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Recent Trends in the Japanese Economy:
A Medium-term Scenario for
the Sustainability of the Japanese Economy

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Recent Trends in the Japanese Economy:
A Medium-term Scenario for the Sustainability of the Japanese Economy

Summary

I. In recent years, economic changes in Japan have tended to lag behind those of the U.S. and Asia, and the major economies of the world are now showing signs of slowing down.

With the success of monetary easing, the U.S. economy started to recover from late 2001, led by car purchases and housing investment. However, consumer confidence has been weakening due to stagnant share prices and deteriorating employment conditions. Production facilities are operating at low rates, deterring plant and equipment investment.

In the major European economies, production has been recovering largely due to continuing inventory adjustment. However, the future looks increasingly uncertain as employment conditions are deteriorating, particularly in Germany.

The major Asian economies continue to improve, led by personal consumption in Korea and exports to China in Taiwan. Concerns about a potential slowdown have been increasing, however, in countries that are heavily dependent on exports to the U.S.

The Chinese economy continues to grow strongly due to public investment, real estate investment and inflows of direct investment from overseas. Nevertheless, potential risks include deflation and the housing bubble.

II. The Japanese economy has been painfully slow to improve, as sluggish exports can no longer drive the recovery. Uncertainty about the future is increasing, largely due to the impact of falling share prices on corporate performance and the financial system, as well as to concerns about the sustainability of the recovery in the U.S. economy.

On the supply side, the inventory cycle has entered an intentional buildup phase. Although production is still rising, the pace has slowed down and may be leveling off. Tertiary industry activity remains weak, with no driving force. Construction activity also remains sluggish. And although employment has been improving in terms of overtime hours, the numbers of self-employed and employees in large-sized firms both declined, with unemployment remaining high in the mid-5% range. In particular, unemployment among young people has risen significantly.

On the demand side, private consumption is holding steady despite the deteriorating income and employment conditions, but may weaken due to worsening consumer sentiment. Curbs on plant and equipment investment continue particularly in the non-manufacturing sector, such as in deregulated industries, while return on investment is showing signs of recovery in the manufacturing sector. Housing investment is falling gradually, mainly for owner-occupied houses. Public investment is likely to continue to decline due to the financial difficulties faced by governments, particularly in local areas. Exports have been slowing recently from the substantial growth recorded since late 2001. Imports continue to grow, led by machinery and equipment from Asia.

The major players in the financial markets continue to avoid credit risk, as the Bank of Japan maintains its quantitative easing policy. The limited supply of risk money means that the policy will be slow to take effect. Meanwhile, consumer prices continue to decline. The easy money policy will therefore remain for some time to address the protracted deflation.

III. Under the influence of globalization, the deflation in Japan is characterized by debt deflation, resulting from balance sheet problems. In January 2001, the government adopted in a Cabinet Meeting "Structural Reform and Medium-term Economic and Fiscal Perspectives" designed to control deflation and revitalize the economy and society. In line with the Medium-term Outlook, Chapter III presents a me-

dium-term scenario for the supply and demand balance and major demand items, based on the current economic situation. The analysis focuses on building a nation based on the creativity of science and technology. The results of the analysis can be summarized as follows.

On the demand side, exports relying on technological advantage should prop up the economy during the intensive adjustment period. Thereafter, economic growth will depend on the success of reforms, which should eliminate the concerns about the future and lead to steady growth of consumption, as well as on a gradual increase in plant and equipment investment, led by the growth of exports and consumption.

On the supply side, capital stock adjustments will make headway from fiscal 2003 to 2005 through intensive adjustments in industrial structure and intra-industry supply structures. Labor input will structurally continue to make a negative contribution due to the reduction in hours worked per capita. Improvement in total factor productivity (TFP) will play a substantial part in leading potential GDP after adjustment.

To arrest the current deflation, it is essential that the adjustment of excess capacity and the search for new demand lead to the expansion of private demand and improvement in profitability.

In order to facilitate the movement of labor between industries during the intensive adjustment period, job creation should be accompanied by the diversification of employment. Consumer fears must be allayed by ensuring job opportunities.

If these conditions are satisfied and the Japanese economy starts to grow sustainably, then the primary balance of public finance will gradually improve. However, there are no precedents in promoting structural reform under deflationary pressure. Furthermore, the medium-term scenario might be adversely affected by delays in the recovery of consumer confidence and investor sentiment. Close attention should therefore be paid to reconcile fiscal and monetary policies designed to avoid the deflationary spiral with the management of government debt.

This report refers to the cases of Korea and Sweden as examples of recovery from economic crisis.

(As of December 9, 2002)

[by Economic Research Group (e-mail: report@dbj.go.jp)]

I Global Economy Showing Signs of Slowdown

In recent years, economic changes in Japan have tended to lag behind those of the U.S. and Asia,[1] and those major economies of the world are now showing signs of slowing down.

1. U.S. (1): Personal Consumption Propped Up by Automobiles but Decline Continuing in Plant and Equipment Investment (see p. 35 for Figures)

Real GDP growth in the U.S. (Figure 1-1) rose substantially in October-December 2001 and January-March 2002, followed by a slowdown in April-June 2002, up only 1.3% on the previous year, only to recover in July-September (up 4.0% according to a provisional estimate), boosted by personal consumption.

Personal consumption has been leading real GDP growth in recent periods. Following tax reductions by the government, car sales continued to boom thanks to major campaigns using incentives such as no-interest loans, which were made possible by low interest rates in the market. In addition, housing-related consumption (building materials, etc.) has stayed relatively strong largely due to strong housing investment, thus contributing to the continuing growth in consumption (Figure 1-2). The increase in consumption has also been helped by income growth.

However, it is generally considered that the U.S. economic recovery will be weaker than the V-shaped recovery expected at the beginning of the year, due to low corporate profits and plant and equipment investment (to be discussed later), as well as to the severe employment situation, which show no signs of improving. Uncertainty about future business conditions has become stronger, as share prices have tended to fall and automobile sales, which have led overall consumption, are beginning to slacken. Consumer confidence is therefore weakening, and personal consumption in the months ahead must be monitored closely.

After consecutive drops on the previous year from January-March 2001 to April-June 2002, plant and equipment investment started to rise in July-September 2002, suggesting that the bottom had been reached (Figure 1-3). However, capacity utilization is still running at low rates. Although information technology-related investment in hardware and software turned up in IT-related industries, other kinds of capital spending in general continue to decline, causing overall plant and equipment investment to continue to fall. With the slow pace of recovery in corporate profits, it will take time for plant and equipment investment to recover fully.

2. U.S. (2): Recovery in Production at a Standstill as Difficult Employment Situation Continues (see p. 36 for Figures)

Industrial production recovered rapidly in January-March 2002, the first increase in six quarters (Figure 1-4). Thanks mainly to the increased production of consumer goods and milder decline in equipment production, the recovery continued to July-September. However, subsequent monthly data indicate a pause in the recovery, mainly for durable goods, as car production turned from strong growth to decline. The capacity utilization in the manufacturing sector remained low at below 75% in July-September 2002, restraining plant and equipment investment.

As regards employment, the reduction in the number of employees has slowed, but unemployment still remains high, pointing to difficult conditions overall (Figure 1-5).[2] In July-Setember 2002, the number of employees increased from the previous period for the first time in six quarters, largely due to the increase in the service sector for two consecutive periods, although the number in the manufacturing sector continues to decline.

In the financial sector (Figures I-6 and I-7), stock prices continued to fall until early October due to heightened concerns about future corporate performance and business conditions, in addition to the downward pressure resulting from

[1] See Development Bank of Japan, "Recent Trends in the Japanese Economy: Globalization and the Japanese Economy," *DBJ Research Report* No. 30, August 2002, Section I-1.

[2] Unemployment stands at 6.0% as of November 2002.

the loss of faith in corporate accounting. Prices then rose on the back of announcements of good profits by some companies, although the economic outlook remains uncertain. The Federal Fund target rate was lowered 0.5% to 1.25% on November 6.

3. Economies of Major European Countries (Germany, France, U.K.): Uncertainties about Recovery Prospects (see p. 37 for Figures)

This section examines the economic conditions for three major European countries: Germany and France, which are among the 12 countries that in 1999 adopted the euro as their common currency, and the United Kingdom, which is one of the 15 members of the European Union (EU) but which has not embraced the euro.

The German economy has enjoyed accelerating exports since the beginning of 2002 due to the recovery of business sentiment in the U.S. and the falling of the euro against the dollar. As a result, the growth of the German economy (seasonally adjusted real GDP, quarterly annualized rate) was up 1.1% in January-March, turning positive for the first time in four quarters (Figure 1-8(1)). Exports continued to increase but domestic demand remained stagnant, as fixed capital formation hardly moved. Thus, the growth was limited to 0.6% in April-June and 1.1% in July-September.

The French economy in 2002 saw an upturn in exports, improvement in business sentiment in expectation of a recovery in production and inventory adjustment. Thus, GDP growth turned positive for the first time in two quarters, up 2.4% in January-March (Figure 1-8(2)). Subsequently, however, the growth slowed gradually due to smaller gains in exports and fixed capital formation, up only 1.7% in April-June and 0.9% in July-September.

Following a minimal growth of 0.5% in January-March, the U.K. economy picked up again in April-June, recording the largest growth among the three European countries (up 2.5%). During this period, the continued weakness in fixed capital formation was more than offset by favorable employment conditions and the asset effect from rising house prices, resulting in strong consumption. Despite a downturn in exports, the U.K. economy grew even more powerfully in July-September – up 3.3% – backed by increased consumption and inventories.

Looking at the recent trends in production, the industrial production index (seasonally adjusted, quarterly annualized) hit the bottom in all three countries in October-December 2001, then rose in January-March 2002 due to inventory adjustment and stronger orders from overseas (Figure 1-9). The most recent data indicate the first decline in three quarters for France due to reduced orders from overseas, but little change in the index for Germany and the U.K.

Figure 1-10 shows the employment situation in these countries in terms of unemployment rate (ILO standards, seasonally adjusted). In Germany, the unemployment rate declined from the latter half of 1998 thanks to an increase in service-sector jobs. In 2001, however, lower production in the manufacturing sector and increasing corporate failures accelerated employment adjustment, causing unemployment to rise gradually to 8.3% in September 2002. In response to the deteriorating employment situation, the Schröder administration, after winning the election for the Bundestag in September, introduced an Employment Reform Act in November. The Act provides for measures to reduce unemployment, such as the organizational reform of employment agencies and the creation of a special facility for SMEs that hire unemployed persons. The effects of such measures are expected to appear in the coming periods.

Economic expansion and increased employment in the public sector reduced unemployment in France to 8.5% in the first half of 2001, more than 3% lower than the peak. However, it rose gradually from the latter half of 2001 as corporate performance deteriorated, reaching 8.8% in September 2002.

The U.K. government has worked hard to increase the flexibility of the labor market by restraining unemployment benefit and promoting deregulation, leading to an increase in the number of part-time workers. Thus, the unemployment rate has been constantly declining since 1993, and stood at 5.0% in July 2002, the lowest level in 25 years.

In 2002, prices in the euro area were af-

fected by rising fresh food prices at the beginning of the year due to adverse weather conditions, as well as by the introduction of tobacco taxes in some member countries. Thus, consumer price inflation has been slightly higher than the reference value (up 2% from the previous year) of the European Central Bank (Figure 1-11). Although fresh food prices had returned to their normal level by midyear, upward pressure on prices caused by labor cost is still strong.

The slower pace of recovery is adversely affecting national budget balances. In Germany, the budgetary deficit may exceed 3% of GDP due to factors such as weaker economic conditions and the cost of repairs after the flood in August, which inflicted much damage in the eastern part of the country. In France, a series of economic stimulus measures were implemented following the Presidential election in the spring, including income and employment tax cuts and increased government spending. As a result, the budget deficit for 2002 is expected to reach 2.6% of GDP, exceeding the initial target (1.9%). Meanwhile, the budget deficit in Italy is expected to exceed 2% of GDP for a second consecutive year, and in Portugal it was confirmed that the budget deficit had far exceeded the 3% target, rising to as high as 4.1% of GDP. The Stability and Growth Pact requires the euro bloc countries to limit their annual budget deficit to 3% of GDP or less, and so the European Commission of the EU initiated procedures for the correction of budget deficit for Portugal in July, and for Germany in November. It also issued an early warning to France and continues to closely monitor developments in Italy. Although it is not a euro bloc country, the U.K. will experience a budget deficit of 1.0% of GDP due to the slower increase in tax revenues.

In light of economic trends, the ECB lowered the official interest rate, which had remained unchanged since November 2001, by 0.5% to 2.75%, as inflationary pressure has eased due to the economic slowdown and the stabilization of the euro.

4. Major Asian Economies: Recovery Continuing but Concerns about a Slowdown (see p. 38 for Figures)

Figure 1-12 shows the trends of real GDP in major Asian economies. In general, they slowed in parallel with the U.S. economy from 2000, and Taiwan and Singapore experienced negative growth in 2001, while the Korean economy, however, continued to grow even during the slowdown.

As the U.S. economy recovered, positive growth returned for Taiwan in January-March 2002 and for Singapore in April-June. In this recovery process, exports and imports both turned up (Figure 1-13), with net exports contributing to GDP growth. Inventory investment also contributed to the growth, as production increased in view of the recovery in exports.

Prices (Figure 1-14) have been rising slightly in Korea, but declining in Taiwan and Singapore. Likewise, unemployment (Figure 1-15) has continued to fall in Korea since the end of the Asian crisis, but has remained high in Taiwan and Singapore, implying that the export-led recovery has not spilled over.

Recently, Asian economies have stalled due to the slowdown in the U.S. economy: the Singaporean economy remained at the same growth rate from the previous period in July-September, and slowdowns might be expected.

5. China: Strong Growth and Increased Risks (see p. 39 for Figures)

The Chinese economy continues to grow powerfully (Figure 1-16). Although the growth slowed in 2001 almost in parallel with the U.S. recession, the extent of the slowdown was insignificant compared with other major Asian economies. Growth accelerated again to 8.1% year-on-year in July-September. For the year 2002 as a whole, the Chinese economy is expected to grow by around 8%[3], surpassing the official target of 7%. However, this rapid expansion of the Chinese economy is accompanied by increased risks.

Chinese growth has been led by fixed asset

[3] According to the Chairman of the National Development Committee (*Yomiuri Shimbun*, November 11, 2002).

formation, which has been growing by more than 20% since the beginning of 2002 (Figures I-17 and I-18). The growth of investment completed is not necessary autonomous, because it owes much to the increase in capital construction development including infrastructure development, which is largely financed by the government. There has also been a substantial growth in real estate development, which accounts for over 20% of investment in fixed assets. The growth reflects housing construction booms in Shanghai and other coastal cities. Real estate prices continue to rise despite increased inventories, [4] which raises concerns about a real estate bubble.[5] Direct investment has been increasing rapidly largely due to the accession of China to the WTO in December 2001, contributing to the growth of fixed asset formation.

Consumption (Figure 1-19), another pillar of domestic demand, has been increasing by about 10%. However, savings[6] has been rising faster than consumption, indicating that more of the income growth has gone to savings rather than to consumption. This may be partly explained by the increase in unemployment due to the reform of state-owned enterprises. The official unemployment rate in urban areas increased from 3.1% at the end of 2000 to 3.6% at the end of 2001, and has reached 4-5% so far this year.[7] If the number of laid off from state-owned enterprises is added, the unemployment rate as of September 2002 will reach 7%.[8] Job insecurity is one of the main reasons of the weak consumption.

Exports and imports (Figure 1-20) experienced slower growth following the collapse of the IT bubble in the U.S., but have been increasing since the beginning of 2002, backed by the recovery of the U.S. economy. Although China continues to enjoy a trade surplus, its contribution to GDP growth is not significant as exports and imports are both increasing.

Prices have been falling (Figure 1-21). Although the post-Asian crisis deflation has been overcome, the consumer price index has turned negative again as prices for raw materials and ex-factory industrial products have been declining due to oversupply.

[4] The inventory index rose from 91 in March 2001 to 98 in August 2002. At the same time, real estate prices continue to rise by an average annual rate of 9% in Shanghai and over 2% nationwide.

[5] For example, Prime Minister Zhu Rongji, on a visit to Shenzhen on China's National Day, directed bank executives to adopt more strict criteria in examining loan applications from real estate investment firms, calling attention to the overheating of investment in the real estate market (*Nihon Keizai Shimbun*, October 19, 2002).

[6] On a stock basis, the year-on-year growth of savings amounted to 15.2% in January-March 2002, 17.4% in April-June and 18.1% in July-September. This translates into 23.1% in January-March, 136.1% in April-June and 53.1% in July-September on a flow basis.

[7] According to the Deputy Chief of the National Bureau of Statistics (*Jiji Press*, October 16, 2002).

[8] According to the Director of the Department of Labor and Social Security (*Nihon Keizai Shimbun*, November 12, 2002).

II Japanese Economy: Slower Improvement

1. Overview: Production Rising, but Concerns about Leveling Off
(see p. 40 for Figures)

The recovery of the Japanese economy has recently stopped, due to slower growth in exports, the major contributor. Looking ahead, there is even greater uncertainty due to overseas factors such as concerns about the sustainability of the U.S. economic recovery. Falling share prices are also a threat as they affect corporate performance and the financial system.

Led by the recovery of exports, real GDP turned from a decrease of 3.3% on the previous year in January-March 2002 to an increase of 1.5% in July-September, the first increase in five quarters (Figure 2-1). On a seasonally adjusted basis, however, the GDP growth on the previous year excluding the change in inventories[9] slowed from 0.6% in April-June to 0.3% in July-September. Although private consumption unexpectedly propped up the economic growth in the July-September period, the growth from October-December onward may be difficult to sustain, partly because of the potential impact of falling share prices. The decline in the GDP deflator slowed to 0.6% on the previous year in January-March 2002, then rebounded to 1.6% in July-September, pointing to the resilience of deflationary pressure.

Looking at the trend of each GDP (GDE) component, consumption has stayed almost unchanged under persistently severe income and employment conditions. The year-on-year growth of real private consumption increased from 0.9% in April-June to 2.5% in July-September, the first increase in five quarters, due to buoyant small car sales, as well as to temporary factors such as the extremely low consumption in the previous year and unusually hot weather. The upturn in business sentiment seems to have contributed to the relatively steady rise in consumption since the beginning of the year. However, consumer confidence has been showing signs of weakness since the summer following downward revisions to corporate profits and falling share prices.

Plant and equipment investment, though bottoming out, has not proved robust. The year-on-year decline in real private plant and equipment investment was reduced from 12.1% in October-December 2001 to 4.7% in July-September 2002. The investment is also bottoming out in terms of seasonally adjusted change from the previous quarter. However, the recovery in production, the main contributor to the bottoming-out, has stalled recently, leading some observers to suggest that the economic recovery since the beginning of the year will be short-lived. Thus, corporate investment sentiment may now be even worse than in the first half of the year. The recovery of leading indicators such as machinery orders is also losing steam.

Housing investment has been poor, with real private housing investment falling from the previous year for six consecutive quarters to July-September 2002. The seasonally adjusted change from the previous quarter also indicates a mild downtrend. Besides investment in owner-occupied houses remains low, inventories are increasing for condominiums in the Tokyo metropolitan area, which have led housing investment on the back of falling land prices and a growing desire to return to the urban area. Increased investment in houses for rent, observed until April-June, is not considered sustainable.

Reflecting the financial difficulties faced by central and local governments, public investment has been declining on the previous year in real terms since October-December 1999 (except for January-March 2001 when it was flat). In July-September 2002, it accounted for 6.2% of GDP (in nominal terms), down more than 2 points from the most recent peak of 8.2% recorded in January-March 1999. This downward trend is expected to continue as the central government carries out fiscal restructuring and due to financial constraints faced by local governments.

[9] In August 2002, the Cabinet Office thoroughly revised the method for calculating quarterly GDP estimates, and the new method entails larger fluctuations in private inventories than the traditional method. Since April-June 2002, inventories have made a substantially positive contribution due to inventory buildup following the bottoming-out of the economy.

The substantial growth of exports seen since the beginning of the year has been slowing recently. Real exports turned up in early 2002, mainly automobiles to the U.S. and machinery to Asia. The recovery of production was led by the substantial growth of exports, up 4.8% in January-March and 5.9% in April-June, in terms of the seasonally adjusted change from the previous quarter. However, exports grew only 0.6% in July-September as the recovery of IT-related demand faltered. Imports are on the rise. After bottoming out in January-March on a seasonally adjusted quarterly basis, real imports have been increasing since April-June, led by machinery from Asia. The contribution of net exports has been positive for three straight quarters since January-March 2002 on a year-on-year basis. In terms of seasonally adjusted change from the previous quarter, however, it turned negative, albeit slightly, in July-September for the first time in four quarters, as export growth slowed.

Real GDP for fiscal 2002 is set to increase for the first time in two years, exceeding both the forecast in the government's Economic Outlook in January 2002 (0.0% in real terms),[10] and the Cabinet Office Estimates in September (up 0.2% in real terms)[11], as the relatively strong performance in the first half of the fiscal year will more than offset any slowdown in the coming months.[12] Looking ahead, however, pessimism is growing that the Japanese economy may contract as early as in the first half of fiscal 2003, depending on trends in the U.S. economy and share prices. Thus, the growth for fiscal 2003, although considered to be slightly positive on average, is likely to be smaller than for fiscal 2002.[13]

To confirm this GDP trend from the supply side, Figure 2-2 shows the trends of key components for the index of all-industry activity: the industrial production index (22.4% weighting), the tertiary industry activity index (59.5%) and the construction activity index (8.1%), all seasonally adjusted.

With the progress of inventory adjustment in electronic devices and other IT-related products, the industrial production index turned up in January-March 2002, followed by a relatively rapid recovery, up 3.8% in April-June and 2.2% in July-September on the previous quarter. However, production in electric machinery, which initially led the recovery, has been flat since June, while transport equipment, which supported industrial output in July-September, faces uncertainties over the sustainability of car exports to the U.S. According to an estimate based on actual data for October and the Manufacture Production Forecast Survey for November and December, the index is projected to rise only 0.2% on the previous year in October-December, which would be a substantial deceleration. Although industrial output is still rising, it is slowing down and may level off.

The tertiary industry activity index rose for the first time in four quarters in January-March 2002, edging up 0.1% on the previous period, only to decline 0.4% in April-June, especially in communications and corporate services. Although it bounced back in July-September, up 0.4% due to contributions from amusement and other personal services, the growth may not be sustainable. As consumption stays flat, previous leading industries such as mobile communication and information services are suffering faltering growth. Thus, tertiary industry activity remains weak overall.

The construction activity index temporarily recovered in January-March 2002 due to progress in public works and private civil engineering projects, followed by a further slump and weakness in both the public and private sectors.

[10] According to Cabinet Office, "Fiscal 2002 Economic Outlook and Basic Stance toward Economic and Fiscal Policy" (Cabinet Decision on January 25, 2002).

[11] According to "Fiscal 2002 Economic Trend Estimates (Cabinet Office Estimates)" in Cabinet Office, "On Future Economic Trends" (September 20, 2002).

[12] The average of real economic growth forecasts for fiscal 2002 by 16 private forecast institutions based on the quarterly GDP estimate (preliminary data) for July-September 2002 = up 1.0% (*Nihon Keizai Shimbun,* November 21, 2002).

[13] The average of real economic growth forecasts for fiscal 2003 by 16 private forecast institutions based on the quarterly GDP estimate (preliminary data) for July-September 2002 = up 0.3% (*Nihon Keizai Shimbun,* November 21, 2002).

2. Inventory Cycle Entering a Buildup Phase (see p. 41 for Figures)

On a graph with the year-on-year growth of inventories plotted on the horizontal axis and that of shipments on the vertical axis, the inventory levels are empirically known to move in clockwise circles, confirming the existence of the inventory cycle. In other words, although producers try to adjust production to match shipment volume, the time lag between noticing a change in shipment growth in line with the economic cycle and the subsequent adjustment of production volume causes swings in the inventory level.

For example, when shipments grow as the economy expands, producers intentionally build up inventories by increasing production so as not to miss opportunities for profit (intentional buildup phase). However, the economy will eventually pass its peak and the growth in inventories will exceed the growth in shipments (crossing the 45 ° line in the first quadrant from upper left to lower right). This means that inventories, despite the efforts of producers, continue to increase above a reasonable level (unintended accumulation phase). Further recession, causing decreases in shipments, forces producers to cut back production faster than the decline in shipments until inventories fall to a reasonable level (inventory adjustment phase). The economy subsequently bottoms out and shipments start to recover. However, inventories will then be decreasing faster than shipments (crossing the 45 ° line in the third quadrant from lower right to upper left). This means that the producer unintentionally reduces inventories (recovery phase). Once the producer realizes that inventories have fallen below the suitable level, production will again start to be increased. This creates the inventory cycle consisting of the above four phases.

According to this concept, the inventory cycle for the mining and manufacturing sectors combined entered an intentional buildup phase in July-September 2002, as shipments recovered smoothly, led by producer goods, for which inventory adjustment was completed most quickly (Figure 2-3). The previous cycle spent three quarters in the recovery phase, whereas it only took one quarter for the current cycle to complete the recovery phase, which mostly consisted of adjustments in IT-related products. The pace of recovery after bottoming out was faster because the adjustment was more drastic. However, only producer goods have experienced a clear inventory adjustment and entered the buildup phase; the decrease on the year-on-year basis in inventory is still accelerating for capital goods and construction materials.[14]

By type of goods, capital goods, for which adjustment was slowest, entered the recovery phase in July-September, as the decline in shipments slowed substantially. In particular, the shipments of capital goods for manufacturing equipment exceeded the level of a year earlier for the first time in six quarters thanks to the bottoming-out of plant and equipment investment (Figure 2-4). The fall in shipments of construction materials, although still severe, has been decelerating gradually (Figure 2-5). The shipments of consumer goods slightly exceeded the level of the previous year in July-September, largely due to healthy car exports (Figure 2-6). Inventory adjustment for producer goods was completed in January-March, earlier than for final demand goods. Although shipments grew rapidly mainly for electronic devices, the growth has slowed somewhat since last summer (Figure 2-7).

3. Weak Recovery in Job Offers as Employment Conditions Remain Difficult (see p. 42 for Figures)

The ratio of active job openings to applicants has been rising since the bottom of 0.51 in January-March 2002, but the recovery is slow (Figure 2-8). This is because the denominator of the ratio (i.e. the number of job seekers) has stayed high despite the rising numerator (i.e. the number of job offers). The unemployment rate has remained high for more than a year, and was 5.4% in July-September (Figure 2-8). On a monthly basis, it reached a record-high of 5.5% in October. By age group, unemployment has increased significantly for the young generations to the mid-30s

[14] In the previous cycle, producer goods also led final demand goods in the process of economic recovery, but the decline in the inventories of final demand goods had already slowed at the comparable stage.

(Figure 2-9). The unemployment rate for the 15-24 age bracket has risen rapidly since around 1998, and is now a high 10%. In the last 12 months, the biggest increase in unemployment was recorded in the 25-34 age bracket, indicating that the deteriorating employment situation has begun to affect slightly older generations.[15] As firms continue to curb new hiring, the rise in unemployment is attributable to the reduction in job opportunities for younger people as well as to the expansion of less-stable forms of employment.[16]

Although the number of employees continues to decline from the previous year, the decrement shrank somewhat in July-September 2002 (Figure 2-10(1)). By industry, the number continues to plummet in the manufacturing sector. It also fell by 300,000-400,000 in wholesaling/retailing due to successive corporate failures. Those declines are partially offset by the increase of employees in services. Looking at the different employee classifications, the downtrend continues for the self-employed and family employees, and the decline in the number of regular employees has been protracted (Figure 2-10(2)). Meanwhile, the number of temporary and daily employees has been rising. The decline in the number of employees is thus being stemmed by a shift to employment for a fixed period, which is more flexible and helps suppress wages and welfare expenses such as social insurance premiums.[17] By size of corporation, the number of employees in small- and medium-size corporations has remained much the same as a year earlier, but that in large corporations that employ 500 or more workers continues to fall sharply (Figure 2-10(3)).

The amount of overtime hours has been increasing since the turn of the year on a quarterly basis (Figure 2-11). On a monthly basis, however, it recorded in September the first decline on the previous month since December 2001 for the manufacturing sector as the recovery of production stalled, and the decline accelerated in October. Although the decline in the number of employees is expected to slow, the leading indicators of production and hours worked show that the recovery is weakening. Furthermore, the recovery in employment is limited to peripheral or marginal areas, specifically to part-time employees. In light of the wage situation which will be discussed later, firms are now increasingly committed to reducing labor costs. If the current recovery phase turns out to be short-lived, the economy is likely to re-enter an adjustment phase without any perceived improvement in employment.

4. Earnings Decreasing, Resulting in Worsening Consumer Confidence

(see pp. 43-44 for Figures)

The consumption situation continues to worsen in line with the deteriorating income and employment situation. The year-on-year change in total cash earnings per person based on the Monthly Labor Survey indicates that bonuses and special earnings as well as scheduled earnings have continued to shrink since April-June 2001 (Figure 2-12). According to the survey, the part-time worker ratio (the ratio of part-time workers to the total of full-time and part-time workers) moved up 1 point from the previous year to 22.0% in July-September 2002, supposedly reducing the average wage by a little less than 1%.[18] However, the wages of full-time workers, traditionally resistant to downward pressure, started to show signs of decline in 2002. Thus, the decline in total wages can be explained not only by the increasing share of part-time workers, but also by the reduction in wages of individual workers whose statuses do not

[15] By relationship to the head of household, unemployment has risen for "family members other than the head and spouse" and in single-member households, whereas the average unemployment rate remained flat for the past 12 months.

[16] When the employment situation upon graduation is severe, the mismatch between available jobs and the qualifications of applicants not only raises the subsequent severance rate and also increases the possibility of unemployment by preventing the development of job skills. See Ministry of Health, Labour and Welfare, "Analysis of Labour Economy (White Paper on Labour Economy) FY 2002," Section 2-2, for example.

[17] Temporary and daily employees refer to those hired for a period of one year or less, and regular employees refer to executives and those hired for a period of over one year or for an undetermined period.

[18] In terms of total earnings, part-time workers receive just over 2% of the wages earned by full-time workers, in part due to the difference in hours worked.

change.[19]

The downtrend is particularly significant for bonuses, which have traditionally been used to adjust wages. The summer bonus for 2002 witnessed a record drop of 5.9% from the previous year, even higher than all forecasts. Changes in income usually lag behind those of corporate performance by about six months. However, a structural reduction in labor cost is now underway to lower labor's share, which has remained high since the mid-1990s.[20] The 2002 winter bonus is expected to record a similar drop to that of the summer bonus. As the outlook for the economy remains uncertain, the income situation is unlikely to improve for the time being. Although deflation supports real purchasing power, the downtrend of real wages on the previous year has accelerated since the latter half of 2001, down 3.4% in July-September 2002.

Despite this difficult situation, the change from the previous quarter in real private and household consumption according to the GDP estimate rose briskly for four straight quarters to July-September 2002 (Figure 2-14). This is particularly impressive under the newly adopted estimation method which enhanced the smoothness of the estimated series.[21] Consumption has an inherent upward trend due to such factors as the increase in population and in the number of households (see Section III-5). In light of the subdued recovery in plant and equipment investment and the slowdown in exports, however, the sustainability of the steady growth in consumption will be tested in the months ahead.

According to the Family Income and Expenditure Survey, the level of real household consumption declined gradually from 1998, but has stayed almost unchanged since 2000 (Figure 2-15). In July-September 2002, consumption exceeded the level of a year earlier, which seems to have contributed to the brisk movement of consumption in the GDP statistics. It should be noted however that this movement includes some elements that are inconsistent with the trend of other indicators.[22]

On the supply side, the retail sales index (Figure 2-16) is still falling for such products as clothing and food, due to the significant impact of deflation. As regards home appliances, the index has declined rapidly in reaction to the surge in demand just before the promulgation of the new home appliance recycling law in April 2001 and to the decline in personal computer sales.

Against this backdrop, the number of passenger cars sold has been recovering since around 2000 and exceeded the annualized number of 3.4 million in the recent two quarters (Figure 2-17). The share of small cars in the total number of cars sold including standard-sized and mini vehicles exceeded 90% until the 1980s, but then dropped to 52% in fiscal 1999 following the elimination of the commodity tax in 1989 and changes in mini car specifications in 1990 and 1998. However, this long-term trend has been reversed since fiscal 2000, with the share of small cars accounting for 55.1% of the cumulative total from January to October 2002.

In the short term, this may be explained by the marketing of new "compact" models in the small class as consumers prefer lower-priced vehicles, as well as the effects of vigorous sales campaigns. However, the sustained buoyancy of car sales for more than two years despite the overall consumption slump can only be explained by the structural increase in demand for replacement. The number of small cars owned

[19] The Labor Force Survey points to a rise in the average age of all employees, particularly among full-time workers due to curbs on new hiring. Despite the resulting upward pressure on wages, the regular wages and earnings of full-time workers have been falling on the previous year so far in 2002, and declined 0.3% in July-September.

[20] See Wataru Miyanaga, "Labor's Share and the Adjustment of Wages and Employment," *DBJ Research Report*, No. 27, June 2002.

[21] The change in the method of calculating the GDP estimate in August 2002 corrected its traditional heavy dependence on the Family Income and Expenditure Survey, which reflects the demand side, by adopting a weighted average incorporating the supply side (demand: supply = 0.5271: 0.4729).

[22] Although consumption increased on the previous year in July-September 2002, a closer look reveals that the propensity to consume has "raised" the consumption level. This precludes any interpretation of this movement as the ratchet effect, which could only "maintain" the consumption level. The decline in consumption recorded in July-September 2001, which is partly responsible for this increase, was caused by the decrease in spending on essentially stable items such as education and rent, thus implying the effect of re-sampling. See also Cabinet Office, "Annual Report on Economy and Finance, FY 2002," Columns 1-3.

exceeds that of standard-sized cars by more than 100%, and the average age of small cars has been rising despite the recent buoyant sales. The stock of standard-sized cars has also been increasing despite the decline in the number sold since around 1996, but the average age of standard-sized cars is rising more rapidly, approximately 10 years after the sales boom in the early 1990s. This implies that increased demand for replacement is now expected, including a shift to small cars. Strong sales of passenger cars will thus continue for some time, but such sales do not constitute a change in attitude toward consumption as a whole. Passenger car sales are leveling off in terms of value, due to the rising shares of small and mini vehicles, and the sales of home electric appliances, another typical durable goods, are still stagnant. These facts imply that consumer confidence remains weak.

Looking at tourism sales (Figure 2-18), overseas travel rose in September 2002, one year after the terrorist attacks in the U.S., which led to a protracted decline. As compared with September 2000, however, the sales are still down 5.7% overall and down 7.3% for overseas travel, indicating that a total recovery has yet to come. In particular, the unit price per customer for domestic tours has been declining. According to the statistics on brand sales by travel agencies, the unit price has been falling by some 10%, more than offsetting the 5% increase in the number of customers.

