  is the weight of expenditure of  $i$  for time  $t$      $\pi_{i,t}$  is the change of price of  $i$

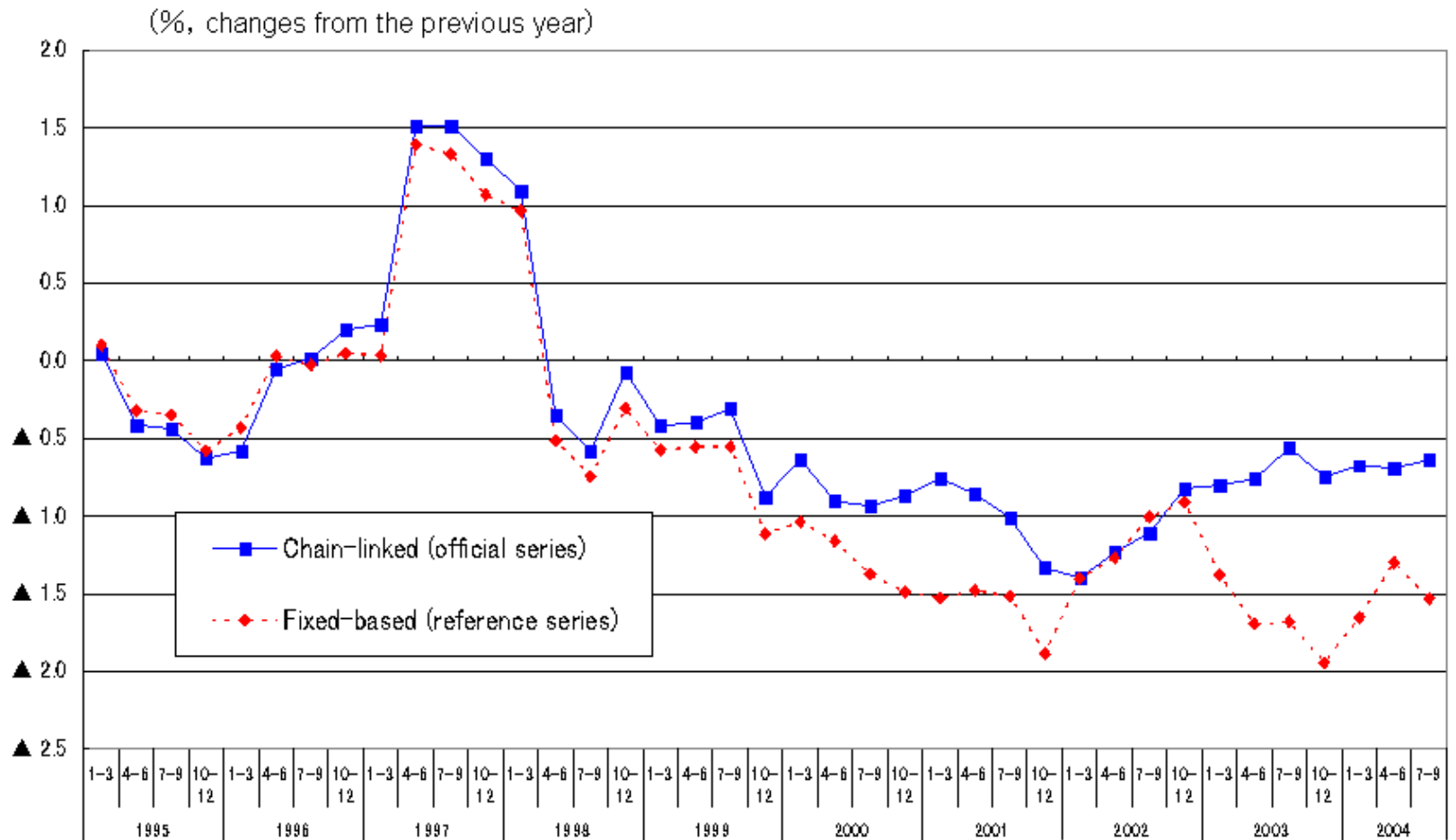
$P^{CP}$  is the Paasche-type price index (Chain-linked)     $P^F$  is the Paasche-type price index (Fixed-based)

