



Inflation, Exchange Rates, and Oil Prices

Crude oil is priced and traded in U.S. dollars. However, most producers and users of refined oil products around the world earn and spend other currencies. Furthermore, inflation occurs at different rates in different countries. The theory of purchasing-power parity (PPP) suggests that changes in exchange rates should offset inflation differentials, at least in the long run, keeping the "real" price of a common basket of goods and services roughly comparable across countries. Can we use PPP to explain movements in the inflation-adjusted, local-currency prices of crude oil?

The figure below compares inflation-adjusted, local-currency oil prices in the United States, Japan, and Germany during the last four decades. Expressed in terms of 1995 consumer prices, a barrel of oil cost \$15.39, ¥5862, or DM39.79 in the first quarter of 1960. A barrel of oil cost \$27.87, ¥3350, or DM63.80 in the third quarter of 2000, also expressed in 1995 prices. For convenience, the figure shows indexes of inflation-adjusted, local-currency oil prices that have been rebased to equal 100 for each country in the first quarter of 1960.

Inflation-adjusted, local-currency oil prices (excluding taxes) are much lower now in Japan than 40 years ago, even after the sharp recent increase. Of the three major subperiods evident in the chart—the "pre-oil shocks period" of 1960-1972, the "oil shocks period" of 1973-1985 and the "post-oil shocks period" of 1986-2000—only during 1986-2000 were average real oil prices lower in yen terms than they were in the third quarter of 2000. On the other hand, inflation-adjusted oil prices in dollars and marks (or euros) are relatively high now compared to previous periods. Only during 1973-1985 were real oil prices higher in the United States and Germany than they were in the third quarter of 2000.

Clearly, forecasts of oil prices based on PPP using consumer-price indexes and current exchange rates would not have been very accurate in recent decades. First, the dollar price of oil changed erratically during the last 40 years compared to the prices of broad consumer baskets of goods and services. This is indicated by abrupt upward and downward movements in the index levels in all three countries. Second, real exchange rates between the dollar, yen and mark (euro) have also varied substantially. This is demonstrated by the divergent time paths of real oil prices facing consumers in the three countries investigated here.

The chart demonstrates that the recent inflation-adjusted, local-currency oil-price shock has been greatest in percentage terms in Germany among the three countries considered here. The real mark (or euro) price of crude oil increased by 211 percent from the fourth quarter of 1998 through the third quarter of 2000, compared to 133 and 125 percent increases in real dollar and real yen terms, respectively. The much greater price impact evident in Germany reflects the fact that the mark (euro) has depreciated significantly against the dollar and yen during the last two years.

—William R. Emmons

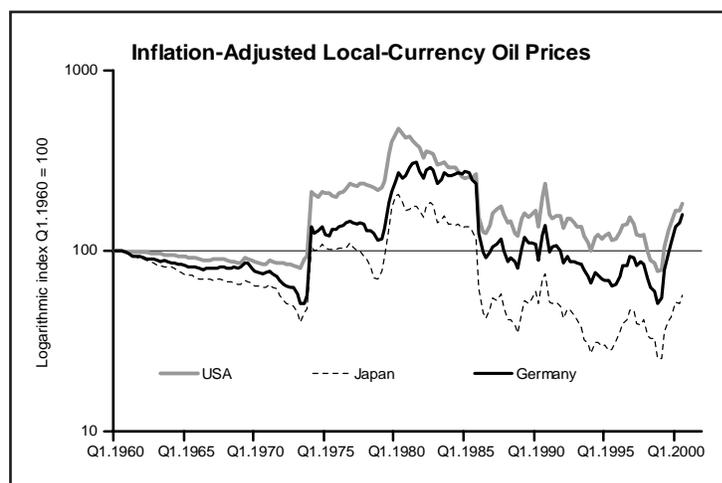


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Conventions used in this publication:

1. Charts and tables contain data that were current through October 2000. Unless otherwise indicated, data are quarterly.
2. The *percent change* refers to the percent change from the same period in the previous year. For example, the percent change in x between month $t-12$ and the current month t is: $[(x_t / x_{t-12}) - 1] \times 100$.
3. All data with significant seasonal patterns are seasonally adjusted.

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Real Gross Domestic Product

Percent change

	97.4	98.1	98.2	98.3	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3
Canada	4.78	4.26	3.27	2.55	3.19	3.74	4.30	5.19	4.92	4.94	5.32	.
Euro Area	2.98	3.69	2.79	2.55	1.96	1.86	2.11	2.55	3.24	3.40	3.72	.
France	2.85	3.30	3.47	3.25	2.90	2.55	2.61	3.04	3.44	3.55	3.37	.
Germany	1.62	3.03	1.74	1.62	0.94	0.64	1.00	1.60	2.44	2.32	3.59	.
Italy	3.04	2.84	1.48	1.42	0.43	1.08	1.11	1.32	2.18	2.98	2.61	.
Japan	-0.49	-2.87	-1.07	-3.18	-3.06	-0.41	0.74	0.96	-0.19	0.73	0.81	.
United Kingdom	3.51	3.18	2.98	2.40	2.02	1.66	1.77	2.32	2.87	3.03	3.18	.
United States	4.31	4.85	4.10	3.91	4.61	3.87	3.75	4.31	4.96	5.29	6.10	5.35

Nominal Gross Domestic Product

Percent change

	97.4	98.1	98.2	98.3	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3
Canada	4.76	3.91	3.12	1.68	2.22	3.56	5.35	7.79	8.15	8.38	8.63	.
Euro Area	3.00	4.13	3.81	4.22	3.86	4.26	4.16	4.27	4.35	4.46	4.51	.
France	4.23	4.37	4.39	4.01	3.31	2.91	2.89	3.31	3.75	4.25	4.01	.
Germany	2.39	3.84	3.04	2.96	2.11	2.02	1.99	2.41	2.84	2.28	3.09	.
Italy	5.65	6.01	4.28	3.87	2.84	2.88	2.53	2.68	3.59	4.52	4.51	.
Japan	0.50	-1.77	-1.04	-3.17	-2.90	-1.04	0.05	0.20	-1.60	-1.04	-1.02	.
United Kingdom	7.05	6.03	6.29	5.87	4.81	4.09	4.40	4.95	5.29	5.75	5.03	.
United States	6.23	6.28	5.34	5.22	5.85	5.44	5.38	5.80	6.52	7.12	8.21	7.73

Consumer Price Index

Percent change

	97.4	98.1	98.2	98.3	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3
Canada	1.02	1.06	0.98	0.85	1.08	0.82	1.59	2.17	2.36	2.66	2.45	.
Euro Area	1.49	1.11	1.37	1.07	0.78	0.90	0.97	1.16	1.55	2.05	2.02	.
France	1.17	0.86	1.06	0.72	0.37	0.28	0.35	0.53	1.00	1.51	1.49	.
Germany	2.03	1.24	1.40	0.66	0.43	0.28	0.48	0.63	0.95	1.80	1.62	.
Italy	1.96	2.02	2.05	2.05	1.73	1.40	1.45	1.72	2.05	2.36	2.50	.
Japan	2.12	1.97	0.34	-0.19	0.51	-0.10	-0.25	0.01	-0.99	-0.66	-0.70	.
United Kingdom	3.62	3.42	4.02	3.32	2.92	2.22	1.41	1.17	1.45	2.31	3.13	.
United States	1.89	1.50	1.62	1.62	1.55	1.73	2.09	2.26	2.56	3.21	3.31	3.47

Employment Growth

Percent change

	97.4	98.1	98.2	98.3	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3
Canada	3.27	2.78	2.71	2.42	2.68	2.92	2.84	2.66	2.73	2.99	2.78	2.39
Euro Area	0.98	1.43	1.63	1.83	1.95	1.82	1.60	1.66	1.79	1.81	1.98	.
France	1.53	1.68	2.07	2.19	1.99	2.37	2.28	2.44	2.85	3.11	3.17	.
Germany	0.11	0.36	0.91	1.09	1.37	1.37	0.83	1.06	1.07	1.37	1.98	.
Italy	0.54	0.92	0.69	1.33	1.44	1.18	0.90	0.94	0.83	1.15	1.40	.
Japan	0.71	0.05	-0.74	-0.94	-0.95	-1.23	-1.09	-0.66	-0.22	-0.46	-0.38	.
United Kingdom	3.00	3.09	2.12	2.55	1.74	1.02	1.17	1.06	1.31	1.16	1.13	.
United States	2.06	1.80	1.49	1.23	1.35	1.69	1.49	1.52	1.47	1.63	1.49	1.06