Finally, consumer sentiment, which improved in the spring of 2002 largely in anticipation of an economic recovery, has recently shown signs of deterioration again (Figure 2-19). Although the Consumer Confidence Index for the coming six months continued to improve in the September survey, this is because the expectation of falling prices was counted as a positive factor. The employment and income prospects both hit record lows since the survey of December 2001. Other consumer confidence indicators (Figure 2-19(2)) also deteriorated in surveys conducted in July-September, indicating reduced expectations for economic recovery as income and employment conditions continue to worsen. It is becoming increasingly difficult to expect consumption to maintain its current level amidst this deteriorating environment.

5. Plant and Equipment Investment: Bottoming Out but Recovery Expected to be Weak (see p. 45 for Figures)

Plant and equipment investment is bottoming out but the pace of improvement is painfully slow with poor prospects of recovery.

Historical data based on the Statistical Survey of Incorporated Enterprises shows that the rate of year-on-year growth in plant and equipment investment[23] is strongly correlated with return on investment defined as operating asset profit rate minus the average contracted interest rates on new loans (Figure 2-20). Empirically, the threshold return on investment vis-à-vis the change in plant and equipment investment is 5% for manufacturing and 3% for non-manufacturing.[24]

Looking at the trend in the manufacturing sector, return on investment rose in January-March 2002 as the economy bottomed out, and surpassed the 5% threshold in April-June for the first time in four quarters, followed by a further improvement in July-September to 7.0%. In response, the year-on-year decrease in plant and equipment investment has slowed since April-June, but the improvement is weaker than in the previous recovery (late 1999), when return on investment stood at a similar level. Indeed, the pace of recovery slowed in July-September.

Plant and equipment investment in the non-manufacturing sector has slumped almost constantly since 1998, as controls on spending have been in place in industries exposed to strong pressure to reduce costs largely due to deregulation. Looking at the recent trend, investment declined 8.8% from the previous year in July-September 2002, which indicates that the

[23] According to the Statistical Survey of Incorporated Enterprises, "Plant and Equipment Investment Including Software" was taken as the official amount for plant and equipment investment since July-September 2001, but time series data before this period could not be obtained. Therefore, in this research report analyses are made using the "Plant and Equipment Investment Excluding Software" figures.

[24] In the non-manufacturing sector, the relationship between the change in plant and equipment investment and return on investment is not as stable as in the manufacturing sector. Formerly, the threshold return on investment was considered to be 2.5% for non-manufacturing, but this report adopts the level of 3% in light of recent trends. In any case, the value should not be taken for granted.

decline has been slowing. Nonetheless, the current situation of non-manufacturing sector plant and equipment investment is particularly severe compared not only with the situation in 1996-97, when the correlation between return on investment and plant and equipment investment was strong, but also with the situation in late 1999, when the two indicators had already started to diverge. (Return on investment was at similar levels in the three cases.)

Looking ahead, return on investment will continue to recover at least until the end of fiscal 2002. Trends in the Bank of Japan's *Tankan* and the mid-term account settlements announced in September indicate that corporate performance for fiscal 2002 is still following a V-shaped recovery, even though some initial plans were revised downward. However, the profit environment for the next fiscal year onward is highly uncertain, as prospects for the U.S. economy and the recovery of domestic demand look doubtful. Thus, it is difficult to predict whether the recovery in corporate performance will directly translate into higher plant and equipment investment.

Machinery orders (domestic private demand excluding ships and electric power), which is a good leading indicator of plant and equipment investment, have shown a smaller decline on the previous year in both the manufacturing and non-manufacturing sector (Figure 2-21). Nonetheless, the recovery in the months ahead may prove to be weak, as the ratio of achievement to projection declined in the latest period.

The decline in orders from the manufacturing sector bottomed out in October-December 2001, down 36.4% on the previous year (the largest decline so far under the present standard). Since then, the decline has been slowing progressively, in particular for electric machinery, as inventory adjustment has made headway in electronic devices (down 8.5% from the previous year in July-September 2002). According to the Cabinet Office projection (simple aggregate of projections by corporations x average ratio of achievement over the recent three quarters), machinery orders will increase in October-December 2002 for the first time in seven quarters. On a seasonally adjusted quarterly basis, however, machinery orders declined in July-September, albeit by only 0.6%, for the first time in three quarters. This will be followed by another small decline in October-December (Cabinet Office projection), pointing to a slowdown in the recovery. The ratio of achievement to projection also declined in July-September for the first time in three quarters. This implies a subtle change in investor sentiment following the slowdown in production.

Orders from the non-manufacturing sector (excluding ships and electric power) continue to slump. In communications, controls on investment are expanding from fixed phones[25] to mobile phones, while investment in information technology related to reorganization and new entries has halted in finance & insurance. On a year-on-year basis, orders plummeted 16.8% in January-March 2002, followed by a smaller decline of 8.7% in July-September. According to the Cabinet Office projection, however, the October-December period will witness a steeper drop of 15.3% from the previous year. The ratio of achievement to projection also declined slightly in July-September, although the drop was not as significant as in the manufacturing sector.

Looking ahead, investor sentiment is wavering in the manufacturing sector, which was expected to lead the recovery, and orders from the non-manufacturing sector continue to slump. If industrial production, a key factor for machinery orders, does level off, the current recovery might prove to be even shorter than the previous recovery.

6. Residential Investment Decreasing Slowly (see p. 46 for Figures)

Housing starts (seasonally adjusted annual rate) remained around 1.2 million units after 1999, but have tended to be below 1.2 million since 2001 (Figure 2-22). The year-on-year change by component (Figure 2-23) indicates that the construction of owner-occupied houses has declined since January-March 2001 in reaction to the surge in demand before the revision of the housing loan tax reduction scheme,[26] and due to the severe

[25] Broadband-related investment in fixed phones has stayed firm, but its share in total investment is insignificant.

[26] The surge in demand occurred seemingly because the Housing Loan Tax Reduction (applicable to those who

employment and income conditions. Total housing starts increased on the previous year in April-June 2002, as the reactionary drop in owner-occupied houses subsided and the construction of housing for rent remained strong. In July-September, however, they declined 6.2% on the previous year, largely due to a substantial drop in housing for sale, particularly condominiums.

Floor area for new housing (Figure 2-24) has not increased on the previous year since January-March 2001, attesting to the weakness of housing starts as a whole.

As can be seen in the movement of housing starts, its leading indicator, real private residential investment (seasonally adjusted annual rate) has fallen gradually since April-June 2001, when it recorded a substantial drop (Figure 2-25).

In the condominium[27] market (Figures 2-26 and 2-27), there has been growth in stock recently in both the Tokyo metropolitan area and Kinki area.[28] In both areas, the term-end stock has posted double-digit growth on the previous year since the beginning of 2002, raising concern about possible loosening of the condominium market.

7. Public Investment Falling due to Difficult Financial Situation
(see p. 47 for Figures)

Public investment (public capital formation, seasonally adjusted, annualized nominal values) has been declining almost constantly since the latter half of 1999, due to the fading effects of large-scale economic stimulus measures and cuts in expenditures induced by financial difficulties (Figure 2-28). Consequently, public investment accounted for only 6.2% of GDP (seasonally adjusted nominal values) in the most recent period, down 3 percentage points from the peak period.

Contracted public works orders, a leading indicator, fell 7.8% in fiscal 2001, the third straight year of decline (Figure 2-29). Although the delayed implementation of the second supplementary budget for fiscal 2001 provided support in April-June 2002, the indicator continues to drop due to sustained cuts in expenditure. Cutbacks in spending are particularly significant in funds allocated to local regions, which account for 70% of public investment, in the face of the extremely difficult financial situation.

The government plans to present a supplementary budget bill for fiscal 2002 to the ordinary Diet session in January 2003, but the additional expenditure for public investment will be limited to some ¥1.5 trillion. The supplementary budget will not stop the decline in public investment, as the initial budget for fiscal 2002 proposed substantial reductions from the previous year of 10.7% in central government expenditures on public works projects and 9.5% in investment expenses under local finance plans.

In line with the decline in public investment, budget revenue is slumping due to the sluggish economy and income and other tax reductions, resulting in high budget deficits in both central and local governments. Since the deficits have been largely financed by government bond issues and by borrowings in the special account for local allocation tax, outstanding government debts have been ballooning. Indeed, the outstanding long-term debts of central and local governments will total ¥693 trillion at the end of fiscal 2002, accounting for some 140% of GDP (Figure 2-30).

At present, Japan has huge general government debts as compared with other developed countries, as well as a substantial deficit in the primary balance, i.e. the budgetary balance excluding bond issues, interest payments and bond redemption (Figure 2-31). This fiscal position is in stark contrast to the fiscal restructuring carried out by the EU and the U.S. since the late 1990s.

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moved into their newly purchased home by June 2001) offered much greater advantages in terms of the deduction period and amount as compared with the so-called "New Housing Loan Tax Reduction" (applicable to those who moved into their newly purchased home between July 2001 and December 2003).

[27] For the purpose of this report, the term "condominium" refers to a subdivided housing lot made of reinforced steel frames, ferro-concrete or steel frames.

[28] The statistics of Building Construction Started include condominiums in housing for sale. Condominiums accounted for 65% of housing for sale in fiscal 2001 (based on the number of new housing starts). In the latest period, condominium housing starts in the Tokyo metropolitan and Kinki area accounted for about three-quarters of the national total. Therefore, condominium contract rates and inventory trends in these two areas are important leading indicators for the construction of condominiums and housing for sale as a whole.

So far, the Koizumi Cabinet has adhered to its commitment to cap new central government bond issues at ¥30 trillion. However, tax revenues for fiscal 2002 will fall short of the planned amount by more than ¥2 trillion, and economic stimulus measures including tax cuts are becoming more likely. Thus, a supplementary budget for fiscal 2002 will probably result in the ¥30 trillion cap being exceeded, raising concerns about further deterioration of the government's finances.

8. Exports Slowing from Substantial Increase as Imports Rise
(see p. 48 for Figures)

Figure 2-32 shows the trend of real effective exchange rates for major currencies. The Japanese yen tended to depreciate to January-March 2002, then both the yen and euro strengthened against the dollar from April-June 2002 as the U.S. economy started to slow, resulting in depreciation of the dollar.

Figure 2-33 compares the long-term trend of the yen/dollar exchange rate with purchasing power parity. The yen/dollar rate in 2001 saw the yen weaken after strengthening for almost two years. The movement better approximates the level of purchasing power parity, which is still lower than the exchange rate but has a trend toward yen appreciation.

Against these trends in the foreign exchange markets, Japanese exports and imports both increased in the first half of 2002. Looking at the seasonally adjusted monthly indicators for export and import volumes (Figure 2-34), the volume of exports bottomed out and switched to a substantial increase in 2001 as the U.S. economy recovered and exports to Asia started to grow again. Recently, however, export growth has come to a halt, as the prospects of the U.S. economy become increasingly uncertain and the recovery of the real economy slows down. Imports are increasing after staying almost flat until early 2002.

Looking at a breakdown of export volumes by country (Figure 2-25), exports to Asia increased on the previous year in January-March 2002 due to inventory adjustment in IT-related products. Exports to Asia have been increasing substantially since then, leading the overall growth of exports. Exports to the U.S. also rose on the previous year, backed by the recovery in the U.S. economy and strong car exports.

Figure 2-36 shows the trend of exports for each type of goods based on the "Analysis of All Industrial Activities" published by the Ministry of Economy, Trade and Industry. The data indicate that the substantial increase in exports since early 2002 has been led by producer goods, due largely to the recovery in demand for semiconductors.

Figure 2-37 shows the import trends for each type of goods. As inventory is adjusted in the country, imports have been increasing on the previous year, led by producer and capital goods, particularly IT-related imports from Asia.

9. Wholesale and Consumer Prices Continuing to Decline
(see p. 49 for Figures)

International commodity prices (excluding crude oil) turned down in October-December 2000 and continued to decline on the previous year through 2001 due to the slowdown in the global economy (Figure 2-38). In the latest period, however, they rose for the first time in eight quarters as prices for agricultural products and beverages increased on the previous year.

The wholesale prices of domestic demand goods (weighted average of domestic and import prices) have been falling by about 1% since October-December 2001. Although the decline in the prices of intermediate goods has been slowing since April-June 2002, prices are now falling faster for final goods.

The Consumer Price Index[29] (excluding fresh food) declined by 1% from the previous year since October-December 2000 (Figure 2-39). Analyzing the year-on-year change by component (goods and services), the decline is led by goods mainly due to technological progress and the spread of low-priced imports in the domestic

[29] The Consumer Price Index from the August 2001 announcement has been using 2000 as the base year with items such as personal computers and overseas package tours being added in the calculation of the index. As a result of the revision, the index now reflects more accurately the composition of actual household consumption.

market. In services, public services[30] have been contributing to the decline since April-June 2002, largely because major electric power companies lowered their utility charges.

The Corporate Service Price Index continued to decline by more than 1%, mainly in leasing and rental and communications and broadcasting.

10. Credit Risk Aversion through Low Interest Rates
(see p. 50 for Figures)

In the financial markets, the overnight unsecured call rate has remained near 0% since March 2001, when the Bank of Japan introduced the quantitative monetary easing policy by adopting the current account balance as the direct target of its financial guidance policy (Figure 2-40). Yields on three-month CDs (bid), which represent short-term interest rates, had been relatively stable in a 0.1-0.15% range since the start of quantitative easing. In October 2002, however, they began to rise as expectations heightened for accelerated write-offs of non-performing loans following the announcement of the Integrated Measures against Deflation ("Integrated Measures for the Acceleration of Reforms"), which were drawn up by the government and the ruling coalition. Also, financial institutions tilted toward more conservative fund management due to the slump in bank and other share prices.

Meanwhile, yields on 10-year government bonds, a good indicator of long-term interest rates, remained low since February 2001 as economic prospects worsened due to slumping share prices both in Japan and overseas. In September 2001, however, yields rose sharply to almost 1.3% largely due to the surprise announcement by the Bank of Japan that it would purchase shares held by banks, only to drop again as financial institutions adopted a more conservative investment attitude, taking account of the slump in bank and other share prices. In the most recent period, the yields were extremely low, falling below 1.0% for the first time in four years.

As regards monetary policy, quantitative easing measures are still in place. From December 2001, the target for the Bank of Japan's current account balance was set at ¥10-15 trillion. As an additional easing measure, the target balance was raised to ¥10-20 trillion in late October 2002. The measure seeks to generate some effect by announcing that the government and the central bank will work together to fight deflation. It is also designed to prepare for any disruption in the financial markets that might be caused by the write-offs of non-performing loans. As a result, the current account balance (monthly average) surged from the traditional ¥15 trillion range to over ¥18 trillion.

As a means of monetary control, the monthly amount of long-term government bond buys was raised from ¥1 trillion in February 2002 to ¥1.2 trillion in October. The maturity for bills purchased was extended from six months to one year in October.

The monetary base, i.e. the total of the Bank of Japan's current account balance and cash in circulation, has accelerated since 2001. It recorded a substantial growth of 31.2% on the previous year in April-June 2002, the third consecutive quarter of increase by 20% or more from a year earlier (Figure 2-41). Since the end of April, however, the monetary base has stayed almost unchanged from the previous month. The growth of money stock has stayed around 3% since the latter half of 2001 in terms of M_2+CD, which largely consists of bank deposits. The credit multiplier, i.e. money stock divided by the monetary base, reached a high of 13 in the first half of 1992. It has been falling since then, however, due to the relatively rapid growth of the monetary base, which means that it will take significant time before the current monetary policies take effect. In the latest period, the credit multiplier fell below 8, its lowest level ever, due to the sharp expansion of the monetary base.

The year-on-year change in M_2+CD by component indicates that since 2001, ordinary deposits have increased sharply in stark contrast to the accelerated decline in time and savings deposits (Figure 2-42). Investors are averting credit risk by (1) shifting time deposits into different accounts as the government lifted its full guarantee for time deposits exceeding ¥10 million as of April 2002, and (2) moving money

[30] Electricity, city gas & water charges are included in public services, while publications are included in general services.

from some investment funds back into ordinary deposits after MMF and open-ended bond investment funds successively fell below par value.

In terms of credit, the main reason for the increase in M_2+CD is the buying of government bonds, as lending to the private sector, industrial debentures and stocks continue to decrease (Figure 2-43). This trend implies that private banks are continuing to avoid the credit risk inherent in new loans by diverting funds to risk-free assets including government bonds.

III A Medium-term Scenario for the Sustainability of the Japanese Economy

1. Deflation and Structural Problems in the Japanese Economy
(see p. 51 for Figures)

Under the influence of globalization, including the transition to market economies of China and other former socialist states, the deflation facing the Japanese economy (sustained decline in prices) has been accompanied by a debt deflation, arising from balance sheet problems in the post-bubble era.

As shown in the conceptual diagram on page 51, real GDP (horizontal axis) and price level (vertical axis) are determined by the intersection between the downward-sloping aggregate demand curve and the upward-sloping aggregate supply curve. In this context, a decline in prices is caused by a rightward shift of the aggregate supply curve (1), a leftward shift of the aggregate demand curve (2), or both (3). The Japanese economy has been suffering deflation since around fiscal 1997 due to both demand and supply factors. The demand factor essentially arose from balance sheet problems in all sectors (household, corporate, financial and government). It is considered that the resultant deflation, by increasing debts in real terms, has further restrained demand in such forms as curbs on consumption in the household sector due to uncertainties and reduced income, controlled investment and employment in the corporate and financial sectors under pressure for restructuring, as well as reduced expenditure in the government sector.[31]

In an effort to fight this deflation and revitalize the economy, the government adopted in a Cabinet meeting in January 2002, "Structural Reform and Medium-term Economic and Fiscal Perspectives". This envisages a "steady growth of at least 1.5% in real terms or 2.5% in nominal terms led by private demand" in the medium term by overcoming the deflation through a "period of intensive adjustment for structural reform."

In light of this Medium-term Outlook, this chapter presents a medium-term scenario for the supply-demand balance and major demand items, taking account of the current economic situation and focusing on building a nation based on the creativity of science and technology, which is one of the "models of economic society to be realized" according to the Medium-term Outlook.[32]

In addition to the examination of a medium-term scenario for Japan, this chapter also outlines the economic outlook for, and R&D policies in, Asia including China. The cases of Korea and Sweden are also discussed as examples of recovery from an economic crisis.

2. Supply-Demand Balance in the Japanese Economy after Structural Reform
(see p. 52 for Figures)

Assuming that the reform is designed to build a nation based on the creativity of science and technology, this chapter considers the possible relevant adjustment process if necessary conditions are met, as well as the supply-demand balance in the Japanese economy after the adjustment. The discussion covers the period to fiscal 2010. This section explains the concept of the estimation and outlines the results.

The medium-term vision of the Japanese economy envisaged in the Medium-term Outlook and economic fluctuations during the transition period were spelled out in a background paper prepared by the Cabinet Office and presented to the Council of Economic and Fiscal Policy on January 18, 2002. Based on the estimates in the multi-sector medium-term macroeconomic model (the first version of the Economic and Fiscal Model) published by the Cabinet Office on November 2, 2001, the background paper projects the trends to fiscal 2006 and the values

[31] See Development Bank of Japan, "Recent Trends in the Japanese Economy: The Japanese Economy under Deflation," *DBJ Research Report*, No. 19, August 2001, Chapter II for details on the interpretation of the diagram.

[32] Measures have already been taken under the Basic Law on Science and Technology of 1995 and the Basic Program for Science and Technology, and their impact will be felt in the years ahead. As a preliminary measure for fiscal 2003, the tax relief scheme for corporate R&D will become permanent after a thorough review. These efforts are expected to ensure renewed growth.

for fiscal 2010 concerning macroeconomic factors such as real and nominal growth rate, price inflation (GDP deflator) and the saving-investment balance in each sector, as well as the financial state of the government such as the primary balance. The data, however, do not contain information about the underlying economic structure, such as the trend for each demand item such as private consumption and plant and equipment investment or the overall supply-demand balance.

The estimation in this chapter has two major objectives. First, it gives an "example" of the conceivable supply and demand structure based on the trend of medium-term growth provided necessary conditions are met. The estimation in this chapter is not a forecast in that it assumes that certain conditions are met, such as proper economic and fiscal policies by the government and a favorable environment in the external economy so that the Medium-term Outlook may produce the expected results. This chapter, by showing the estimation in this manner, thus analyzes how the economic structure would change if the Medium-term Outlook materializes, thus enabling discussion of the conditions necessary for restoring growth in the deflationary economy. The second objective is to update the background paper, which is based on information as of late 2001. Since then, the Japanese economy has changed greatly, and the general perception of the sustainability of the economy and time required to eliminate deflation has worsened. By incorporating the downtrend of the real economy, this chapter presents a more realistic transition process that would eventually lead to the growth envisaged in the Medium-term Outlook.[33]

The estimation is premised on the following scenario. As regards the business cycle, the current expansion phase following the trough of January-March 2002 is assumed to enter a recession in mid fiscal 2003.[34] It is difficult to achieve the goal identified in the Medium-term Outlook to complete intensive structural adjustment in two years (fiscal 2002 and 2003), as the deflationary pressure of structural adjustment accompanying the reform will amplify the impact of cyclical adjustment. Therefore, the gradual approach will be necessary to cover the period to fiscal 2005, when the next economic expansion is expected. Thus, economic growth will stay near zero during the full-scale adjustment from fiscal 2003 to 2005, even if proper macroeconomic management is ensured mainly through monetary policies to avoid a deflationary spiral. from fiscal 2006, it is assumed that the Japanese economy will slowly break out of deflation thanks to cyclical recovery and the reforms, and that the growth of over 1.5% assumed in the background paper will be achieved, about two years behind schedule. As regards the budget blocs, the estimation does not consider the introduction of policies discussed in the government after the publication of the Medium-term Outlook or any original assumptions. On the expenditure side, the estimation in this chapter closely follows the assumptions of the background paper (the government shouldering one-third of the basic pension payments), except that estimated values of nominal GDP are considered in tax revenues. Government debts are assumed to maintain their creditworthiness in the market.

The estimation process adopts a variant version of the "successive approximation method."[35] On the demand side, the trend of real/nominal GDP and its deflator shown in the background paper is adopted as a benchmark (the government shouldering one-third of the basic pension payments), then the method assumes a (probable) series of revised values in line with the above-mentioned scenario. On this premise, tentative estimates of the real value, the nominal value and the deflator are calculated for each demand component to compile revised values of

[33] In this respect, the Medium-term Outlook itself will be reviewed annually to reflect any change in the economic situation. However, relevant information has not been disclosed so far, such as the timing of such review and the form of its publication.

[34] No official statement has been made about the most recent economic trough, so we must wait for a determination by the Working Group of Indexes of Business Conditions of the Cabinet Office. As for the view that the economy will peak in the middle of fiscal 2003, see the "Summary Conclusion of the Working Group on the Analysis and Examination of Economic Trends," presented to the Council of Economic and Fiscal Policy on September 20, 2002.

[35] For the description of the successive approximation method, see Takao Komine, *Nippon Keizai Keiki Yosoku Nyumon (Introduction to the Forecast of the Japanese Economy)*, Toyo Keizai, 1992, pp. 41-47, etc.

GDP and its deflator. This process is repeated until a consistent estimate is obtained. However, the estimation process is different from the ordinary successive approximation method in that it considers as given the real GDP growth rates from fiscal 2006 on, as the projections shown in the background paper for fiscal 2004 and after are assumed to materialize with a time lag of two years. Thus, any divergence between the given real GDP growth rates for fiscal 2006 onward and the result of compiling the preliminary estimate for each demand component on this premise will not lead to revision of the growth rates, but will be reflected on the exogenous shift parameters in each component.[36] Thus, the estimation in this chapter is not a forecast, but examines the conditions required to restore growth in the deflationary economy. For instance, it is assumed that eliminating concerns about the future will raise the propensity to consume. Exports are assumed to grow more rapidly, backed by Japan's technical capabilities. However, these assumptions do not predict that things will be so, but merely present the conditions required for the resumption of economic growth. Nevertheless, the assumptions do not mean number crunching, and analyses are conducted as to whether the scenario could take place as given under the relevant conditions.

The principle of estimation is similar on the supply side and the balance of supply and demand, but is simpler than on the demand side. Namely, it is assumed that the GDP gap ratio will be zero (potential GDP will be realized) from fiscal 2006 onward. To be consistent with this premise, a series of tentative values is estimated for the potential GDP and the contribution of each production factor to the potential growth rate (which is deemed probable in light of actual data and the reform scenario). Then proper assumptions are made on exogenous variables including population, labor force participation rate and capital stock retirement rate, and the consistency of the assumptions is checked against other factors such as the trend of plant and equipment investment estimated on the demand side. Any remaining divergence will not lead to revision of the potential growth rate but will be reflected on total factor productivity (TFP) as a "condition" for sustaining the growth track.

The definition of and estimation of actual values of potential GDP and capital/labor inputs are based on OECD's "Economic Outlook 71 (June 2002).[37] The concept of potential GDP according to OECD[38] is the "level of real GDP that is sustainable in the medium term under stabilized inflation." This level is determined by assigning the trends[39] of potential labor input on a NAWRU (non-accelerating wage rate of unemployment) basis, capital stock (actual value) and TFP (total factor productivity) to the production function[40] formulated and estimated for each country. The contribution of each production factor to potential growth is based on our own calculation assuming a Cobb-Douglas production function[41], with an equilibrium capital distribution rate of 0.33[42].

Based on the ideas described above, Figures 3-1 to 3-3 show the result of estimating the

[36] The trend in the adjustment period to fiscal 2005 will be revised at the same time.

[37] The calendar year data published by OECD are converted into fiscal year values by a simple linear interpolation.

[38] OECD revised the method for estimating potential GDP in 1995. It adopted a production function approach after considering an approach based on the estimation of smoothed GDP using the Hodrick Prescott filter, in addition to the traditional split time-trend method. For details, see Giorno, C., P. Richardson, D. Rosevaere and P. van den Noord, "Estimating Potential Output, Output Gaps and Structural Budget Balances," *OECD Economics Department Working Papers*, No. 152, 1995.

[39] Smoothed by the Hodrick-Prescott filter.

[40] Here, the production function refers to that of the business sector, and government consumption is considered separately.

[41] In estimating potential GDP, OECD also uses a Cobb-Douglas production function in principle to publish the composition of potential growth by production factor. As regards Japan, however, OECD uses a CES (constant elasticity of substitution) production function, which puts the elasticity of capital-labor substitution at 0.4, and does not publish any breakdown of the growth rate on the grounds of incomparability. Although the method used in this chapter enables the contribution by production factor to be calculated easily, it lacks precision as it relies on OECD estimates for potential GDP and capital/labor inputs, while making separate ad-hoc assumptions regarding the production function, so special attention is required when interpreting or using the results.

[42] According to the assumption in Notes 2-4 in Cabinet Office, "Annual Report on Economy and Finance, FY2001."

trends of supply-demand structure and balance that are conceivable if growth of over 1.5% is to be achieved from fiscal 2006.[43] On the demand side, private consumption and plant and equipment investment will both continue to slump in the adjustment period to fiscal 2005, as severe income and employment conditions will prevail due to cutbacks on labor cost by corporations, which will coincide with an intensive stock adjustment to improve capital efficiency. As the foreign exchange rate will remain stable,[44] however, negative growth will be recorded only in fiscal 2004, with contributions from exports backed by technical capacities in such fields as the environment, information technology and materials. From fiscal 2006, when the structural adjustment will have been completed, households' concerns about the future will be eliminated as the reforms proceed, and so the propensity to consume will rise in parallel with the aging of the population and changes in the supply structure, eliciting new demand. Consequently, private consumption will recover its strength in line with economic growth. Plant and equipment investment is expected to be controlled in order to improve capital efficiency, but will eventually increase as the expected growth rate and share prices rise. The growth of exports will be milder than in the adjustment period, but will remain brisk. Meanwhile, the government sector in general will stay almost neutral to GDP growth, as the reduction in public investment will be offset by the rise in government consumption including health care expenses for the elderly.

On the supply side (potential growth rate), intensive adjustments in industrial structure and intra-industry supply structure will make headway during the adjustment period, with corporate self-help efforts boosted by reform measures including deregulation. Capital input will make negative contributions from fiscal 2003 to 2005, as the capital stock retirement rate will rise substantially in addition to curbs on plant and equipment investment. As labor mobility between industries will increase as employment status becomes more diverse, labor input will structurally continue to make negative contributions at around the current level, mainly due to the reduction in hours worked per person. Although potential GDP will decline in fiscal 2003 and 2004, when the growth of TFP will be temporarily halted, the reduction in the GDP gap through the adjustment of overcapacity will eventually eliminate the expectation of deflation in the household and corporate sectors, and so real demand will return to normal. Following the completion of the adjustment, capital input will resume its positive contribution due to a respite in structural adjustment, but to a lesser extent as corporate plant and equipment investment will still be focused on capital efficiency. At this stage, the GDP gap will have been eliminated, which means that any slowdown in potential GDP growth will immediately restrain actual GDP growth. Therefore, technological advances and efficiency improvements will need to deliver TFP growth comparable to that in the 1980s, if a sustained growth rate of over 1.5% is to be achieved.

3. Recovery in Demand: the Key to Breaking the Grip of Deflation

(see p. 53 for Figures)

In considering the mechanism of the deflation facing Japan and necessary conditions for its elimination, the simultaneous output/price determination model in the framework of the aggregate demand and supply functions (hereafter referred to as the "AD-AS model") is a useful tool for intuitive understanding, although the model depends on various strong assumptions (see the conceptual diagram on page 51).[45] With

[43] The estimation in this chapter is based on primary QE data for July-September 2002 (FY2000 annual estimation basis), published in November 2001.

[44] The foreign exchange rate is assumed to be almost constant at around ¥120/$.

[45] The AD-AS model can be summarized as follows. The aggregate demand function, which is based on the so-called IS-LM model in textbooks, represents the combinations of aggregate demand (GDP) and general price (GDP deflator) that bring about the equilibrium in the goods market and the monetary market under a given money supply and exogenous demand. The AD function is shown as a downward-sloping curve in a diagram. In general, prices are assumed to be linked to aggregate demand via the real money supply (and interest rates, plant and equipment investment, etc.). In a textbook case, the aggregate supply function represents the combination of aggregate supply and general price that bring about the equilibrium in the labor market under a production function (technology) of diminishing

a simple empirical analysis, this section estimates the aggregate demand and supply curves at different points in time, and investigates the background of the current deflation by identifying demand factors and supply factors behind the changes in output and general price levels, to enable the requirements implied by our estimation for overcoming deflation to be examined theoretically. The structural VAR model[46] is commonly used in recent empirical analyses to identify the impact of temporary shocks induced by money supply and other monetary factors as demand factors and that of permanent shocks due to physical factors including technology and population as supply factors.[47] However, as the robustness of the result and its interpretation are still controversial, this section estimates parameters of the aggregate demand and supply curves in a static framework and decomposes them into supply and demand factors based on the shifts of the two curves due to changes in exogenous variables.

The method of estimation is shown in the Note of Figure 3-4.[48] In the aggregate demand curve formula (1), the third term on the right side represents exogenous demand. The fourth and fifth terms represent the impact of the exchange rate and asset prices on plant and equipment investment, which is expected to be positive (with weaker yen and higher land prices leading to increased plant and equipment investment). As a result, coefficient sign conditions are all positive, including for the third term. In the aggregate supply curve (2) formula, the third term on the right side represents nominal wage rate incorporating productivity. The fourth and fifth terms represent cost factors not reflected on the GDP deflator (import prices and asset prices). Coefficient sign conditions are all negative, including for the third term. The exchange rate and asset prices (land prices) have an impact on the two curves: in the same direction as regards prices (weaker yen raising prices both on the demand side and the supply side, for example) and in opposite directions as regards output (weaker yen raising output on the demand side, while lowering it on the supply side, for example). The direction of impact on output at the equilibrium point will depend on the relative magnitudes of the coefficients.[49]

return, when premised on the nominal rigidity of wages and prices or a mistake in expectation concerning price level. The AS function is shown as an upward-sloping curve in a diagram. In general, prices are assumed to be linked with aggregate supply directly or through real wages. The equilibrium output level and general price level are determined by the intersection of the aggregate demand and supply functions. Accordingly, deflation (sustained decline in prices) is caused by a rightward shift of the aggregate supply curve ((1) in the pattern diagram at the beginning of this chapter), a leftward shift of the aggregate demand curve (2), or both (3).

[46] VAR (Vector Autoregression) is a multivariable time-series analysis technique not premised on any specific economic theory (priori assumption). The structural VAR method is a technique to identify the relations among variables with minimum priori assumptions.

[47] Recent analyses on the Japanese economy include Hitoshi Mio, "Infure Ritsu no Youin Bunkai: Kozo-gata VAR ni yoru Juyo-Kyokyu Yoin no Shikibetu (Factor Dissolution of Inflation Rate: Classification of Supply and Demand Factors with Structural VAR)," *Kinyu Kenkyu (Financial Research)*, Vol. 20, No. 4, Financial Research Center, Bank of Japan, 2001. Examples of analysis are also provided in Economic Planning Agency, "Annual Economic Report, FY 1998" (see Note 2-1-2).

[48] The formulation draws on Economic Planning Agency, "Annual Economic Report, FY 1996, Table 1-10-2.

[49] The impact on the equilibrium output will be positive when the following condition is satisfied: $\alpha_2\gamma_1>\alpha_1\gamma_2$ for the yen/dollar rate, and $\alpha_2\delta_1>\alpha_1\delta_2$ for land prices.

Explained variable: real GDP, estimated with log-linear, two-stage least-squares method
Estimation period: Q2 1990 – Q1 2002
t values in parentheses ( ).

	Constant term	GDP deflator	Real consumption + real government expenditure + real exports	¥/$ rate	Land prices
Aggregate demand curve		α_1	β_1	γ_1	δ_1
	2.28	-0.448	0.920	0.061	0.150
	(2.53)	(-3.37)	(10.6)	(5.78)	(3.37)
	Constant term	GDP deflator	Unit labor cost	¥/$ rate	Land prices
Aggregate supply curve		α_2	β_2	γ_2	δ_2
	0.32	3.033	-1.541	0.002	-0.466
	(0.12)	(5.40)	(-4.36)	(0.08)	(-11.3)

Note: See text and Note of Figure 3-4 for details of the estimation method and data.

