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Outline of the Corporate Service Price Index and Recent Trends

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List of Recent Special Papers

183	December	Expansion of Japan's Tertiary Sector — Background and Macroeconomic Implications — 「わが国における第三次産業の拡大について」 -- その背景とマクロ経済的含意 --
184	January 1990	Corporate Management under an Expanding Economy — Based on the financial statements of principal enterprises in Japan for fiscal 1988 — 「景気拡大局面における企業経営動向について」 -- 「昭和63年度主要企業経営分析」から --
185	Winter	Quarterly Economic Outlook 「情勢判断資料平成２年冬」 -- わが国金融経済の分析と展望 --
186	February	A Study of Potential Pressure on Prices — Application of P* to the Japanese Economy — 「物価上昇圧力指標の検討」 -- P* （ピー・スター）の紹介と分析 --
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188	Spring	Quarterly Economic Outlook 「情勢判断資料平成２年春」 -- わが国金融経済の分析と展望 --

189	May	Financial Reform in Asian Economies 「最近におけるアジア諸国の金融制度改革」
190	Summer	Quarterly Economic Outlook 「情勢判断資料平成２年夏」 -- わが国金融経済の分析と展望 --
191	August	Flow of Funds in Japan in 1989 「平成元年の資金循環について」
192	Autumn	Quarterly Economic Outlook 「情勢判断資料平成２年秋」 -- わが国金融経済の分析と展望 --
193	December	The Recent Rise in Japan's Land Prices: Its Background and Implications [A translation of an article in Chosa Geppo (Monthly Bulletin), April 1990.] 「わが国における近年の地価上昇の背景と影響について」
194	Winter 1991	Quarterly Economic Outlook 「わが国金融経済の分析と展望」 -- 情勢判断資料平成３年冬 --
195	February	Corporate Finance and Business Investment under Financial Deregulation 「金融自由化の下での企業金融のマクロ的展開について」
196	March	Outline of the Corporate Service Price Index and Recent Trends 「企業向けサービス価格指数の概要と最近の動向」

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Outline of the Corporate Service Price Index and Recent Trends

Summary

1. The recent structural shift in the Japanese economy to greater emphasis on services has become conspicuous with significant qualitative changes being witnessed in the service sector. However, compared with the manufacturing sector, the paucity of service sector statistics is particularly noticeable. Thus, the Bank of Japan has developed, and recently issued, a "Corporate Service Price Index" (CSPI), which complements Wholesale Price Indexes (WPI) as a measure of the value of the currency and also as an indicator of economic trends.

2. The index covers tertiary sector services provided to corporations with selection based on criteria such as minimum transaction values and the continuous availability of actual contract prices. As a result, the index captures 54% of the total value of services transacted at the intermediate level.

Seven major groupings -- "Finance and Insurance", "Real Estate", "Transportation", "Information Services", "Communications", "Advertising Services", and "Other Services" -- are divided into 15 groups, then 29 sub-groups and 74 items for which 2,413 prices are surveyed. The index was computed on a quarterly basis with base year of 1985 and data available from the same year. Hereafter, new data will be released on a quarterly basis.

3. CSPI remained stable between 1985 and early 1988, during which period rises in "Rent Paid for Real Estate" were virtually offset by decreases in "Ocean Freight" (prices in yen terms dropped on account of the appreciation of the yen) and "Leasing" (because of declines in both interest rates and the price of leased items). After that, the index started to rise against the background of strong domestic demand, centering on personal consumption and corporate fixed investment, due to rises in "Ocean Freight", "Road Freight", "Advertising Services", and "Rent Paid for Real Estate". Since the second quarter of 1990, the rise in CSPI has accelerated, mainly reflecting tight labor market conditions.

4. There is a view that labor cost is a dominant factor in determining CSPI. However, the following also need to be taken into account:

   i) Costs other than labor costs, such as materials and fuel, also affect the index to some extent.

   ii) The continuous expansion of demand for service industries is one of the important determinants of the index.

   iii) Foreign exchange rates (some prices are surveyed in foreign currencies), interest rates, land prices, ongoing deregulation, and technical innovation also affect price trends.

In other words, CSPI is influenced by macroeconomic supply and demand conditions in the same way as WPI which shows the overall price level of goods.

5. Using Input-Output Tables (I-O Tables), it is found that CSPI affects other price indexes such as WPI and the Consumer Price Index (CPI). According to lag correlation analysis, CSPI's lead relationship with CPI can be verified to some extent, but the lead and lag relationship between it and WPI does not appear to be verified. The gap between trends in CSPI and the CPI for Services, which widened until 1988 and then narrowed, is due to the fact that the impact of the exchange rate and WPI (e.g. crude oil price) on CSPI is far greater than that on the CPI for Services.

To summarize, CSPI is expected to play the following roles:

i) CSPI complements WPI as an indicator grasping the price trends of goods (WPI) and services (CSPI) provided in inter-enterprise transactions.

ii) CSPI is a lead indicator for CPI, i.e. it affects the cost of commodities and services included in CPI.

6. The Bank of Japan intends to improve the index by expanding it to include commercial margins, imputed financial interest etc., and new services, as well as effect specification changes when necessary.

Contents

Introduction

The shift in the Japanese economy towards services has recently been rapidly accelerating. As a percentage of nominal GDP, the share of the service sector 1/ has been on a rising trend since 1975, marking 56.6% in 1988. Parallel with the rapid expansion of inter-enterprise transactions, the number employed by the service sector to total employed by all sectors has expanded remarkably from 48.6% in 1975 to 55.5% in 1988. Moreover, great qualitative changes have been taking place as evidenced by financial institutions and distributors increasingly applying computers and telecommunications. Thus, an accurate measure of service price trends has become indispensable.

However, services traded in inter-enterprise transactions are not included in existing representative price indexes such as Wholesale Price Indexes (WPI) covering goods traded in inter-enterprise transactions or the Consumer Price Index (CPI) covering commodities and services purchased by consumers (Chart 1). Hence, in cooperation with the private sector, scholars, and government agencies concerned, the Bank of Japan has developed, and recently issued, a "Corporate Service Price Index" (CSPI) to improve coverage which, it is hoped, will facilitate easier assessment of overall economic and price trends as well as respond to user needs. 2/

This paper gives an outline of the new index and analyzes price trends over five years (1985-90) based on data collected.

Usage and implications relating to Japanese price statistics, along with prospects for the future development of the index, are also examined.

1. Outline of the Corporate Service Price Index (CSPI)

(1) Coverage, Grouping, Weights, etc.

The index covers tertiary sector services provided to corporations. Items to be surveyed were selected based on the following two criteria:

i) Inter-enterprise transactions totaling ¥500 billion or more based on the intermediate sectors of 1985 Input-Output Tables (I-O Tables).

ii) Actual service prices are agreed when a contract is concluded so as to ensure continuity and reliability of data.

Specifically, seven major groupings, "Finance and Insurance", "Real Estate", "Transportation", "Information Services", "Communications", "Advertising Services", and "Other Services" have been established. These major groupings are divided into 15 groups, then 29 sub-groups, and lastly 74 items with 2,413 prices being surveyed (Chart 2).

In principle, weights are based on values in the intermediate sectors of 1985 I-O Tables: of the seven major groupings, "Transportation" and "Other Services" ("Leasing and Renting", "Building Maintenance", "Civil Engineering and Construction Services", and "Judicial and Accounting Services") are weighted at around 30% each; "Real Estate" at 14%; and "Finance and Insurance", "Information Services", "Communications", and "Advertising Services" at 6-7% each.

Commerce (commercial margins), Financial Services (imputed interest), Public Administration, and Education and Research are excluded mainly because it is difficult to conduct a continuous price survey.3/ Medical Services and Health is also excluded because inter-enterprise transactions for this item are negligible. As a result, service transactions covered by the index total ¥60 trillion, capturing 54% of the total transaction value of services in inter-enterprise transactions in 1985 (¥112 trillion) (Chart 3).

To reinforce focus on monitoring the service-related costs of doing business, CSPI consists of only one series covering both domestic and imported services. The index (base year 1985) is computed on a quarterly basis using a Laspeyres formula with data starting from the first quarter of 1985. The base period is also revised every five years, based on I-O Tables.

(2) Input-Output Analysis of CSPI

In order to obtain a clear picture, it is necessary to examine CSPI input/output structure using I-O Tables.4/

Input analysis

Chart 4 shows the composition of input costs (in a broad sense) for CSPI industries (i.e. input value to sales ratio), which not only include ordinary expenditures concerning tangible

goods (materials, fuel, etc.), services, labor costs, and depreciation of fixed capital, but also operating surplus.

Compared with the composition of input costs for WPI industries at the manufacturing and wholesale stage, input costs for CSPI industries are characterized as follows:

i) The share of labor costs for CSPI industries (35%) is much higher than that for WPI industries (18%), as evidenced by labor intensive industries (e.g. transportation) where labor costs account for over 40% of total costs.

ii) The operating surplus for CSPI industries, including interest paid (with respect to real estate, finance and insurance, etc.), rent on movable property (centering on computer-related equipment), etc., accounts for 18%, which is higher than the 9% for WPI industries.

iii) WPI-related costs (e.g. materials, fuel) for CSPI industries account for only 16%, less than one-third the 51% for WPI industries, reflecting the noticeable small proportion of these costs in finance and insurance and real estate (2~3%). In this regard, the share of CSPI-related costs for WPI industries shows only 6%.

Output analysis

Chart 5 shows the proportion of CSPI industries' output that translates into the intermediate input of other price indexes, indicating the impact of CSPI on other price indexes.

Of 100 CSPI industry output units, 37 go as intermediate input for WPI industries (e.g. raw materials 〈iron ore, etc.〉, transportation services provided by shipping companies to steelmakers, insurance services provided to corporations), and 55 as intermediate input for overall service industries including CSPI industries (e.g. the office renting services of real estate agents provided to law offices). The intermediate input for construction industries, centering on material transportation, totals nine units.

With regard to the impact on CPI industries, 16 CSPI industry output units go as intermediate input for the CPI for Services (personal services 〈e.g. haircutting, movies, etc.〉, passenger transportation, postal services, etc.) and 14 as intermediate input for the CPI for Commodities (eight for retail sales margins and the balance for the input of WPI industries' goods consumed by households). As a result, 30 units go as intermediate input for the CPI General Index.

Output analysis shows that CSPI has an impact on various prices, not only WPI but also CPI, construction-related prices, etc.