Unemployment Rate

Percent

	97.3	97.4	98.1	98.2	98.3	98.4	99.1	99.2	99.3	99.4	00.1	00.2
Canada	8.87	8.76	8.61	8.30	8.20	8.05	7.91	7.83	7.56	6.95	6.80	6.66
Euro Area	11.60	11.50	11.20	11.00	10.80	10.60	10.20	10.00	9.90	9.60	9.40	9.10
France	12.36	12.20	11.94	11.81	11.80	11.79	11.67	11.48	11.19	10.75	10.32	9.79
Germany	10.00	10.05	9.86	9.58	9.21	8.97	8.85	8.74	8.76	8.69	8.47	8.39
Italy	11.69	11.76	11.78	11.91	11.92	11.78	11.60	11.41	11.25	11.13	10.98	10.61
Japan	3.40	3.51	3.69	4.08	4.24	4.41	4.64	4.73	4.72	4.62	4.82	4.70
United Kingdom	6.92	6.59	6.41	6.33	6.32	6.27	6.26	6.08	5.95	5.95	5.82	5.54
United States	4.84	4.67	4.67	4.42	4.51	4.42	4.30	4.26	4.21	4.09	4.07	4.00

Reserve Money Growth

Percent change

	97.4	98.1	98.2	98.3	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3
Canada	3.57	2.40	3.99	4.47	6.86	9.55	8.07	8.68	25.24	7.08	4.84	.
Euro Area	.	.	.	.	.	.	.	.	.	.	.	.
Japan	10.47	8.83	9.24	9.01	4.09	6.14	6.35	7.27	14.94	10.88	6.31	3.92
United Kingdom	6.54	6.82	5.93	5.88	5.03	5.26	6.68	7.47	9.33	9.85	.	.
United States	5.88	6.02	5.93	6.36	6.90	7.65	8.75	9.09	12.87	10.57	7.35	5.54

Narrow Money Growth

Percent change

	97.4	98.1	98.2	98.3	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3
Canada	12.12	11.34	12.27	12.22	9.06	5.33	1.35	1.73	5.19	12.56	18.15	.
Euro Area	7.48	9.50	10.21	9.03	10.66	12.13	11.81	12.87	10.92	10.55	7.22	.
Japan	9.38	8.80	7.74	8.21	6.73	8.47	11.83	12.94	11.78	10.37	8.66	.
United Kingdom	7.38	6.48	5.41	5.88	5.86	6.04	6.81	7.02	7.82	7.28	.	.
United States	8.26	9.37	11.07	11.85	14.17	14.44	13.48	12.12	9.28	8.13	7.36	7.45

Broad Money Growth

Percent change

	97.4	98.1	98.2	98.3	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3
Canada	-1.41	-1.23	-0.97	0.46	1.16	1.76	2.39	2.87	4.06	5.26	6.49	.
Euro Area	4.54	4.91	4.99	4.71	4.70	5.62	5.74	6.64	7.45	7.65	7.13	.
Japan	3.78	4.61	3.95	4.39	4.33	4.12	4.32	3.29	2.63	1.88	1.87	.
United Kingdom	5.63	4.35	3.88	8.99	8.33	6.47	5.45	3.05	3.82	5.24	6.72	.
United States	5.66	6.44	7.16	7.33	8.50	8.44	8.04	7.61	6.18	5.81	5.86	5.64

Short-Term Interest Rates

Percent

	97.4	98.1	98.2	98.3	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3
Canada	4.11	4.81	4.96	5.25	5.13	5.00	4.70	4.82	5.04	5.28	5.76	5.86
Euro Area	4.30	4.12	3.80	3.88	3.52	3.09	2.64	2.70	3.43	3.54	4.26	4.74
Japan	0.66	0.95	0.62	0.67	0.62	0.49	0.11	0.09	0.29	0.11	0.08	0.27
United Kingdom	7.47	7.47	7.49	7.58	6.79	5.50	5.20	5.19	5.89	6.12	6.19	.
United States	5.73	5.55	5.59	5.53	5.20	4.90	4.98	5.38	6.06	6.03	6.57	6.63

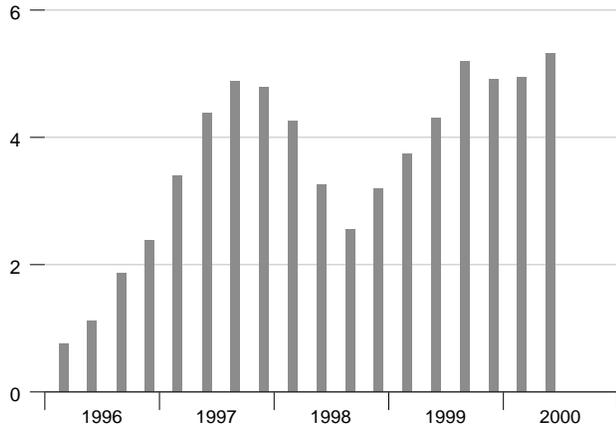
Long-Term Interest Rates

Percent

	97.4	98.1	98.2	98.3	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3
Canada	5.85	5.61	5.49	5.50	5.21	5.24	5.49	5.78	6.21	6.20	5.96	5.81
Euro Area	5.60	5.12	4.99	4.56	4.15	3.99	4.26	5.05	5.32	5.62	5.43	.
France	5.64	5.14	5.04	4.64	4.45	4.31	4.55	5.20	5.71	5.93	5.90	.
Germany	5.50	5.00	4.90	4.40	4.03	3.87	4.10	4.87	5.17	5.43	5.27	.
Italy	6.02	5.34	5.14	4.76	4.32	4.09	4.36	5.14	5.42	5.72	5.58	5.60
Japan	1.68	1.65	1.36	1.13	1.02	1.83	1.39	1.79	1.78	1.79	1.71	1.79
United Kingdom	6.49	6.02	5.78	5.47	4.80	4.47	4.89	5.45	5.50	5.60	5.30	.
United States	6.20	5.94	5.92	5.58	5.32	5.60	6.04	6.34	6.55	6.54	6.29	6.06