The result of the estimation is shown above. Except for the exchange rate for the aggregate supply curve, estimated coefficients significantly satisfy the sign conditions in all explained variables. It is evident that the absolute value of the coefficient on GDP deflator (the magnitude of the coefficient representing elasticity as the estimation formula is log-linear) is greater for the aggregate supply curve, which means that output is easily influenced by the shift of the aggregate demand curve while prices are easily influenced by the shift of the aggregate supply curve. Judging simply from the relative magnitudes of the estimated coefficients, a weaker yen and higher land prices will both have a positive influence on the equilibrium output. Here, the term "influence" merely indicates that, based on the economic structure in the estimation period, "greater equilibrium output" corresponds to "lower exchange rate for the yen" or "higher asset (land) prices"; the word does not signify any causal links.

Using the parameters of the aggregate supply and demand curves thus estimated, the shifts in the two curves and their intersection (theoretical equilibrium values of real GDP and GDP deflator derived from the model) can be observed for each of the fiscal years (based on the average of quarterly estimates) in the experience period (fiscal 1990-2001) by interpolating the actual values of the explaining variables (left diagram in Figure 3-4). As regards the forecast period (fiscal 2002-2010), the shifts in the two curves can be observed as a condition for realizing the estimates of GDP and GDP deflator, which are considered as given, assuming that the coefficient on GDP deflator will remain unchanged from the experience period for both curves (right diagram in Figure 3-4). Based on the movements of the two curves thus specified, Figures 3-5 and 3-6 decompose the changes in output and prices into demand factor and supply factor. In this analysis, demand factor refers to the changes in GDP and GDP deflator caused by the shift of the aggregate demand curve when the aggregate supply curve remains unchanged from the previous year. Likewise, supply factor refers to the changes in GDP and GDP deflator caused by the shift of the aggregate supply curve when the aggregate demand curve remains unchanged from the previous year.

As a whole, the left diagram in Figure 3-4 and Figures 3-5 and 3-6 indicate that the economic slowdown and price decline since the 1990s have taken place in three stages: fiscal 1990-1993, when output and prices were still rising (the period when the bubble burst); fiscal 1994-1996, when prices started to decline, albeit very slowly (the disinflation period); and since fiscal 1997, when prices have declined at a faster pace while output growth has fallen to almost zero (the deflation period). The shifts in the aggregate demand and supply curves indicate that changes on the supply side played a major role in the transition from the period when the bubble burst to the disinflation period. That is, the aggregate demand curve, on average, continued to move toward the upper right, as in the period

when the bubble burst, but the aggregate supply curve started to shift toward the lower right as economic globalization progressed[50] and drove down prices. On the other hand, changes on the demand side played an important part in the transition from the disinflation period to the deflation period. Although the aggregate supply curve, on average, continued to move toward the lower right, as in the disinflation period,[51] the aggregate demand curve stopped moving toward the upper right, as concerns mounted about the financial system and future income. Thus, output recorded only a marginal growth, assisted slightly from the supply side, and the decline in prices accelerated.

In this context, the shifts of the aggregate demand and supply curves required to realize the estimates for the forecast period, as well as the composition of the changes in output and prices, have the following characteristics. First, as shown in Figure 3-4, the slope of the aggregate supply curve has been fairly mild, at least within the realized values of output in the past. Therefore, the aggregate demand curve must shift toward the upper left if the vision of the Medium-term Outlook of solid economic growth and mild price inflation (a shift of the equilibrium point toward the upper right on the output/price plane) are to be achieved. Although reforms on the supply side will also undoubtedly be required to eliminate households' concerns about the future and to materialize potential consumer needs, the key is the extent to which demand will actually increase, including the effect of such reforms, and so the various factors that affect or are closely related to demand[52] must be monitored carefully. Second, the aggregate supply curve will eventually stop shifting to the lower right and will then reverse slightly. This movement represents a reduction in overcapacity and expectation for the elimination of deflation, and therefore is not inconsistent with the rise in TFP, which was identified as a necessary condition on the supply side. The demand side and the supply side are not totally independent of each other. Any expansion of aggregate demand backed by the improvement in consumer confidence in households and in corporate profit cannot be realized without changing the supply structure and halting the downward slide of the aggregate supply curve. Conversely, technology and know-how will materialize as TFP only if they are accompanied by the expansion of aggregate demand.

[50] It was also during this period that the so-called "price destruction businesses" emerged.

[51] The curve temporarily shifted toward the upper left in fiscal 1997 as the consumption tax rate was raised, but the shift toward the lower right accelerated in fiscal 1998 and 1999.

[52] Such factors include, but are not limited to, money supply, the exchange rate and asset prices.

4. Number of Workers to Rise Gradually through Diversified Employment

(see p. 54 for Figures)

The population of productive age (15-64) has already started to fall from the peak of 87.25 million in 1995 and is expected to drop to 81.67 million in 2010 (Population Projection for Japan by the National Institute of Population and Social Security Research, medium variant for January 2002). Our estimates for future employment are as follows. During the adjustment period, the number of employees will stay flat at just over 53 million, and the working population will decline slightly due to the decline in the number of self-employed and family laborers. In the growth process from fiscal 2006, the number of self-employed and family laborers will continue to decline but the number of employees will start to rise, thus slightly increasing the total working population. Although the total working population will still be smaller in fiscal 2010 than the record level in fiscal 1997, the number of employees will rise to some 5.5 million (Figure 3-7, left).

The number of displaced workers will inevitably rise, as the number of employees will be restrained largely due to the disposal of non-performing loans and business reorganization. The unemployment rate will peak at 5.9% in fiscal 2004-2005, with the jobless population increasing by 0.5 million from the average of 3.48 million in fiscal 2001 (Figure 3-7, right).[53]

[53] Here, no estimation is made concerning how many workers will lose their jobs due to the disposal of non-performing loans, as it is difficult to make any assumptions on the amount of loans to be written off. According to the estimate of the Cabinet Office in the summer of 2001,

This scenario is only possible conditional on the following assumption: the typical "pain" of unemployment is shared through the expansion of diverse job opportunities, as mentioned below, and work sharing to reduce the average hours worked. Such changes in employment systems will greatly support production at the same time, through its favorable impact on consumption, as discussed in the following section.

Diversified employment patterns mean that more people, both men and women, work for a shorter time. Our estimation expects that the number of employees will increase while the average hours worked will decline by more than 1% per year even in the growth process. The decline in labor input in the outlook of potential GDP corresponds to this idea. The number of hours worked has already fallen as the five-day week has become commonplace. With the expected increase in short-time workers, the number of hours worked will fall further, by about 6% on average by fiscal 2010.

As a means of reducing labor cost, employment systems have already become more diverse since around 1997, with the increase in contingent workers.[54] This trend is expected to continue during the adjustment period. Furthermore, employment is expanding in industries such as wholesale/retail and services, where non-career workers account for much of the workforce. This expansion of the service industry will encourage greater employment diversity.

On the labor side, there is a growing need for expanding the choice of employment systems to fit workers' personalities and abilities. For women, diversified employment allows work to be reconciled with childcare and housework. For men, there is a need for increased involvement in the family and local communities. Regarding regular workers, mostly men, demands for shorter working hours are increasing, as changes to the lifelong employment system based on seniority are eroding workers' traditional preference for long service; more of the education and training for employees is now conducted outside the company as part of self-development.

We assume that women's labor participation rate needs to rise in order to achieve the medium-term scenario. The labor participation rate[55] in Japan is similar to that in Europe and the U.S., but is one of the highest for men among the developed countries, at 85%. For women, on the other hand, the rate is 59.6%, which is higher than in Spain and Korea, but substantially lower than in the Netherlands, Germany and France (over 60%), as well as in the U.K. and the U.S. (approximately 70%). Women's labor participation rate in Japan is known to follow an M-shaped curve as the rate declines in the lower 30s due to marriage and the concomitant housework, childcare, etc. In order to ensure consistency with the increase in the number of employees assumed in the present estimation, it is necessary to eliminate the dip in the middle of the M curve and to raise women's labor participation rate to 66% on average by fiscal 2010, if men's labor participation rate is to remain at the current level.

The gap between the future vision and the status quo is not small. The number of part-time workers is increasing, while the number of hours worked per person has been declining, implying work-sharing among part-time workers become more common. However, the treatment of part-time workers has not improved even since the enactment of the Part-time Labor Law[56]. In contrast, the number of hours worked by full-time workers has remained almost constant since the economy went into recession in October 2000.

Against this backdrop, the government, the Japan Federation of Employers' Associations ("Rengo") and the Japanese Trade Union Confederation concluded an industrial partner agreement on work sharingin March 2002. Ulti-

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the disposal of ¥1 trillion would increase the number of unemployed by 10,000 to 15,000. However, the accumulated effect for multiple years may be smaller than the simple aggregate due to reemployment or exits from the labor market.

[54] Here, "contingent workers" comprise those who work for a few hours a day such as part-time workers (close to the definition of part-time workers in the Monthly Labor Statistics), workers employed (under contract) for a determined period of time (including temporary and daily workers in the Labor Force Survey), and in some cases dispatched workers, contract employees and temporary employees.

[55] The labor force (work force + unemployed) aged 15-64 divided by the total population, according to OECD, *Employment Outlook 2001.*

[56] The Part-time Labor Law ("Law for Improving the Employment Management of Short-time Workers"), designed to improve the labor conditions, education/training and welfare of part-time workers, took effect in December 1993.

mately subject to an independent decision by labor and employees, the Agreement calls for the elimination of employment insecurity and treatment suited for individual working patterns. In "Employment Policy Agenda and Current Development" (July 2002), the Employment Policy Study Group of the Ministry of Health, Labor and Welfare provided guidelines for a "society with diverse choices" in view of labor shifts and changing employment structure in the future. These guidelines state that in order to encourage diversified employment, the current disparity between full-time and part-time workers in terms of job contents and treatment must be eliminated to ensure fairness, so that short-term employment may be selected as a positive form of employment. Non-career forms of employment such as freelance part-time workers, or "freeter" have already become popular among the younger generations. In short-time labor, incentives for job continuation and skill upgrading need to be provided to encourage the development of skilled labor and improve productivity.

In the adjustment period, the shift of labor to the service sector will accelerate. The change in employment structure over the past 30 years (Figure 3-8) shows that the work force in the service sector has been increasing constantly. In contrast, the work force shrank in the 1990s for manufacturing. In wholesale/retail, the growth in the number of workers slowed down after increasing almost in parallel with that of the service sector, followed by contraction in late 2001 mainly due to corporate failures.

The service sector may be characterized as an aggregate of "miscellaneous" business activities, and has typically expanded by incorporating various new industries. The job creation plan presented by the Council of Economic and Fiscal Policy in May 2001 advocated the creation of 5.3 million jobs in the coming five years, i.e. over 1 million new jobs per year (Figure 3-10). If this figure means a net increase, the past growth trend (see Figure 3-8) will need to be accelerated significantly. Nonetheless, it seems achievable to create jobs for 0.6–0.7 million persons per year to fiscal 2010. The plan specifically lists personal and family services that will be required in the diverse employment society, including childcare, elderly care and adult education. Thus, jobs need to be created by commercializing areas that traditionally belong to housework and by creating new services through deregulation.

Finally, the mobility of labor between industries should be examined. Figure 3-9 shows the movement of labor in the 12 months to 1997. Hiring and turnover are both significant in services, wholesale/retail and manufacturing, reflecting the scale of employment in these industries. A majority of those who changed jobs were re-employed in the same industries, but 45% of them shifted to other industries: the magnitude of new hiring and severance in a year suggests that the employment structure is changing rather smoothly. Of course, measures should be taken to address the destabilization of employment, because many job leavers will experience hardship in those sectors that are cutting back on employment and the labor shift should boost productivity. Such measures should include the utilization of placement services, dispatched labor and term contracts, as well as the provision of efficient vocational training opportunities. In the growth process after the adjustment, it is assumed that the manufacturing sector will improve productivity while reducing the number of workers, whereas the non-manufacturing sector will expand without losing efficiency. However, for this to happen, the conditions mentioned above must be met.

5. Consumption to Remain Flat, Followed by Mild Recovery
(see p. 55 for Figures)

As regards consumption, there are two main points: the extent to which it will prop up the economy in the adjustment period, and its role in the renewed growth process. Before examining the relationship between such economic environment and the present scenario, the following basic trends in consumption should be noted: (1) Consumption fluctuates very little. (2) Macro-consumption fluctuates due to the influence from the number of consumer units, such as population and households. The first trend can be explained by people's tendency to maintain their present level of consumption. A good example is the ratchet effect, which smoothes the amount of consumption against short-term fluctuations of

income when there is no change in long-term income prospects. So far, consumption has increased in line with GDP. The only exception after the high-growth period happened in fiscal 1997, when consumption recorded a definite decline as the impact of recession was amplified following the surge in demand just before the consumption tax hike in the previous year.

The second trend, i.e. the number of consumer units, is shown in Figure 3-11. The National Institute of Population and Social Security Research (hereafter referred to as IPSS) estimates that the population will reach a peak in 2006, supporting consumption in the adjustment period. Households are considered to be more realistic consumer units, and so we forecast statistics at the household level. Here, the number of households is estimated based on the future number of households estimated by IPSS (1998).[57] In order to compare the estimated trend of the number of households with that of population, Figure 3-11 calculates a population index based on the number of households in 1990 (simply multiplied). The data shows that while the population is increasing very slightly, the number of households has increased in recent years at an annual rate of about 1% and is still assumed to increase by some 0.3% in 2010. By type of household, the "others" including three-generation households will continue to decline and the increase in the number of two-generation households will slow, whereas the number of single-member households is expected to continue to grow strongly. Although the change in structure will lead to a decrease in the average number of household members, the existence of the basic, fixed part of consumption including housing, utility expenses means that the increase in the number of households will contribute to the growth of macro- consumption.[58]

Despite those long-term factors, the income and employment situation is expected to worsen in the adjustment period, as cutbacks on labor cost will continue. Since the growth of GDP, and therefore income, will stay near zero, and labor share will be reduced due to the diversification of employment, employee remunerations are estimated to decline until fiscal 2006, one year after the starting point of GDP recovery. As observed currently, this adjustment will primarily involve pay cuts. Although the pace of pay reductions will gradually slow, wages and employment conditions will not improve until fiscal 2007 (Figure 3-12). Under these difficult conditions, consumption will stagnate but manage to maintain its current level, due to the following factors in addition to the structural increase in population and the number of households.

The first factor that will support consumption is the rising ratio of elderly retired people. The public pension scheme, although susceptible to fluctuations of economic condition due to its assessment system, now guarantees stable benefits to a wide range of pensioners, as compared with the pre-high-growth period. Furthermore, elderly people now hold some 40% of the financial assets of the total population, worth ¥1,400 trillion. With the exception of interest receipts, the elderly population has almost finished earning money for purchasing. Their consumption is expected to remain strong, unaffected by the slumping economy and production, particularly because the real value of the principal rises as deflation proceeds.

As regards the working generation, wages per person will decline on average. However, greater employment diversity will heighten job security, i.e. the possibility for motivated persons to find some sort of work, which will help main-

[57] The household estimate of IPSS is based on the previous population estimate in 1997. The estimate based on the new population estimate in 2002 will be published later. The new population estimate is different from the old one in the assumption of birth rate (with the peak of the medium variant being moved up one year to 2006). Since the number of those who were born after 1997 and will become household heads by 2010 is negligible, the main impact on the revision to the household estimate will be due to the change in the actual part of the transition probability for each type of household. The present estimation uses the average number of household members in the 1998 household estimate and the population estimate at 2002.

[58] The Family Income and Expenditure Survey indicates that if consumer spending in the two- to five-member households in 2000 is regressed to the number of household members, fixed expenses (segment) account for 59.1% of the monthly consumption expenditure of a four-member household. A simple application of this result means that the split of a four-member household into 2 two-member households will result in a 60% increase in total consumer spending. Of course, such simple calculation will not materialize, because consumption is closely related to income.

tain the current purchasing power. In the future, this will alleviate the fear of losing one's income due to unemployment, i.e. the uncertainty of lifetime income, thus reducing the need to make additional contingency savings. It is therefore important to reduce concerns about the future, particularly regarding the social redistribution system. Uncertainties about the future have already lowered the level of consumption, particularly in worker's households. In the adjustment period, any revisions to the systems that are disadvantageous to the younger generations under slowed growth, such as pension, taxation and medical insurance, will improve the prospects for lifetime income and thus increase the consumption of the working generations.

Moreover, if the adjustment is widely recognized as preparation for future growth, people will have greater confidence in the viability of the social security system and receiving net benefits, in addition to the improved prospects for income. This will boost consumption further.

Assuming those outcomes, consumption is expected to show a stronger trend than income, but its growth will only be about 0.2% for fiscal 2003-2005. Partly due to the rising ratio of elderly people, the propensity to consume is expected to rise as a whole, which will support consumption. A comparison of this increase in consumption with GDP growth (Figure 3-13) confirms that the fluctuation of consumption will be smaller than that of GDP, as noted earlier in this section.

Following the transition to the growth process, consumption is assumed to grow slightly faster than GDP, thus leading the whole economy. As the income situation improves, the rise in the propensity to consume in worker's households in the adjustment period will become almost flat, but the propensity as a whole will continue to rise due to the increasing ratio of elderly people. Nonetheless, financial assets will continue to increase in the household sector, as the savings-investment balance in the sector will stay positive, albeit to a lesser degree.

As regards the content of consumption, increases are expected for family services including housework, childcare and elderly care as the service sector expands. The reduction in the average number of hours worked and the resultant increase in leisure time will also stimulate consumption. The expected increase in time-consuming activities such as movies and tours will be accompanied by the consumption of clothing and bags. The willingness and opportunities to pay for a wider range of goods and services are also expected to rise as people seek to learn more about products.

Finally, Figure 3-14 compares real consumption with real housing investment per household. After recording parallel increases in the high-growth period, housing investment started cyclical fluctuations with the formation of a certain level of stock. Since consumption started to slump in the 1990s, household expenditure has been declining in both terms. Although potential demand for high-quality spacious housing will hold up, stock is expected to be mobilized by expansion of the second-hand market. The present estimation assumes that housing investment will rise slightly on average in the long term and that consumer spending, after a slight drop in the adjustment period, will eventually pick up as economic growth resumes. All in all, they are both expected to remain relatively flat.

6. Plant and Equipment Investment to Recover Gradually through Adjustments to Improve Capital Efficiency

(see p. 56 for Figures)

The future increase in plant and equipment investment and capital stock depends on the improvement of the slumping return on capital.

The average return on capital stock[59] (Figure 3-16) has been declining since the 1980s, particularly in the early 1990s following the col-

[59] Capital stock is represented by the OECD estimate based on Cabinet Office, "Gross Capital Stock of Private Enterprises," etc., and includes public corporations. For convenience, the average return on capital is calculated indirectly from the capital share/capital coefficient (definition: capital share = 1 – compensation of employees/national income represented by factor costs, capital coefficient = GDP/capital stock). As a matter of concept, the average return on capital represents the ratio of corporate operating surplus including interest and rent to capital stock, and it must be noted that the calculation here is far from precise due to the fact that no adjustments are made for proprietorship income and the imputed rent of owner-occupied houses, etc.

lapse of the bubble economy. Since then, corporations have been switching to investment focused on capital efficiency, and the return on capital has been barely showing signs of bottoming out since fiscal 1999, at almost half the level of fiscal 1980. When we decompose the fluctuation of the return on capital into two factors, capital share (1 – labor share) and capital coefficient (inverse of average capital productivity), it is clear that the rapid drop in the return on capital in the early 1990s was largely due to the change in capital share. Meanwhile, the capital coefficient continued to rise even in the late 1990s when plant and equipment investment started to be scaled back, thus providing structural downward pressure on the return on capital.

Of course, it is not true that a higher return on capital is always better, both from a macroeconomic viewpoint and in terms of corporate management. Essentially, macroe- conomics aim to maximize economic welfare at any point in time, whereas corporations seek to maximize their market value. The return on capital is automatically determined by the optimal course of capital accumulation chosen for that purpose. However, it is evident that the return on capital in Japan in recent years is not simply the consequence of dynamic optimization. Rather, it is natural to suppose that the capital coefficient continued to rise as a result of the unexpected slump in GDP growth and TFP, and not a result of any change in technical conditions or factor prices.

Recently, Japanese companies have been adopting very strict criteria not only in selecting new investment projects but also in revising the efficiency of existing stock, such as closing establishments and reorganizing their business. Such adjustments are inevitable in order to improve the return on capital to a normal level and eliminate the expectation of deflation by giving the impression that overcapacity is being corrected. It is not easy to determine the normal or appropriate level of the return on capital for achieving the Medium-term Outlook. Our estimation expects that the capital share will be adjusted upward by fiscal 2006 to around 0.33[60], which is assumed to be the equilibrium capital share in Section 2. The capital coefficient is likely to peak at 2.5 in fiscal 2002, falling subsequently to just under 2.4, which corresponds to the level of fiscal 1999. As a result, the return on capital will regain about half the loss suffered since the relatively stable period in the mid-1980s and reach the level of fiscal 1992-93. Although this improvement does not seem so large, it will require substantial adjustments and temporary negative growth of capital stock from fiscal 2003 to 2005. This means that the retirement rate for existing capital will peak at 8.5%, which is twice as high as the current level, and that plant and equipment investment will bottom out at just over 13% of GDP (nominal basis), which is 2 points lower than the present level (Figures 3-15 and 3-17).

The improvement in the return on capital, accompanied by secondary effects including rising stock prices, is expected to lead to an autonomous recovery of plant and equipment investment. However, firms will continue to focus on capital efficiency, as the absolute return is still lower than in the mid-1980s and the capital coefficient will not increase even after the economy starts to grow again. Consequently, assuming a retirement rate of about 5%, which is slightly higher than the current level, plant and equipment investment in fiscal 2010 will only account for a little less than 15% of GDP (nominal basis), which is still lower than the current level. However, the fact that the share stands at about 13% (as of 2000) in the U.S., Germany, France and the U.K., although the difference in industrial structure should be taken into consideration, suggests the above-mentioned level is not considered from a macroeconomic viewpoint to represent an underinvestment that will impair the technical capabilities of Japan. Further improvement in the quality of investment is indispensable if Japan is to build a nation based on the creativity of science and technology.

[60] The level of 0.33 corresponds approximately to the average level of the 1980s in Japan. Incidentally, capital share is considered to be about one third in most countries (see Romer, D., *Advanced Macroeconomics*, McGraw-Hill, 1996, p. 21).

7. Net Exports to Increase with Higher Value-added Export Goods and Strong Economies Overseas

(see p. 57 for Figures)

This section presents assumptions on Japanese net exports in light of the trends in the domestic demand projected thus far. Figure 3-19 shows the trends in the balance of payments based on the present scenario. Exports rose in January-March 2002 as the U.S. economy bottomed out and the economic cycle was completed in Asia. Thus, the trade account surplus is expected to resume its expansion in fiscal 2002. In July-September 2002, however, the substantial increase in exports in the preceding months stopped as the U.S. economic recovery faltered, which points to only a mild growth of exports for the whole of fiscal 2002.

Nonetheless, net exports are expected to grow strongly in the medium term, particularly to the U.S. and Asia. The U.S. economy is likely to maintain just over 3.0% annual growth in real terms (Figure 3-20). A medium-term forecast by the Congressional Budget Office in August 2002 indicates that the potential growth rate will reach 3.0% for 2002-2012. Although the growth of labor input in the non-agricultural sector will be smaller than in the 1990s, capital input and TFP are expected to record increases comparable to the average level of the 1990s. Thus, the U.S. economy will maintain 3% growth if the rapid rise in labor productivity in the latter half of the 1990s can be sustained.

Backed by strong final demand in the U.S., Asian economies are also expected to perform well. Figure 3-21 shows the actual figures and estimates of world imports according to the IMF. The data indicate faster growth for the developed countries including Asian NIEs to 2007. Substantial growth is also expected for the developing countries including China and ASEAN members in 2004-2007.[61]

The prospect of such strong economic growth in the U.S. and Asia allays concern about the demand for Japanese exports, which are expected to increase in 2004-2005 when the U.S. economy resumes its stable growth of over 3%. As domestic demand is expected to remain flat in this period, Japanese economic growth will be led by net exports, and so the trade surplus is expected to increase gradually to 2010.

The expansion in the trade surplus, however, assumes that Japanese export goods remain competitive. Defining technology-intensive goods as the goods (industries) for which the ratio of R&D to sales is highest, Figure 3-22 shows the trend of imports for each category of goods classified by this criterion. The data indicate that throughout the 1990s, more technology-intensive goods experienced higher export growth, implying that high-value added products such as electronic/communication machinery and scientific/optical instruments led the improvement in export competitiveness. However, such export competitiveness is inherently relative, and any transfer of production facilities overseas to improve manufacturing processes would lead to a decline in the exports of the goods concerned. A system that allows the creation of more productive goods will be necessary to maintain domestic production of the goods that could lead exports in the medium term.

On the other hand, the balance of income is mostly attributed to the balance related to the return on security investment. In addition to the sustained increase in net external assets, continued yen depreciation since 2001 has helped inflate the surplus, resulting in a larger income balance surplus. Although this trend is expected to continue, the income balance surplus will not necessarily grow faster than the trade balance surplus in the medium term, as the size of the income balance surplus is susceptible to fluctuations in the foreign exchange rate. The increase in net external assets will be accompanied by a continued growth of income balance surplus if there is no major fluctuation in the foreign exchange rate until 2010. In the meantime, Japanese exports, backed by stable economic growth in the U.S. and Asia, will remain strong in the medium term, led by high-value added goods. Therefore, the current account surplus, particularly the trade account surplus, will continue.

[61] The growth rate for all developing countries is expected to be 5.8% on average in 2004-2007. Asian countries (excluding NIEs) will experience average annual increases of 6.7% in real GDP, 9.7% in exports and 10.7% in imports.

8. Primary Balance of Public Finance to Improve Slowly
(see p. 58 for Figures)

As described in Section 1-7, public demand, in terms of public investment (public capital formation) has been falling since peaking in the mid-1990s. Meanwhile, government consumption (government final consumption expenditure) has been rising, largely due to increases in social benefits in kind such as medical expenses as well as in the consumption of fixed capital (Figure 3-23).[62]

For the period covered by the scenario, the same assumptions as the premises in the Background Paper are used in principle to avoid any substantial deterioration of budgetary discipline. Namely, it is assumed that government expenditure will be curbed through measures such as the annual reduction of 3% in investment expenses, of ¥300 billion in medical expenses through health insurance reform, of 0.5% in the number of government employees and of 1% in the cost of supplies. As a result of such curbs on expenditure, public investment will continue to decline. Thus, government- sector demand will remain neutral as a whole, despite the growth in government consumption largely due to the expected increases in expenditure in the education sector as well as in medical expenses induced by aging.

In light of the current budgetary situation, public investment will be forced to be curtailed as planned, as the local governments, which account for 70% of public investment, have steadily cut back on investment expenses by around 10% per annum since fiscal 1999 (Figure 3-24). Incidentally, public investment will account for less than 4% of GDP by 2010, if the budget cuts are to be realized as planned.

As regards the budgetary situation, tax revenues have not been able to cover the general expenditure since fiscal 1998 on a national account basis. The budget deficit has been expanding with the distribution of some ¥20 trillion in central government subsidies to local governments (Figure 3-25). The structure of the budget deficit reveals that local governments receive large subsidies from the central government, causing the budget balance of the central government to deteriorate while suffering from falling tax revenues and the aging-induced increase in social security cost. In particular, tax revenues have been adversely affected by the decline in nominal terms due to the economic slump and deflation, as well as by the special tax reduction in fiscal 1998 and the permanent reduction in income and corporate taxes since fiscal 1999.

We will have to wait until economic growth stabilizes in nominal terms, to achieve the budget balance by the above-mentioned cuts in government expenditure. Until then, the primary balance will stay at its current level, and so outstanding government debts will continue to increase. However, further deterioration in the primary balance will be avoided through sustained efforts to reduce government expenditure. Also, monetary policy will continue to be supported by the market by maintaining the relatively loose market condition to avoid any substantial rise in interest rates. New central government bond issues will peak at some ¥40 trillion, with outstanding government debts accounting for more than 160% of GDP. Thereafter, the primary balance will slowly improve thanks to the economic recovery expected from fiscal 2007. In fiscal 2010, the deficit will stand at some 1.7% of GDP, with moves toward a balanced budget expected from the first half of the 2010s.[63]

[62] In the National Accounts, the consideration of medical services covered by social security funds, net of payments by individuals, is included in government final consumption expenditure as benefits in kind.

[63] It is assumed that a tax reduction of about ¥500 billion per annum on a tax revenue basis will be introduced mainly for R&D, starting in fiscal 2003. See the Note of Figure 3-25 for other assumptions regarding tax revenues.

(Appendix 1)
Assumption of Longer Adjustment Period
(see p. 59 for Figures)

Structural reform in a deflationary economy, the objective of the Medium-term Outlook, is a difficult challenge without precedent in Japan or any other country. As shown in the scenario described above, one of the major conditions for turning around the economy is creating confidence about the future in the household and corporate sectors. However, this is extremely difficult to achieve in practice. Policy-makers should therefore take precautions against a deflationary spiral through both fiscal and monetary policies and the management of government debts, bearing in mind that even if sustained growth of over 1.5% is ultimately achieved, its timing and necessary adjustment process may vary considerably (i.e. downward risk).

Figures 3-26 to 3-28 show the estimation for a case with an adjustment period that is two years longer than in the above-mentioned base scenario, taking account of possible delays in the recovery of consumer and investor sentiments even with appropriate macroeconomic management. In this case, the GDP gap ratio is expected to peak at a higher level than under the economic slump induced by the yen depreciation, as negative growth will continue for three years from fiscal 2003 to 2005, thus slowing down the adjustments in industrial structure and intra-industry supply structure designed to ease the deflationary pressure. Consequently, it may take an extra four years to eliminate the GDP gap and break away from deflation.

(Appendix 2)
Economic Outlook and R&D Policies in Asia
(see p. 60 for Figures)

Asian economies are expected to show relatively high growth rates from 2005, thanks largely to improvements in education, secure law enforcement, high savings rate, sound fiscal policy and open investment and trade, although some weaknesses may emerge until 2004 mainly due to economic fluctuations.[64] Thus, these economies are expected to become major export markets for Japan.

Assuming that GDP growth from 2005 onward will be 5.0% for Hong Kong, Taiwan and Singapore,[65] 7.1% for China[66] and 6.2% for other countries,[67] the share of China in the total GDP will increase gradually due to its higher growth rate, up from some 40% in 1995 to about 50% in 2005 (Figure 3-29).

A forcast, based on per capita GDP growth[68] of 4.2% for Taiwan and Singapore, 7.0% for China and 5.4% for other countries, indicates that China, despite its overwhelming share in the total GDP, will still have a small per capita GDP in 2005, comparable to the levels of Indonesia and the Philippines (Figure 3-30).

The source of such economic growth is innovation of technology. The following part outlines R&D efforts in Asian countries (Table 3-1).

In China, the total amount of R&D is not large, as private companies are not yet actively involved in R&D; R&D accounted for only 1.0% of GDP in 2000. The 10th Five-Year Plan aims at raising this ratio to 1.5% by 2005. Relevant R&D policies include the establishment of Science Parks such as Zhongguancun in Beijing, active support for venture businesses, better management of intellectual property rights, the encouragement of foreign affiliates to set up R&D institutions, and the invitation of excellent human resources from overseas.

In Korea, a Basic Law on Science and Technology was enacted in line with the long-term vision on R&D policy adopted in 1999. The Law provides for technological development led by the private sector, rather than the traditional government-led efforts, as well as the designation of focus areas including information technology and biotechnology.

[64] World Bank, *Global Economic Prospects*, p. 190.

[65] Calculated as the sum of the expected per capita GDP growth of 4.2% for the Non-OECD High Income Countries and the average expected population growth of 0.8% for East Asia and the Pacific.

[66] Although the growth rate will be 6-7% according to the World Bank, *Global Economic Prospects*, this report adopts the figure of 7.1%, taking account of the objective stipulated in China's 10th Five-Year Plan.

[67] Average for East Asia and the Pacific excluding the Non-OECD High Income Countries.

[68] World Bank, *Global Economic Prospects*, p. 190. The growth rate for China takes account of the target of 0.9% for population growth stipulated in the 10th Five-Year Plan.

In Taiwan, as the transfer of production facilities to China has become a major issue, "Challenge 2008" program was adopted in May 2002 to address the problem. The program incorporates a plan to develop Taiwan as an international hub for R&D, with the objective of raising the share of R&D in GDP to 3%.[69] Plicies measures include extension of low-interest loans for R&D amounting to NT$50 billion, the establishment of R&D centers and the invitation of international human resources for R&D. IC systems, biotechnology and nano-technology have been identified as key focus areas.

In Singapore, the "Industry 21 Plan" adopted in 1999 intended to turn the country into a hub of knowledge-intensive industries. The plan identified eight focus areas including electronics, communications/media and biomedical.[70] The five-year Science and Technology Program prepared in 2002 sets out policies such as concentration on niche areas, the encouragement of R&D in the private sector, the establishment of an effective system for technology transfer, and the management of intellectual property rights, as well as the overseas recruitment and domestic development of talented human resources.

As described above, electronics and biotechnology are common focus areas for R&D policies in China and other major Asian economies. The introduction of foreign capital and human resources from overseas are also common policy measures.

(Appendix 3)
Recovery from Economic Crisis in Korea: Structural Reform and Increased Exports
(see p. 61 for Figures)

This and the following section take the cases of Korea and Sweden as examples of recovery from an economic crisis.

Korea was hit by an economic crisis in 1997, which resulted in negative economic growth in 1998 (Figure 3-31). The economic crisis in Thailand raised concerns about the high debt ratios of Korean companies depending on short-term foreign funds, thus triggering the flight of overseas capital.[71] The sound condition of government finance in Korea at that time was in stark contrast to the situation in Latin America, where government debt crises have led to economic crises (Figure 3-32).

The Korean economy recovered rapidly in 1999, with GDP growth exceeding 10%. Internal factors behind this recovery include the conglomerate (*chaebol*) and financial reforms carried out under IMF programs.

In the framework of the conglomerate reform, the Korean government required major *chaebol* to reduce their debt ratios, which caused the economic crisis, to at least 200%. It also required companies in financial difficulty to submit a reconstruction plan, which were then forced out of business when reconstruction was deemed impossible. As a result, many firms were obliged to break up or sell themselves. Thus, the Daewoo conglomerate was forced into bankruptcy, while separate companies were spun off from the Hyundai conglomerate. Foreign capital was also introduced in the process of the chaebol reform: Samsung Motors and Daewoo Motors were sold to Renault and GM respectively. Following this introduction of foreign capital, the inflow of foreign direct investment has been exceeding the outflow in the balance of payments since 1998 (Figure 3-33).

As regards financial reform, 150 trillion won (¥15 trillion), which amounts to 25% of GDP, was injected from government funds to consolidate financial institutions. As a result, the non-performing loan ratio dropped rapidly after reaching 8.3% in 1999 to 2.5% in March 2002 (Figure 3-34).