2. Recent CSPI Trends and Background

(1) Trends

Overall

Chart 6 shows that CSPI remained stable between 1985 and early 1988, during which period consecutive rises in "Rent Paid for Real Estate" ("offices", "stores") against the background of strong demand for offices, as well as increases in "Advertising Services" ("magazines", "television"), were virtually offset by double-digit year-to-year decreases in "Ocean Freight" ("trampers", "tankers"; all prices contracted in dollars -- those in yen terms dropped on account of the appreciation of the yen) and "Leasing" ("computers and communications equipment", "office equipment") because of declines in both interest rates and the price of leased items reflecting technological innovation.

The index subsequently started to rise against the background of strong domestic demand. "Ocean Freight" (owing to increased imports), "Road Freight" (increased ground transportation), and "Advertising Services" charges rose (reflecting strong personal consumption), and the rise in "Rent Paid for Real Estate" accelerated, all contributing to a rising trend in CSPI. During 1988, CSPI increased 1.2% over the previous year and during 1989, 4.5% (including the effect of the consumption

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Items in quotation marks ("magazines" etc.) included in CSPI.

tax).5/ In 1990, due to higher labor costs reflecting tight labor market conditions, the index continued on a rising trend and since the second quarter of 1990, during which increases brought about by the consumption tax disappeared, the rise in CSPI has accelerated (around 3.5%, year to year).

Movement by industry group

The following features can be observed by industry group (Charts 6 and 7):

i) "Real Estate" rose 27% in the five years between 1985 and the third quarter of 1990, due to both strong demand (mirroring the increased number of office workers <reflecting the shift of the economy to being more service oriented> and floor space per capita <office automation>, and the advance of foreign corporations) and a supply shortage especially in the Tokyo and Osaka areas. The rises in the Tokyo and Osaka areas were remarkable -- 37% and 29% in the five-year period, respectively.

"Advertising Services" ("television", "direct mail", etc.) showed the second highest rise following "Real Estate" reflecting a surge in personal consumption. With regard to demand, there are seasonal factors associated with the mid-summer and year-end gift-giving seasons 6/ (seasonal increases in April-June and October-December and reactionary decreases in

July-September and January-March, respectively).

ii) From 1985 until 1987, "Other Services", "Information Services", and "Transportation" remained stable but then started to rise:

"Other Services" remained stable from 1985 until 1987 because rises in labor-intensive services such as "Civil Engineering and Construction Services", "Building Maintenance", and "Judicial and Accounting Services" were offset by considerable drops in "Leasing" stemming from declines in both interest rates and the price of leased items as well as intensified competition occasioned by more new entrants.7/ From the second quarter of 1988, "Other Services" started to rise because of further price increases in labor-intensive services, magnified by "Leasing" due to the rising cost of money, etc.

Regarding "Information Services", until the third quarter of 1987, rises in response to labor costs were offset by decreases occasioned by improved computer processing, following which this major grouping started to rise in response to increases in demand for software development associated with the establishment of large on-line network systems and CIM.8/

"Transportation" showed a downward trend until early 1988 due to a fall in "Ocean Freight" (prices in yen terms dropped on account of the yen's appreciation) and then started to rise, reflecting a smaller decline in "Ocean Freight" due to increasing imports. Since 1989, the rise has accelerated owing to increases in "Road Freight" and "Storage Facilities" in response to higher labor costs stemming from the labor shortage.

iii) "Finance and Insurance" and "Communications" showed a steady downward trend, the former marking 93.9 in the third quarter of 1990 (1985=100), the lowest figure among the seven major groupings because "Insurance Services" decreased reflecting a considerable drop in the value of underlying insured items (e.g. prices of imported crude oil, iron ore, and raw cotton), while "Financial Services" ("over-the-counter remittances", etc.) remained stable.

"Communications" exhibited a downward trend (except for increases associated with the consumption tax) because of competition with new entrants as a consequence of three telecommunications reform laws in April 1985 resulting in "International Telecommunications" ("international telephone calls", "international leased circuits") marking an average 50% drop from 1985.

(2) Contributing Factors

Cost-related

Chart 8 shows that unit labor cost (gross nominal wages paid/production value) traced a downward trend until mid-1988 because increases in service production value exceeded wage increases. Then, it started to rise owing to increases in employment and wage hikes brought about by a labor shortage and has recently accelerated, contributing to the recent rise in CSPI. This rising trend is particularly noticeable among labor-intensive services (accounting for over 70% of weighting for CSPI) such as "Transportation" (truck and hire car drivers, stevedores), "Information Services" (systems engineers), and "Other Services" (technical experts). The relationships between CSPI rises and unit labor cost by industry group show a definite positive correlation over the five-year period except for the drop in the "Communications" group which is due to deregulation (Chart 9).

With regard to the effect of price fluctuations in tangible goods such as materials and fuel (WPI-related price factors), that of fuel prices on "Transportation" is conspicuous (especially "Territorial Waterways" <Chart 10>). Specifically, "Road Transportation" (gas oil), "Sea Transportation" (C-grade heavy oil), "Air Transportation" (jet fuel oil), and "Passenger Transportation" indexes remained stable until 1988, reflecting lower fuel prices owing to the yen's appreciation and a drop in

the price of crude oil. Subsequent higher fuel prices started to push CSPI up and, recently, a price increase following a crude oil price hike due to Iraq's invasion of Kuwait has also been observed.

Lastly, "Leasing" ("computers and communications equipment", "office equipment", etc.) and "Civil Engineering and Construction Services" ("design and on-site supervision"), which are components of "Other Services", and "Casualty Insurance" have traced an almost parallel trend to the price indexes of underlying items, because rates for such services (which show only small changes) are adjusted[9/] for price changes in the underlying items from the statistical viewpoint that the real value of services should be maintained (Chart 11).

Demand-related

"Indices of Tertiary Industries Activity (ITIA)" since 1985 show a stable rising trend, marking 135.7 in the third quarter of 1990 (1985=100) because business services such as Information Services, Leasing, and Advertising Services rose at an annual rate of over 10%, parallel with expanded Real Estate and Wholesale Trade. CSPI's lag relationship with two quantitative indexes, namely the "Index of Industrial Production (IIP)" and ITIA (which shows a more stable trend than IIP) is also verified, indicating that the expansion of service industries stimulates CSPI rises (Chart 12).

According to the "Short-term Economic Survey of Principal Enterprises in Japan", the diffusion indexes (DI) of corporate sentiment (the difference between the percentage share of the number of companies reporting "favorable" and those reporting "unfavorable") for all industries picked up rapidly from the second half of 1987 and, since 1989, a "favorable" response has remained strong. Meanwhile, CSPI (year-to-year change) has accelerated since mid-1988, indicating an approximate one-year lag to business conditions (from the second quarter of 1989 to the first quarter of 1990, increases brought about by the consumption tax are included <Chart 13>). This seems to be influenced by trends in labor costs, a major variable which has a lag correlation with economic fluctuations. With regard to the relationship between CSPI and economic trends, it is imperative to deepen analysis as data accumulates.

Foreign exchange-related

"Ocean Freight" and "International Air Freight" prices are surveyed in contracted currencies and converted into yen terms using current exchange rates. As a result, CSPI fluctuates according to exchange rate fluctuations as well as fluctuations in contracted currency terms. Specifically, CSPI is pushed down about 0.4% 10/ by a 10% appreciation of the yen (e.g. from ¥150/dollar to ¥135) and vice versa in the case of the yen's depreciation. The considerable appreciation of the yen after the Plaza Agreement in 1985 (1985 average: ¥238.59/dollar --> 1986 average: ¥168.55/dollar; a 29.4% appreciation of the yen)

pushed CSPI down by about 1% during 1986 and exchange rate fluctuations had a slightly negative impact from 1987 to early 1989 and a positive contribution from mid-1989 until mid-1990 (Chart 14).

Other factors

Interest rates, land prices, deregulation, and technological innovation have also affected CSPI.

Interest rates have both a direct impact such as on "Leasing" (the interest payment burden accounts for a high proportion of total costs) and an indirect one via macroeconomic fluctuations. "Industrial machinery", "machine tools", and "machinery/equipment for commercial establishments", whose underlying leased item prices were relatively stable, were depressed because of the long-term prime rate between 1985 and early 1987 but since 1989 have been buoyant (Chart 15). In contrast, the impact on "computers and communications equipment" and "transportation equipment" is not so noticeable, because other factors than the long-term prime rate, such as price changes in leased items and maintenance costs (automobile casualty insurance, repair costs, safety inspection costs, etc.), play a big role.

As for the impact of land prices on CSPI, rising land prices are supposed to have a direct relationship with rises in "Rent Paid for Real Estate" and "Toll Roads" through the prefectural fixed assets tax and acquisition cost of land.

However, in actuality, the direct impact of land price rises on enterprise costs is limited[11/] as evidenced by "rent paid for offices/stores", where the just-mentioned tax accounts for only about 10% of total costs. Newly contracted rents since 1975 show that they are indeed influenced by supply and demand conditions (as indicated by vacancy rates) but that the impact of land prices (indicated by published land prices) is not clearly noticeable. Specifically, newly contracted rents in the Osaka area rose during 1975 along with a declining vacancy rate regardless of lower land prices, and during 1988 the tempo of rent increase decelerated though land prices rose (Chart 16).

Lastly, as stated above, deregulation and liberalization have held CSPI down -- "Communications" showed a downward trend mirroring competition with new entrants as a consequence of the three telecommunications reform laws in April 1985 and "Financial Services" ("over-the-counter remittances") has declined since April 1990 in response to customer demands.

As for other factors, a drop in computer prices, brought about by rapid technological innovation, played a big role in lower leasing and database service prices.

Chart 17, which surveys the impact of the macroeconomy on CSPI, shows that cyclical factors such as exchange rates, crude oil prices, domestic demand expansion, and the labor shortage, affect "Transportation"-related groups ("Road Freight", etc.) and "Information Services". "Real Estate" has shown consecutive rises reflecting building shortages, whereas structural factors

such as deregulation and technological innovation affect CSPI, as evidenced by the drop in "Communications", "Financial Services", and "Leasing". A change in monetary policy also affects CSPI, directly and indirectly.

(3) Econometric Analysis of Index Fluctuations

Chart 18 is a regression analysis, with nominal wages (labor cost factor), material and fuel costs (domestic WPI factor), labor productivity (Indices of Tertiary Industries Activity; demand factor), the foreign exchange rate factor, and tax reform factor (April 1989-March 1990) as explanatory variables.