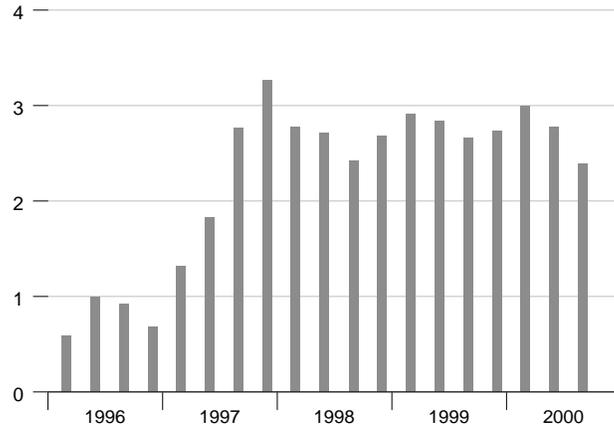
Real GDP Growth

Percent change
6



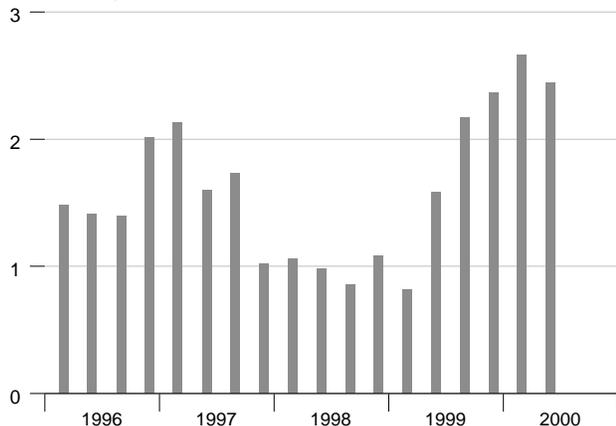
Employment Growth

Percent change
4



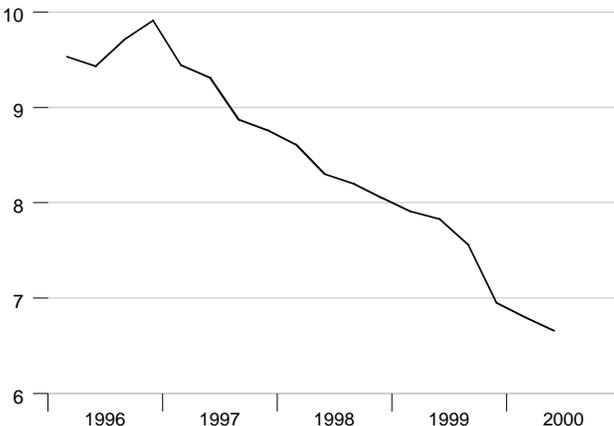
Consumer Price Index

Percent change
3



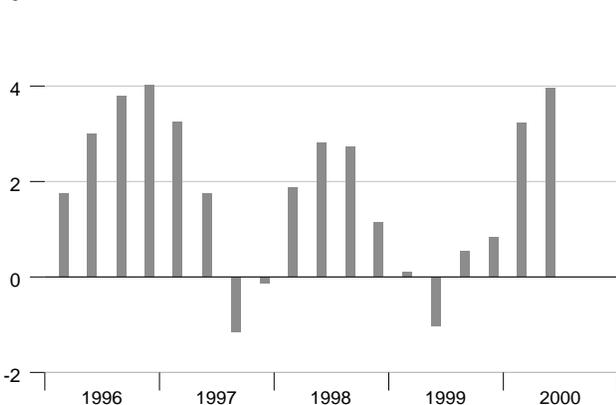
Unemployment Rate

Percent
10



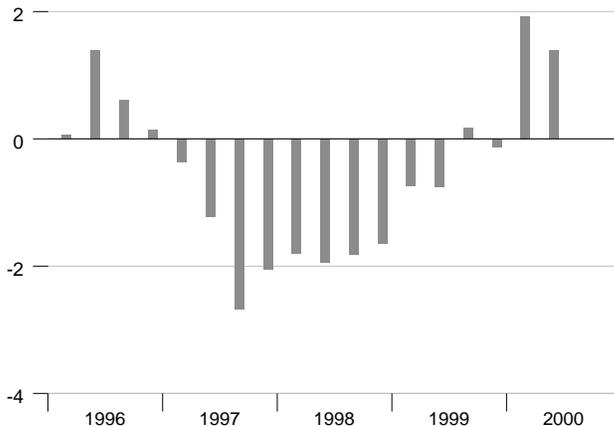
Hourly Earnings

Percent change
6

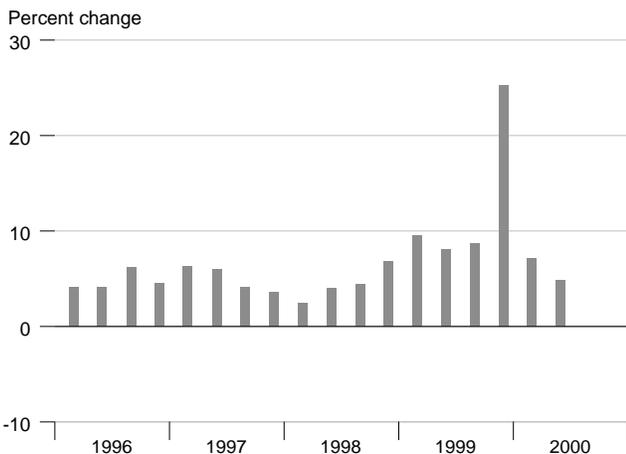


Current Account Balance

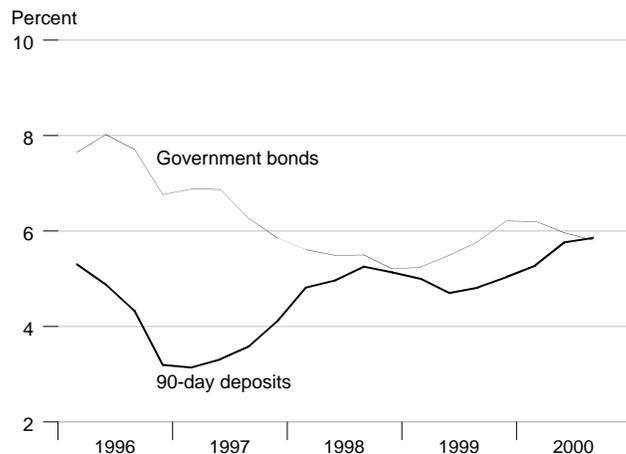