In addition to those internal factors, external factors also played an important role. As a result of the economic crisis, the Korean won depreciated substantially from 900 won/$ to 1,700 won/$. The effective exchange rate also fell by about 40%, helping improve the export competitiveness of Korean products (Figure 3-35). Korean exports, generally led by electric machinery and electronics, also expanded due to factors on

[69] The share stood at 2.1% in 1999.
[70] Pharmaceuticals led the increase in production in the summer of 2002, which was pointed out an early result of encouraging the biomedical industry.
[71] The movement of short-term funds appears in "other investment" in the balance of payments (Figure 3-33).

the demand side including the IT boom in the U.S. and other economies. A breakdown of GDP into components (Figure 3-31) indicates that exports continued to make a positive contribution even in 1998, when Korea experienced a negative growth, offsetting the declines in components such as private consumption and fixed capital formation, also helped by the decrease in imports.[72] Such support from net exports eased the shock of the economic crisis and the subsequent structural reform, and facilitated a smooth transition to economic growth led by domestic demand.

As a result of the structural reform in this period, private demand remained strong despite the collapse of the IT bubble in the U.S. starting in the second half of 2000,[73] which helped to maintain the positive growth of the Korean economy.

(Appendix 4) Prompt Response to Bursting of Bubble in Sweden (see p. 62 for Figures)

The Swedish economy has been recovering smoothly since the early 1990s, when it experienced a serious economic slump and financial crisis following the bursting of the bubble economy. This segment describes the background of this economic recovery, which provides insights into the current Japanese economy.[74]

In the latter half of the 1980s, the Swedish economy experienced an asset price bubble, namely share prices rising rapidly along with real estate prices, mainly for commercial properties (Figure 3-36). Share prices and real estate prices peaked in 1989 and 1990 respectively, followed by sharp declines of 40% and 60%. As asset prices skyrocketed, the banking sector's credit to the private sector as a percentage of GDP rose from 40% in 1985 to 56% in 1990, but it plummeted after the bubble burst to 35% in 1995 (Figure 3-37). Meanwhile, the financial crisis continued until two of the four major banks were nationalized. Measures for stabilizing the financial system were led by the government, with the injection of public funds amounting to over 4% of GDP.[75]

The financial crisis in Sweden was triggered in the autumn of 1990 by the failure of Nuckeln, a major non bank credit company. In response, efforts were made to clean up the aftermath of the bubble, with the government in 1991 increasing the capitalization of Nord Bank, the second largest in the country. In the spring of 1992, policy scope still stayed within the framework of traditional economic stimulus packages, including supplementary budgets incorporating increased public investment.

In mid-1992, however, the financial crisis suddenly reached a critical stage, as a full-scale bailout of Nord Bank became necessary. The government committed itself to full protection of deposits and settlement accounts in September by announcing measures to grant government guarantees to banks. As a specific measure, the government purchased all Nord Bank shares held privately, then injected capital. Some of the non-performing loans of the Bank were transferred to a newly established special debt recovery bank. Government guarantees were also provided for the financing of the debt recovery bank. In December of the same year, the fourth-ranked Gotha Bank was also nationalized, followed by a similar transfer of non-performing loans a year later. The other major banks that were not subjected to nationalization adopted the same approach, setting up special recovery banks and transferring non-performing loans. Each recovery bank proceeded with corporate renewal using active measures including M&A.[76]

[72] Due to such trends in exports and imports, the "trade balance" in the balance of payments turned to a substantial surplus in 1998 (Figure 3-33).

[73] As regards the recent trend of consumption in Korea, however, there have recently been concerns about signs of overheating, such as the increase in outstanding credit card debts and the rapid rise in real estate prices.

[74] The description about Sweden is based on OECD, *Economic Surveys: Sweden*. Sweden has a GDP of around SKr2.1 trillion (Skr1=$0.1) and a population of about 8.9 million. According to Adema, W. (2001), *Net Social Expenditure (2nd Edition)*, net government expenditure for social security accounted for 31% of GDP based on the OECD standard, which is substantially higher than the level of Japan and the U.S. (about 15%).

[75] The four major banks accounted for almost 80% of total assets in Sweden.

[76] Nord Bank acquired Gotha Bank in 1993. The disposal of shares held by the government in 1995 amounted to Skr67 billion, which nearly equaled the amount of government funds injected into the two banks at that time. The measures to deal with the financial crisis were entirely lifted

A monetary crisis erupted in September 1992, leading to the floating of the Swedish krona in November. Subsequently, the real effective exchange rate fell 24% on average between 1992 and 1993, which led to a rapid recovery of exports (Figure 3-38). The recovery was particularly significant in the materials industries supported by price competitiveness, such as wood/wood products, paper/pulp and iron/steel. The expansion of domestic demand through increased plant and equipment investment in those industries was accompanied by increases in exports led by automobiles and electronic/optical equipment as the world economy started to recover. This recovery in the manufacturing sector pulled the whole economy out of the crisis, fueling domestic demand including private consumption in the late 1990s (Figure 3-39). In the same period, investment in R&D (research and development) became active particularly in electronic equipment and pharmaceuticals. Thus, Sweden has remained top among OECD members in terms of R&D investment.[77]

During the economic crisis, private consumption fell from the previous year both in 1992 and 1993, while the savings ratio in the household sector rose substantially from near zero in 1990 to over 10% in 1993 and 1994 (Figure 3-40). Since 1995, however, private consumption has recovered significantly despite the persistently high unemployment rate, resulting in a constant decline in the household savings ratio. Although the deteriorating budget situation had a non-negligible impact on the financial market at one time as institutional investors rebelled against the absorption of government bonds, the financial reconstruction measures announced in 1994 as a necessary condition for accession to the EU have started to bear fruit (Figure 3-41). By 1998, the primary balance improved by as much as over 12% of GDP on a cumulative basis.[78] Price inflation was also stable during the financial reconstruction, thus contributing to the recovery of consumption in the household sector from the financial as well as monetary aspects.[79]

In a relatively small economy like Sweden, the business cycle tends to be more dominant than in Japan. However, the process of overcoming an economic crisis may be characterized by a recovery in exports thanks to a falling exchange rate, as well as by a recovery in consumption following financial consolidation and flexible fiscal policies.

in July 1996, and the government guarantees were terminated after almost four years.

[77] Sweden tops the OECD members in R&D as a percentage of GDP.

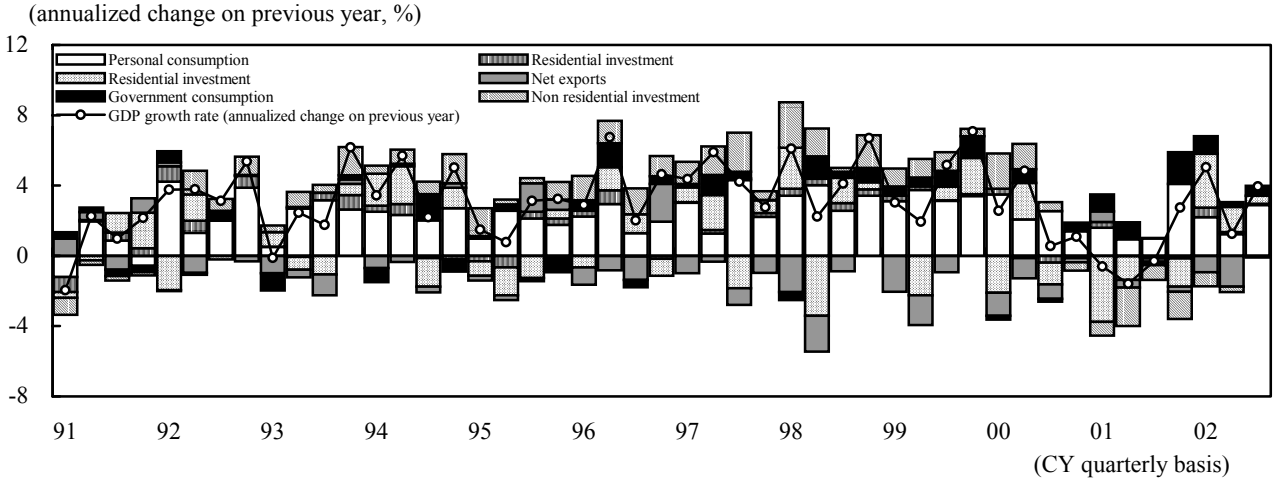
[78] A multi-faceted systematic reform package was introduced for financial reconstruction, including the increase of worker's share in medical insurance premiums, the reduction of old-age pension benefits, temporary reduction of income tax and cutbacks on investment in the construction of roads and railways.

[79] The Central Bank of Sweden introduced an inflation target of 2±1% for consumer prices in 1993 to enable flexible fiscal policies through the short-term financial market. Perotti (1999), "Fiscal Policy in Good Times and Bad," *Quarterly Journal of Economics*, 114, pp. 1399-1436 uses data for 19 OECD member countries to demonstrate that the reduction in budgetary expenditure under a financial crisis supports private consumption when liquidity constraints are not significant.

I. Global Economy Showing Signs of Slowdown

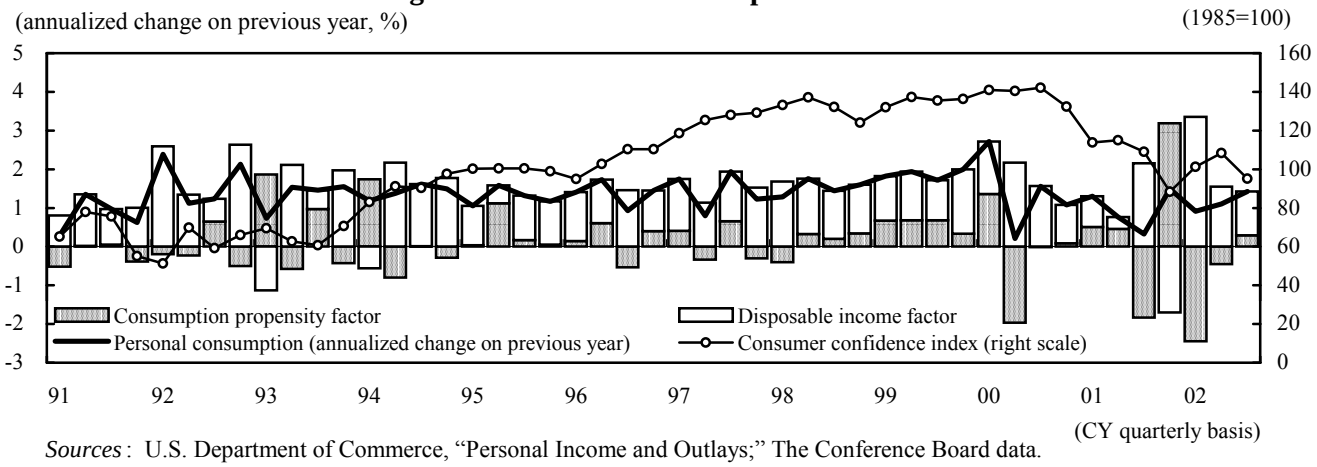
U.S. (1): Personal Consumption Propped Up by Automobiles but Decline Continuing in Plant and Equipment Investment

Figure 1-1. Trends in Real GDP



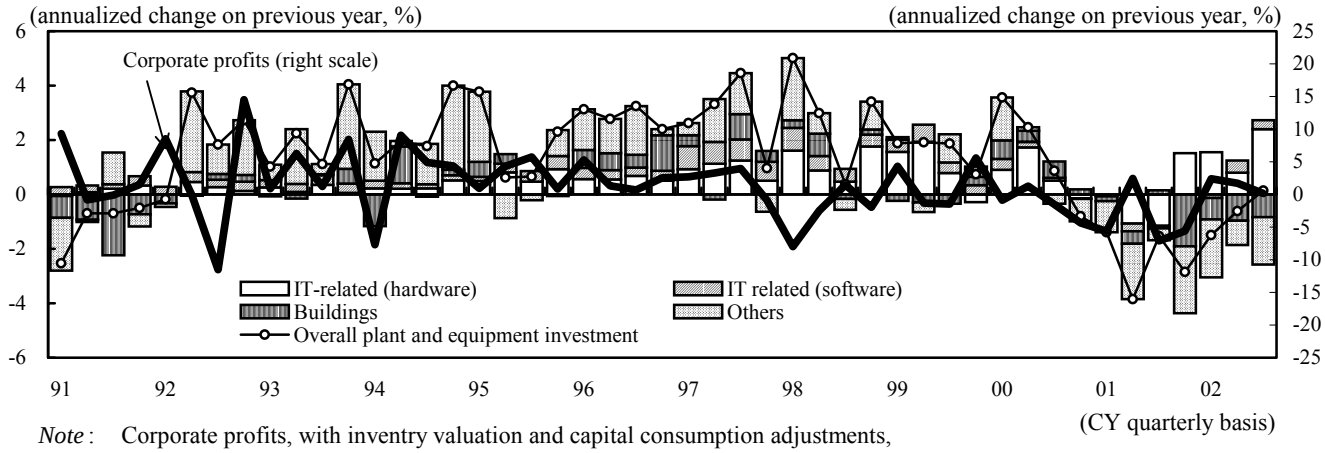
Source : U.S. Department of Commerce, "National Income and Product Account."

Figure 1-2. Personal Consumption Trends



Sources : U.S. Department of Commerce, "Personal Income and Outlays;" The Conference Board data.

Figure 1-3. Trends in Real Plant and Equipment Investment and Corporate Profits

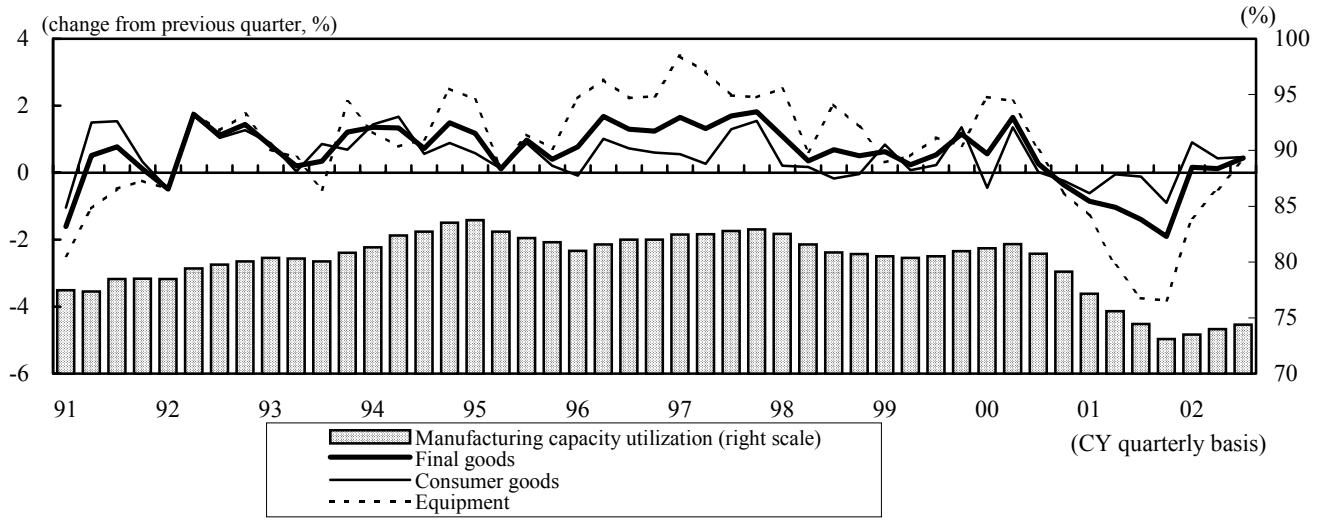


Note : Corporate profits, with inventry valuation and capital consumption adjustments, represent nominal seasonally adjusted annualized change from the previous quarter.

Source : U.S. Department of Commerce, "National Income and Product Account."

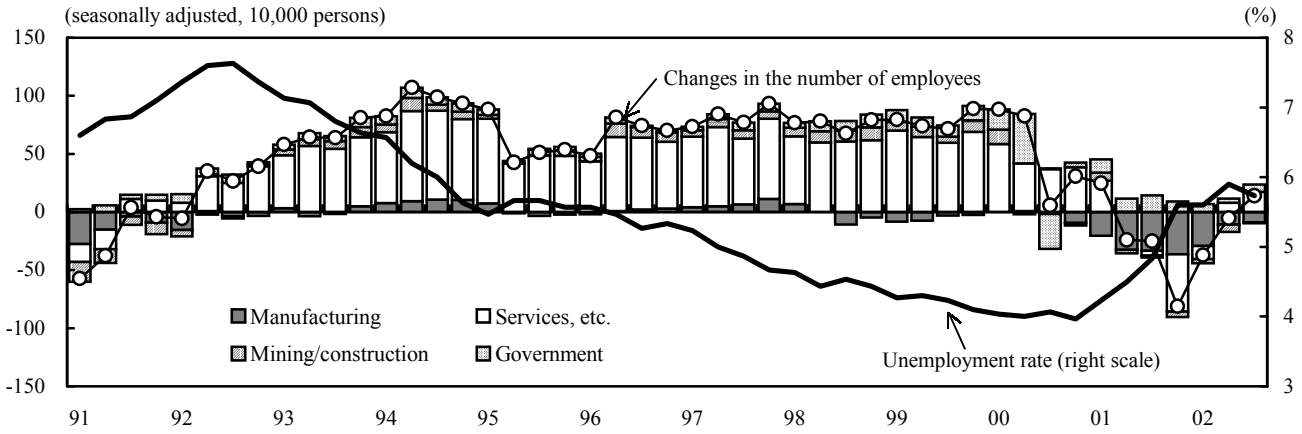
U.S. (2): Recovery in Production at a Standstill as Difficult Employment Situation Continues

Figure 1-4. Industrial Production Growth (seasonally adjusted)



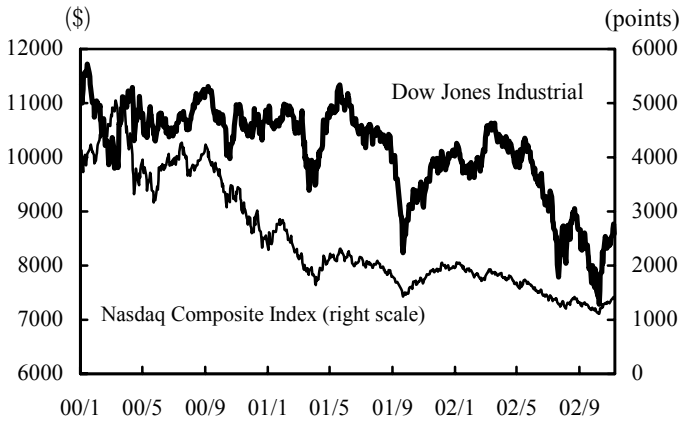
Source :FRB, "Industrial Production and Capacity Utilization."

Figure 1-5. Quarterly Changes in Number of Employees and Unemployment Rate



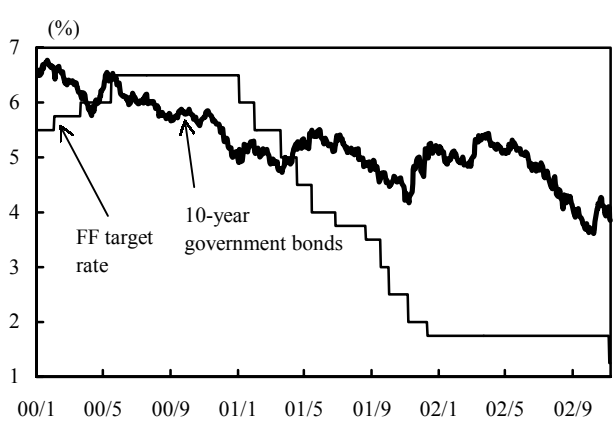
Note : The number of employees represents monthly average for the non-agricultural sector. (CY quarterly basis)
Source :U.S. Department of Labor, "Employment Situation."

Figure 1-6. Stock Market Indexes



Sources : Dow Jones; DRI.

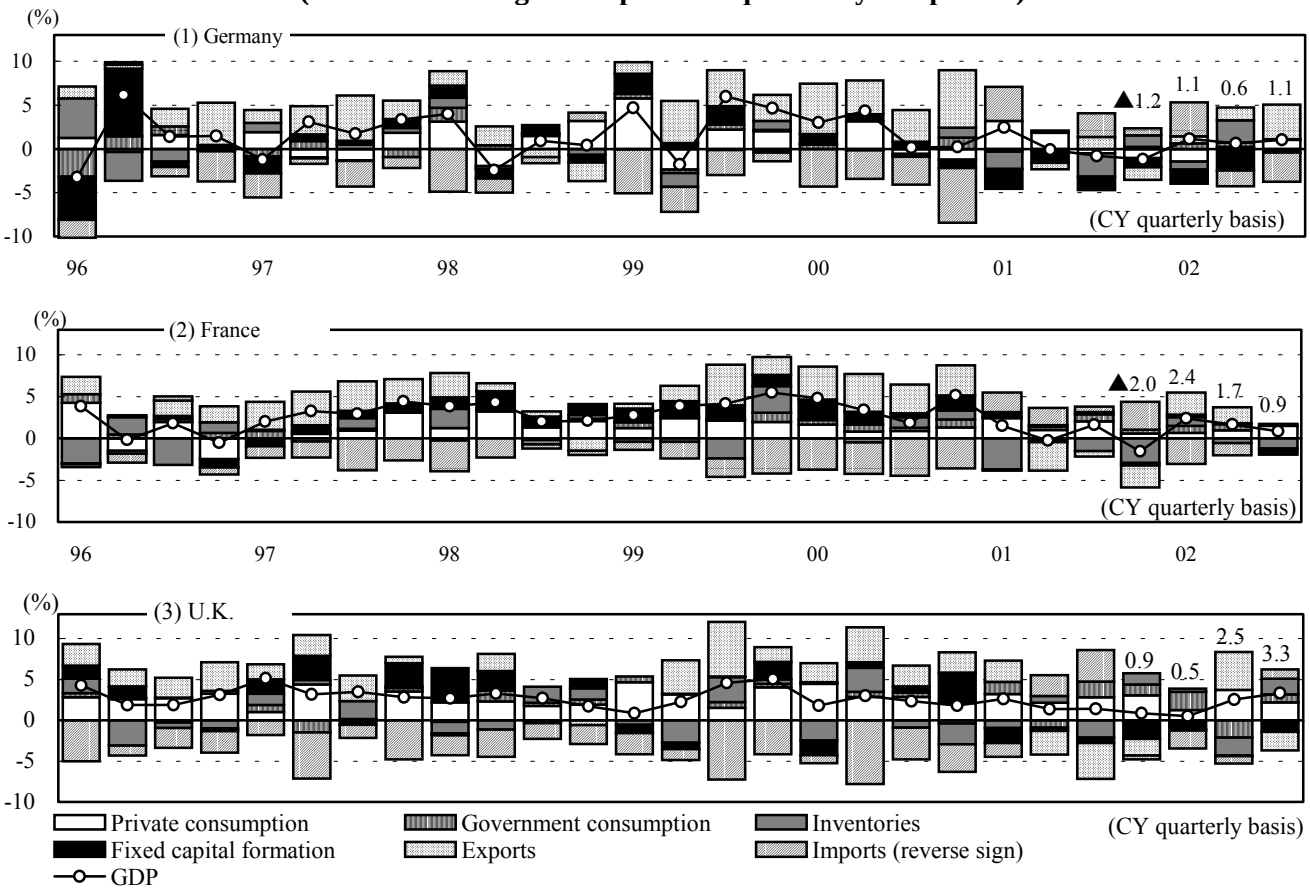
Figure 1-7. Long- and Short-term Interest Rates



Sources : FRB data; Wall Street Journal.

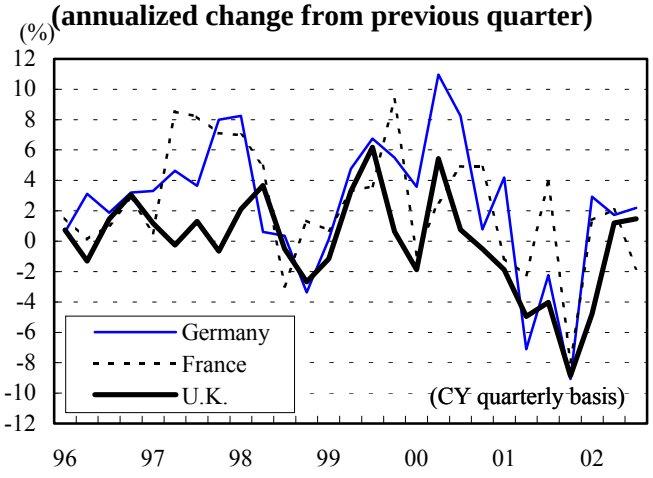
Economies of Major European Countries (Germany, France, U.K.): Uncertainties about Recovery Prospects

Figure 1-8. Real GDP of Major European Countries (annualized change from previous quarter by component)



Sources: Statistisches Budesamt (StBA), Direction Générale de l'Institut National de la Statistique et des Etudes Economiques (INSEE) and U.K. Central Statistical Office data.

Figure 1-9. Industrial Production Index in Major European Countries (annualized change from previous quarter)



Notes: 1. Based on seasonally adjusted values.
2. Based on the ILO standard values for international comparisons of unemployment.
3. The German consumer price index excludes fuels.

Sources: StBA, INSEE, U.K. Central Statistical Office, Eurostat and European Central Bank data.

Figure 1-10. Trend of Unemployment Rate

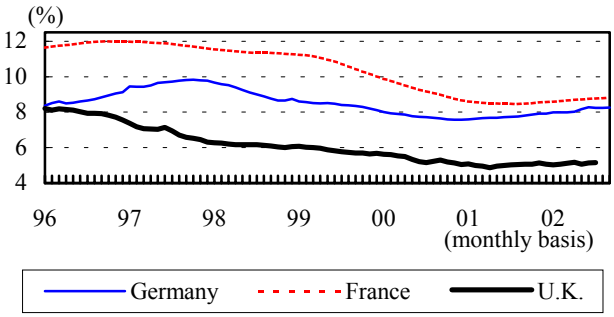
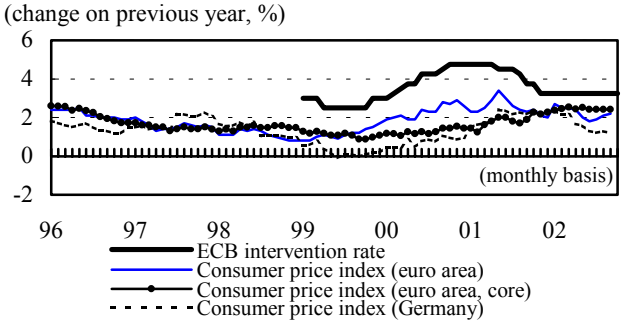


Figure 1-11. Consumer Prices and Financial Policy in Euro Area



Major Asian Economies: Recovery Continuing but Concerns about a Slowdown

Figure 1-12. Real GDP Growth Rate

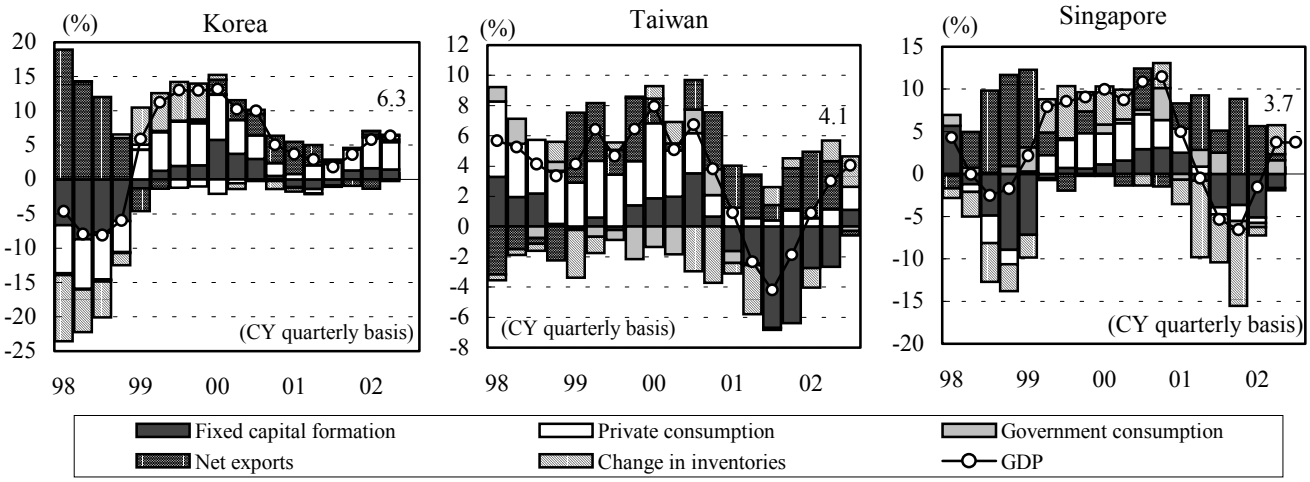


Figure 1-13. Exports and Imports

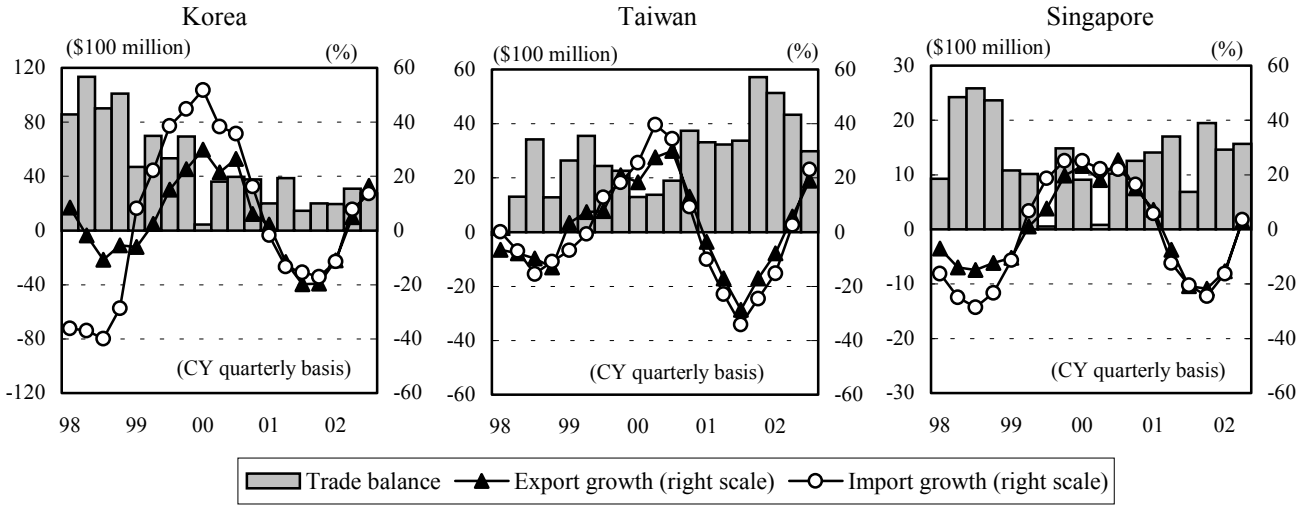


Figure 1-14. Price Inflation

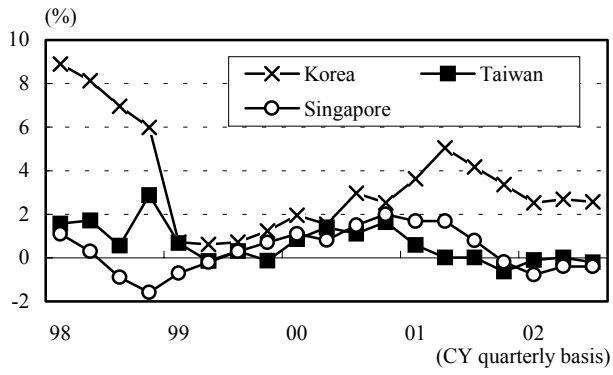
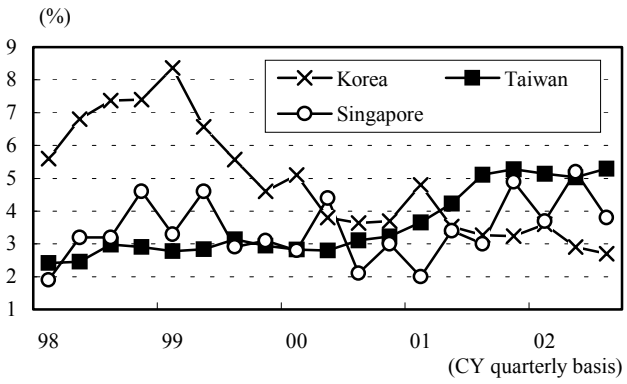


Figure 1-15. Unemployment Rate



Notes : 1. Exports for Singapore in Figure 1-13 represent net exports.
2. Growth rates represent year-on-year.

Sources : National statistics.