From Chart 18, the following significant factors can be observed:12/

i) Demand factors have been responsible for a substantial portion of the rise in CSPI the last five years, having a consecutive positive contribution (+2~3%).

ii) The contribution of labor costs has increased since 1988 -- recently, its importance has been almost the same as that of the demand factor.

iii) Materials, fuel, and foreign exchange rates, are fluctuating factors -- showing minus figures from 1986 to 1988 and since then positive ones.

iv) Labor productivity has had a slightly negative contribution.

There is a view that labor cost is a dominant factor in determining the prices of service industries which are characterized as being labor intensive. However, according to this econometric analysis, the demand factor and the foreign exchange rate factor also need to be taken into account. CSPI is influenced by macroeconomic supply and demand conditions in the same way as WPI, which shows the overall price level of goods.

3. Comparison of CSPI with Other Statistics and Role

(1) Comparison with CPI

The CPI for Services, common to CSPI, has shown a consecutive rising trend since 1985, during which time the trend gap between it and CSPI widened up to 1988 and then narrowed. This disparity is due to the fact that the impact of other factors (besides nominal wage increases) on CSPI is far greater. Specifically, CSPI remained stable (between 1985 and 1987) influenced by the drop in WPI, the yen's appreciation, and low price of crude oil, and since 1988 has accelerated due to domestic demand expansion and the foreign exchange rate factor (the yen's depreciation), contributing to narrowing the gap between it and the CPI for Services.

CSPI has traced an almost parallel trend with the CPI General Index (except for increases brought about by the consumption tax in April 1989) due to the fact that the impact of foreign exchange rates and crude oil prices has also affected the latter index, directly or indirectly, through the prices of imported goods such as gasoline and kerosene in the same way as CSPI.

Lastly, judging from the input structure of CPI, where the share of the input of CSPI industries captures similar amounts 13/ as WPI, CSPI seems to be a lead indicator for CPI to some extent, which is verified by lag correlation analysis evidencing CSPI having an approximate two-three month lead relationship

with CPI for five years. This relationship needs to be examined in more detail as data accumulates.

(2) Comparison with WPI

Turning to the relationship between CSPI and WPI, there is an argument that increases in service prices push up those of goods included in WPI because various services such as advertising and transportation are necessary for almost all goods included in WPI as value-added input. However, CSPI industries only account for 6% (Chart 4), indicating the small direct impact of CSPI on WPI, and no significant CSPI lead relationship with WPI, which also includes the indirect impact of CSPI on WPI, was estimated. Indeed, both WPI and CSPI are influenced by business conditions and foreign exchange rates and display a similar trend in some situations. However, CSPI and WPI are independent in terms of external shocks -- since the Plaza Agreement of 1985 such shocks have affected WPI more than CSPI but, in terms of domestic business conditions, recent labor cost hikes (wage increases for truck drivers and systems engineers were noticeable) have had a greater impact on CSPI.

In sum, CSPI complements WPI as an indicator grasping the price trends of goods (WPI) and services (CSPI) provided in inter-enterprise transactions, although CSPI's lead relationship with WPI cannot be verified. CSPI is also an indicator for CPI, as is WPI for CPI.

(3) Role of CSPI as a Deflator

Lastly, the relationship between CSPI and System of National Accounts (SNA) or Indices of Tertiary Industries Activities (ITIA) is examined. The prime role of CSPI is not as a deflator for specific statistics such as SNA, but rather as complementary price statistics for WPI. The prime purpose of CSPI is thus to accurately assess overall price trends in the actual economy as well as to serve as an indicator of economic trends reflecting the greater emphasis on actual and reliable prices. On the other hand, areas where market prices are difficult to survey and only processed data is available, are excluded, which is a disadvantage to using CSPI as an overall service industry deflator. However, for some items (29 service industries 〈74 items〉), CSPI contributes to deflating nominal values of SNA, as WPI does.

It is expected that CSPI will be used as a new complementary price information tool to ITIA which shows real values of service industry activities.

Conclusion

To summarize, this paper, as an analysis of CSPI, puts forward the following three propositions:

First, the traditional argument that prices of service industries, which are labor intensive, are downwardly rigid is not always applicable because CSPI is influenced not only by labor costs, which are fairly flexible, but also by macroeconomic trends and foreign exchange rates, as verified by this paper. CSPI is thus affected by monetary policy as a total demand control policy.

Second, CSPI, which is a lead indicator for CPI like WPI, needs to be watched as a complementary index to WPI. The extent and path of price pressure can be more generally estimated by expanding coverage to services. On which indicator emphasis is put, CSPI or WPI, depends on the economic situation.

Third, compared with trends in WPI, which covers prices of goods such as materials and intermediate goods, CSPI has risen more (index for the third quarter of 1990: 110.9 〈1985=100〉) than the comparatively stable trends in WPI (index for the same period: 95.2). This is mainly due to the difference between the two input structures (i.e. composition of costs, as mentioned before) and productivity difference. This point needs to be examined further based on the future accumulation of data, especially since the last five years does not cover one complete business cycle. Expansion coverage by including commercial

margins, and imputed financial interest, as well as the develop ment of new analytical methods (such as a quantitative grasp c changes in service quality), need to be examined. Of course other imperative problems in statistical compilation such a data accumulation, specification changes in response to rapi changes in the service area, consistency of quality in price surveyed, (see Appendix) are also important.

With regard to the above points, the Bank of Japan intends to make further efforts in cooperation with the private sector and other quarters concerned.

Appendix

Characteristics of Prices Surveyed for CSPI

Compared with tangible goods, services are difficult to be stored or carried. Because of these characteristics, prices of services contracted in markets differ widely by region and other criteria. Therefore, with regard to price surveillance, various means are used.

For example, with respect to office rents, more than 200 quotations in 35 major cities are collected because figures differ widely according to region. Prices surveyed in each area are based on total office floor space in each respective area.

In the case of "Leasing" and "Ocean Freight" (exclusive vessels), most contracts are fixed for five to ten years once contracts are concluded. In this case, only prices at the newly contracted stage are collected from among similar (but not strictly the same) specifications (unlike ordinary cases) and samples are connected over time, contributing to reflecting supply and demand conditions more accurately.

Because of difficulties in selecting representative prices for services, a large number need to be collected. Thus, 2,413 prices are surveyed representing all services. This means an average of 33 prices per item, which is more than ten times the average of three for domestic WPI.

It occasionally happens that specifications surveyed cease to be commonly found in the market or cease to be representative. Such an instance was seen when new computers for leasing were introduced. Thus, if a specification surveyed for CSPI ceases to be representative, a new but similar specification replaces it as well as in WPI. When service specifications are changed, any price difference between the new and old ones is adjusted so that only the price change not corresponding to change in quality is reflected, a basic principle in compiling price statistics. If a price difference of ¥100,000 between the new (¥500,000) and old (¥400,000) specification breaks down into ¥70,000 for improved quality and ¥30,000 the actual rise (e.g. due to labor costs), only the latter (¥30,000) is reflected in index trends.

Notes

1/ This sector covers Wholesale Trade, Retail Trade, Financial and Insurance Services, Real Estate, Transportation, Communications, Services (non-profit services serving households included), and Public Services (electricity, gas, water supply excluded), which correspond to tertiary sector (electricity, gas, water supply excluded) categories in System of National Accounts (SNA).

2/ Turning to similar indexes in foreign countries, the New Zealand Department of Statistics established a Producers Price Index for all industries, including service sectors, in 1978, and the U.S. Department of Labor has been developing price indexes for individual service sectors for more than ten years and has already published some (railroad freight and ten other sectors). However, European countries and others have yet to develop similar indexes.

3/ Commerce, whose prices (commercial margins) theoretically should be surveyed since the sector has captured a high weight (¥22 trillion in intermediate transactions), is excluded from CSPI because of the difficulty in surveying representative prices. Imputed interest for financial services (¥13 trillion in intermediate transactions) is also excluded because:

i) it is difficult to survey representative prices;

ii) there is no definite way to adjust financial service commission rates for changes in the real value of such services. (it boils down to the problem of estimating the real value of "money" itself).

4/ Sectors comprising each price index are classified as below for input-output analysis:

i) CSPI -- Finance and Insurance (life insurance and imputed interest excluded); Real Estate (housing rent excluded); Transportation (own transportation excluded); Communication and Broadcasting; Services (education, research, medical services, and health excluded); and sewerage systems, waste disposal.

ii) WPI -- Agriculture; Forestry and Fisheries; Mining; Manufacturing; Electric Power, Gas and Water Supply (sewerage systems and waste disposal excluded); and Wholesale Trade.

iii) CPI -- Consumption expenditures of households (output analysis); consumption outside households (input analysis).

5/ CSPI is calculated based on prices which include the consumption tax as well as WPI (CSPI includes some items which are exempt from taxation such as "Casulty Insurance", "Ocean Freight", "International Air Freight", etc.).

6/ CSPI (as well as the CPI for Services) tends to rise in the second quarter because a lot of service price contracts are revised at that time. By individual industry, TV commercials increase in the second and fourth quarters reflecting strong demand toward the mid-summer and year-end gift-giving seasons, respectively, and decrease in the first and third quarters. However, seasonal fluctuations in CSPI cannot be estimated yet because not enough long-term data series are available.

7/ The number of companies affiliated with Japan Leasing Association remarkably increased from 204 in 1984 to 286 in 1987.

8/ CIM = "Computer Integrated Manufacturing", whereby computers integrate and execute planning, design, and production based on common databases.

9/ With regard to "Leasing", "Casualty Insurance", and some other items whose prices are determined by those of underlying items and commission rates, commission rates surveyed are adjusted for price changes in underlying items (using WPI, etc.).

10/ The 0.4% rate is calculated based on the usual case, where the following actual errors are neglected:

i) contracted currencies are not limited to dollars (Deutschemark, etc.)

ii) the impact of changes in individual items on all services depends also on index level differences between the price index of individual items and all services, which have existed since the base year 1985.

11/ "Rent paid for real estate" is not significantly affected by rises in land prices for the following reasons:

i) Even in the case of purchasing new buildings, where higher land prices push up the cost of raising funds for purchasing land, competition with rental accommodation in buildings nearby offsets the cost-push effect of high land prices on renting services.

ii) The main motive for holding buildings and land is not for rental income, but the expectation that higher land prices will bring future capital gains.