# Fig. 6: Private non-residential investment deflator



" Source Quarterly Estimates of GDP: July-September 2004( The Second Preliminary)"

# Fig. 7: Consumption of households deflator



# Fig. 8: Different index formulae

	Annual volume index	Quarterly volume index
Annually chain-linking Laspeyres volume index	$LV_t = LV_{t-1} \times \frac{\sum P_{t-1} Q_t}{\sum P_{t-1} Q_{t-1}}$	$LV_t^k = LV_{t-1} \times \frac{\sum P_{t-1} Q_t^k}{\sum P_{t-1} Q_{t-1}}$
Quarterly chain-linking Fisher volume index	$FV_t = FV_{t-1} \times \sqrt{\frac{\sum P_{t-1} Q_t}{\sum P_{t-1} Q_{t-1}} \times \frac{\sum P_t Q_t}{\sum P_t Q_{t-1}}}$	$FV_k = FV_{k-1} \times \sqrt{\frac{\sum P_{k-1} Q_k}{\sum P_{k-1} Q_{k-1}} \times \frac{\sum P_k Q_k}{\sum P_k Q_{k-1}}}$
Annually chain-linking Fisher volume index	$FV_t = FV_{t-1} \times \sqrt{\frac{\sum P_{t-1} Q_t}{\sum P_{t-1} Q_{t-1}} \times \frac{\sum P_t Q_t}{\sum P_t Q_{t-1}}}$	$FV_t^k = FV_{t-1} \times \sqrt{\frac{\sum P_{t-1} Q_t^k}{\sum P_{t-1} Q_{t-1}} \times \frac{\sum P_t^k Q_t^k}{\sum P_t^k Q_{t-1}}}$

(Note)  $P_t^k$  : Price of each item for the  $k$  th quarter of year  $t$

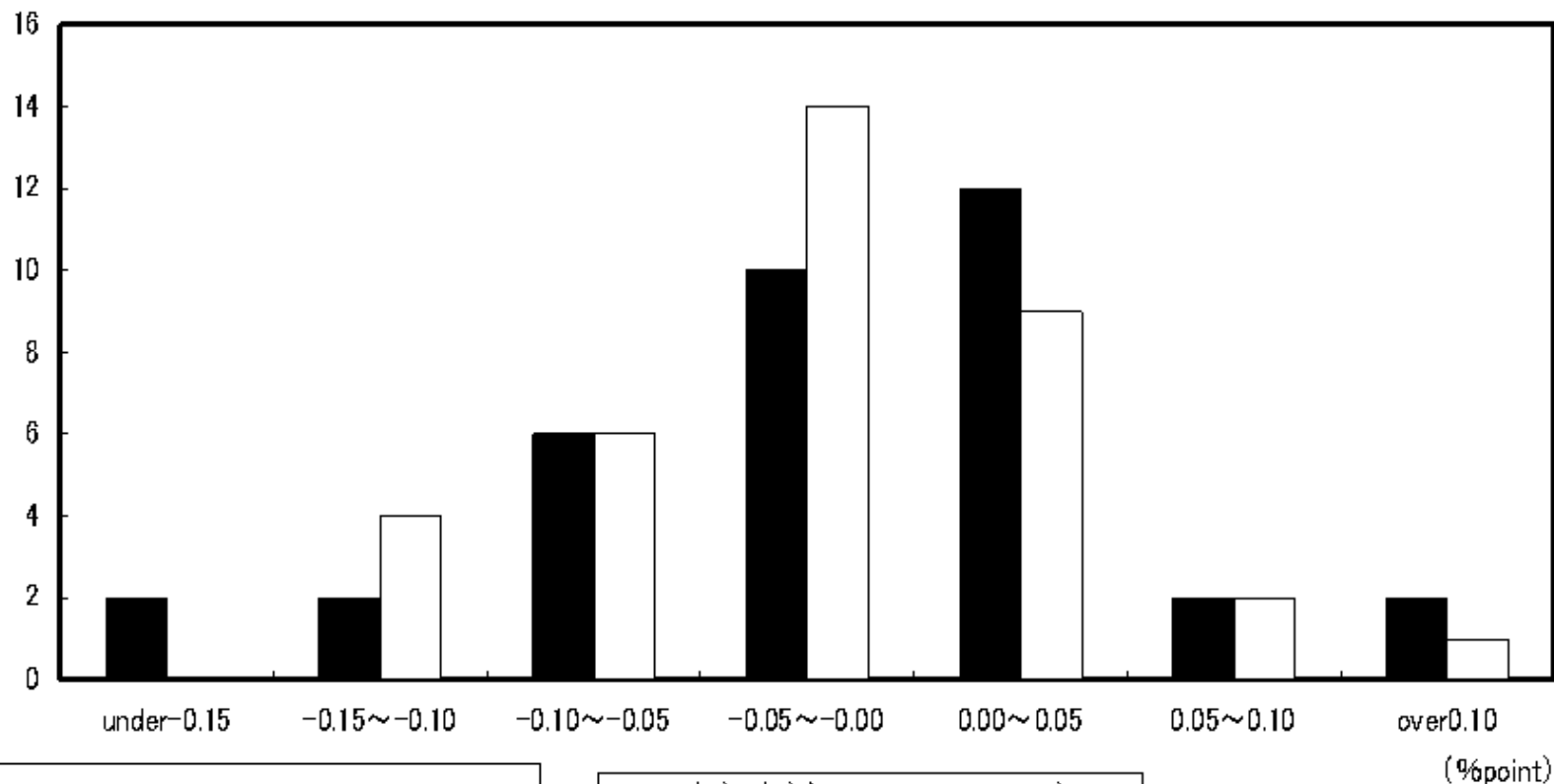
$Q_t^k$  : Quantity of each item for the  $k$  th quarter of year  $t$