Percent of GDP
2



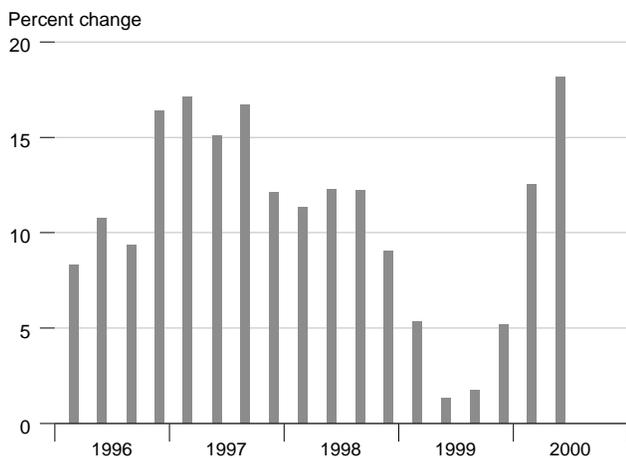
Reserve Money Growth



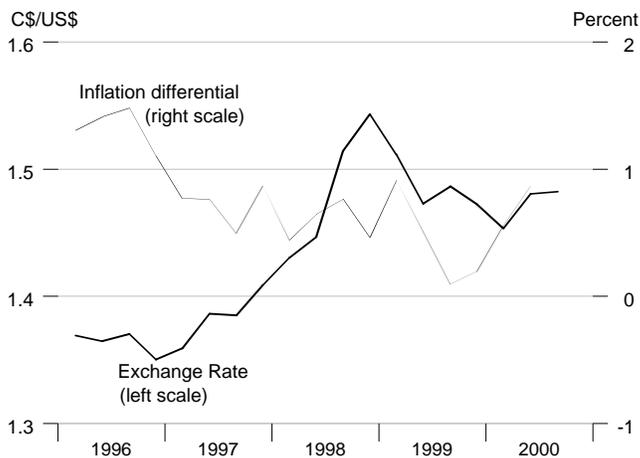
Interest Rates



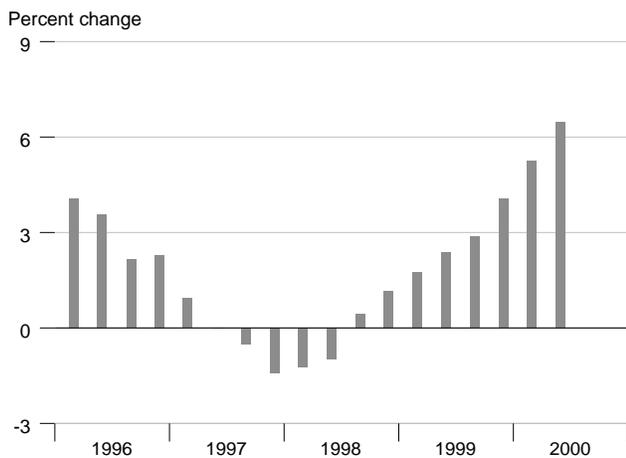
M1 Growth



Exchange Rate and Inflation Differential



M2 Growth

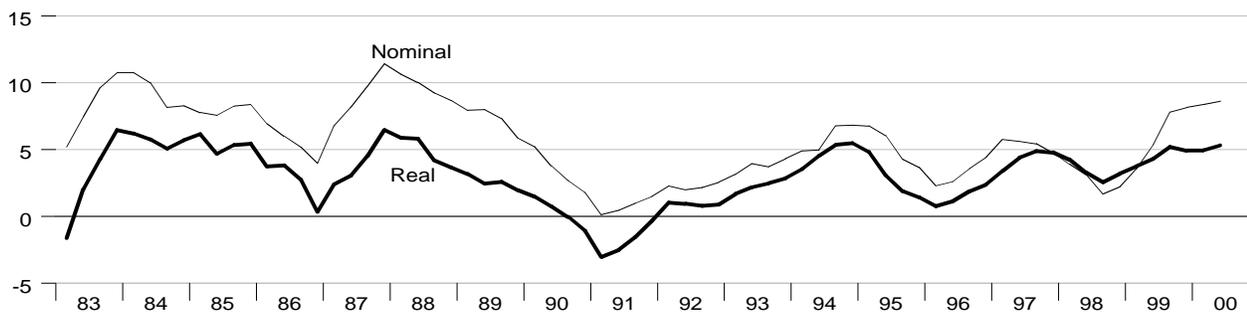


Real Effective Exchange Rate



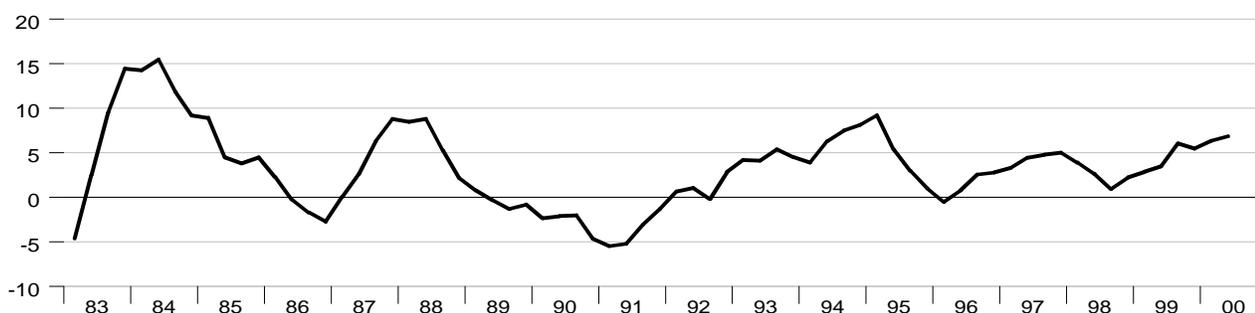
GDP Growth

Percent change



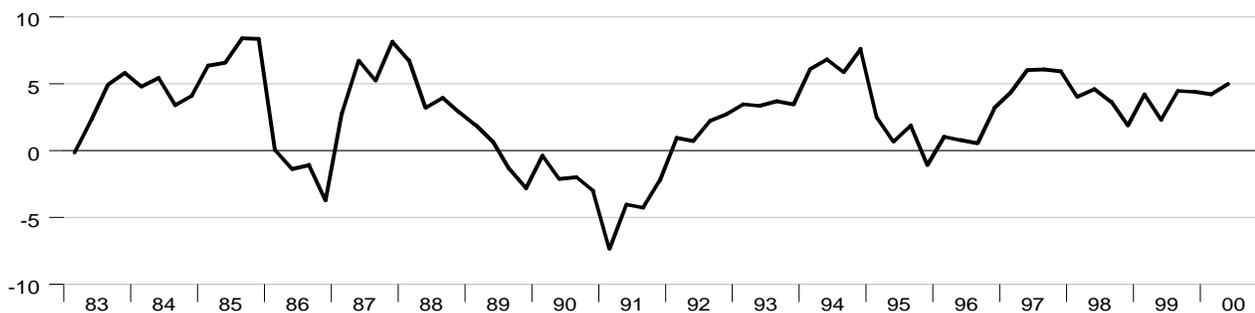
Industrial Production

Percent change



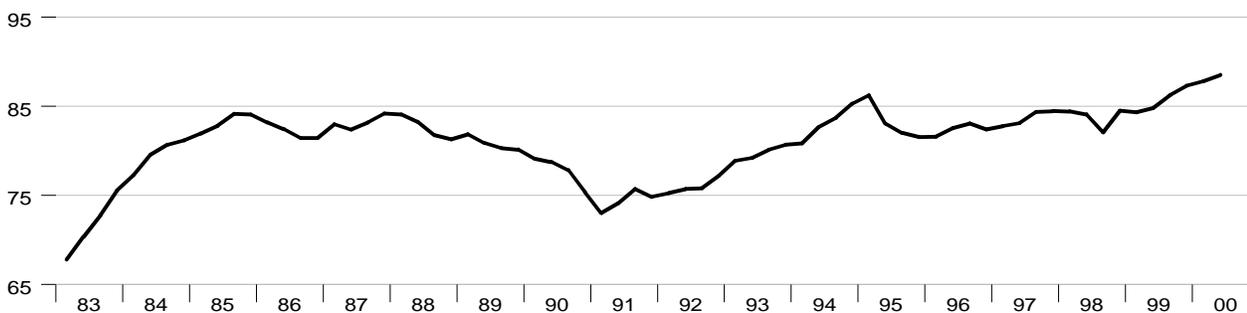