China: Strong Growth and Increased Risks

Figure 1-16. Real GDP Growth

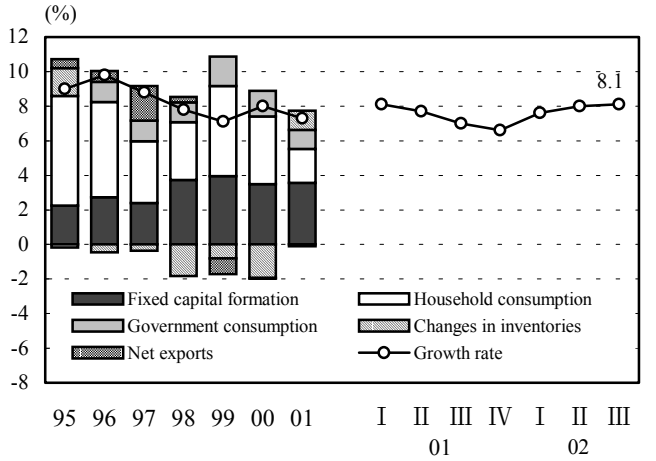


Figure 1-17. Investment Completed, Direct Investment Inflows

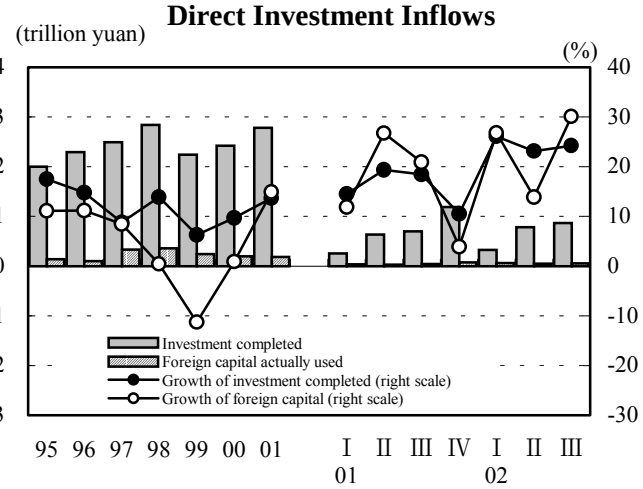


Figure 1-18. Composition of Investment Completed

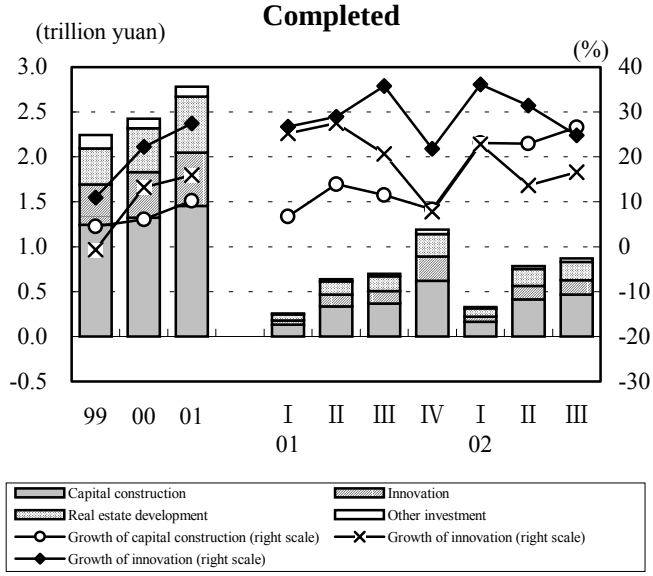


Figure 1-19. Retail Sales of Consumer Goods

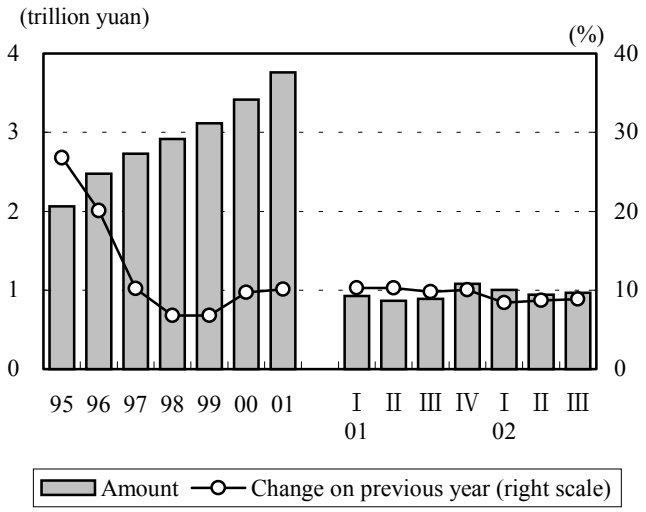


Figure 1-20. Exports and Imports

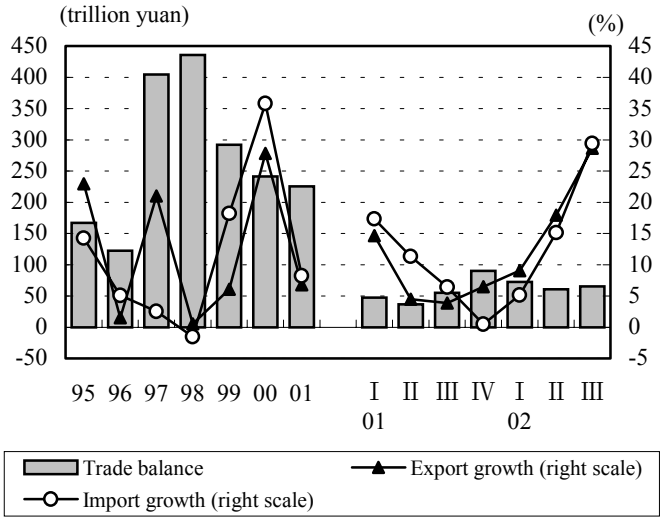
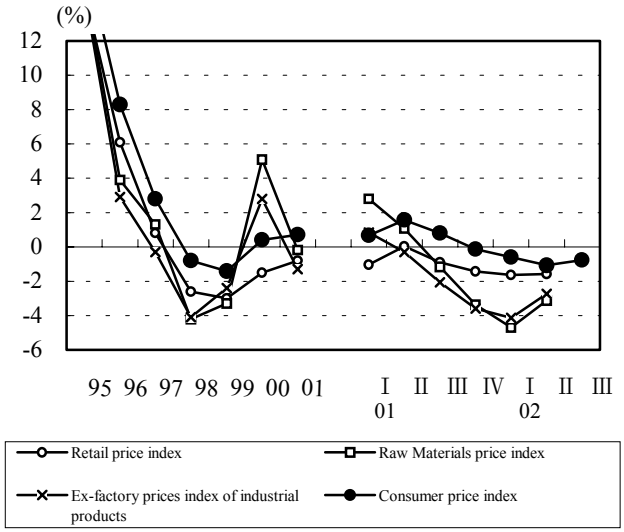


Figure 1-21. Price Indexes



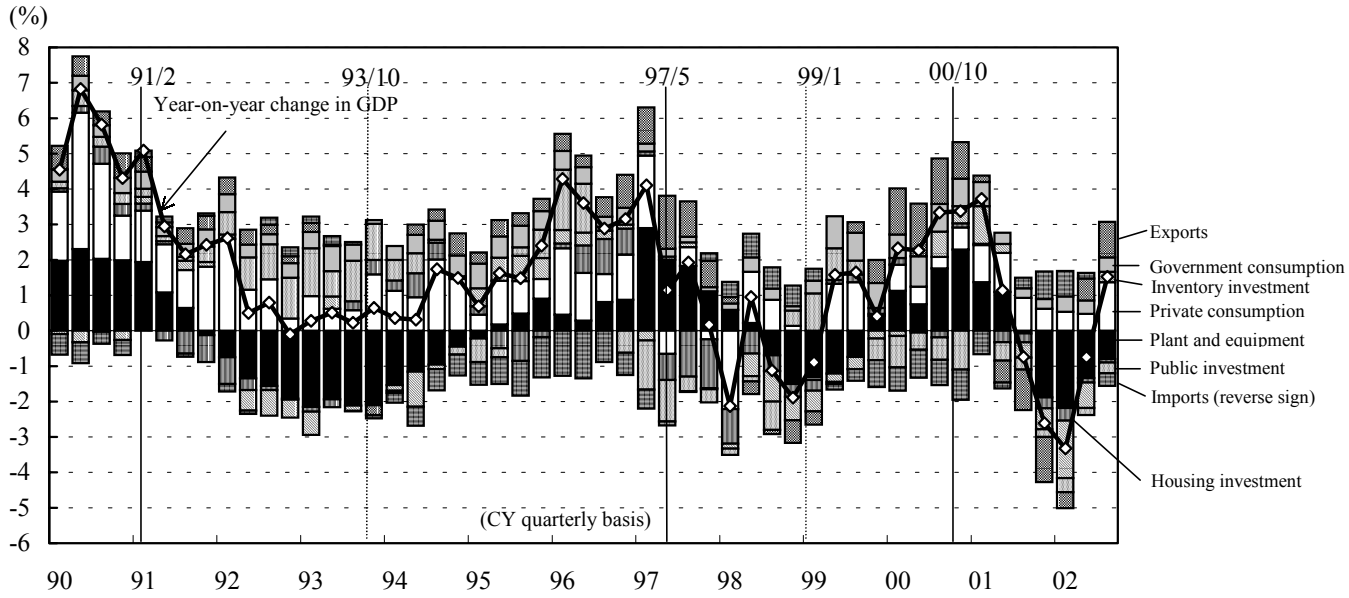
Notes: 1. Data on the value added of industrial production covers state-owned enterprises and non-state owned enterprises of a certain scale. The growth rate is in real terms. The amount of value added is not available for 1995-1998.
2. Savings represent the Saving Deposit in the International Financial Statistics.
3. The growth rate represents change on the previous year.

Sources: IMF, "International Financial Statistics", China Statistical Yearbook, China Monthly Economic Indicators and People's Bank of China data.

II. Japanese Economy: Slower Improvement

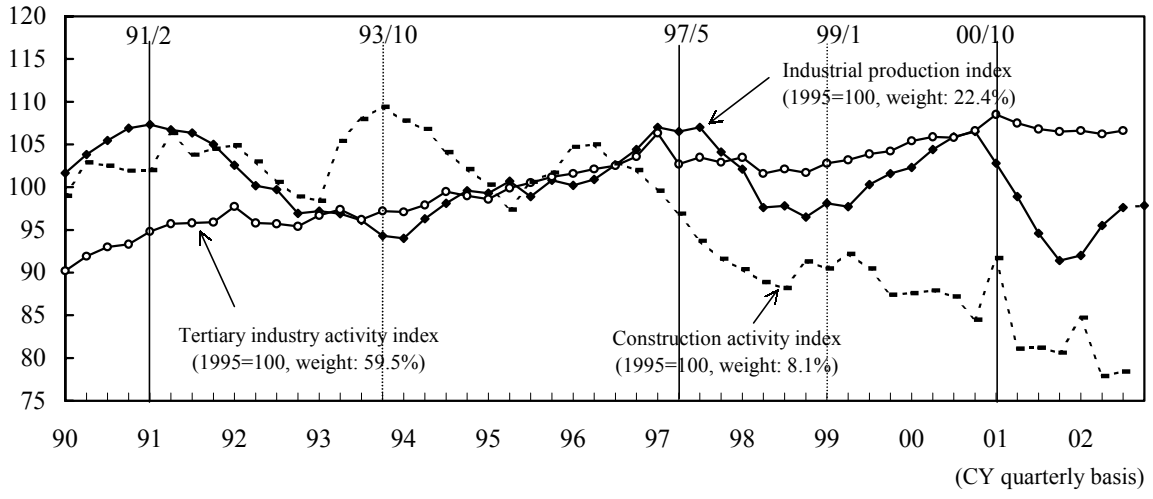
Overview: Production Rising, but Concerns about Leveling Off

Figure 2-1. Trends in Real GDP (Year-on-year change by component)



Note : 1995 as base year. Government consumption includes the contribution of public inventories.
Source : Cabinet Office, "National Accounts."

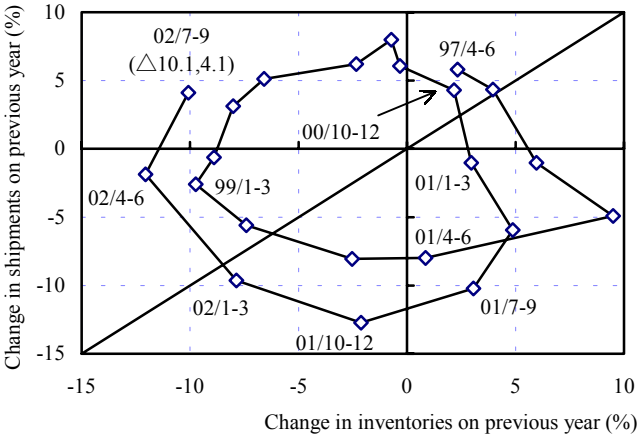
Figure 2-2. Trends in Production Indicators (Seasonally adjusted)



Notes : 1. Weights represent shares in all-industry activity index (GDP from the supply side) and add up to 100 in sum with the agriculture, forestry and fishery production index (weight: 1.8%) and public service activity index (8.2%).
2. The industrial production figures for October-December 2002 are a combination of actual results for October and forecasts for November and December based on the Survey of Manufacturing Production Forecast.
Source : Ministry of Economy, Trade and Industry.

Inventory Cycle Entering a Buildup Phase

Figure 2-3. Inventory Cycle (total of mining and manufacturing sector)



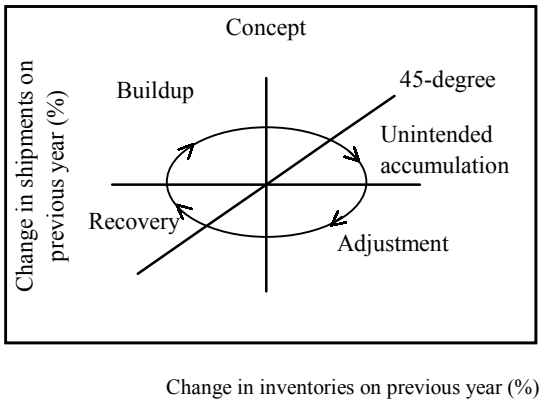


Figure 2-4. Inventory Cycle of Capital Goods (excluding transport equipment)

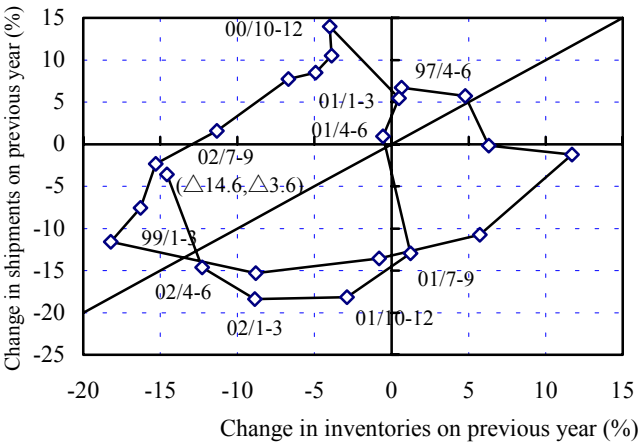


Figure 2-5. Inventory Cycle of Construction Goods

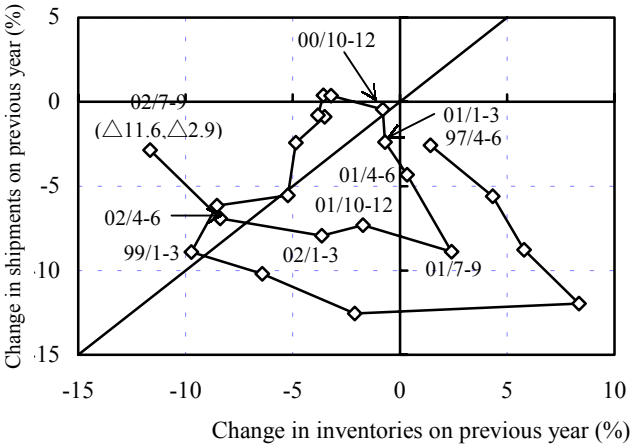


Figure 2-6. Inventory Cycle of Consumer Goods

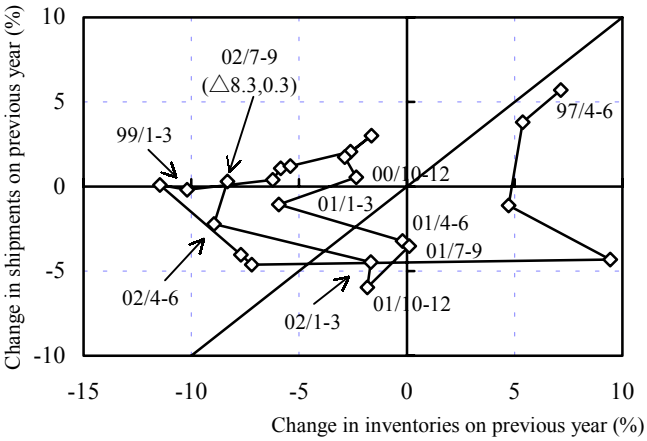
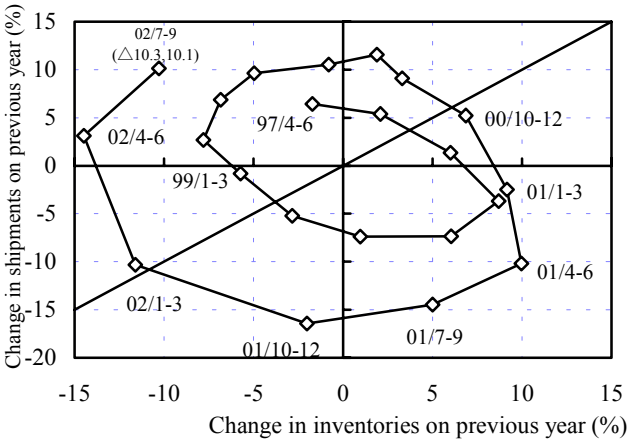


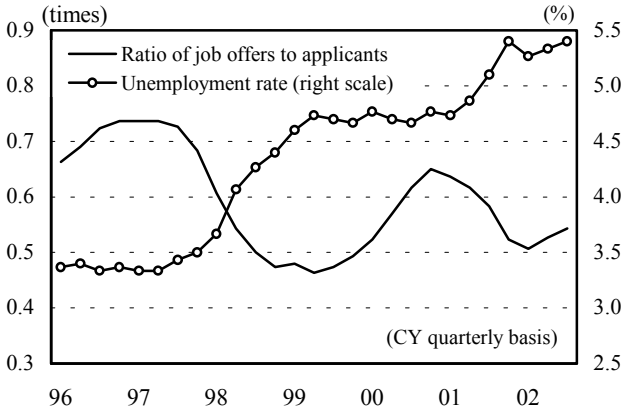
Figure 2-7. Inventory Cycle of Producer Goods



Source : Ministry of Economy, Trade and Industry, "Industrial Index."

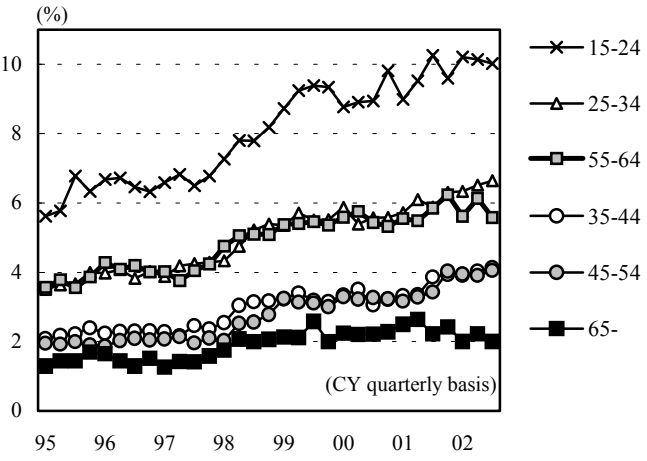
Weak Recovery in Job Offers as Employment Conditions Remain Difficult

Figure 2-8. Trends in Ratio of Job Offers to Applicants and Unemployment Rate



Note : Seasonally adjusted.
Sources : Ministry of Public Management, Home Affairs, Posts and Telecommunications, "Labour Force Survey;" Ministry of Health, Labour and Welfare, "Statistics on Placement Activities."

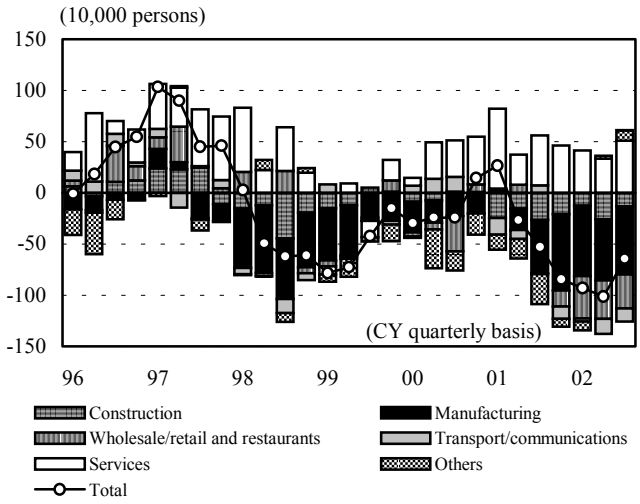
Figure 2-9. Unemployment Rate by Age Group



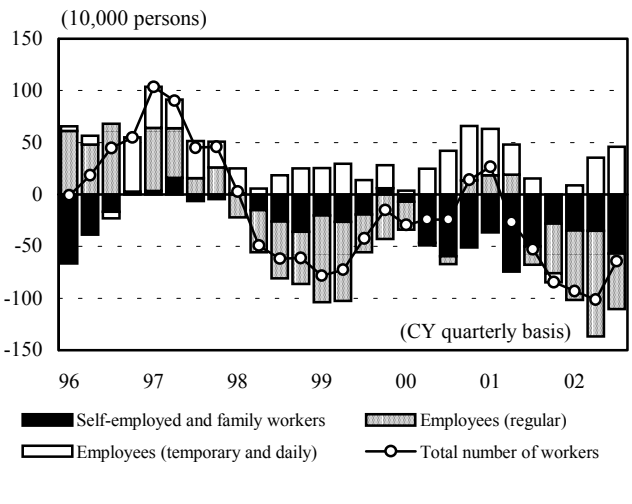
Note : Seasonally adjusted.
Source : Ministry of Public Management, Home Affairs, Posts and Telecommunications, "Labour Force Survey.

Figure 2-10. Trend of Year-on-Year Change in Number of Workers and Employees by Component

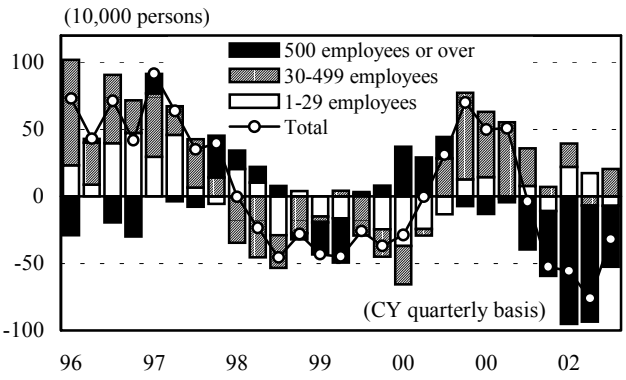
(1) By industry



(2) By status

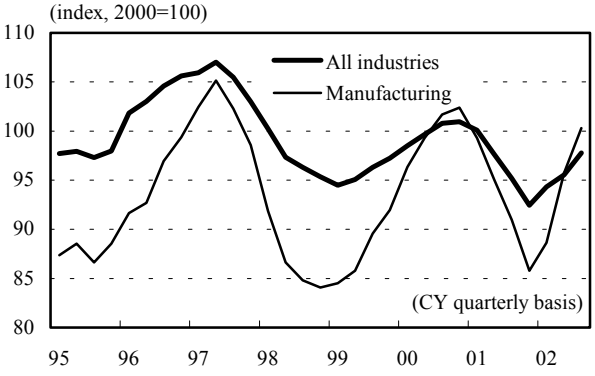


(3) By size of corporation (excluding agriculture, forestry, fisheries and government)



Source : Ministry of Public Management, Home Affairs, Posts and Telecommunications, "Labour Force Survey."

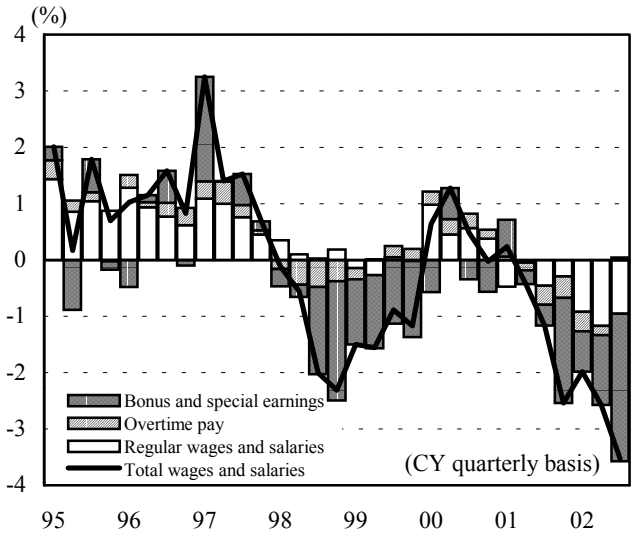
Figure 2-11. Overtime Hours (seasonally adjusted)



Source : Ministry of Health, Labour and Welfare, "Monthly Labour Survey."

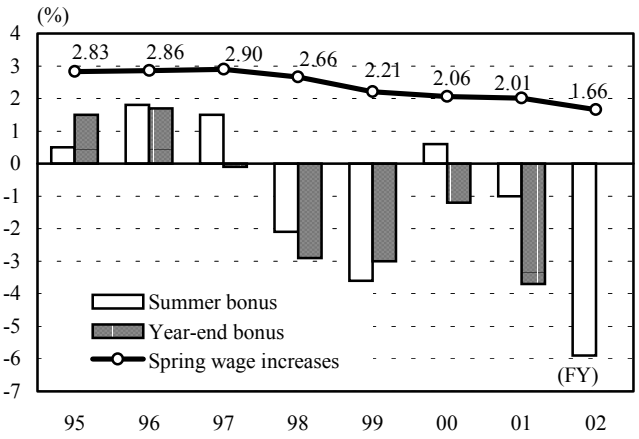
Earnings Decreasing, Resulting in Worsening Consumer Confidence

Figure 2-12. Year-on-Year Change in Wages and Salaries per Person



Note : Business establishments with five or more employees.
Source : Ministry of Health, Labour and Welfare, "Monthly Labour Force Survey."

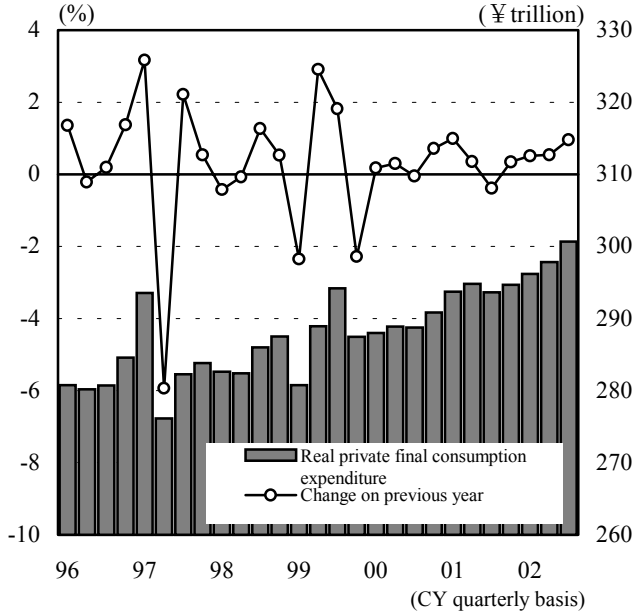
Figure 2-13. Spring Wage Increases and Change in Bonuses on Previous Year



Notes : 1. Summer bonus and year-end bonus include wages and salaries paid as such in June-August and November-January respectively in business establishments with five or more employees.
2. Spring wage increases cover listed companies with trade unions employing 1,000 or more workers and capitalized at ¥2 billion or over.

Source : Ministry of Health, Labour and Welfare, "Monthly Labour Statistics" and "Spring Wage Increase Requests and Settlement Conditions for Major Private Corporations."

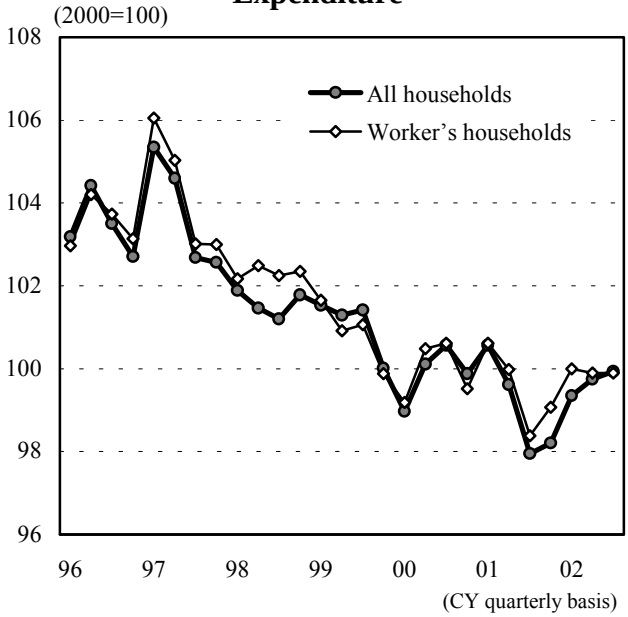
Figure 2-14. Consumption on GDP Basis



Notes : 1. Seasonally adjusted annual rate.
2. Data since January-March 2000 are calculated with the new quick estimate method. Growth rates for the periods prior to the change in calculation method are on a confirmed information basis. The levels of consumption are calculated retrogressively from the growth rates.

Source : Cabinet Office, "National Accounts," second QE for July-September 2002.

Figure 2-15. Real Household Consumption Expenditure

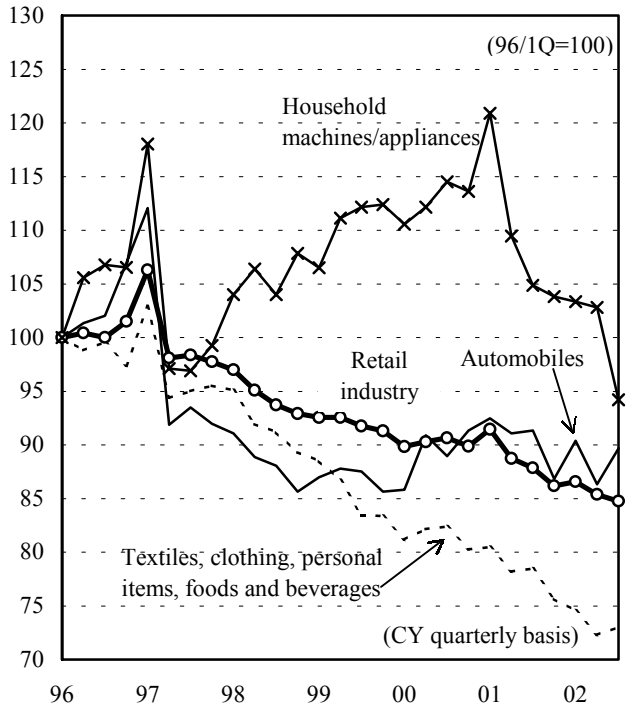


Notes : 1. Moving average of the consumption level index with two preceding periods.
2. The consumption level index is obtained from the monthly consumption expenditure per household, which is converted into the amount of consumption for a four-member household in 30.4 days (365 days/12 months). This amount is then translated into an index based on the average for 2000, and finally divided by the consumer price index for conversion into real terms. Seasonal adjustment is based on the Census Bureau method II (X-11).

Source : Ministry of Public Management, Home Affairs, Posts and Telecommunications, "Family Income and Expenditure Survey."

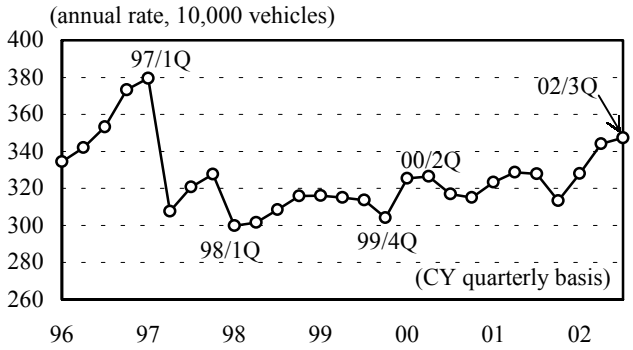
Car Sales Flat as Consumer Confidence Deteriorates Further

Figure 2-16. Retail Sales Index (seasonally adjusted)



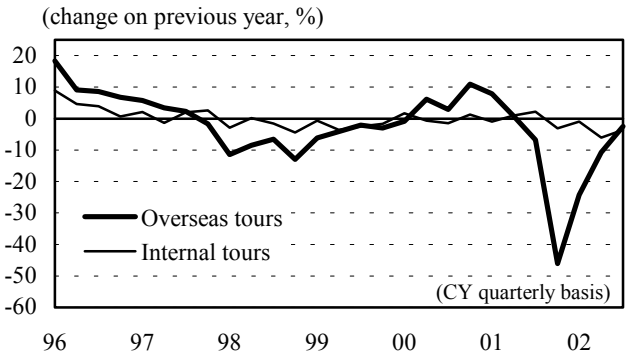
Note: Retail sales index except for total represents the average of published seasonally adjusted figures weighted by the salesof each industry.
Source: Ministry of Economy, Trade and Industry, "Report of the Current Survey of Commerce."

Figure 2-17. New Car Registrations (seasonally adjusted)



Note: Passenger cars including mini automobiles.
Source: Japan Automobile Dealers Association data.

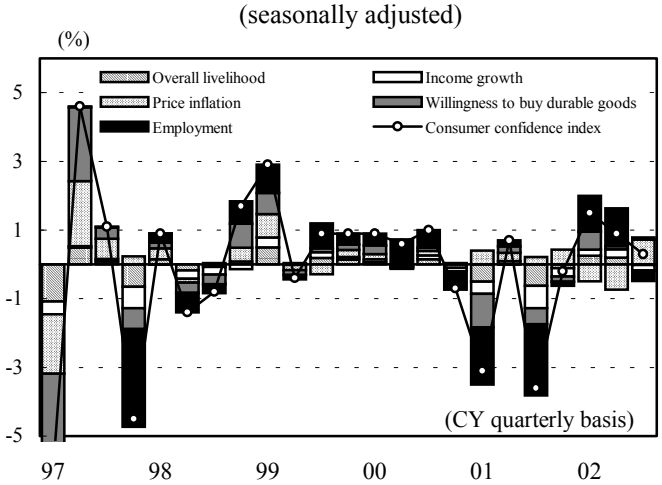
Figure 2-18. Tourism Sales



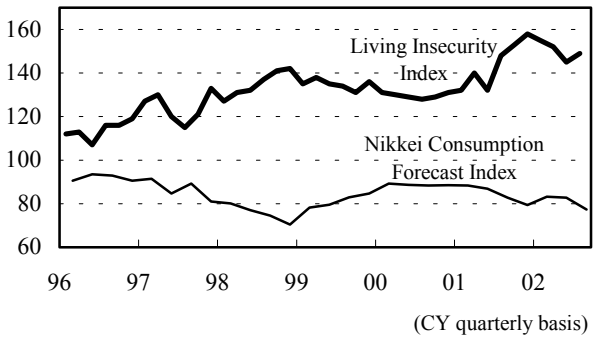
Source: Ministry of Land, Infrastructure and Transport, "Tourism Sales of 50 Major Tourist Agencies."