12/ Regression equation for estimates: ( ): t-value

CSPI (monthly, year to year)

$$= \underset{(-4.7)}{-1.80} + \underset{(11.9)}{0.04} \times (\text{Exchange rate (year to year)})$$

$$+ \underset{(11.2)}{\sum_{i=1}^{12} a_i} \times (\text{Nominal wages per non-manufacturing employee (year to year)})_{-i}$$

$$- \underset{(-2.5)}{0.22} \times \sum_{i=1}^{12} (\text{Non-manufacturing productivity}^{*} \text{ (year to year)})_{-i}$$

$$+ \underset{(10.5)}{0.20} \times \sum_{i=0}^{11} (\text{Domestic WPI (year to year)})_{-i}$$

$$+ \underset{(5.9)}{0.54} \times \sum_{i=0}^{11} (\text{ITIA (year to year)})_{-i}$$

$$+ \underset{(17.8)}{2.62} \times (\text{Tax reform dummy (April 1989-March 1990 = 1)})$$

Almon lag: $\sum a_i = 0.47$

$\overline{R^2} = 0.99$ S.E. = 0.17 D.W. = 1.31

Estimation period: January 1986-September 1990

* Productivity = $\dfrac{\text{ITIA}}{\text{Number of employees} \times \text{Work hours per employee}}$

13/ Of total input costs for CPI industries, WPI-related costs account for 14% and CSPI ones, 9%.

Charts

Chart 1 WPI and CPI Coverage

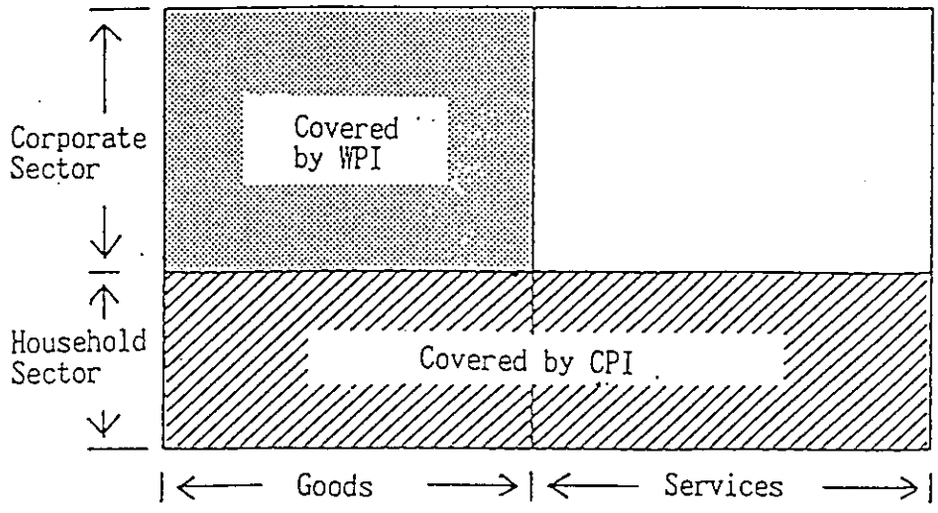


Chart 2 The Sectorial Composition of the Corporate Service Price Index

Major Grouping (Weights)	Group	Weights	Sub-group	Weights	Item (number of items)	Reference Index: Items included in indexes for All Services	Reference Index: Items not included in Indexes for All Services
Finance and Insurance (62.7)	Financial Services	30.3	Banking Charges	30.3	Over the Counter remittances, Collection of Finance Bills, Direct Debit, Electronic Banking with Corporate Customers, Foreign Exchange Related Charges, Stock Transfer Agency Charges (6)		Fees Associated with Securities' Offerings (Commission rate) Trust Business Fees (Commission rate) Securities Fees (Commission rate)
	Insurance Services	32.4	Casualty Insurance	32.4	Voluntary Automobile, Compulsory Automobile, Fire, Marine and Other Transportation (4)		Casualty Insurance (Commission rate)
Real Estate (136.5)	Rent Paid for Real Estate	136.5	Rent Paid for Real Estate	136.5	Offices, Stores, Hotels, Parking Lots (4)	Office Rent (by area: Tokyo, Osaka, Nagoya)	Newly Contracted Rents (Central Tokyo)
Transportation (298.1)	Land Freight	100.6	Rail Freight	2.9	Rail Freight (1)		
			Road Freight	97.7	Road Freight (1)		
	Sea Freight	65.5	Ocean Freight	34.0	Liner, Trampers, Tankers (3)		Export Freight Rate
			Territorial Waterways	12.2	Freighters etc. (1)		
			Harbor Transportation Services etc.	19.3	Harbor Transportation Services etc. (1)		
	Air Freight	4.6	International Air Freight	3.0	International Air Freight (1)		Export Freight Rate
			Domestic Air Freight	1.6	Domestic Air Freight (1)		
	Passenger Transportation	78.3	Rail Passengers	32.5	Rail Passengers (1)		
			Road Passengers	25.8	Bus-Hire Cars etc. (1)		
			Air Passenger Transportation	20.0	International Air Passengers, Domestic Air Passengers (2)		
	Storage and Other Transportation Services	49.1	Storage Facilities	12.6	Custody-Lading (1)		
			Packing	21.8	Packing (1)	Packing (by destination)	
			Toll Roads	14.7	National Expressways, Ordinary Toll Roads, Urban Expressways (3)		
Information Services(72.9)	Information Services	72.9	Information Services	72.9	Software Development, Data Processing, Data Base Services, Market Research (4)		
Communications (71.8)	Communications	71.8	Postal Services	16.5	Postal Services (1)		
			Domestic Telecommunications	51.9	Telephone Calls, Leased Circuits, Mobile Telephones, Pocket Beepers, Value-added Networks (5)		
			International Telecommunications	3.4	International Telephone Calls, International Leased Circuits, International Telex (3)		
Advertising Services(63.6)	Advertising Media Charges etc.	63.6	Radio/TV Advertising	26.4	Television, Radio (2)		Broadcasting Revenue from Advertising (monthly amount)
			Other Advertising	37.2	Newspaper, Magazine, Direct mail, Fliers, Mobil Advertising, Outdoor (6)		
Other Services (294.4)	Leasing and Renting	101.1	Leasing	72.4	Computers and communications Equipment, Office Equipment, Industrial Machinery, Machine Tools, Transportation Equipment, Machinery and Equipment for Commercial Establishments, Other Leasing (7)		
			Renting	28.7	Computer Rental, Construction Machine Rental, Car Rental (3)		
	Building Maintenance, Civil Engineering and Construction Ser	133.1	Building Maintenance Services	68.6	Cleaning, Management of Facilities, Security, Hygiene Services (4)		
			Civil Engineering and Construction Services	64.5	Design and on Site Supervision, Surveying, Soil Surveys (3)		
	Judicial and Accounting Services	35.9	Judicial and Accounting Services	35.9	Judicial Services, Accounting Services (2)	Judicial and Accounting Services (by profession)	
	Industrial Waste Disposal and Sewerage Systems	24.3	Industrial Waste Disposal	20.2	Industrial Waste Disposal (1)	Industrial Waste Disposal (by type)	
			Sewerage Systems	4.1	Sewerage Systems (1)		
7 Major Groupings (1000.0)	15 Groups	1000.0	29 Sub-groups	1000.0	(74 items)		

(Reference) The Domestic Wholesale Price Index

9 Major Groupings	21 Groups	90 Sub-groups	903 items	

Chart 3 CSPI, WPI, and CPI Coverage

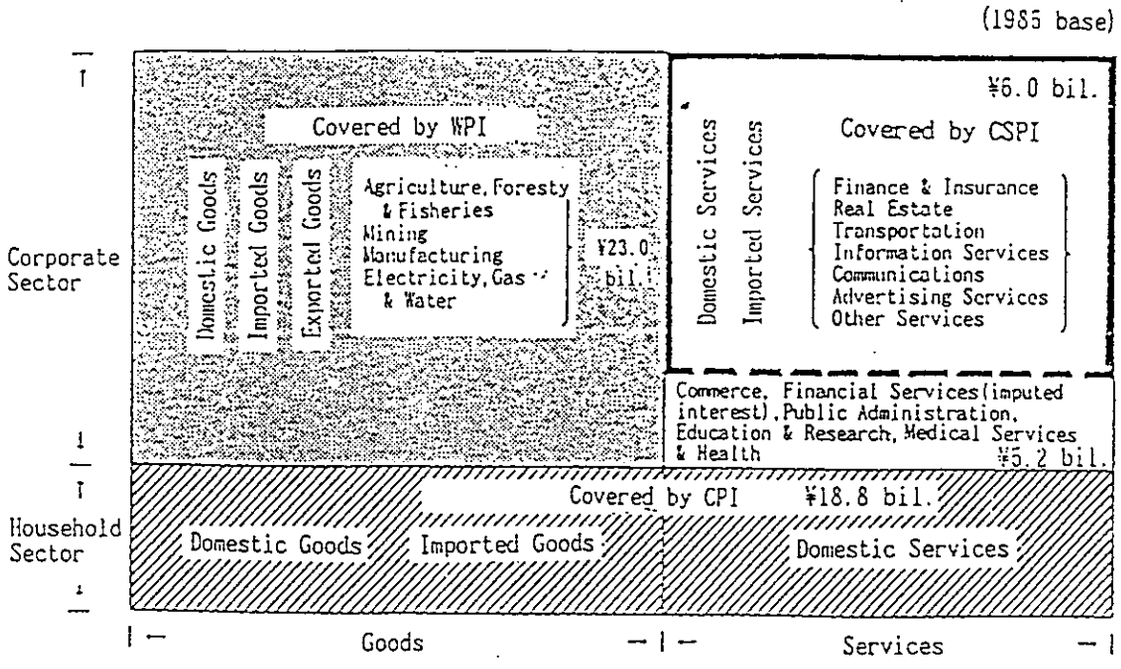
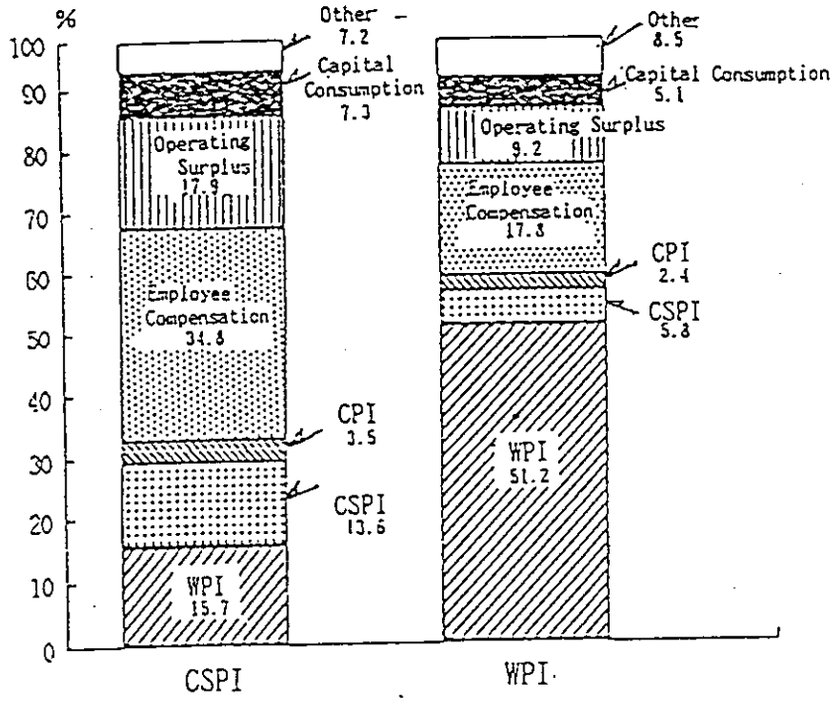
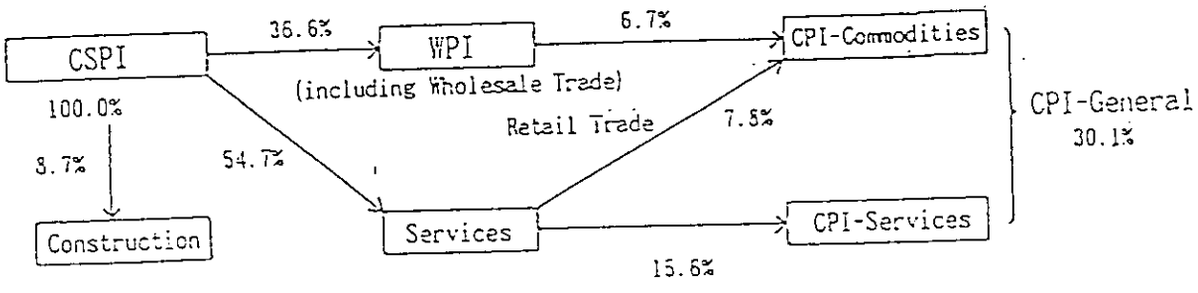