Retail Sales

Percent change

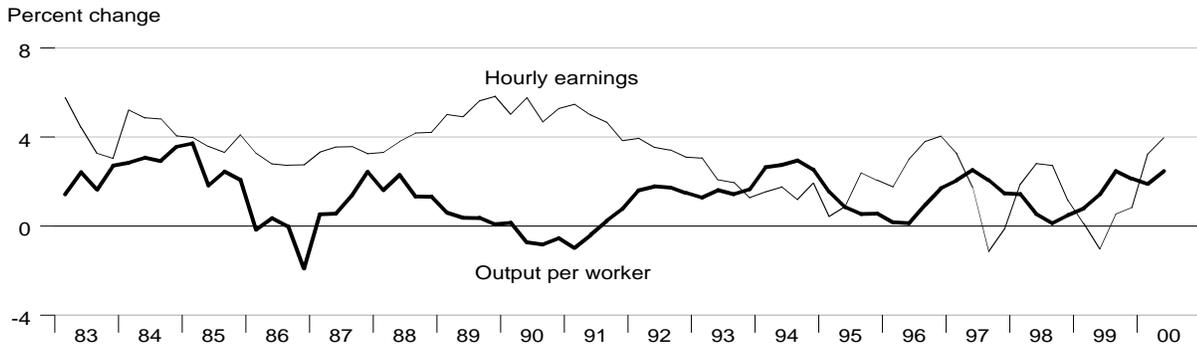


Capacity Utilization

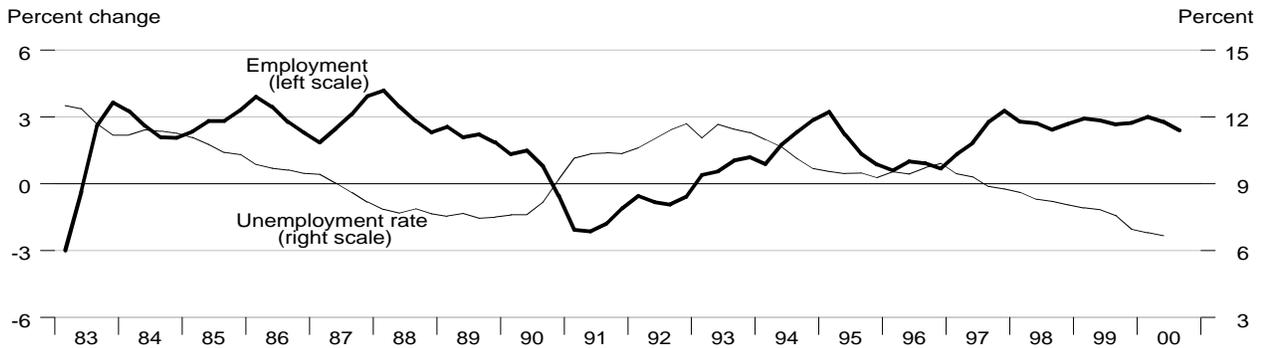
Percent



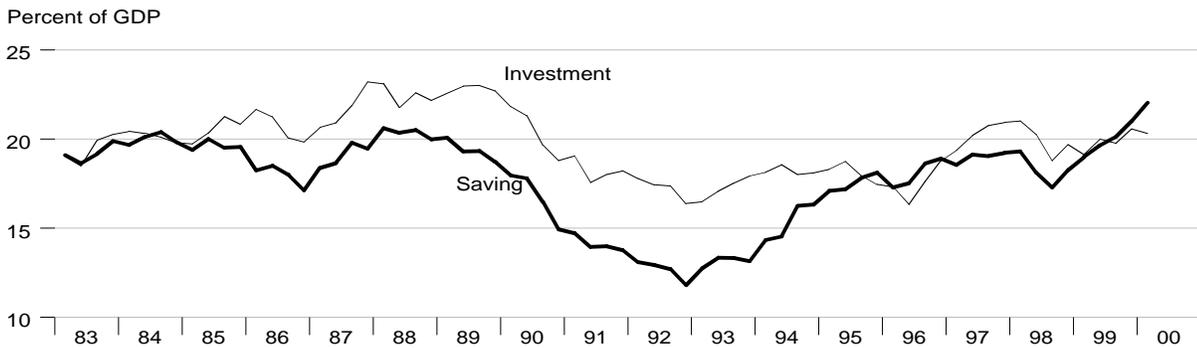
Hourly Earnings and Output per Worker



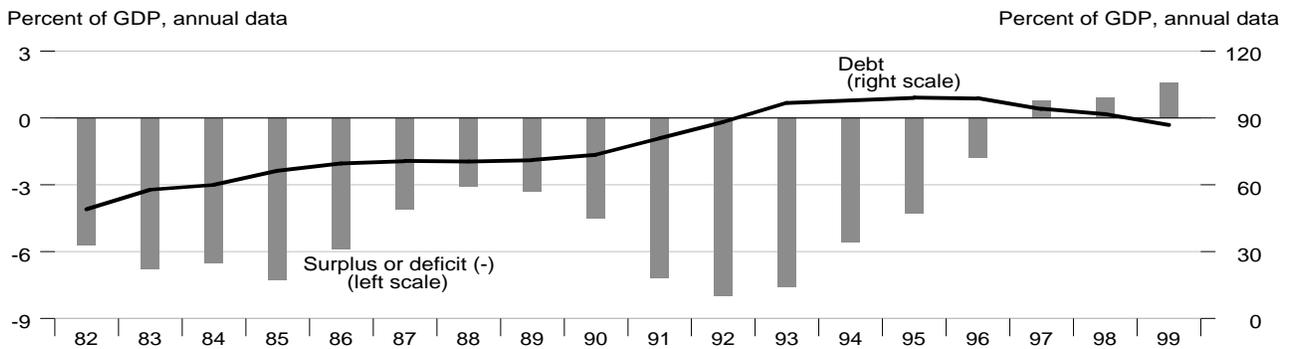
Labor Force Indicators



Saving and Investment

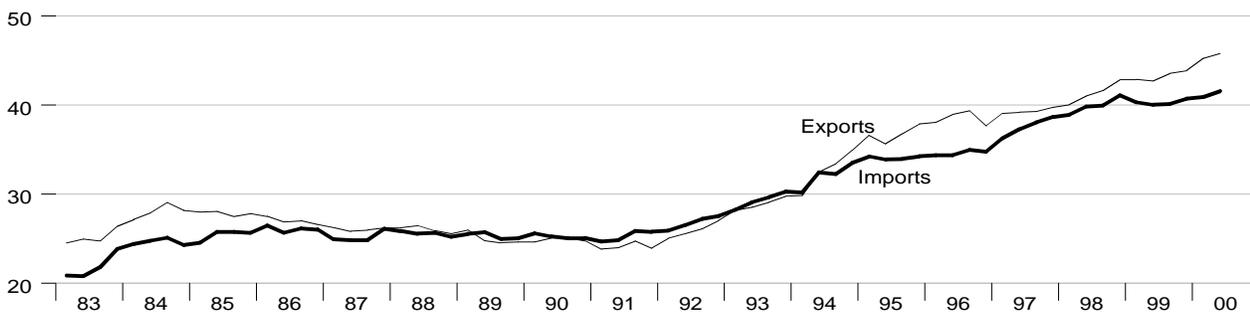


Government Debt and Budget Surplus or Deficit (-)



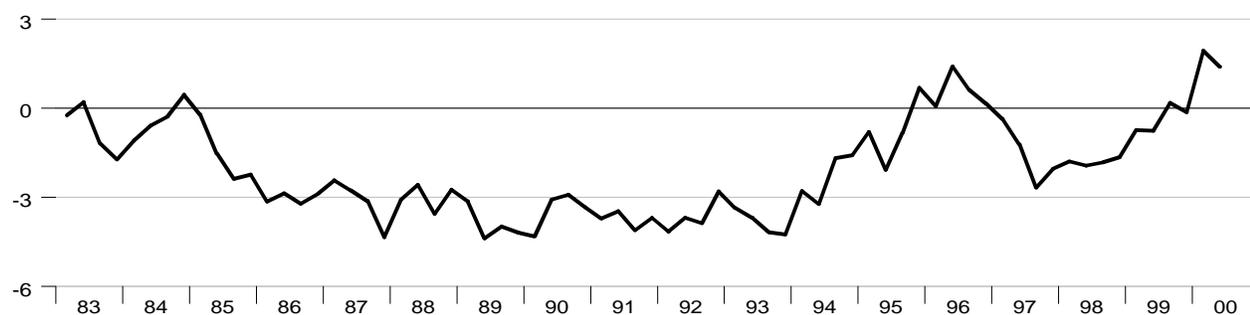
International Trade - Goods and Services