$LV_t^k, FV_t^k$  : Laspeyres and Fisher volume indexes for the  $k$  th quarter of year  $t$

# Fig. 9: Comparison of different chain-type indexes

## (1) GDP growth rates (quarter to quarter)

Frequency  
(the number of quarters)



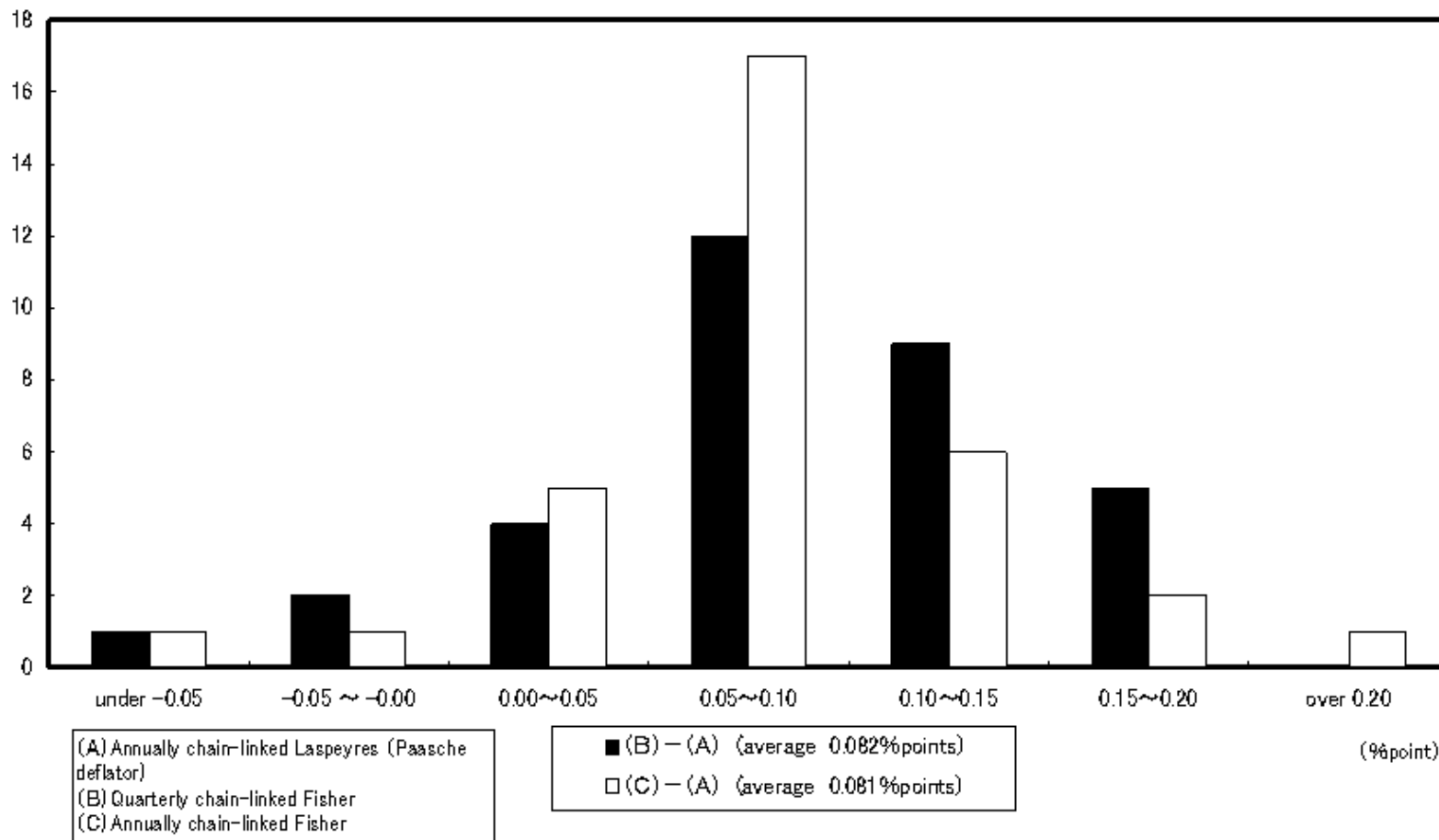
(A) Annually chain-linked Laspeyres  
(B) Quarterly chain-linked Fisher  
(C) Annually chain-linked Fisher

■ (B) - (A) (average -0.027%points)  
□ (C) - (A) (average -0.024%points)

Note: Above chart is calculated using 36 quarters, from 2nd quarter of 1997 to 1st quarter of 2004.

# Fig. 10: (2) Changes in GDP deflator (year to year)

Frequency  
(the number of quarters)



Note: Above chart is calculated using 33 quarters, from 1st quarter of 1996 to 1st quarter of 2004.

# 3. Priority issues for JSNA

- Application of chain-linking system
  - Chain-linked GDP (production approach)
- Extension of accounts
  - Productivity measures and FISIM
- Reexamination of concepts and methods
  - Review of capital stock estimation
  - Quality of raw data
- More detailed description
- Better communication with users
  - Especially with international media and users

# Examples: Typical foreign perception of JSNA

- “Study casts cold light on Japan’s growth rate”

*FINANCIAL TIMES, May 25, 2004*

- Technical problems with the way the GDP deflator is calculated, some of which will be corrected next year, mean official numbers overestimate the rate of price falls.

- “Is Japan’s resurgence for real?”

*TIME, October 6, 2003*

- Scratch beneath the surface on some of the headline-making numbers and Japan’s mini-miracle quickly starts to look a bit contrived—many of those who have scrutinized the government’s economic-growth estimates don’t actually believe them.

- “Statistical fog has traditionally obscured developments in Japan more than elsewhere.”

*Press Briefing at the OECD, February 17, 2005*

- “The revision said more about the notorious volatility of Japanese GDP numbers than about the real state of the economy.”

*FINANCIAL TIMES (FT.com), March 14, 2005*

# 4. Remaining challenges

- How do we overcome conflict between accuracy and stability?
  - Much earlier publication of flash estimates
  - Advantages and disadvantages of concurrent seasonal adjustment
  - Frequent and immediate revisions to source data
- What is the “best practice” for communicating with users and the media?
  - Especially for international users and media
- How do we establish more productive collaboration with other source suppliers?
  - More effective feedback methods