Chart 4 Input Components of CSPI and WPI



Source: Management and Coordination Agency, "Input-Output Tables (1985)".

Chart 5 Output Structure of CSPI



Source: Management and Coordination Agency, "Input-Output Tables (1985)".

Chart 6 Trends in All Services and Major Groupings

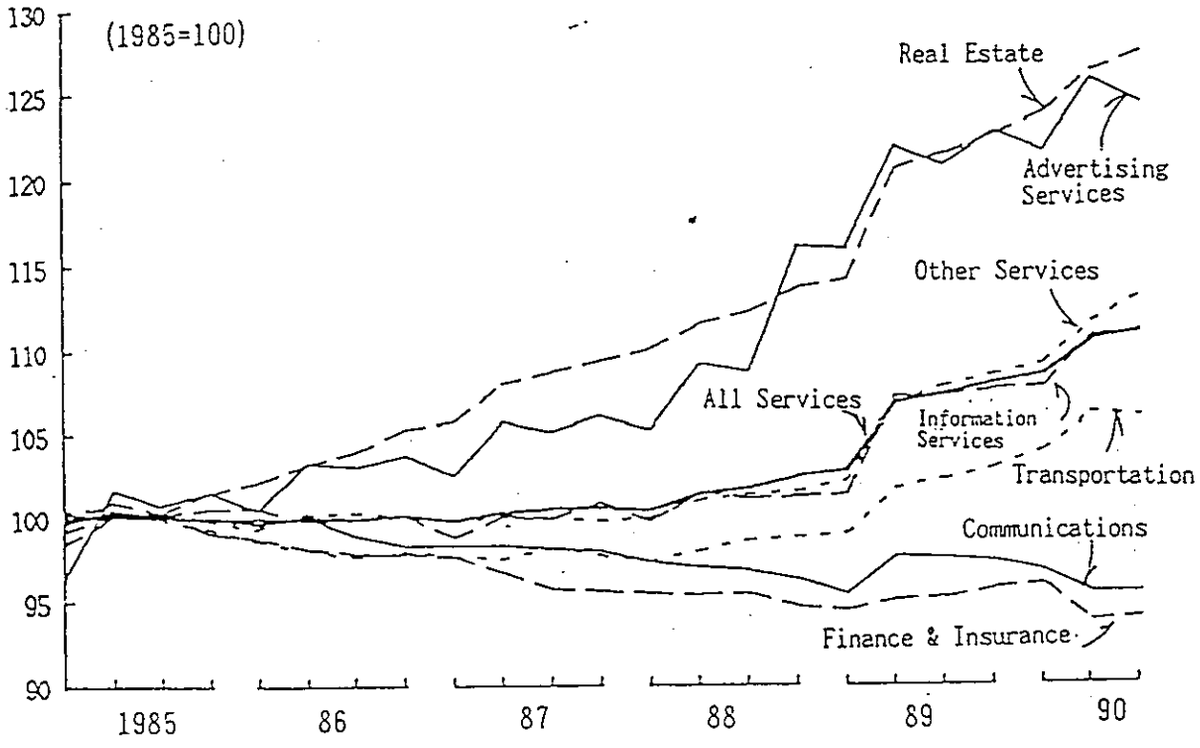


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Chart 7 Breakdown of CSPI

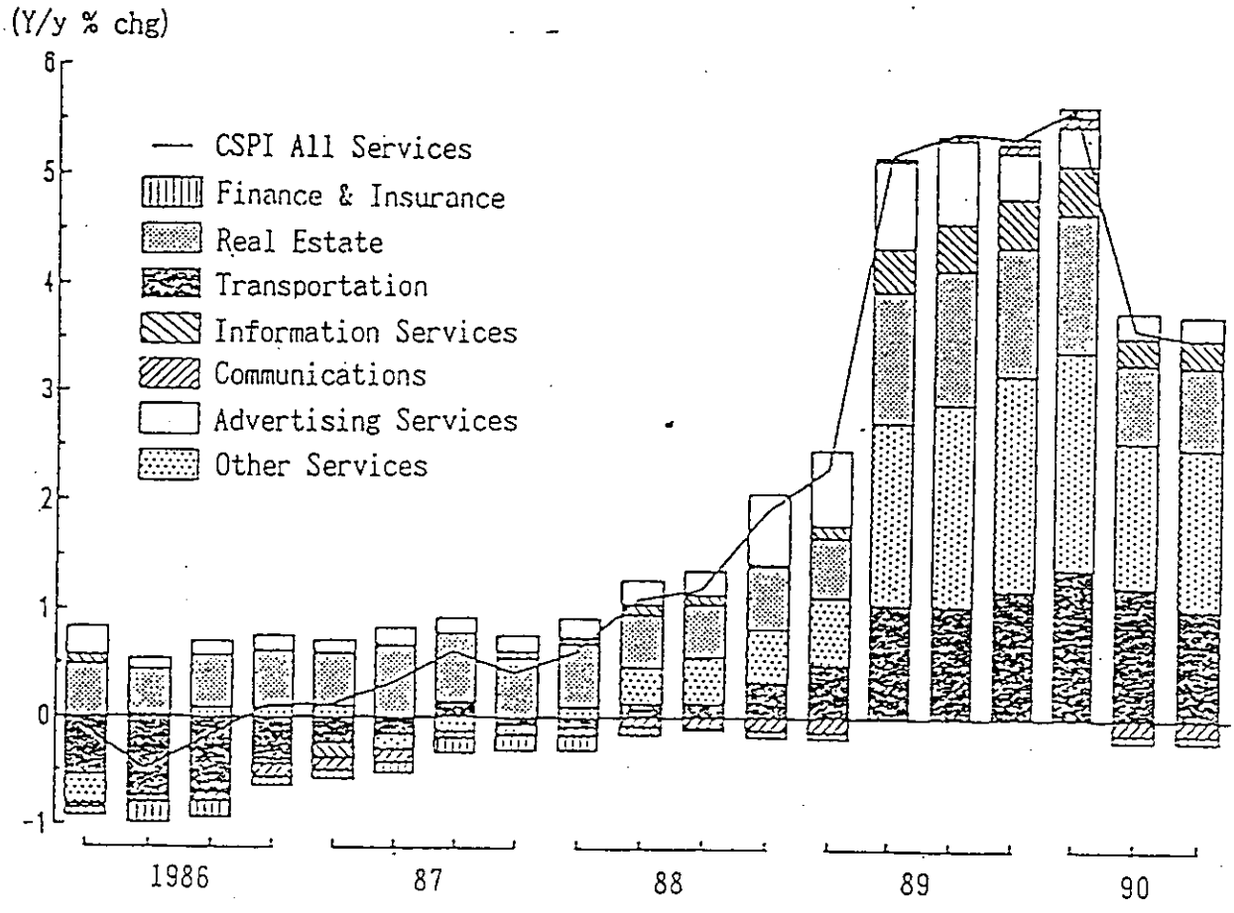
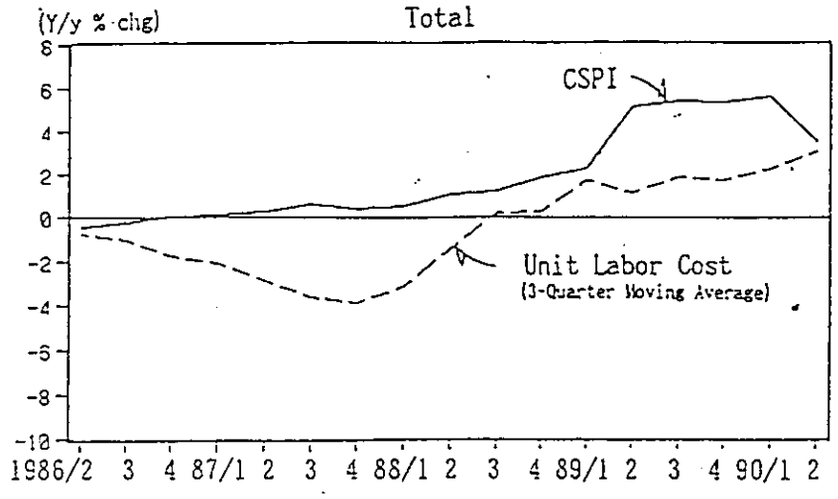
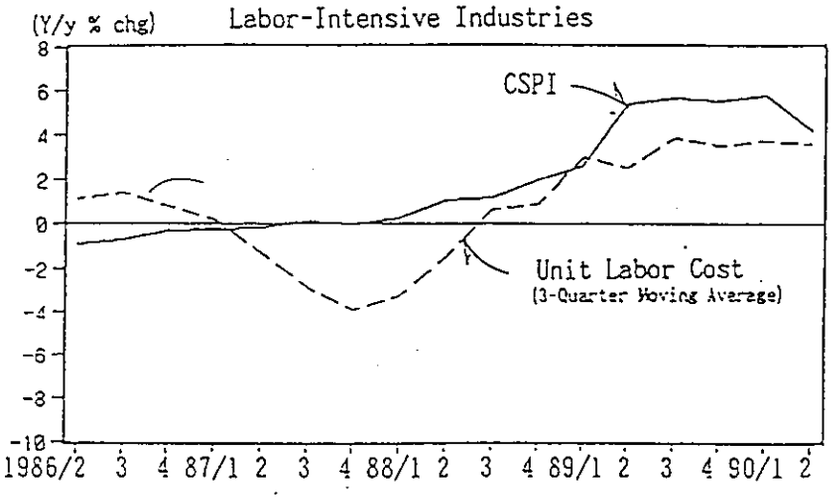
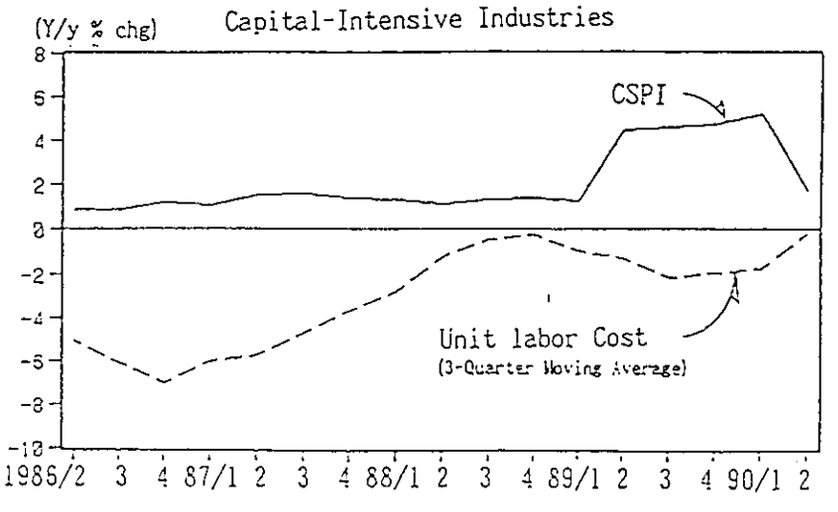