Figure 2-19. Consumer Confidence Indicators

(1) Quarterly change in consumer confidence index (seasonally adjusted)



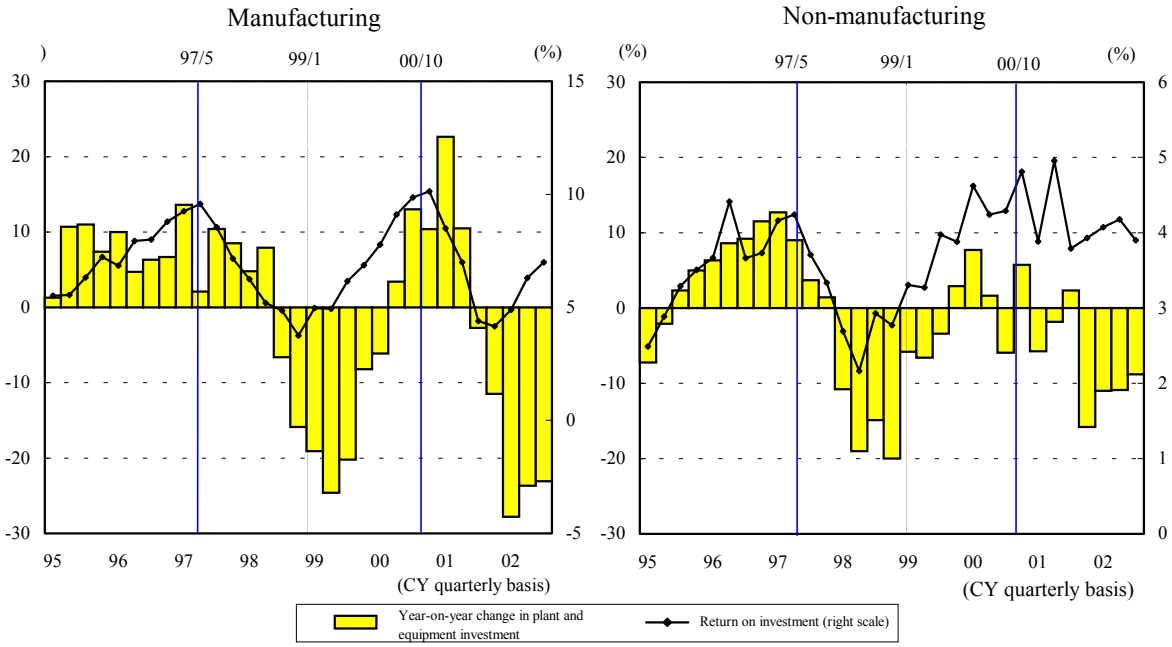
(2) Other Confidence Indexes



Note: Consumer confidence index is based on surveys for the coming six months. Figures for individual components were redistributed from seasonally adjusted data.
Sources: Cabinet Office, "Consumer Confidence Survey;" Japan Research Institute, "Consumer Sentiment Index;" Nikkei Industrial Consumption Research Institute data.

Plant and Equipment Investment: Bottoming Out but Recovery Expected to be Weak

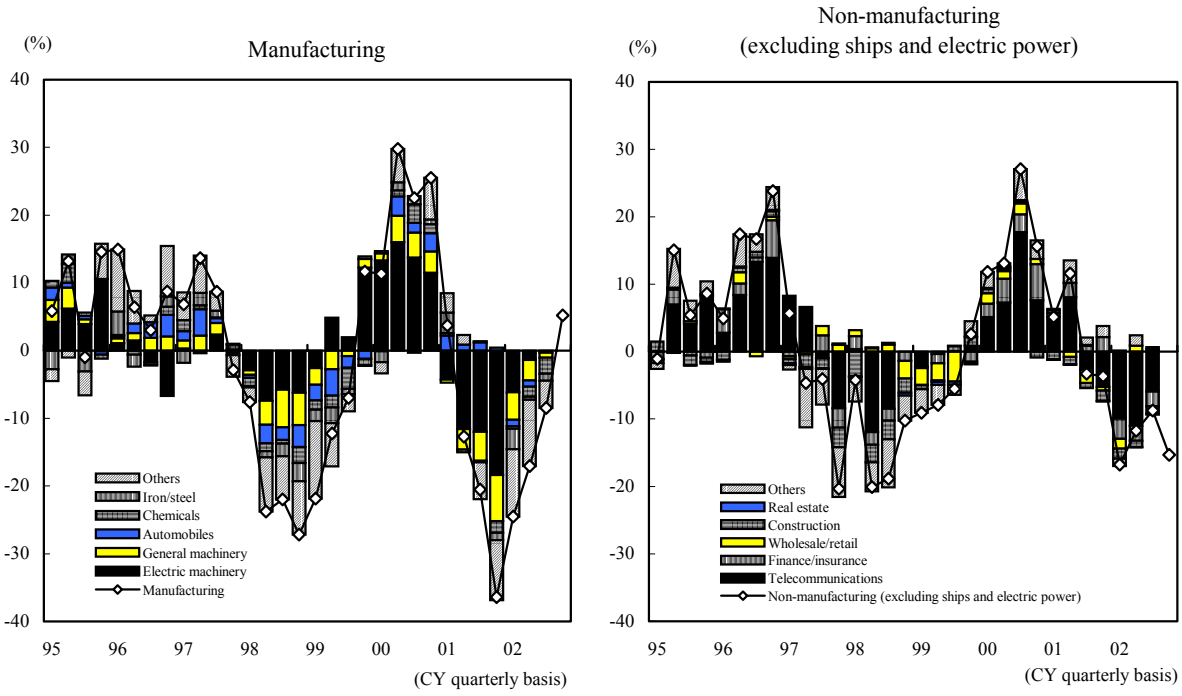
Figure 2-20. Year-on-Year Change in Plant and Equipment Investment and Return on Investment (corporations of all sizes)



Notes: 1. Plant and equipment investment excludes software.
2. Return on investment = operating asset-profit rate – average contracted interest rates of banks (new loans, total), where operating asset-profit rate = operating profit/(tangible fixed assets + inventories).
3. No adjustments are made for changes in the accounting rule on business tax (ministerial order revised in December 1998).

Sources: Ministry of Finance, "Quarterly Report of Statistical Survey of Incorporated Enterprises," etc.

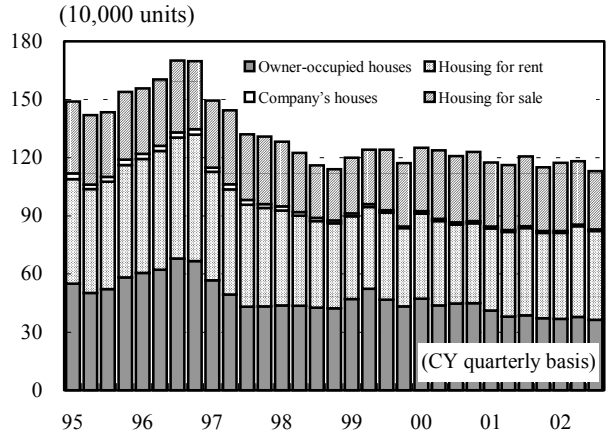
Figure 2-21. Orders Received for Machinery (trend of year-on-year change by industry)



Note: Cabinet Office estimate for October-December 2002.
Source: Cabinet Office, "Orders Received for Machinery."

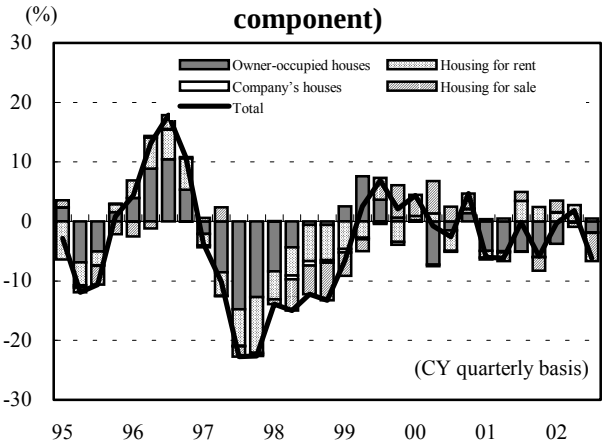
Residential Investment Decreasing Slowly

Figure 2-22. Trend of Housing Starts (seasonally adjusted annual rate)



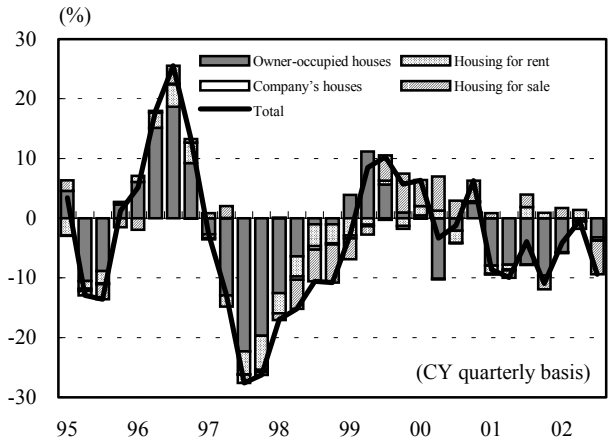
Source Ministry of Land, Infrastructure and Transport, "Building Construction Started."

Figure 2-23. Housing Starts (trend of year-on-year change by component)



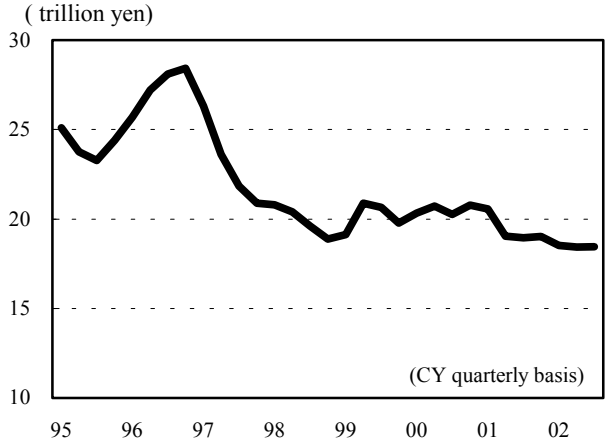
Source : Ministry of Land, Infrastructure and Transport, "Building Construction Started."

Figure 2-24. Floor Area of Housing Starts (trend of year-on-year change by component)



Source : Ministry of Land, Infrastructure and Transport, "Building Construction Started."

Figure 2-25. Real Residnetial Investment (seasonally adjusted annual rate)



Source : Cabinet Office, "National Accounts."

Figure 2-26. Contract Rate and Stock of Condominiums (Tokyo metropolitan area)

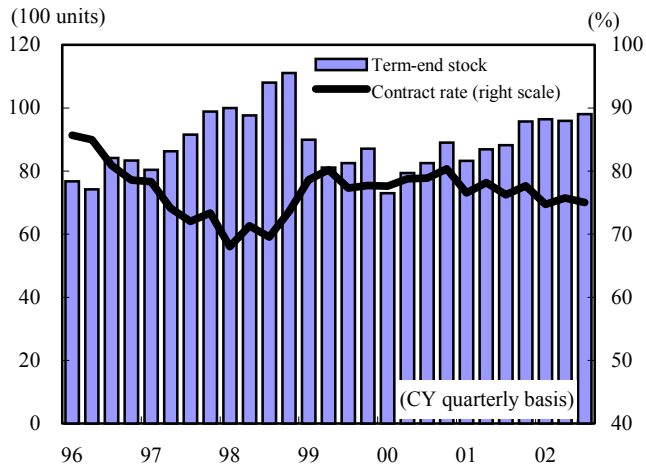
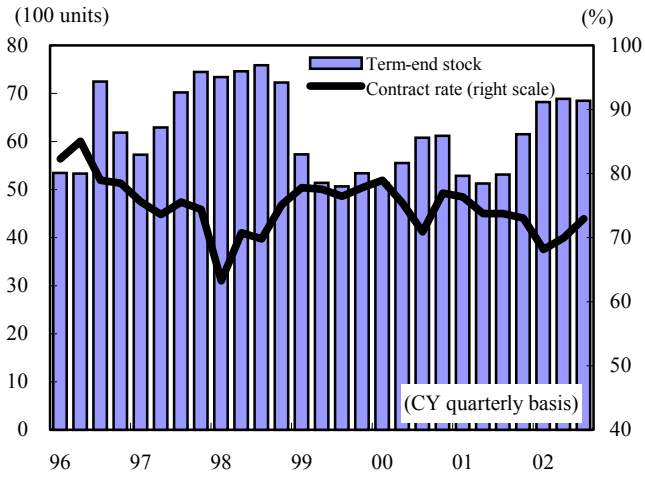


Figure 2-27. Contract Rate and Stock of Condominiums (Kinki area)

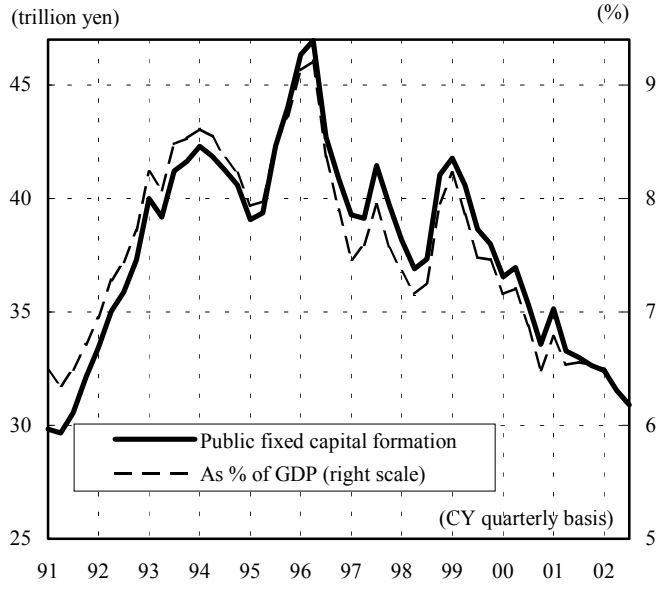


Note : Contract rate refers to the quarterly average of the percentage of housing sales contracts that were actually closed from among the total number of contracts started for any given month. Stock refers to the figure at the end of the quarter.

Source : Real Estate Economic Institute Co., Ltd.

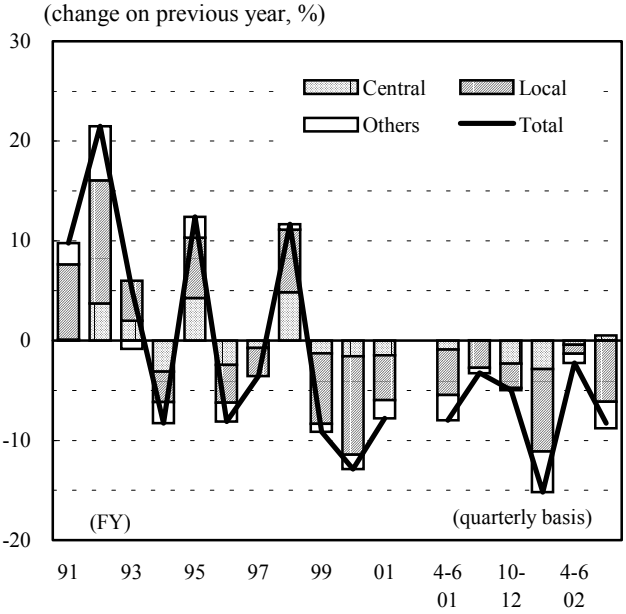
Public Investment Falling due to Difficult Financial Situation

Figure 2-28. Trend of Public Investment



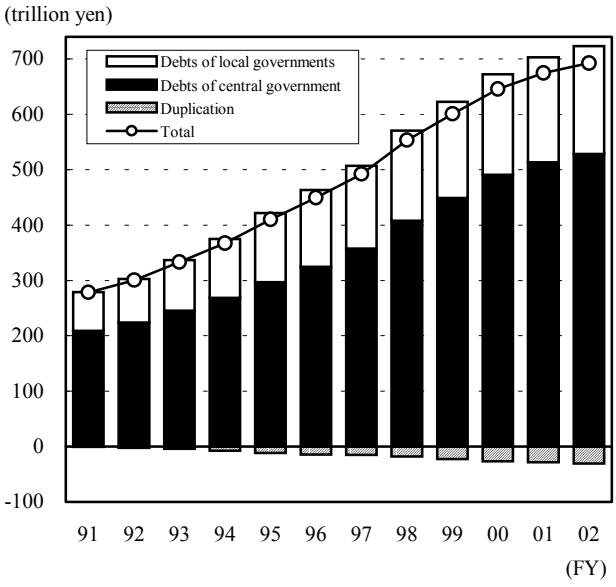
Note : Data represent seasonally adjusted annual rate.
Source : Cabinet Office, "National Accounts."

Figure 2-29. Trend of Contract Value for Public Works



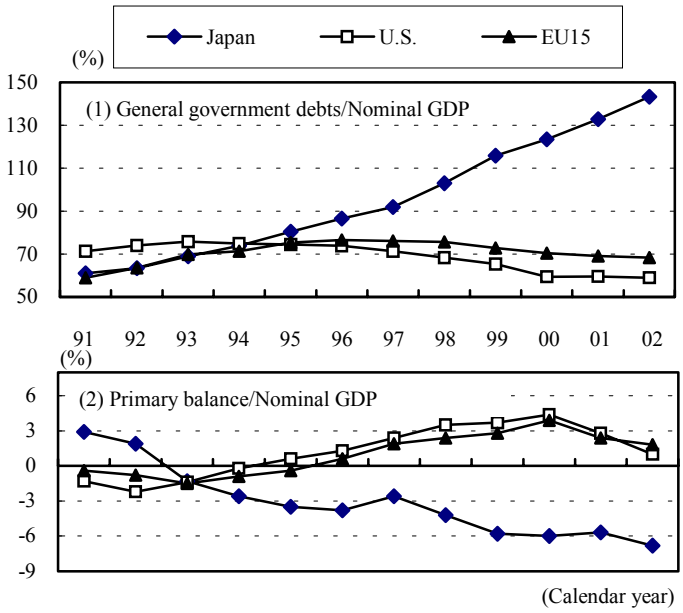
Note : In the legend, "Local" represents the total of prefectures and municipalities. "Others" represent the total of central and local public business entities.
Source : Surety Association for Construction Companies, "Public Works Prepayment Surety Statistics."

Figure 2-30. Long-term Outstanding Debts of Central and Local Governments



Note : Figures for fiscal 2001 represent estimates after supplementary budget and those for fiscal 2002 are estimates based on the initial budget.
Source : Ministry of Finance, "Budgetary Data (March 2002)."

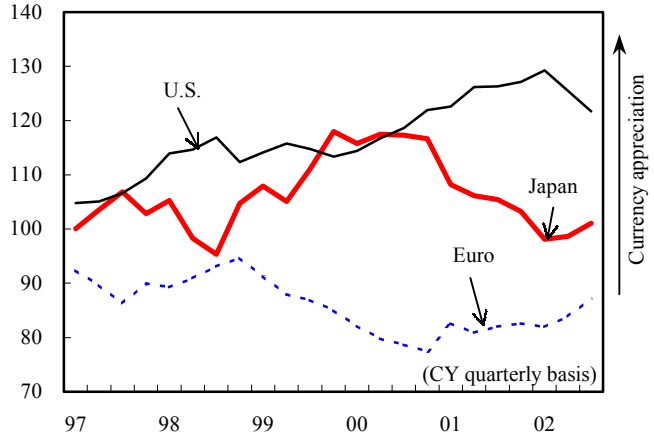
Figure 2-31. International Comparison of Financial Situations



Notes : 1. Values for 2002 are estimates.
2. Figures for some European countries in 2000 include income from the selling of cellular phone licenses (around 1% of the primary balance).
Source : OECD, "Economic Outlook 71."

Exports Slowing from Substantial Increase as Imports Rise

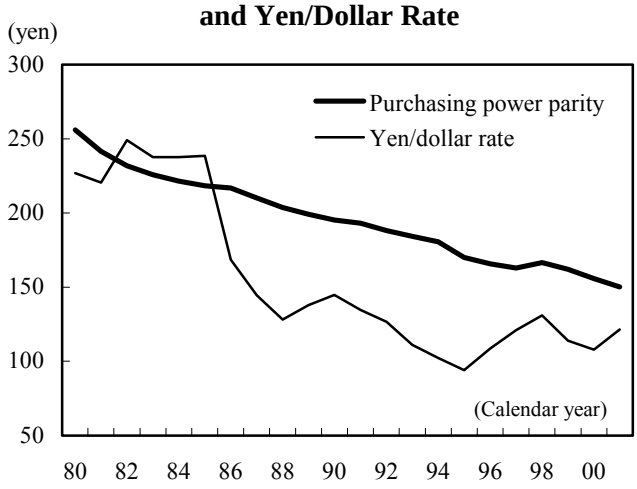
Figure 2-32. Trends of Real Effective Exchange Rate (1990=100)



Note: Exchange rate is converted into real terms with the price levels of the country and its 44 trading partners and then weighted for trade in industrial products in 1990.

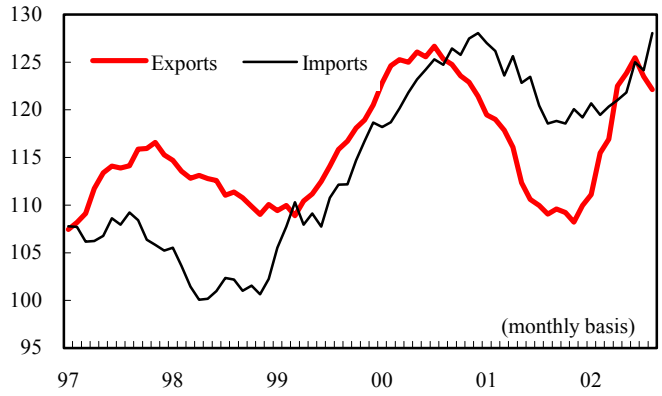
Source: J.P. Morgan, "World Financial Market."

Figure 2-33. Japan's Purchasing Power Parity and Yen/Dollar Rate



Source: OECD, "Purchasing Power Parities and Real Expenditure."

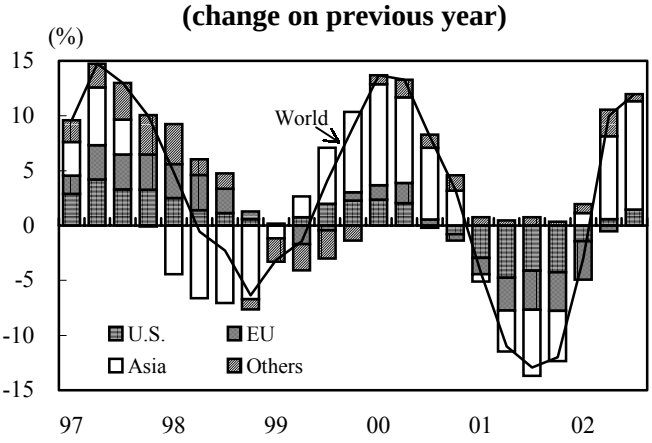
Figure 2-34. Export and Import Volume Indices (1995=100)



Note: Three-month moving average of seasonally adjusted values based on X-11.

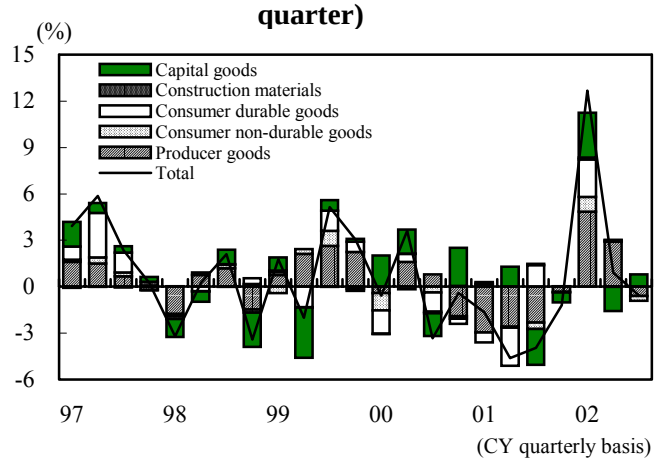
Source: Ministry of Finance, "Trade Statistics."

Figure 2-35. Export Volume Index by Destination (change on previous year)



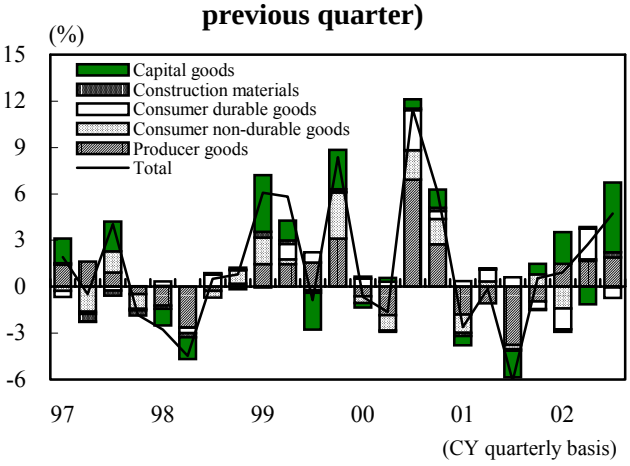
Source: Ministry of Finance, "Trade Statistics."

Figure 2-36. Export Shipment Index of Industrial Goods (seasonally adjusted change from previous quarter)



Source: Ministry of Economy, Trade and Industry, "Analysis of Industrial Production Activities."

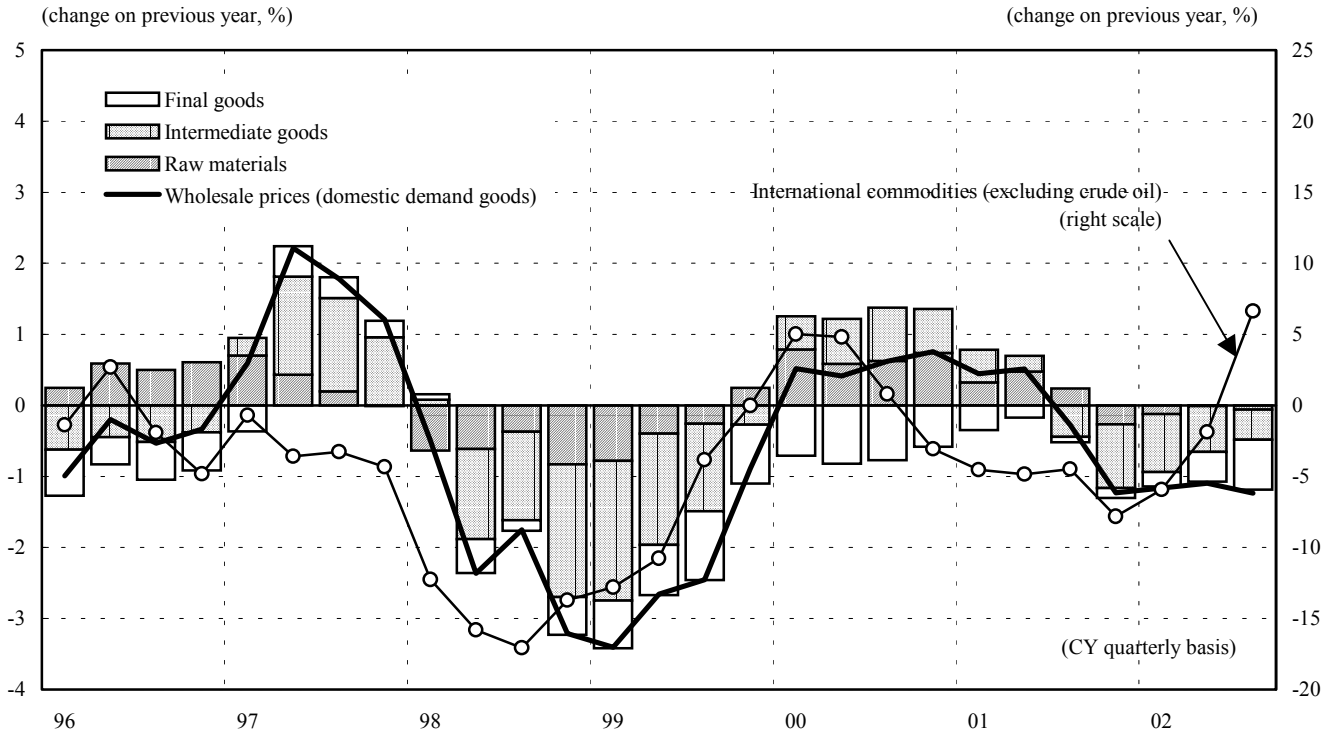
Figure 2-37. Import Supply Index for Industrial Goods (seasonally adjusted change from previous quarter)



Source: Ministry of Economy, Trade and Industry, "Analysis of Industrial Production Activities."

Wholesale and Consumer Prices Continuing to Decline

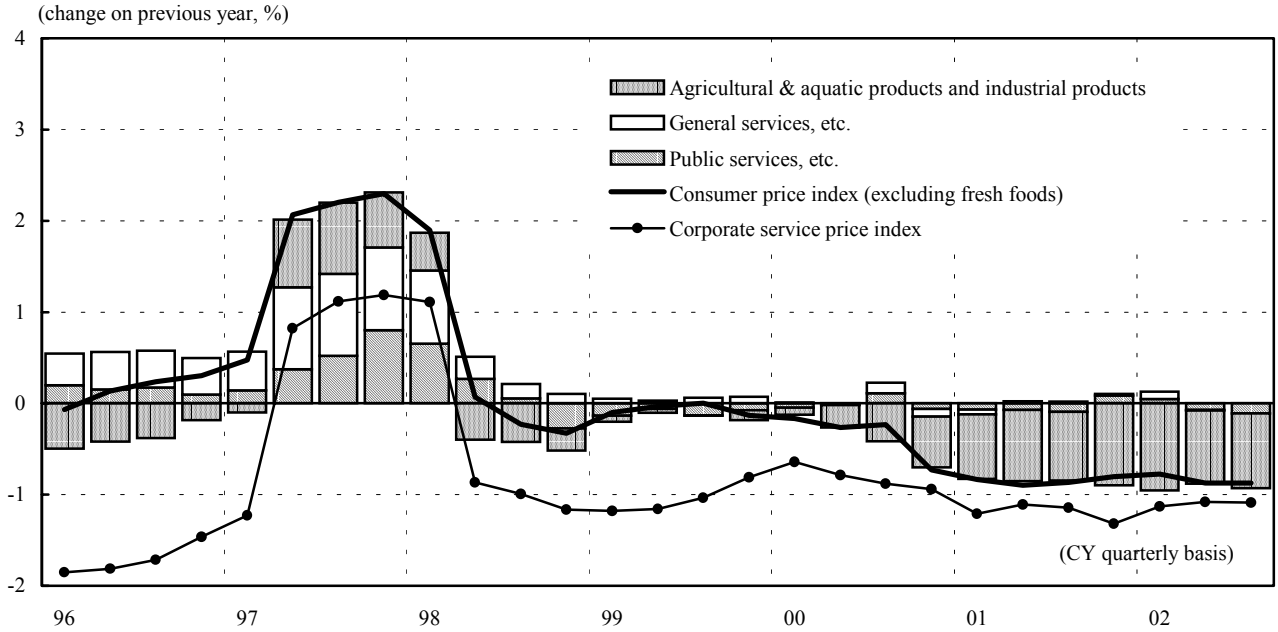
Figure 2-38. Trends in Commodity Prices and Wholesale Prices (domestic demand goods)



Notes: 1. Wholesale prices represent the average of domestic and import prices for domestic demand goods.
2. International commodities for the third quarter of 2002 represent the year-on-year change of July-August average.

Sources: Bank of Japan, "Monthly Report on the Wholesale Price Indexes;" IMF, "International Financial Statistics."

Figure 2-39. Trends in Consumer Prices (excluding fresh foods) and Corporate Service Prices

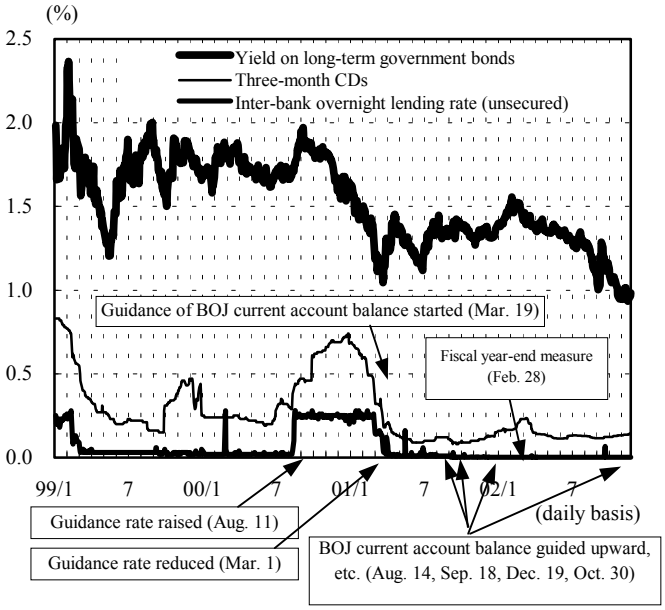


Notes: 1. "General services, etc." include publications. "Public services, etc." include electricity, gas and water charges.
2. Corporate service price index excludes ocean freight transportation, international airfreight transportation and international air passenger transportation.

Sources: Bank of Japan, "Monthly Report on the Wholesale Price Indexes;" Ministry of Public Management, Home Affairs, Posts and Telecommunications, "Monthly Report on Consumer Price Index."

Credit Risk Aversion through Low Interest Rates

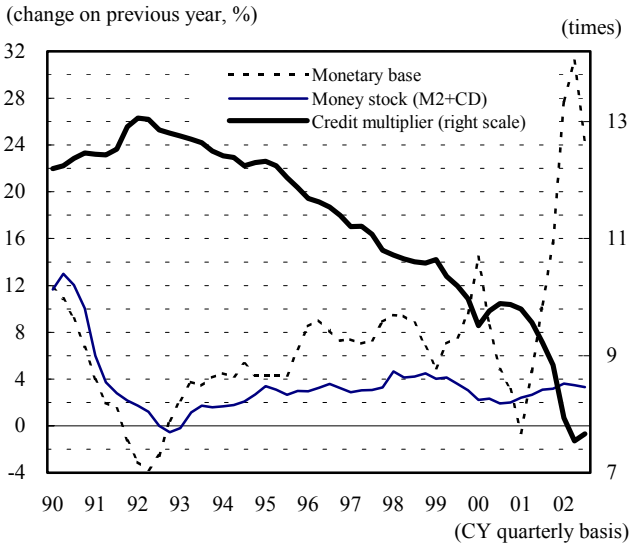
Figure 2-40. Trends in Selected Market Interest Rates



Notes : 1. Yield on long-term government bonds represents that on 10-year bonds.
2. Three-month CDs are represented by the quotation (bid) rate on new issues.

Source : Nihon Keizai Shimbun.

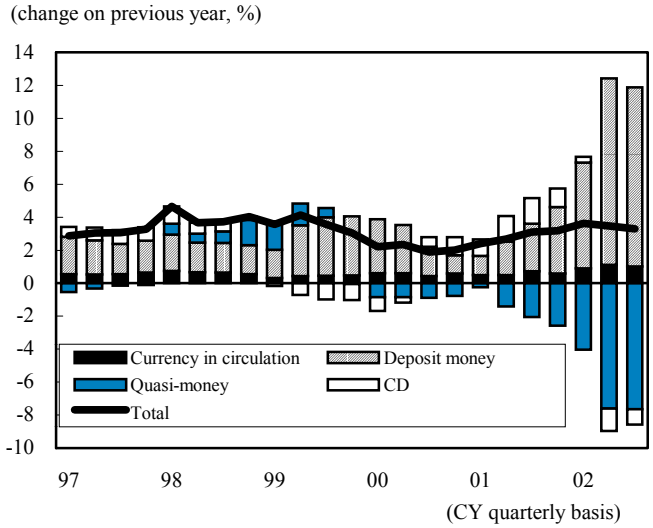
Figure 2-41. Trends in Monetary Base and Money Stock Rates



Notes : 1. Change on previous year in average balance.
2. Credit multiplier = money stock (M2+CD)/monetary base. Seasonally adjusted.