Percent of GDP



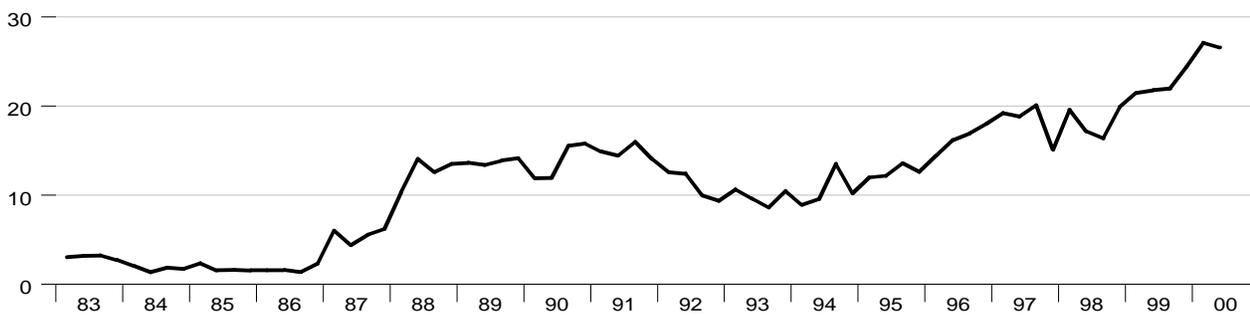
Current Account Balance

Percent of GDP



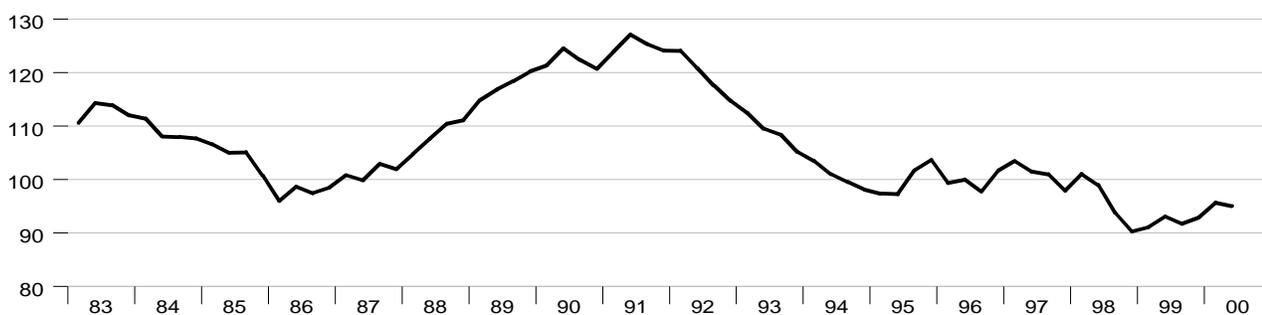
Foreign Exchange Reserves

Billions of US\$



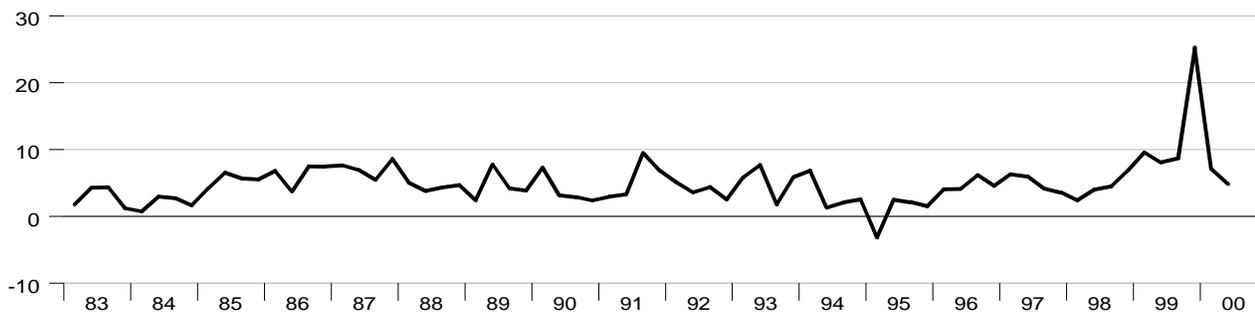
Real Effective Exchange Rate

Index 1995 = 100



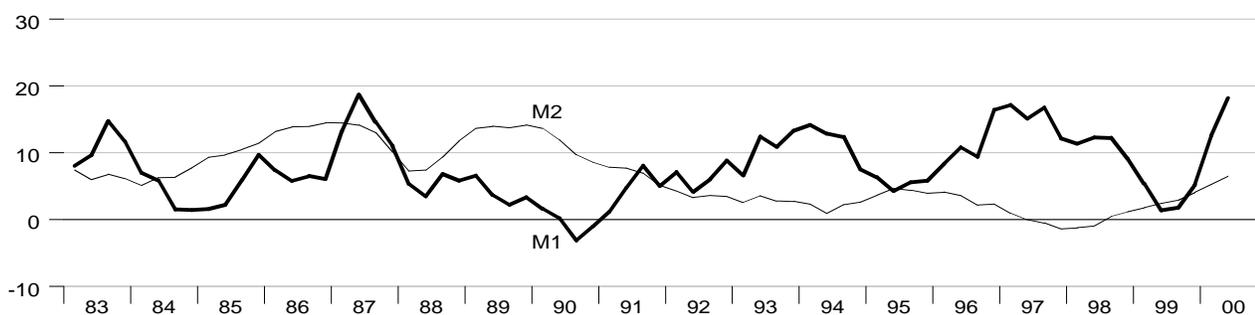
Reserve Money Growth

Percent change



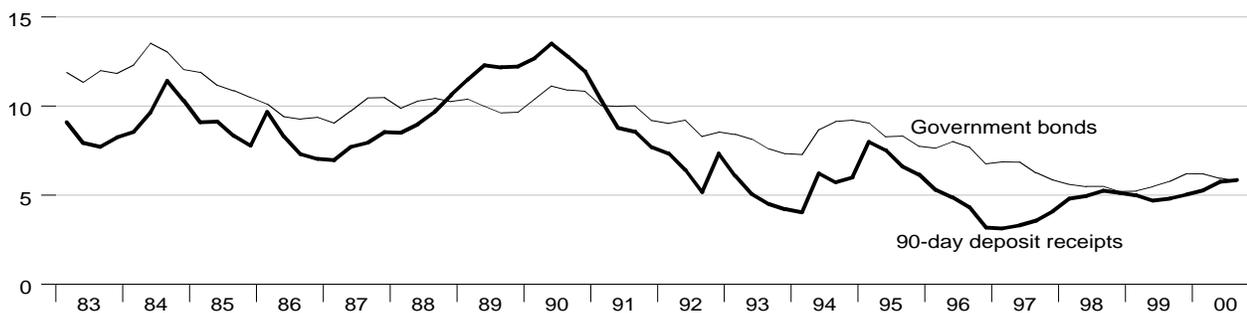
Monetary Aggregates

Percent change



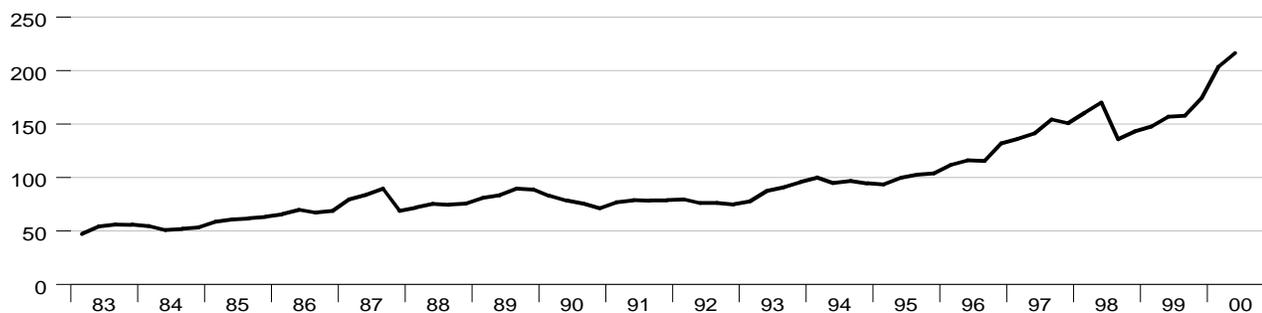
Interest Rates

Percent

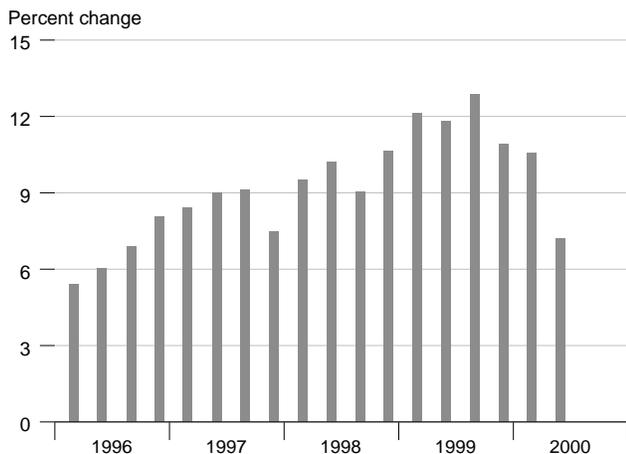