Chart 8 CSPI and Unit Labor Cost



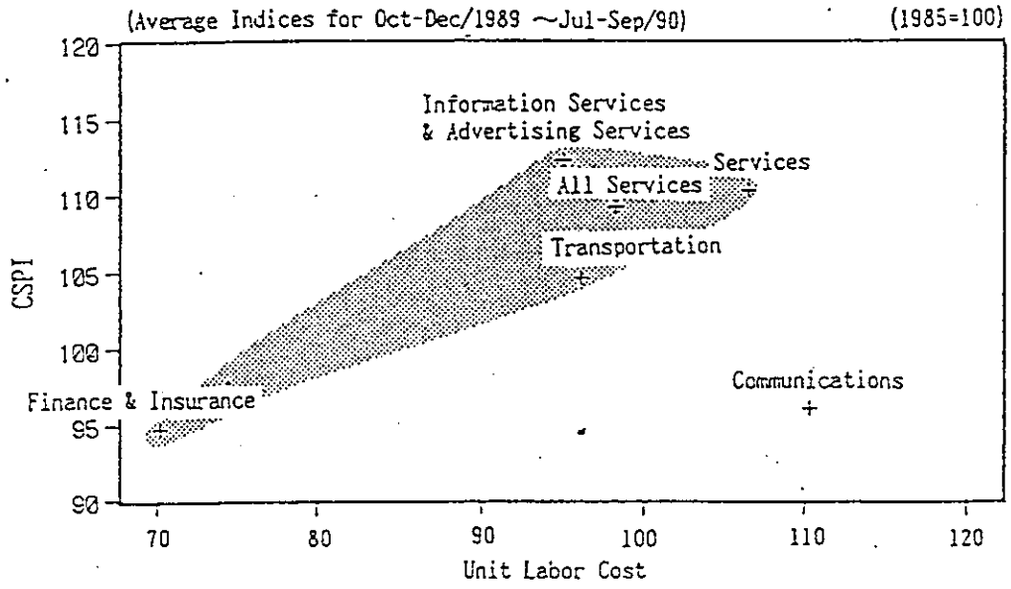




Sources: Ministry of International Trade and Industry, "Indices of Tertiary Industries' Activity"; Ministry of Labor, "Monthly Labor Survey".

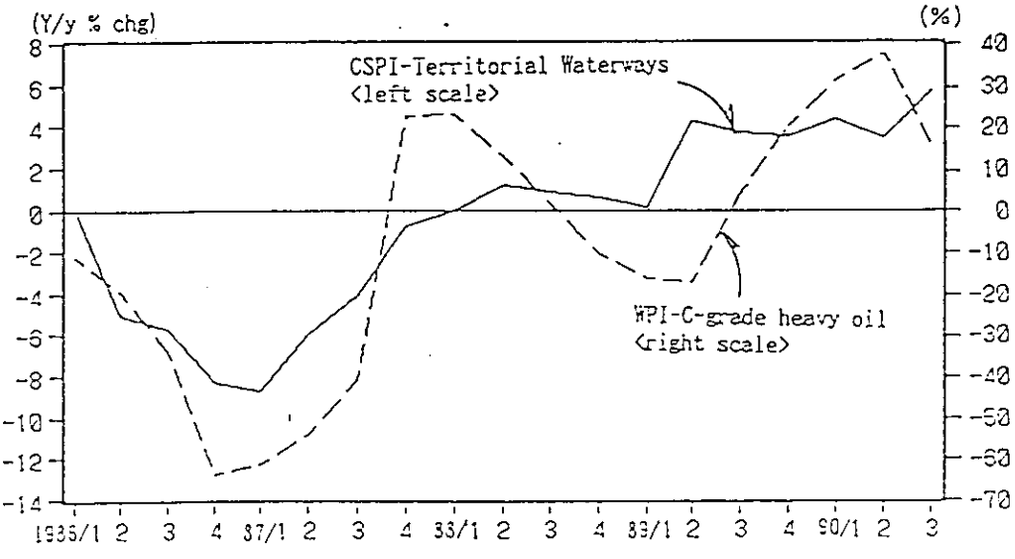
Note: Industry Classification
Labor Intensive: Transportation, Information Services, Advertising Services, Other Services
Capital Intensive: Finance & Insurance, Real Estate, Communications

Chart 9 CSPI and Unit Labor Cost by Industry



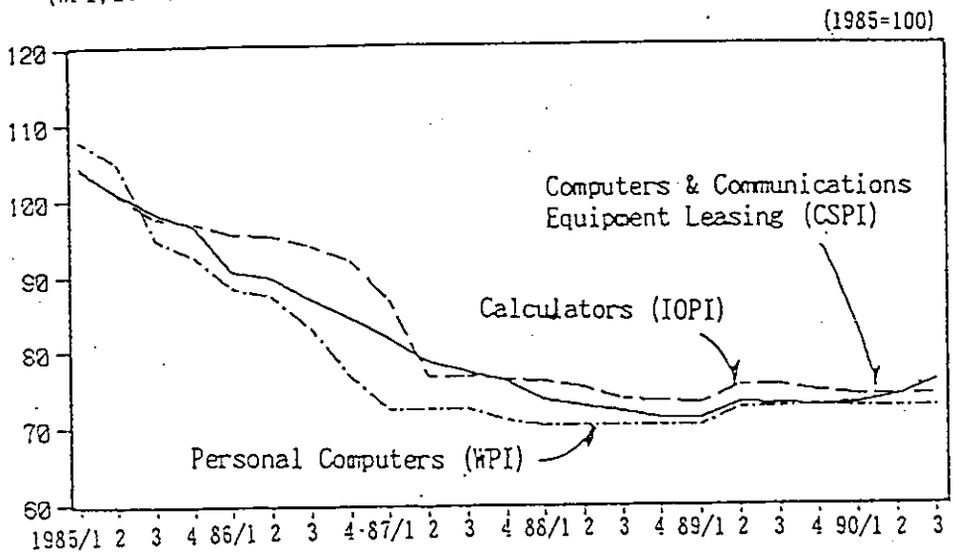
Sources: Ministry of International Trade and Industry, "Indices of Tertiary Industries' Activity"; Ministry of Labor, "Monthly Labor Survey".

Chart 10 Territorial Waterways and WPI (C-grade heavy oil)



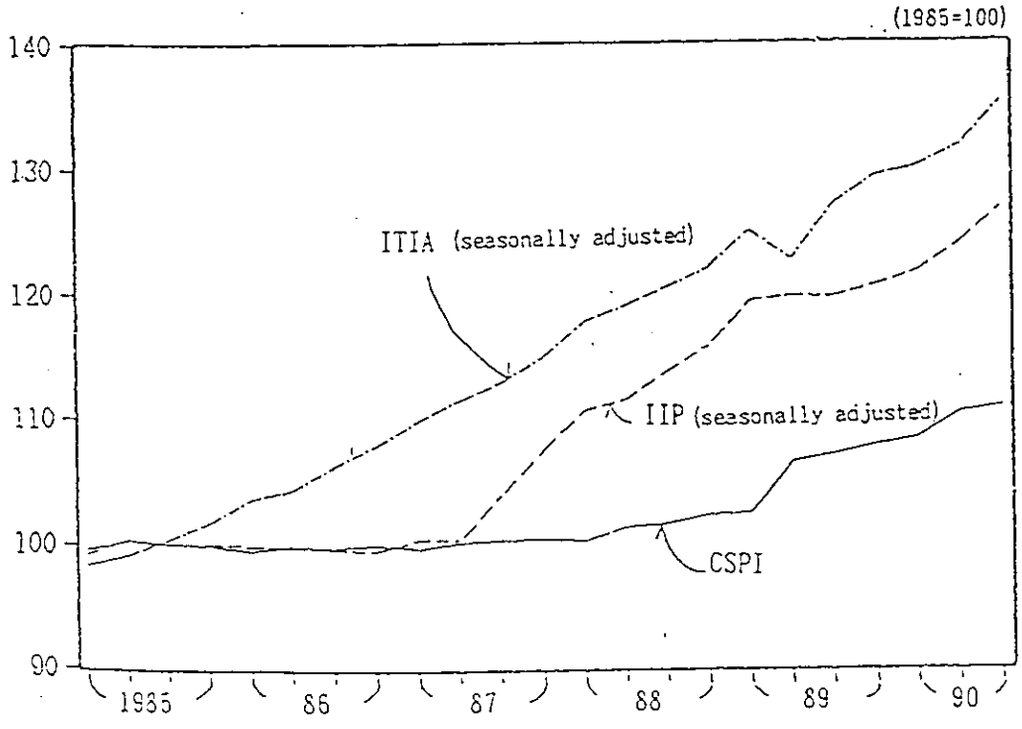
Source: Bank of Japan, "Wholesale Price Indexes".