Source : Research and Statistics Bureau, Bank of Japan, "Financial and Economic Statistics Monthly."

Figure 2-42. Money Stock (M2+CD) by Category Rates

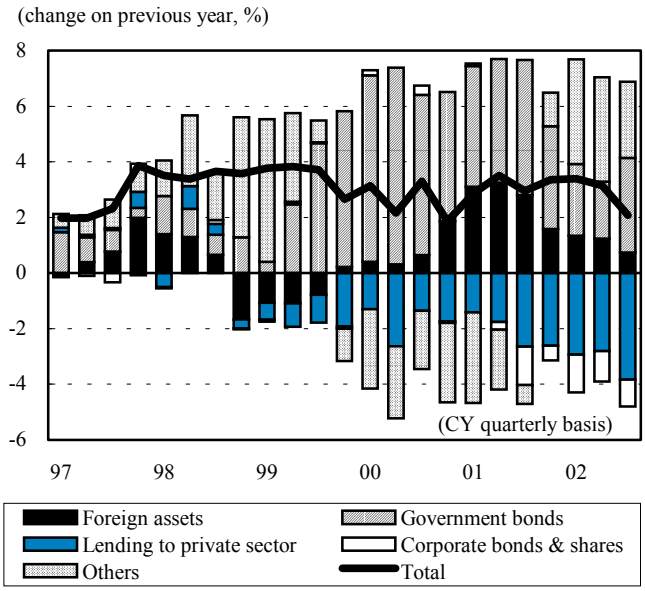


Note : Average balance for the period.

Sources : Research and Statistics Bureau, Bank of Japan, "Financial and Economic Statistics Monthly" and "Money Stock (quick estimate)."

	M1	M2
Currency in circuration:		
Bank notes not held by a bank……	○	○
Deposit money:		
Demand deposits (current deposits, ordinary deposits, etc.)…	○	○
Quasi-money:		
Time and savings deposits (term deposits, etc.)……		○

Figure 2-43. Money Stock (M2+CD) by Credit Component

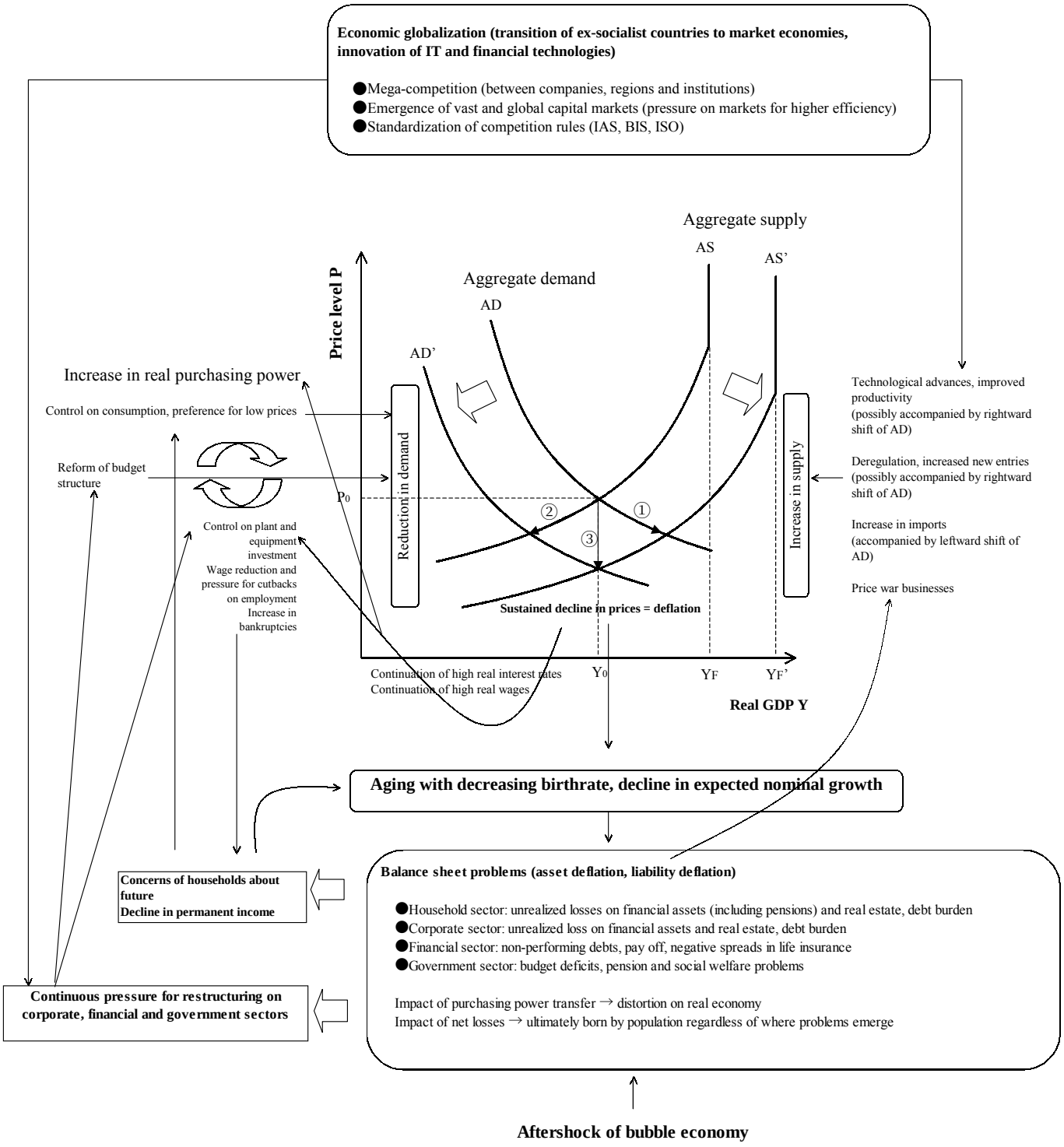


Note : Term-end balance.

Source : Research and Statistics Bureau, Bank of Japan, "Financial and Economic Statistics Monthly."

III. A Medium-term Scenario for the Sustainability of the Japanese Economy

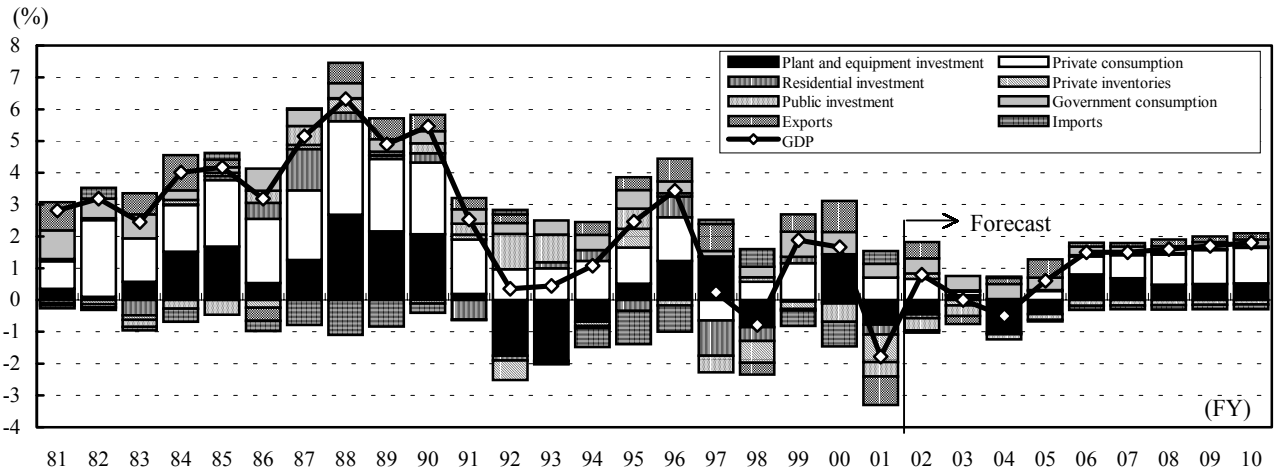
Deflation and Structural Problems in the Japanese Economy



Source: Development Bank of Japan, "Recent Trends in the Japanese Economy: The Japanese Economy under Deflation," Research Report, No. 19, August 2001, p. 22.

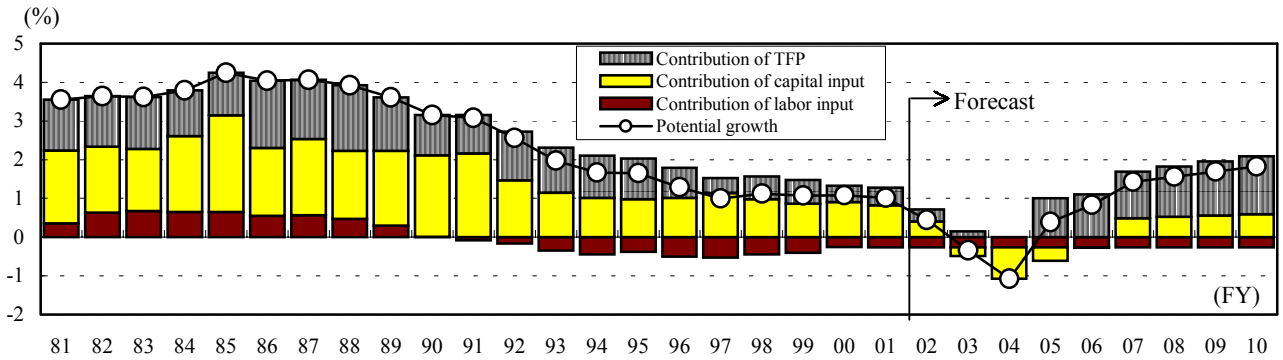
Supply-Demand Balance in the Japanese Economy after Structural Reform

Figure 3-1. Trend of Real GDP Growth by Demand Component



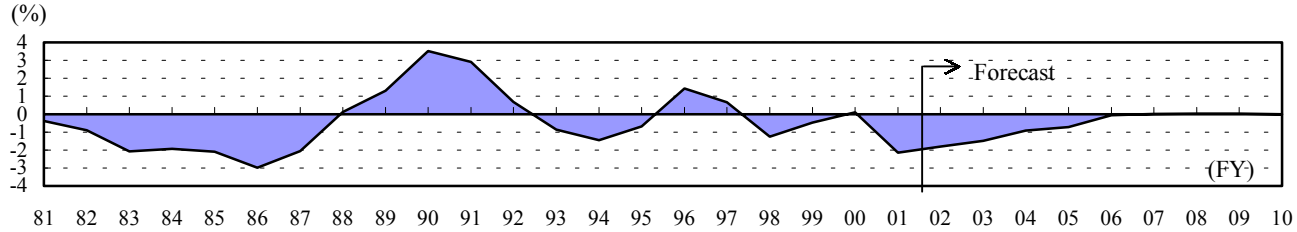
Note : DBJ estimates for fiscal 2002 and after.
Source : Cabinet Office, "National Accounts."

Figure 3-2. Trend of Potential GDP Growth by Component Based on Growth Accounting



Notes : 1. The trends in potential GDP and capital/labor inputs are identified by converting the calendar year values in OECD, "Economic Outlook 71" into fiscal year values. DBJ estimate for fiscal 2002 and after.
2. The breakdown of potential growth rate is based on growth accounting and premised on a Cobb-Douglas production function, with an equilibrium capital share of 0.33 (see Annual Report on Economy and Finance, FY2001, Note 2-4).

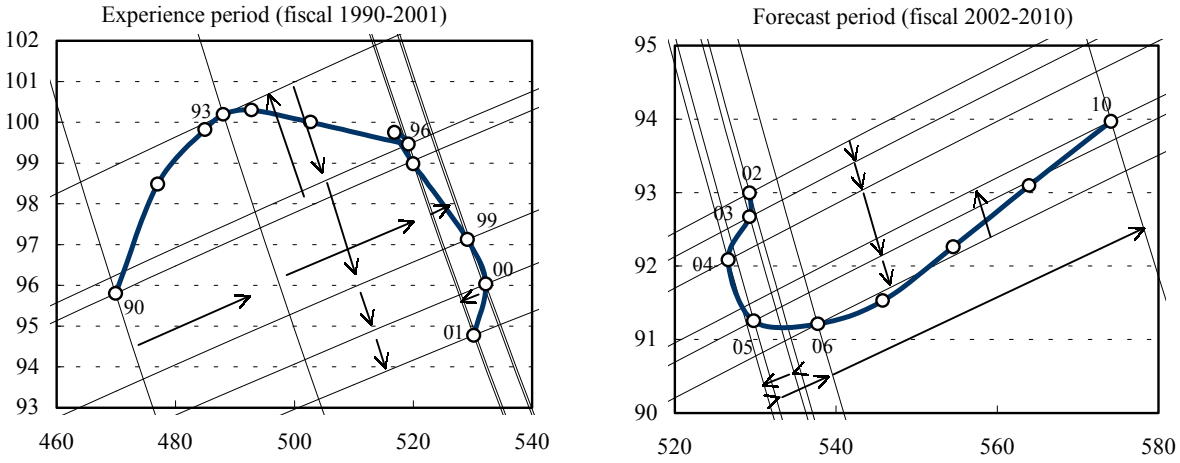
Figure 3-3. Trend of GDP Gap Ratio



Notes : 1. DBJ estimate for fiscal 2002 and after.
2. GDP gap ratio = actual GDP/potential GDP – 1 (%).
Sources : Cabinet Office, "National Accounts;" OECD, "Economic Outlook 71."

Figure 3-4. Estimation and Forecast of AD and AS Curves

(horizontal axis: real GDP (trillion yen), vertical axis: GDP deflator)



Notes: 1. The AD and AS curves are estimated from the following simultaneous equations based on the two-stage least-squares method (all variables converted into logarithmic values).

(1) Real GDP = const. + α_1GDP deflator + β_1(real consumption + real government expenditure + real exports) + γ_1 yen/dollar rate + $\delta_1$land prices + ε_1

(2) Real GDP = const. +α_2GDP deflator + $\beta_2$unit labor cost + γ_2 yen/dollar rate + $\delta_2$land prices + ε_2

The estimation period is from the second quarter of 1990 to the first quarter of 2002. Real GDP, GDP deflator and unit labor cost (=nominal employee remunerations/real GDP) are based on the seasonally adjusted time series before the change in the QE estimation method. Land prices are represented by the index of urban land prices (nation-wide, average of all uses).

2. In the experience period, the AD/AS curves for each fiscal year are obtained from the average of quarterly estimates of these curves. The loci of real GDP and GDP deflator both represent theoretical values derived from the intersections of the two curves, and are therefore different from actual values.

Sources: Cabinet Office, "National Accounts;" Japan Real Estate Institute, "Index of Urban Land Prices," etc.

Figure 3-5. Trend of Economic Growth by Component Based on Estimation of AD and AS Curves

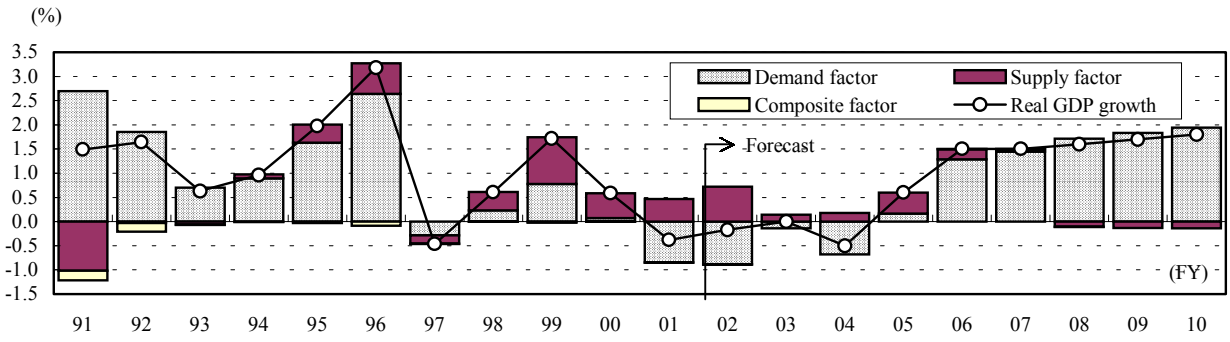
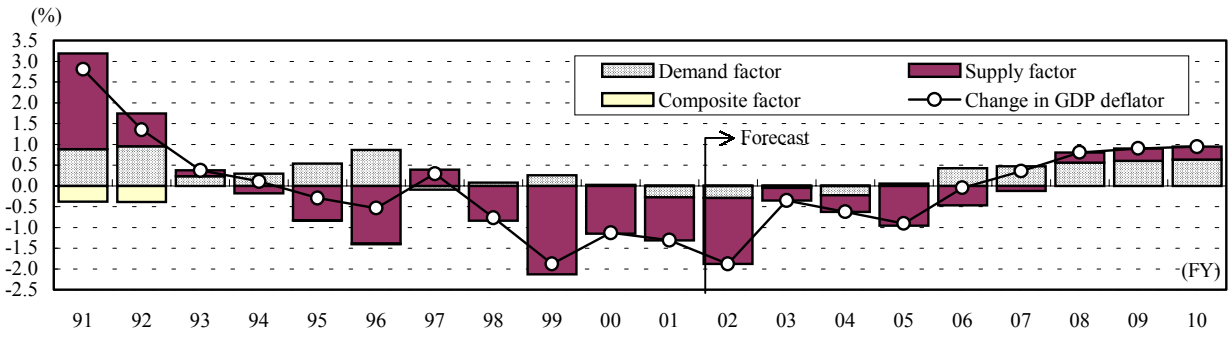


Figure 3-6. Trend of Price Fluctuation by Component Based on Estimation of AD and AS Curves



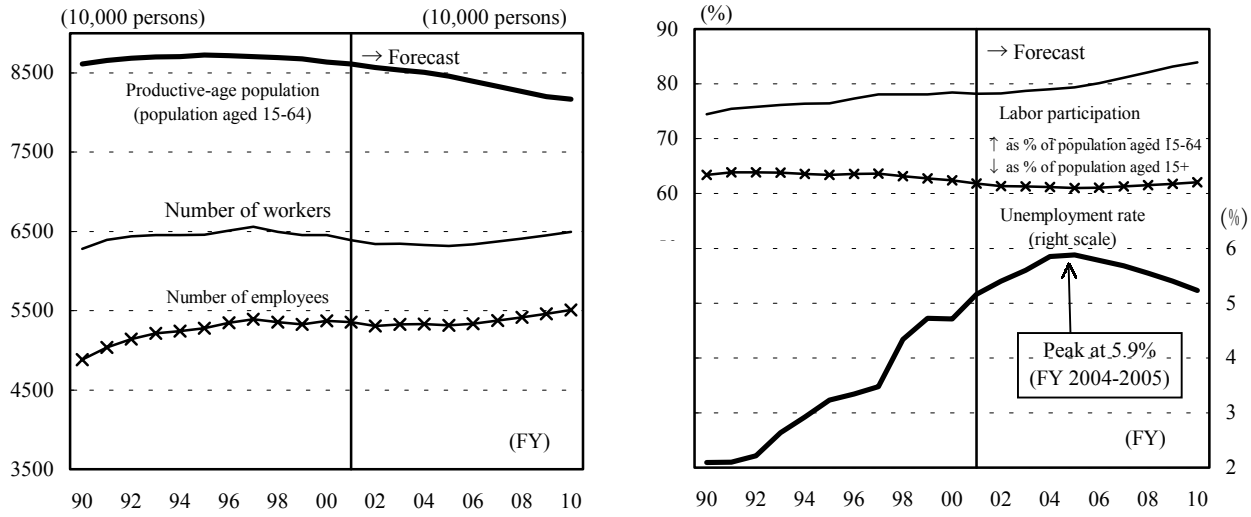
Notes: 1. Real GDP growth and change in GDP deflator are theoretical values and therefore different from actual values.

2. Demand factor indicates any change in GDP and deflator caused by a shift of the AD curve when the AS curve remains unchanged from the previous year. Supply factor means any change in GDP and deflator caused by a shift of the AS curve when the AD curve remains unchanged from the previous year.

Sources: Cabinet Office, "National Accounts;" Japan Real Estate Institute, "Index of Urban Land Prices," etc.

Number of Workers to Rise Gradually through Diversified Employment

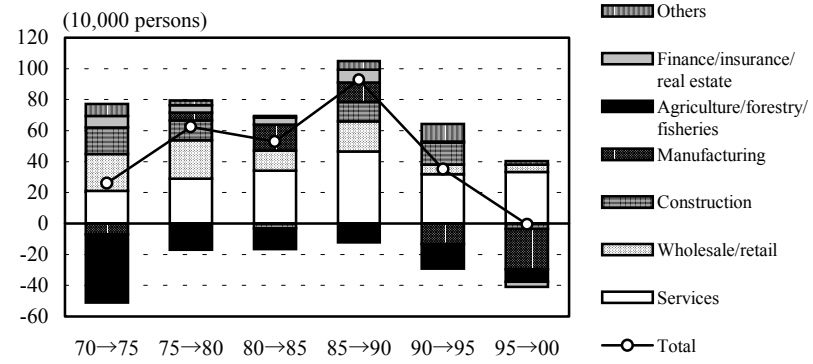
Figure 3-7. Labor Force Prospects



Note : Labor participation refers to the share of the total number of workers and the unemployed in the potential work force.

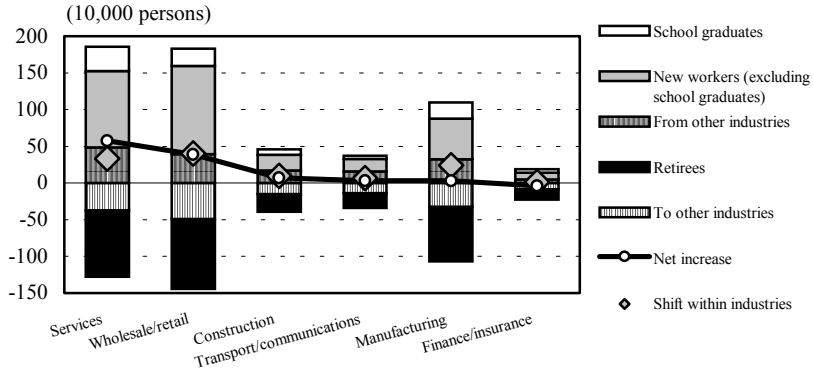
Sources : Ministry of Public Management, Home Affairs, Posts and Telecommunications, "Labour Force Survey" and "Population Census;" Social Security and Population Research Institute, "Estimation of Future Population of Japan (January 2002)," etc.

Figure 3-8. Change in Employment Structure by Industry (annual rate)



Source : Ministry of Public Management, Home Affairs, Posts and Telecommunications, "Labour Force Survey."

Figure 3-9. Current Situation of Labor Shift between Industries (annual data)



Source : Ministry of Public Management, Home Affairs, Posts and Telecommunications, "Basic Survey on Employment Structure (1997)."

Figure 3-10. Government's Job Creation Plan

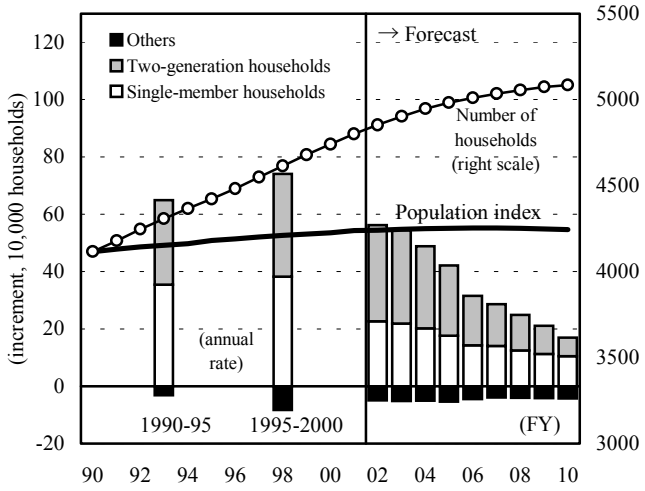
Job creation in service industry
(coming five years)

Personal and family services	195	(10,000 persons)
Adult education	20	
Corporate services	90	
Secondhand housing-related services	55	
Childcare	35	
Elderly care	50	
Medical care	55	
Legal services	20	
Environment	10	
Total	530	

Source : Expert Group on the Reactivation of the Economy Based on the Strategy of Job Increase in the Service Sector, Committee of Economic and Fiscal Policy, "Immediate Report" (May 11, 2001).

Consumption to Remain Flat, Followed by Mild Recovery

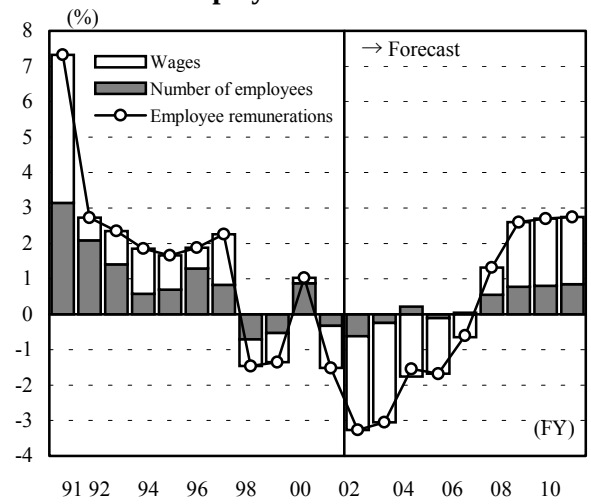
Figure 3-11. Prospects of Number of Households



Notes: 1. Population is represented by an index adjusted for the number of households, with 1990 as base year.
2. DBJ estimates for fiscal 2002 and after.

Sources: Ministry of Public Management, Home Affairs, Posts and Telecommunications, "Population Census," "Current Population Estimates" and "Basic Resident Register Population Directory;" Social Security and Population Research Institute, "Estimation of Future Population of Japan (January 2002)" and "Estimation of Future Number of Households in Japan (October 1998)."

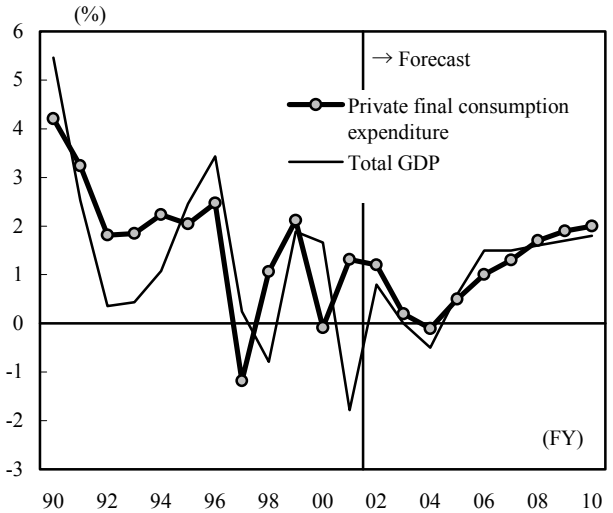
Figure 3-12. Prospects of Income and Employment Situation



Notes: 1. Wages refer to employee remunerations per perso
2. DBJ estimates for fiscal 2002 and after.

Sources: Cabinet Office, "National Accounts;" Ministry of Public Management, Home Affairs, Posts and Telecommunications, "Labor Force Survey."

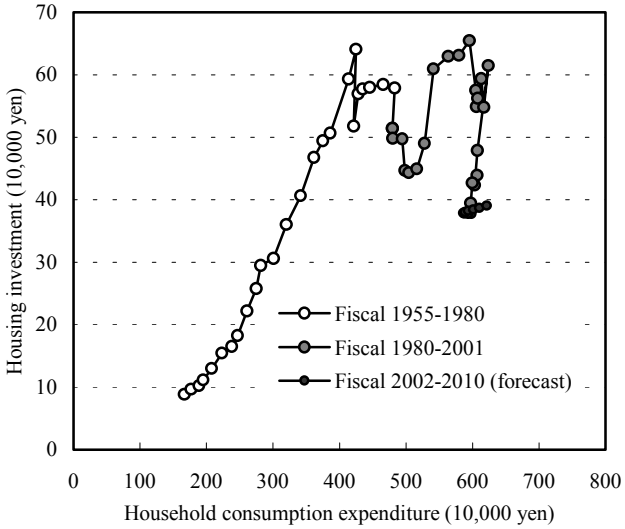
Figure 3-13. Growth of Private Consumption Expenditure



Note: DBJ estimates for fiscal 2002 and after.

Source: Cabinet Office, "National Accounts."

Figure 3-14. Consumption Expenditure and Housing Investment per Household (real terms)

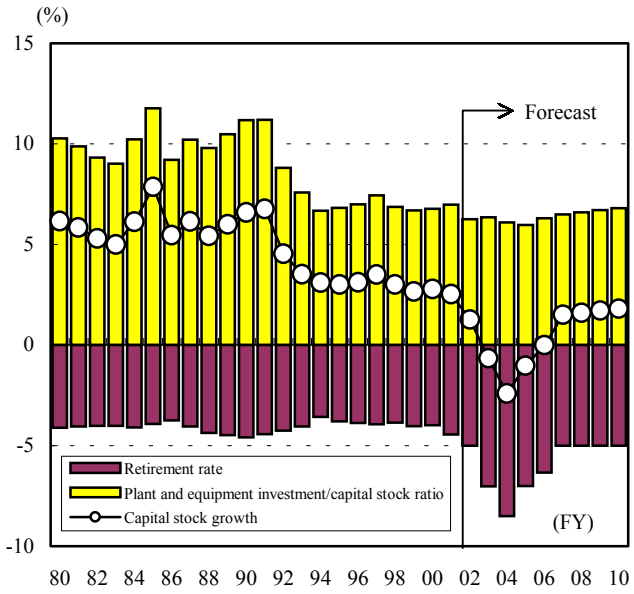


Notes: 1. Figures for fiscal 1955-1980 are based on the old standard, but are expanded for 1980 to equal the new standard value for adjustment to 1995 prices.
2. DBJ estimates for fiscal 2002 and after.

Source: Cabinet Office, "National Accounts."

Plant and Equipment Investment to Recover Gradually through Adjustments to Improve Capital Efficiency

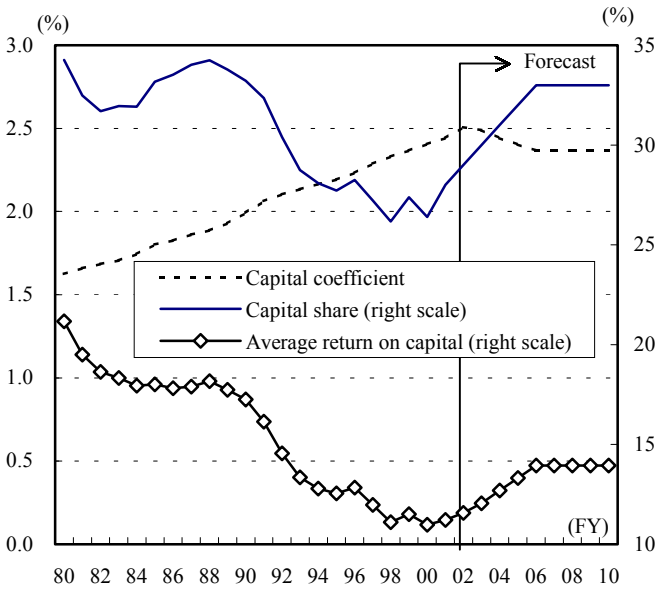
Figure 3-15. Trend of Capital Stock Growth by Component



Notes: 1. DBJ estimates for fiscal 2002 and after.
2. Capital stock represents OECD estimates including public enterprises. Retirement rate refers to estimates based on "Gross Capital Stock of Private Enterprises" and adjusted for special factors. The plant and equipment investment/capital stock ratio represents the difference between the two.

Sources: OECD, "Economic Outlook 71;" Cabinet Office, "Gross Capital Stock of Private Enterprises."

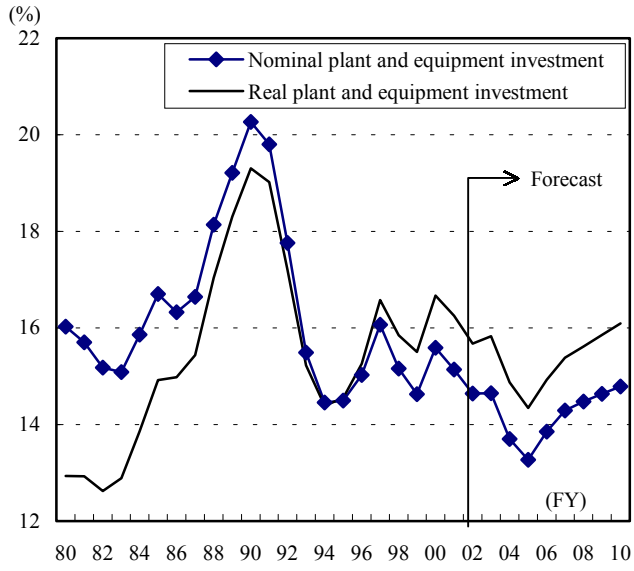
Figure 3-16. Capital Coefficient, Capital Share and Average Return on Capital



Notes: 1. DBJ estimates for fiscal 2002 and after.
2. Capital stock represents OECD estimates including public enterprises.
3. Average return on capital = capital share/capital coefficient.
Capital share = 1 – (compensation of employees/ national income expressed in factor costs).

Sources: OECD, "Economic Outlook 71;" Cabinet Office, "National Accounts."

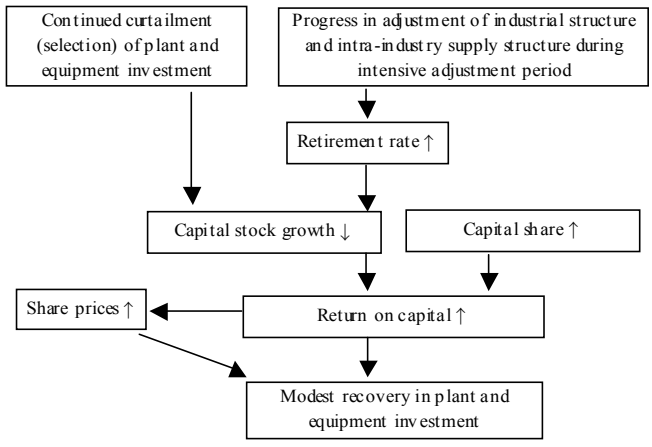
Figure 3-17. Plant and Equipment Investment as % of GDP



Note: DBJ estimates for fiscal 2002 and after.