Stock Exchange Index - Toronto Stock Exchange

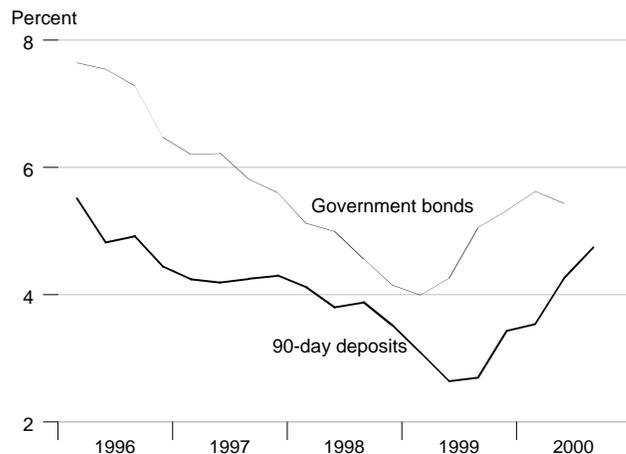
1995 = 100



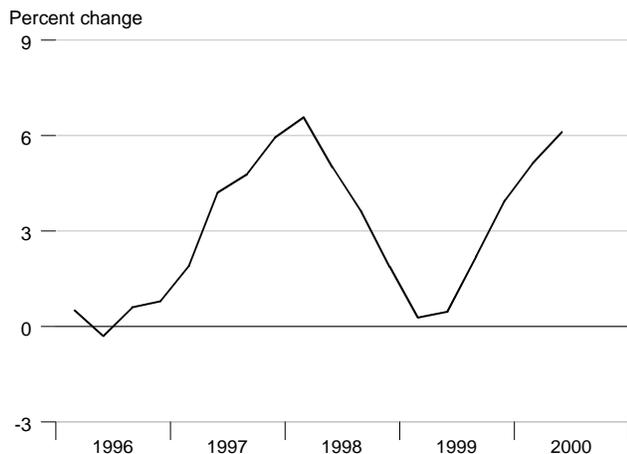
M1 Growth



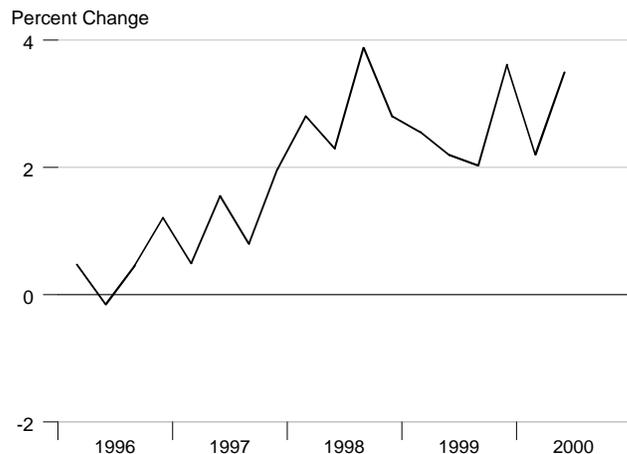
Interest Rates



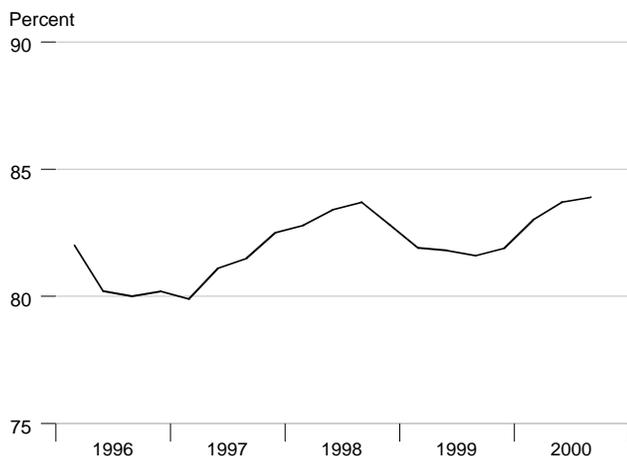
Industrial Production



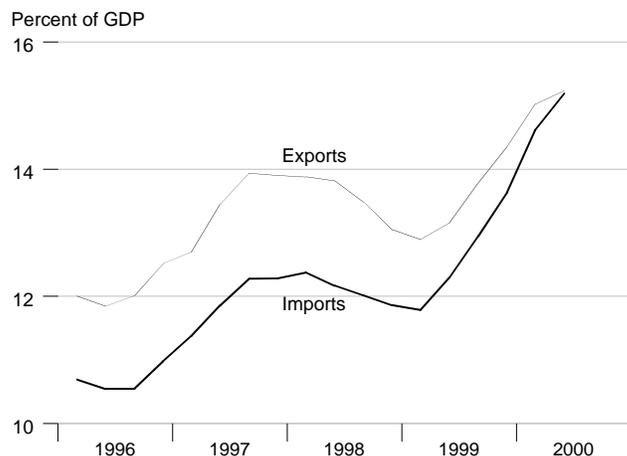
Retail Sales



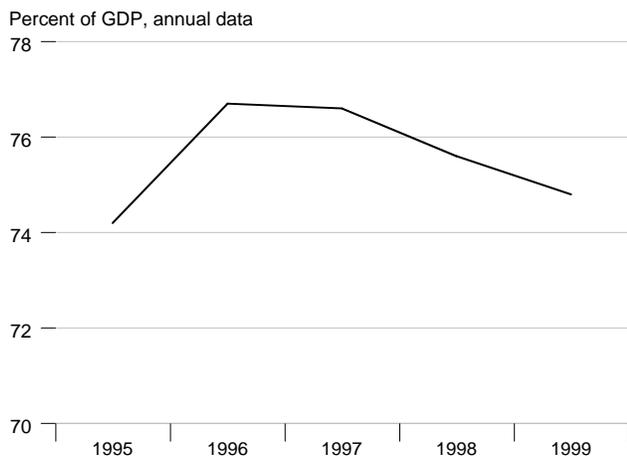
Capacity Utilization



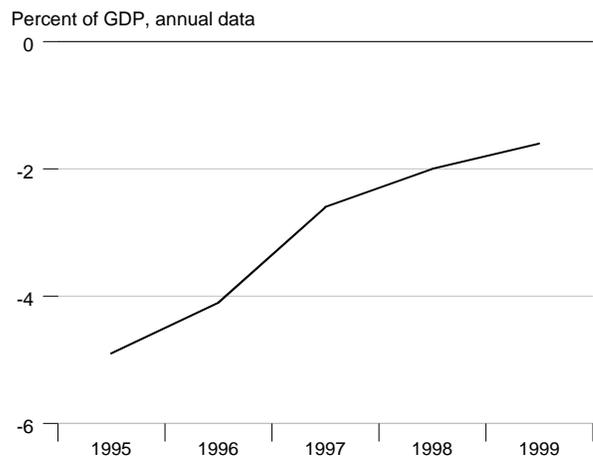
International Trade - Goods



Government Debt

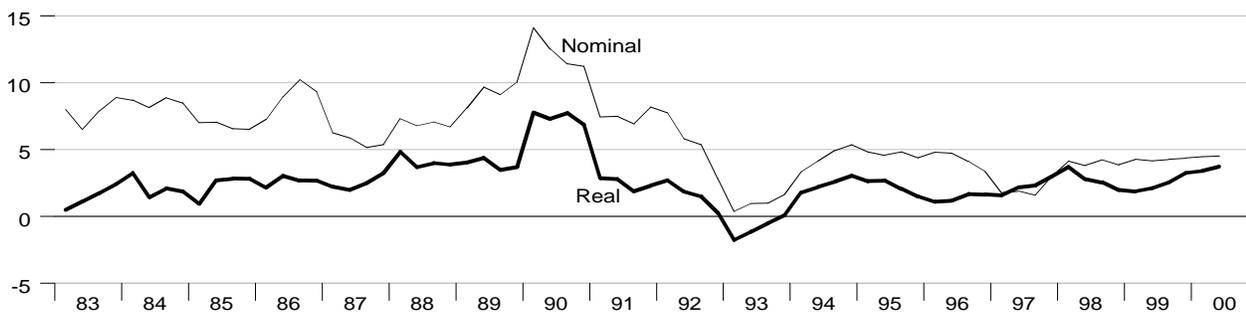


Budget Surplus or Deficit (-)