Chart 11 Relationship between Leasing in CSPI and Prices of Underlying Items (WPI, IOPI)



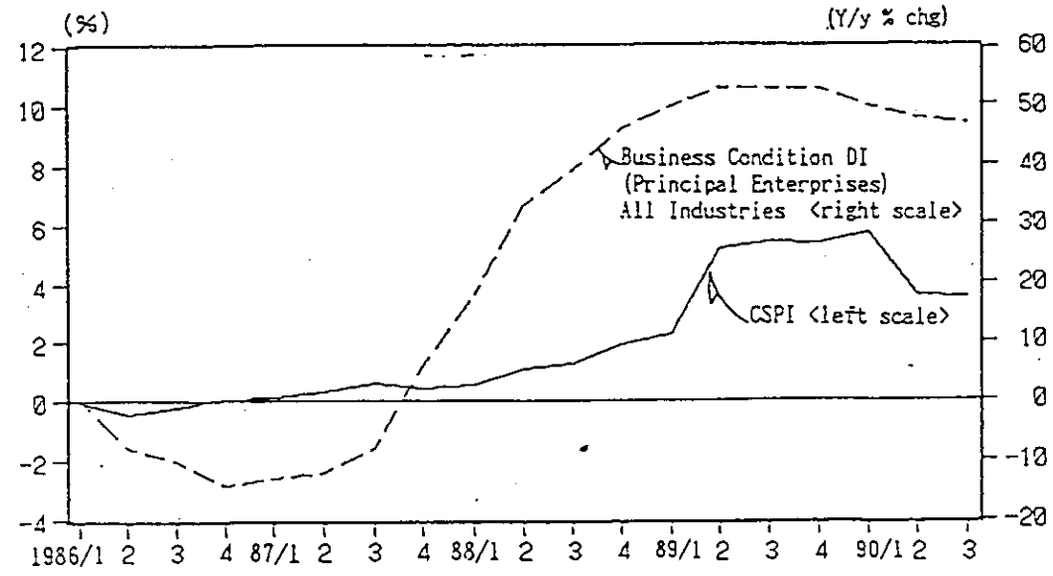
Sources: Bank of Japan, "Wholesale Price Indexes",
"Input-Output Price Indexes of Manufacturing Industry by Sector".

Chart 12 CSPI, Indices of Industrial Production and Indices of Tertiary Industries' Activity



Sources: Ministy of International Trade and Industry, "Indices of Industrial Production",
"Indices of Tertiary Industries' Activity".

Chart 13 Business Fluctuations and CSPI



Source: Bank of Japan, "Short-term Economic Survey of Enterprises in Japan".

Chart 14 Foreign Exchange Impact on CSPI

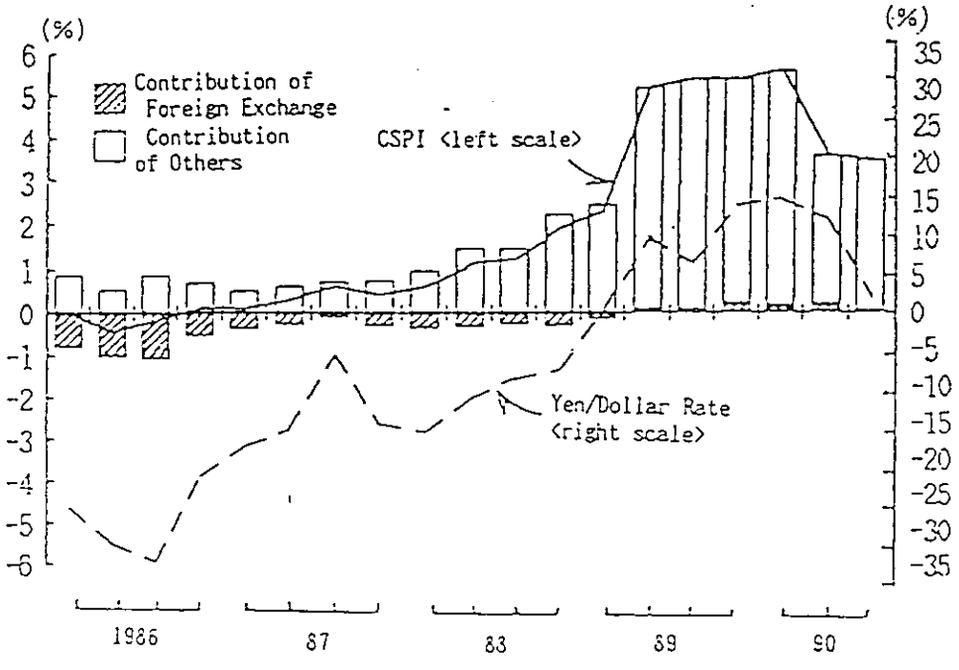
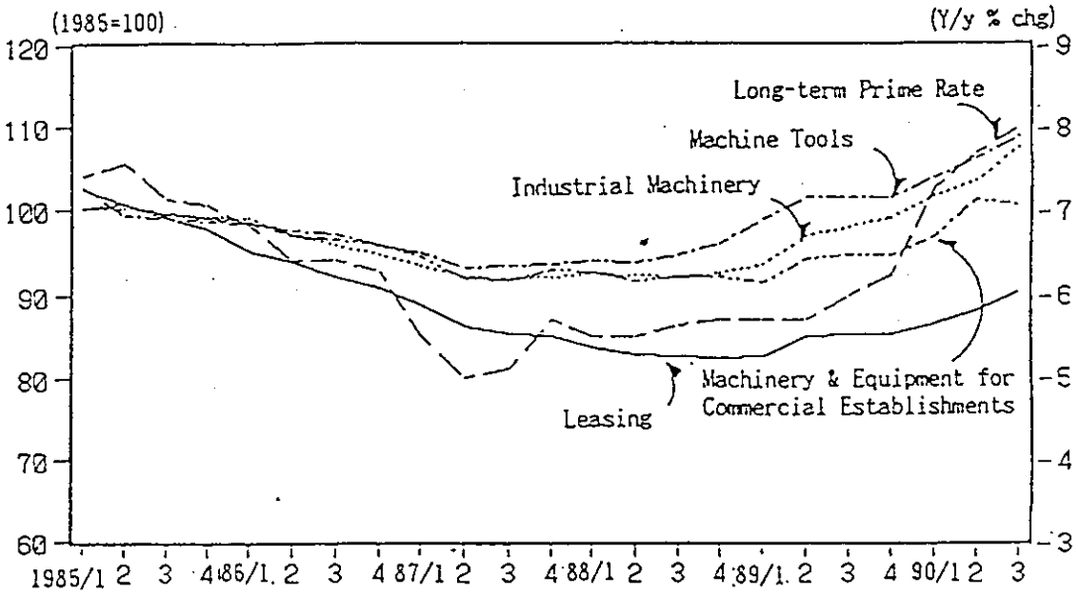
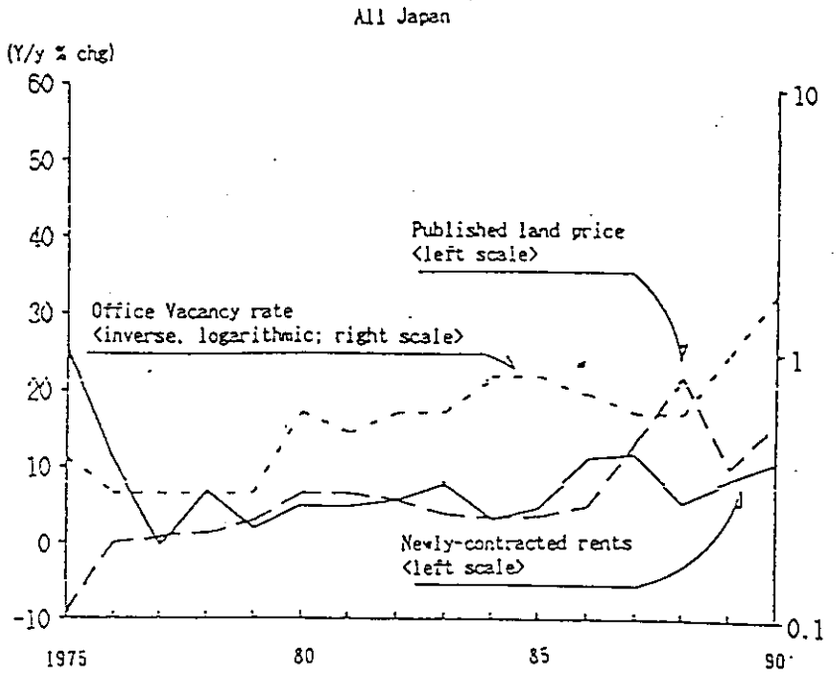


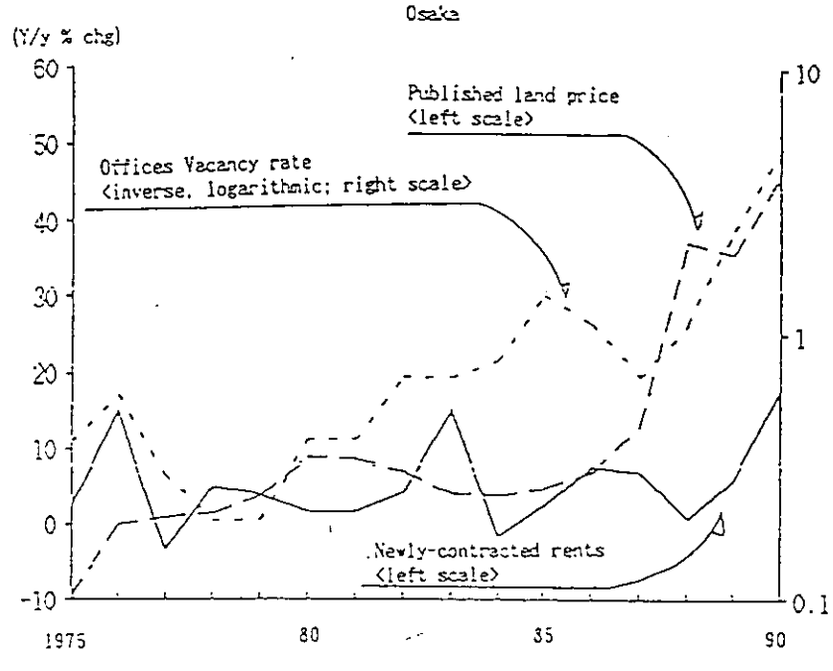
Chart 15 Relationship between Long-term Prime Rate and Leasing Indexes



Notes: CSPI <left scale>,
Long-term Prime Rate (3-month average at month-ends) <right scale>.