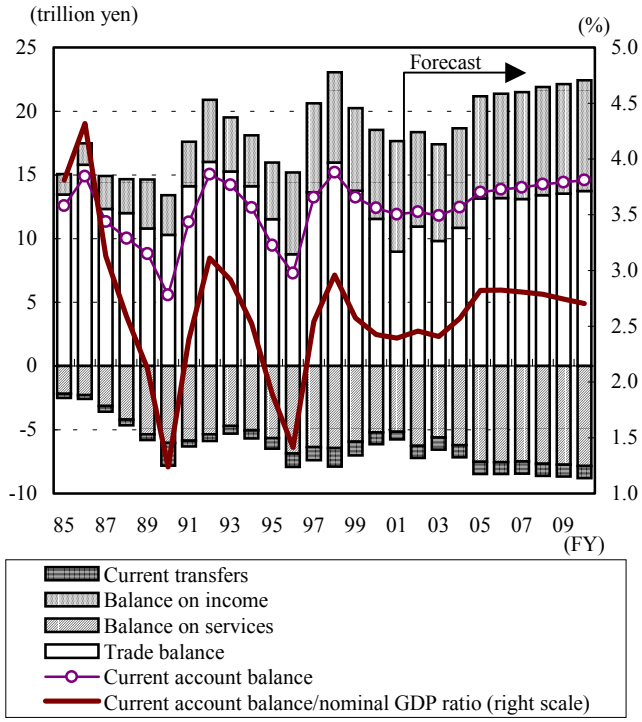
Source: Cabinet Office, "National Accounts."

Figure 3-18. Recovery Scenario for Plant and Equipment Investment



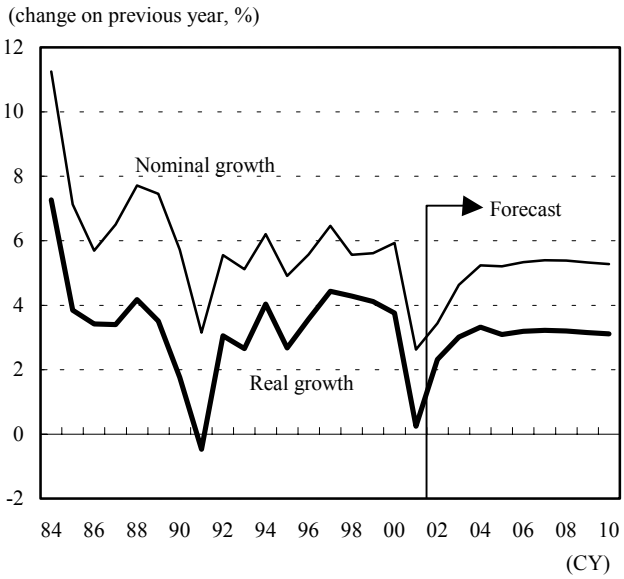
Net Exports to Increase with Higher Value-Added Export Goods and Strong Economies Overseas

Figure 3-19. Trends in Balance of Payments



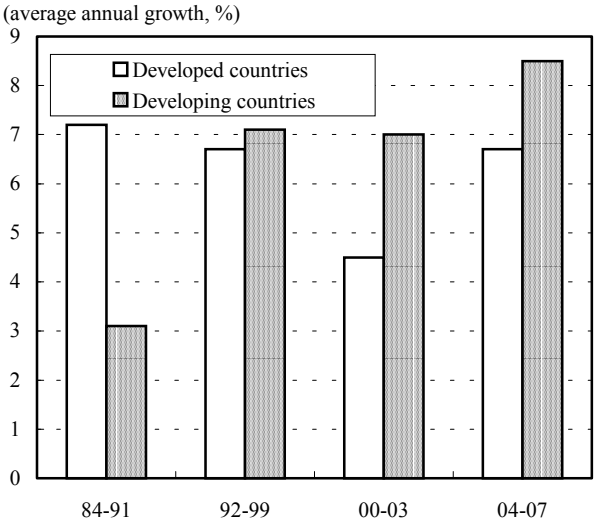
Note : DBJ estimates for fiscal 2002 and after.
Source : Bank of Japan, "Balance of International Payments Statistics."

Figure 3-20. U.S. Economic Growth, Actual and Forecast



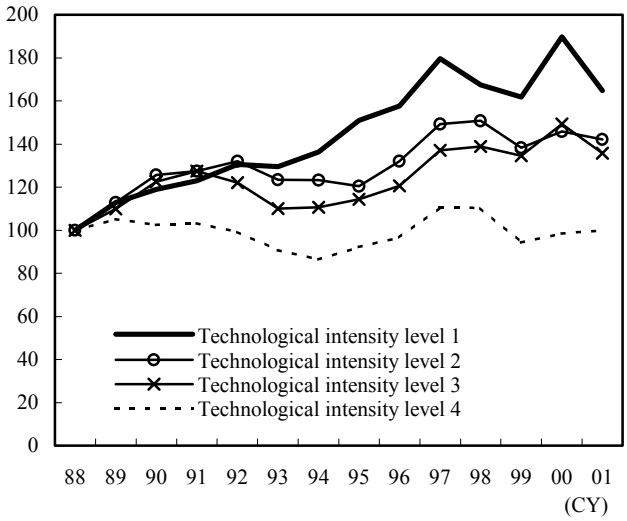
Note : DBJ estimates for fiscal 2002 and after.
Source : Congressional Budget Office, "The Budget and Econom Outlook (August 2002)."

Figure 3-21. World Imports, Actual and Forecast



Notes : 1. IMF forecasts for 2002 and after.
2. Developed countries comprise 41 countries including the U.S., the EU, Japan and the Asian NIEs.
Source : IMF, "Economic Outlook (September 2002).

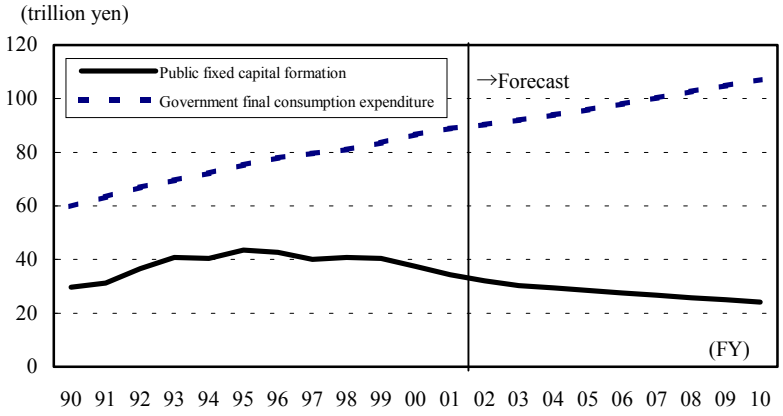
Figure 3-22. Export Growth by Level of Technological Intensity (1988=100)



Note : Technological intensity levels are classified according to the R&D/sales ratio calculated from Ministry of Public Management, Home Affairs, Posts and Telecommunications, "Survey Report on Technological Research" (with level 1 being the highest).
Level 1: electronic/communication machinery and scientific/optical equipment
Level 2: chemicals, electric machinery, precision machinery and rubber products
Level 3: general machinery, transport equipment, plastic products
Level 4: textiles, ceramics/cement/glass, iron/steel and non-ferrous metals
Source : Ministry of Finance, "Trade Statistics."

Primary Balance of Public Finance to Improve Slowly

Figure 3-23. Public Fixed Asset Formation and Government Final Consumption Expenditure



Sources : Cabinet Office, "Annual Report on National Accounts," etc.

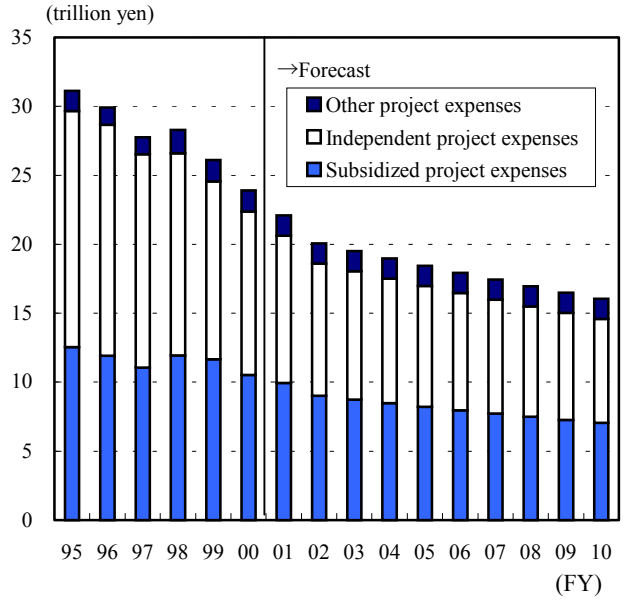
(Major premises for fiscal 2003 and after)

- Investment expenses: –3%/year
- Social security cost:
  - 1/3 of basic pension payments covered by central government
  - Cutback of 300 billion yen/year through health insurance reform
- Labor cost: personnel cutback of 0.5%/year
- Others:
  - Cost of supplies reduced 1%/year
  - Other expenses to rise in line with price inflation

Note : Based on the same premises as in Cabinet Office, "Structural Reform and Medium-Term Economic and Fisal Perspectives: Background Paper (January 2002)."

Figure 3-24. Public Investment by Local Governments

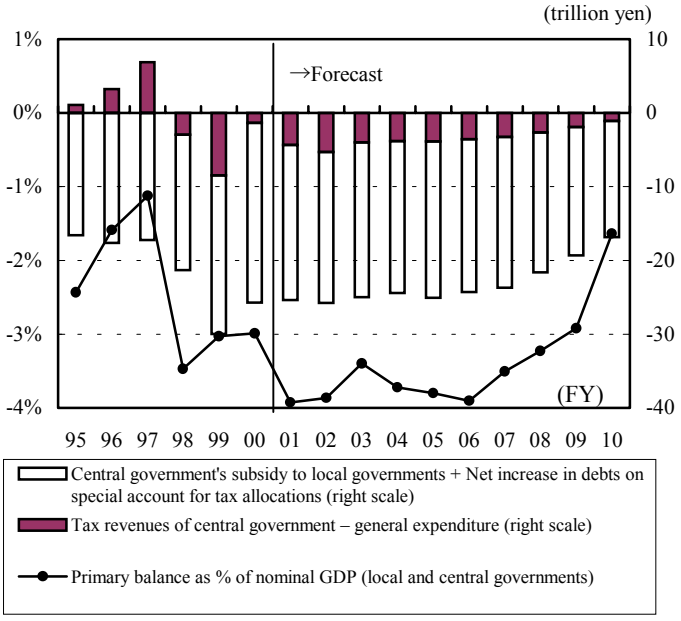
(trend of ordinary construction works expenditure, included in investment expenses)



Notes : 1. Closing values until fiscal 2000 and forecasts of closing values for fiscal 2001 and after.
2. In addition to ordinary construction works, investment expenses include disaster restoration and other projects, which amount to several hundred billion yen per annum.

Sources : Ministry of Public Management, Home Affairs, Posts and Telecommunications, "Annual Report on Statistics of Public Finance," etc.

Figure 3-25. Condition of Government Finance

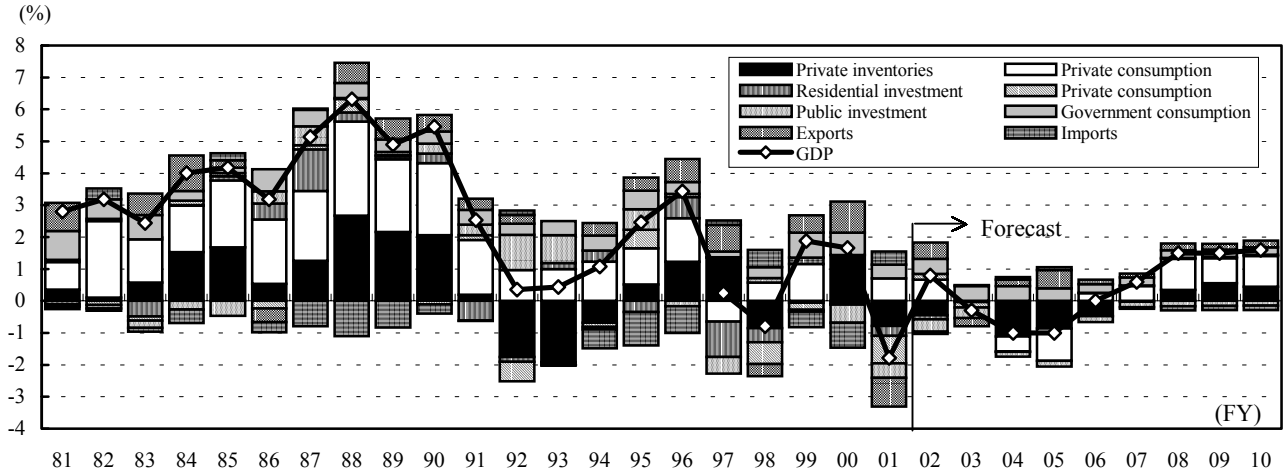


Notes : 1. Primary balance is calculated on an ordinary account basis for local governments and on a general account basis for the central government (different from the general government basis). Interest on postal savings is accounted for in the year of payment, and does not include expenses such as contribution to the Deposit Insurance Corporation.
2. The calculation of tax revenues is based on Cabinet Office, "Structural Reform and Medium-Term Economic and Fisal Perspectives," with an elasticity of 1.1 to nominal economic growth. It is assumed however that the effect of tax reform on R&D will become permanent with a preliminary tax reduction of 1.5 trillion yen expected for fiscal 2003.

Sources : Cabinet Office, "Annual Report on National Accounts;" Ministry of Finance, "Outline of Closing Account (various fiscal years)" and "Budget Explanation (various fiscal years);" Ministry of Public Management, Home Affairs, Posts and Telecommunications, "Annual Report on Statistics of Public Finance," etc.

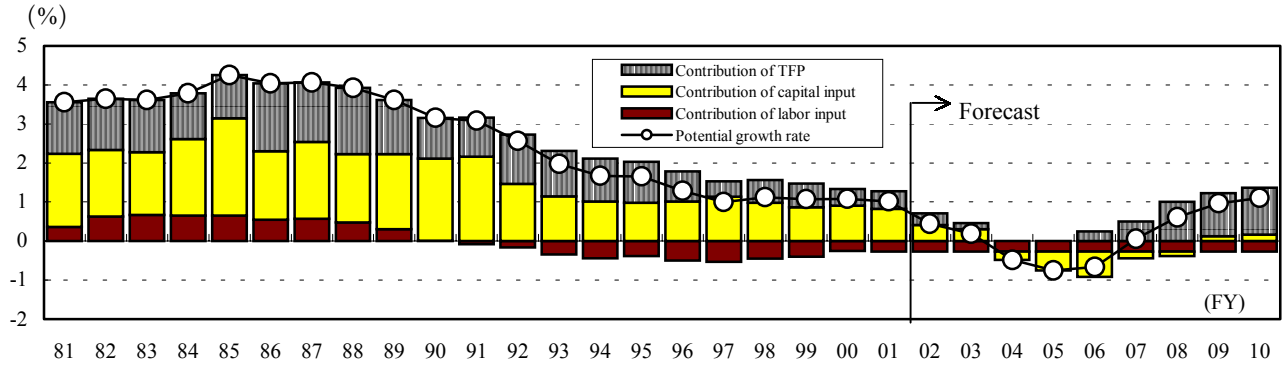
(Appendix 1) Assumption of Longer Adjustment Period

Figure 3-26. Trend of GDP Growth by Demand Component



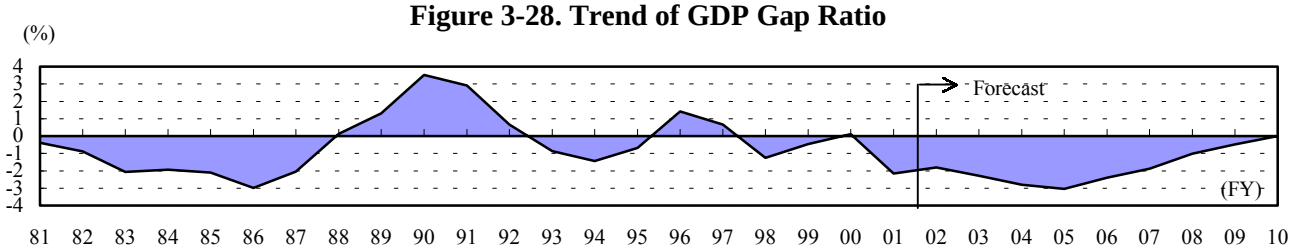
Note : DBJ estimates for fiscal 2002 and after.
Source : Cabinet Office, "National Accounts."

Figure 3-27. Trend of Potential Growth Rate by Component Based on Growth Accounting



Notes : 1. Trends in potential GDP and capital/labor inputs represent calendar year estimates of OECD, "Economic Outlook 71" conver fiscal year values by DBJ. DBJ estimates for fiscal 2002 and after.
2. Breakdown into components based on growth accounting uses a Cobb-Douglas production function with an equilibrium capit of 0.33 (Annual Report on Economy and Finance, FY2001).

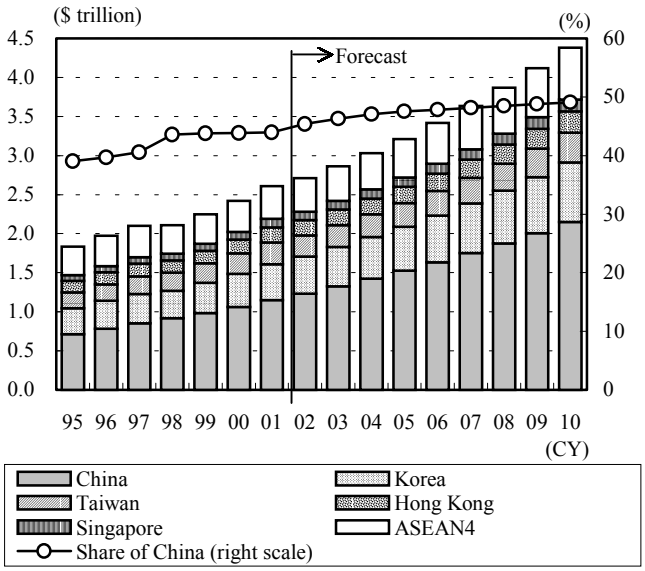
Figure 3-28. Trend of GDP Gap Ratio



Notes : 1. DBJ estimates for fiscal 2002 and after.
2. GDP gap ratio = actual GDP/potential GDP – 1 (%).
Sources : Cabinet Office, "National Accounts;" OECD, "Economic Outlook 71."

(Appendix 2) Economic Outlook and R&D Policies in Asia

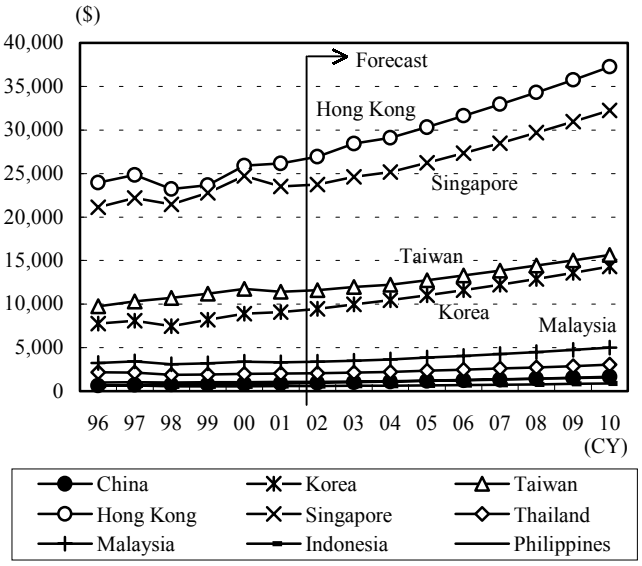
Figure 3-29. Real GDP



Notes : 1. ASEAN4 comprises Malaysia, Thailand, Indonesia and the Philippines.
2. Forecast growth rates are 5.0% for Hong Kong, Taiwan and Singapore, 7.1% for China, and 6.2% for others.
3. The share of China refers to the share in the total of China, NIEs and ASEAN4.

Sources : World Bank, "Global Economic Prospects," etc.

Figure 3-30. Per Capita Real GDP



Note : Forecast per capita growth rates are 4.2% for Hong Kong, Taiwan and Singapore, 7.0% for China, and 5.4% for other

Sources : World Bank, "Global Economic Prospects," etc.

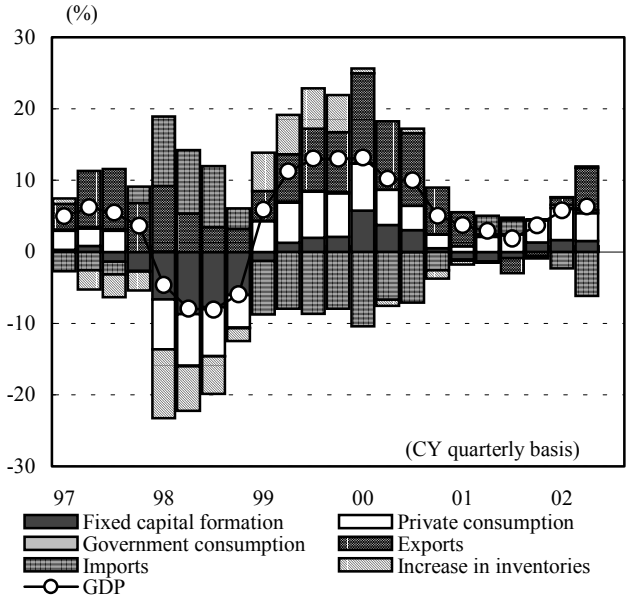
Table 3-1. R&D Policies in China and NIEs

	China	Korea	Taiwan	Singapore
Laws/ programs	10th 5-Year Plan (2001-05), comprising five sub-programs.	1997: 5-Year Program. 1999: Basic Law on Science and Technology enacted under the Long-term Vision for Science and Technology to 2025.	May 2002: Challenge 2008	1999: Industry 21 Program, aimed at developing the country into a hub for knowledge-intensive industries, with designated focus areas. 2000: Science and Technology Program, the third 5-year program, with a budget allocation of S$7 billion.
Contents	Promotion of privatization. Establishment of high-tech industry development zones. Encouragement for foreign capital to establish R&D centers. Objective: R&D accounting for 1.5% of GDP.	5-Year Program is centered on targets concerning R&D expenditures in government sector. Basic Law on Science and Technology seeks transfer of leadership from government to private sector, with designated focus areas.	Creation of international R&D bases. · Low-interest loans for R&D (50 billion yuan) · Establishment of R&D centers on advanced technology · Invitation of international R&D human resources Objective: R&D accounting for 3% of GDP.	Concentration on niche areas. Encouragement of private R&D. Technology transfer and management of intellectual property rights. Recruitment of human resources from the world. Networking.
Focus areas	Chip circuits and software information security. Biogenetics and biochips. New drug development and modernization of herbal medicines. On-line government and finance. Electric motorcars.	Information technology. Biotechnology.	IC systems. Information technology. Biotechnology. Nano-technology. Digital contents.	Electronics. Communications & media. Bio-medical. Energy. Chemicals. Education. Health care. Logistics.
Character-istics	Weak private R&D and small R&D amount are issues to be addressed. Encouragement of foreign capital introduction.		Invitation of R&D human resources from overseas. Its status as an R&D center is threatened as production facilities are transferred to China.	Aims at the introduction of foreign capital in the short term, and the development of domestic human resources and research capacities in the long term.

Sources : Various data.

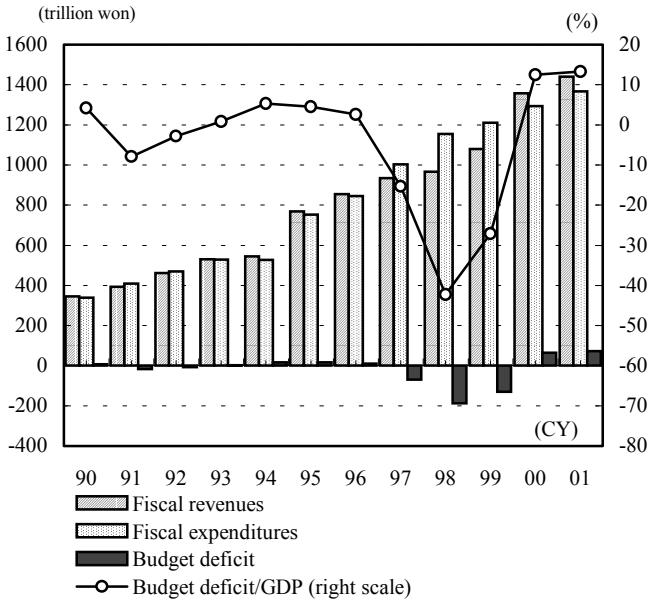
(Appendix 3) Recovery from Economic Crisis in Korea: Structural Reform and Increased Exports

Figure 3-31. Trend of GDP



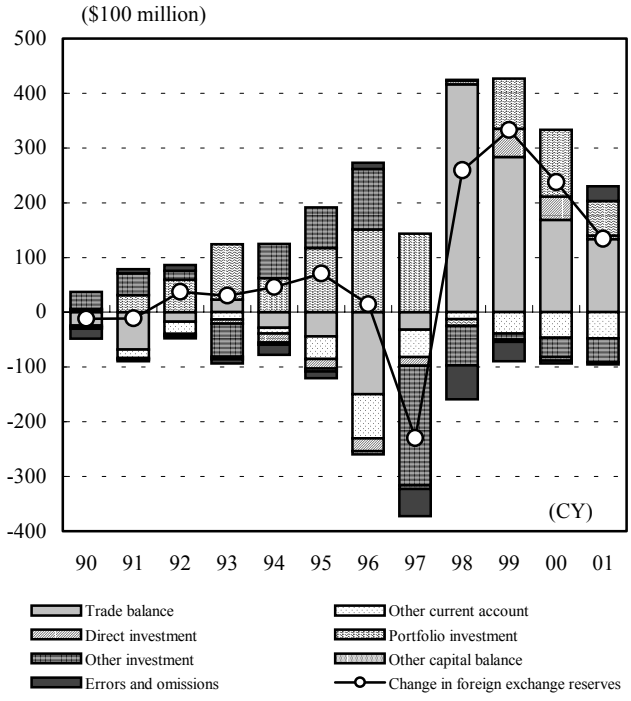
Note : Year-on-year growth.
Source : Bank of Korea data.

Figure 3-32. Budgetary Balance and Budget Deficit as % of GDP



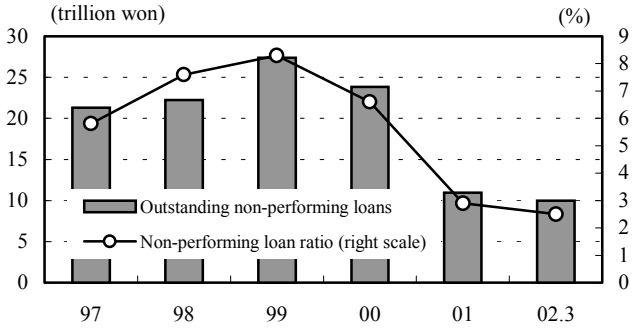
Source : Monthly Statistics of Korea.

Figure 3-33. Balance of Payments by Component



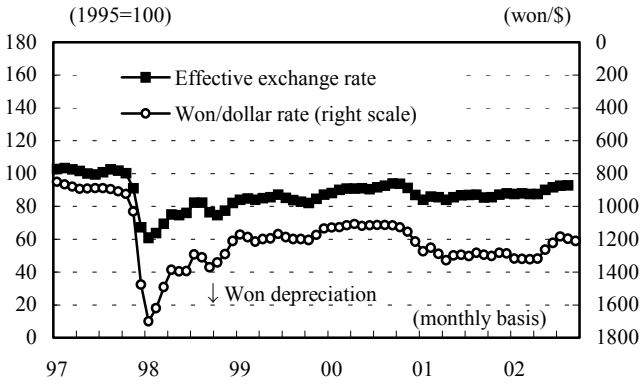
Source : IMF, "International Financial Statistics."

Figure 3-34. Non-performing Loans



Source : Financial Supervisory Agency of Korea.

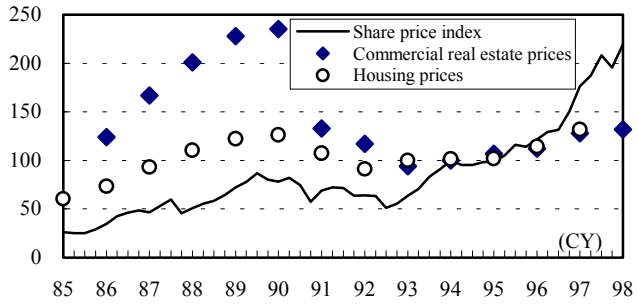
Figure 3-35. Foreign Exchange Rate



Source : OECD statistics.

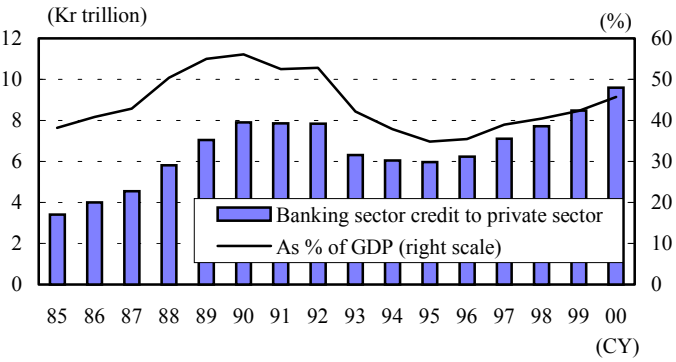
(Appendix 4) Prompt Response to Bursting of Bubble in Sweden

Figure 3-36. Trend of Asset Prices (1994=100)



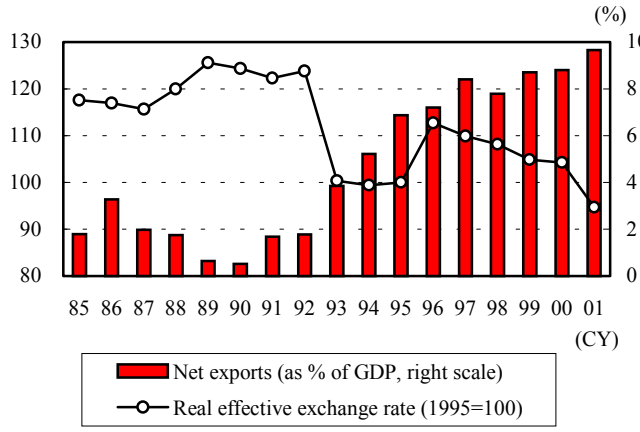
Note: Real estate prices are all measured in Stockholm.
Sources: IMF, "International Financial Statistics" (for share prices); BIS, "Annual Report" (for commercial real estate prices); Central Statistical Office of Sweden data (for housing prices).

Figure 3-37. Balance of Banking Sector Credit to Private Sector



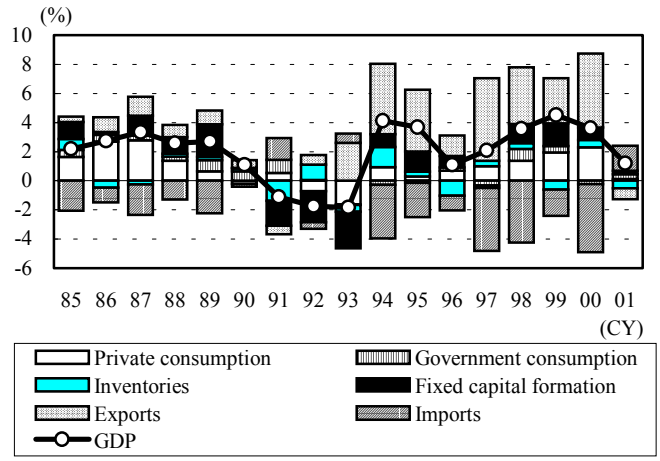
Source: IMF, "International Financial Statistics."

Figure 3-38. Foreign Exchange Rate and Net Exports



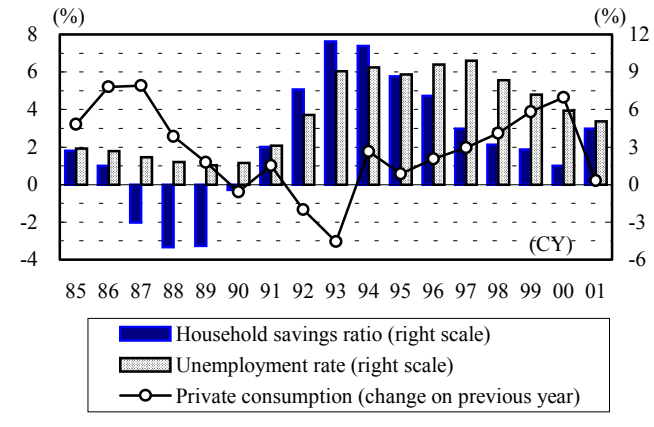
Sources: Central Statistical Office of Sweden data (for net exports); IMF, "International Financial Statistics" (for real effective exchange rate).

Figure 3-39. Trend of Real Domestic Production (year-on-year change by component)



Source: Central Statistical Office of Sweden data.

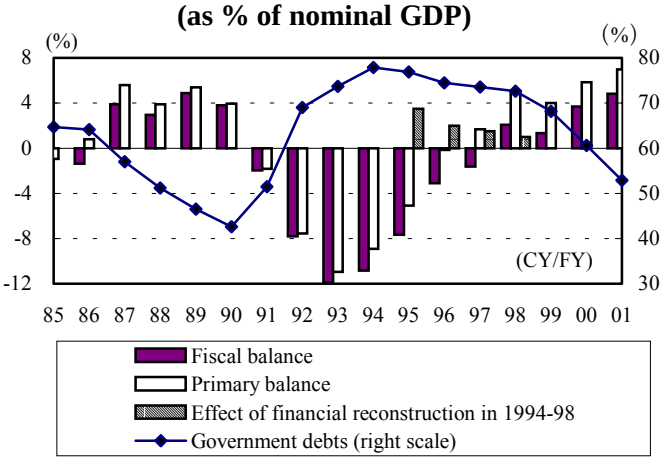
Figure 3-40. Consumption and Unemployment



Notes: 1. Unemployment rate is based on the OECD standard.
2. Private consumption is on an SNA basis in real terms.
3. Household savings ratio is measured against disposable income on a net basis (excluding fixed capital consumption by households and proprietorships).

Source: OECD, "Economic Outlook 71."

Figure 3-41. Fiscal Condition (as % of nominal GDP)



Note: General government basis.
Source: OECD, "Economic Outlook 71."

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