Chart 16 Relationship between Newly-contracted Rents, Published Land Prices, and Office Vacancy Rates





Sources: Japan Building Owners and Managers Association, "Extracts from Annual Survey on Japan B.O.M.A. Member Buildings",
National Land Agency, "Published Land Prices".

Chart 17 Macroeconomic Impact on CSPI (Survey)

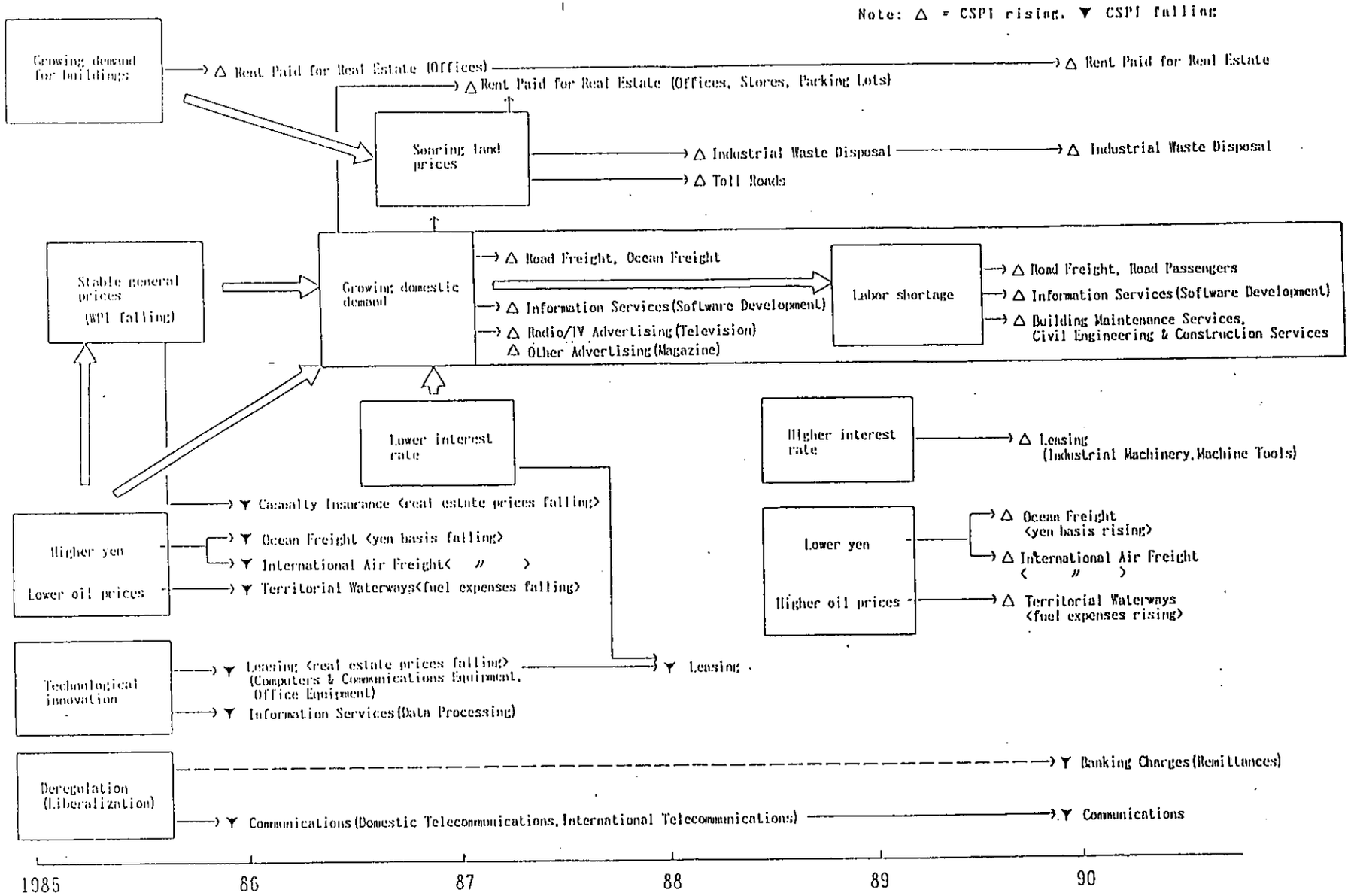


Chart 18 Breakdown of CSPI Fluctuations

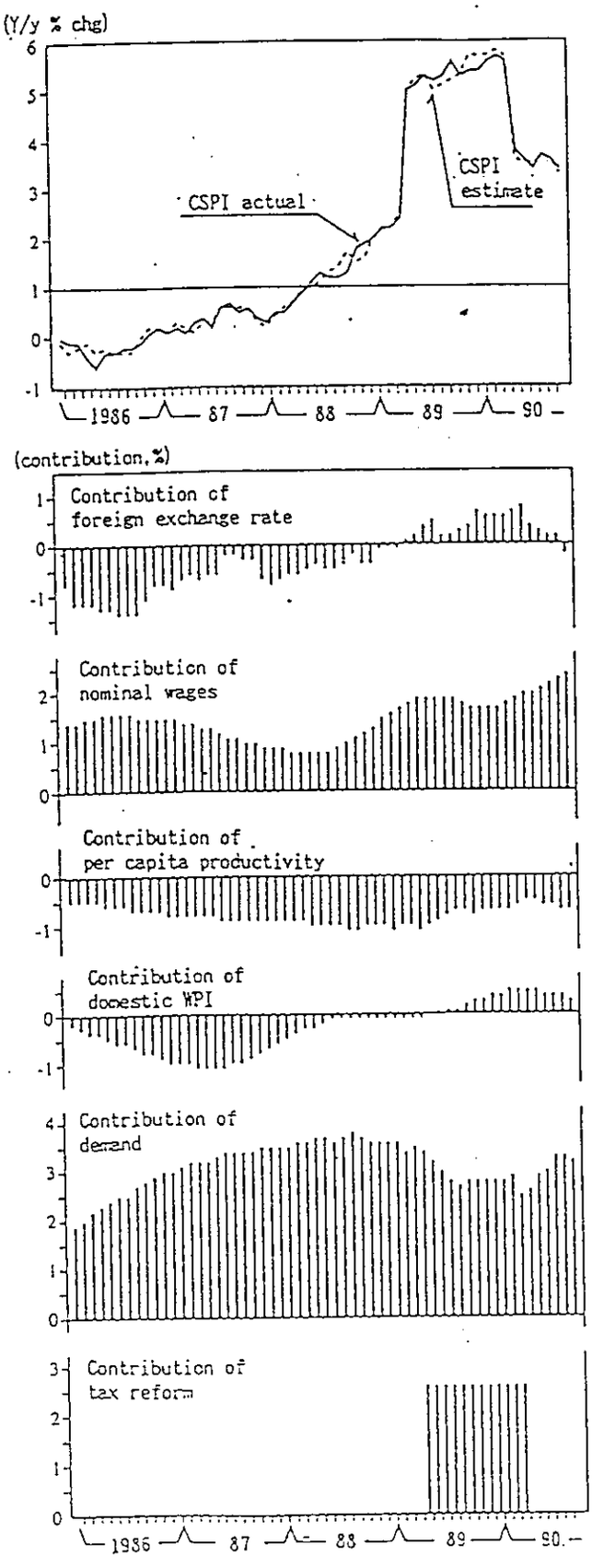
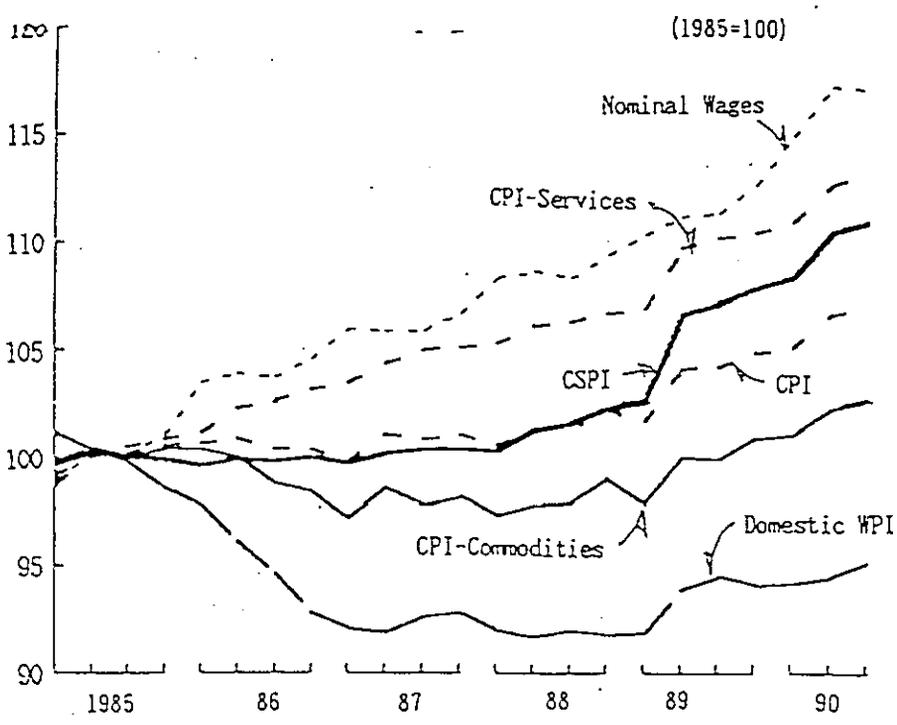


Chart 19 Trends in CSPI, Domestic WPI, and CPI



Sources: Management and Coordination Agency, "Consumer Price Index";
Ministry of Labor, "Monthly Labour Survey";
Bank of Japan, "Wholesale Price Indexes".