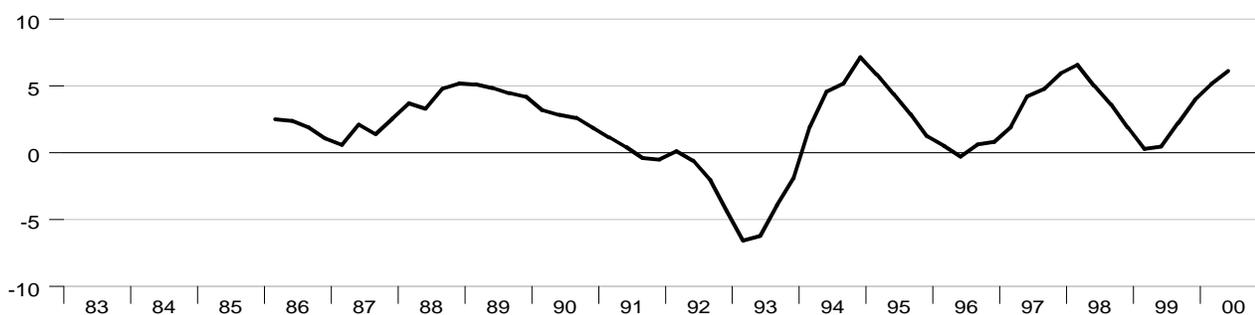
GDP Growth

Percent change



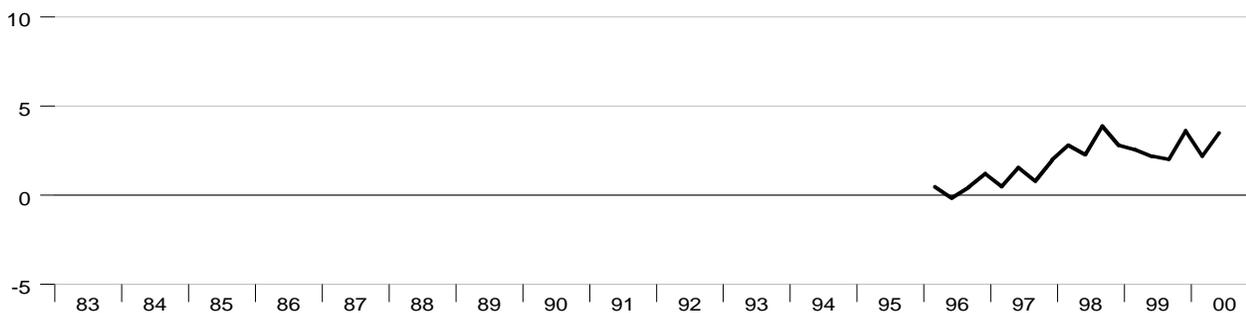
Industrial Production

Percent change



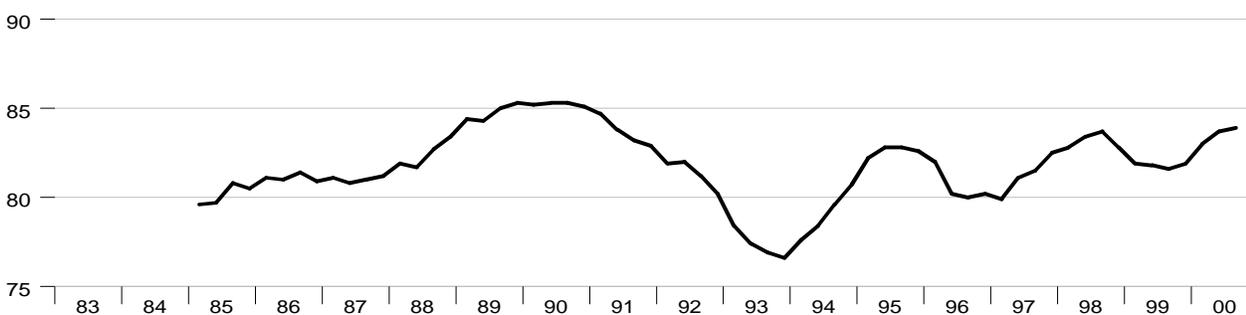
Retail Sales

Percent change



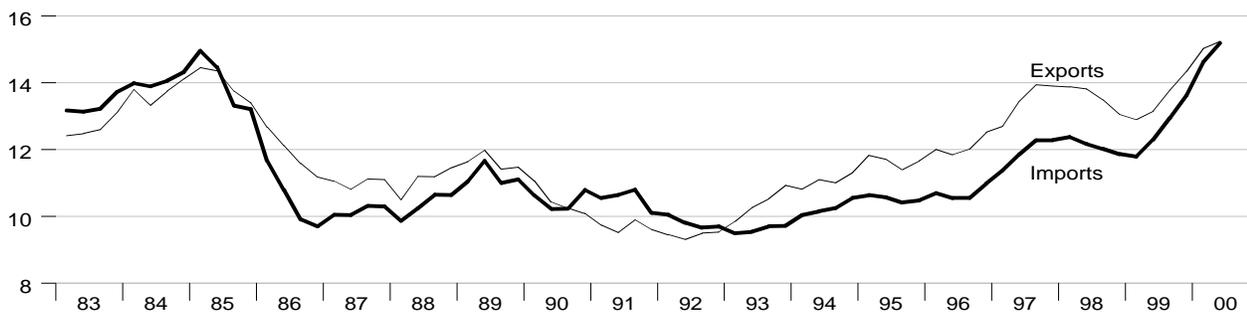
Capacity Utilization

Percent



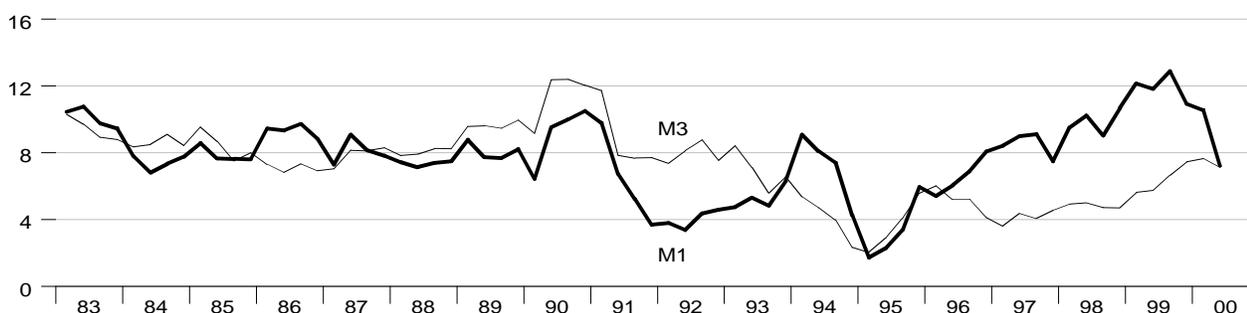
International Trade - Goods

Percent of GDP



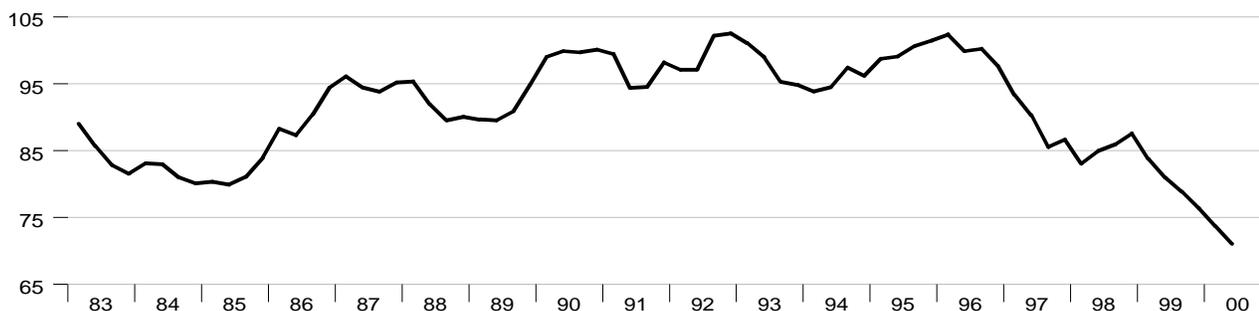
Monetary Aggregates

Percent Change



Real Effective Exchange Rate

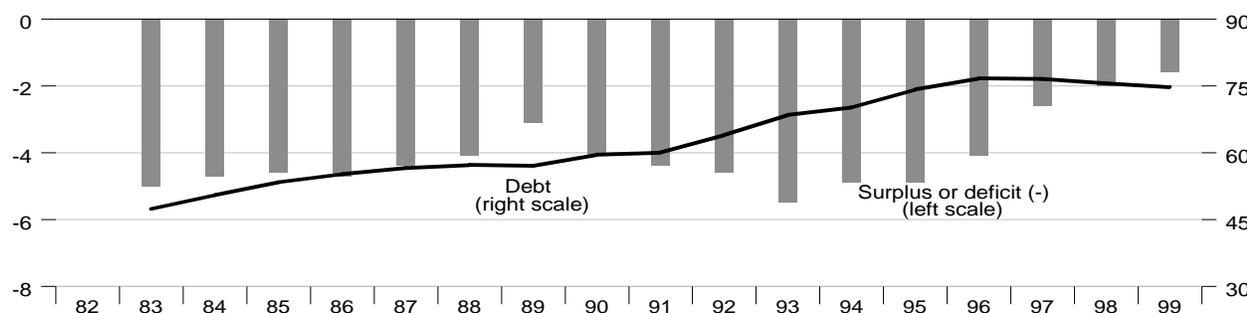
Index 1995 = 100



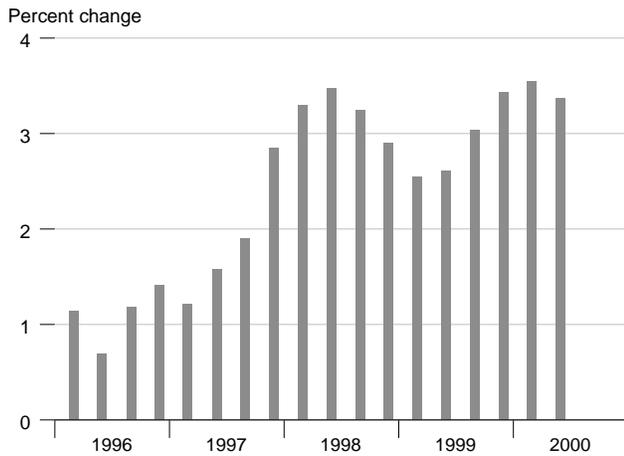
Government Debt and Budget Surplus or Deficit (-)

Percent of GDP, annual data

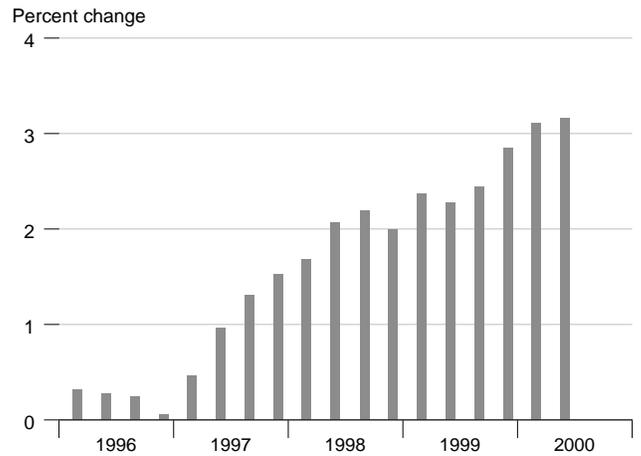
Percent of GDP, annual data



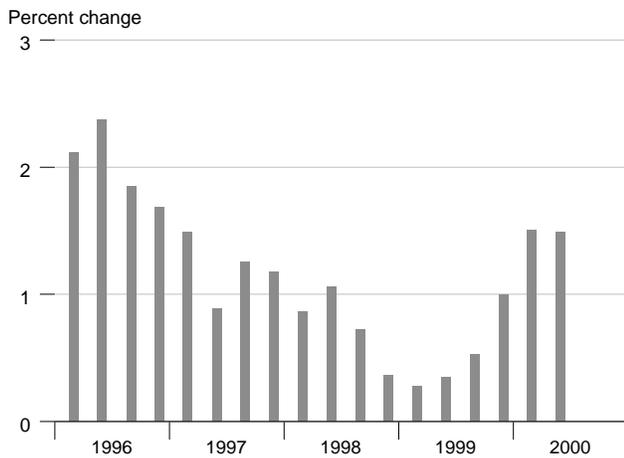
Real GDP Growth



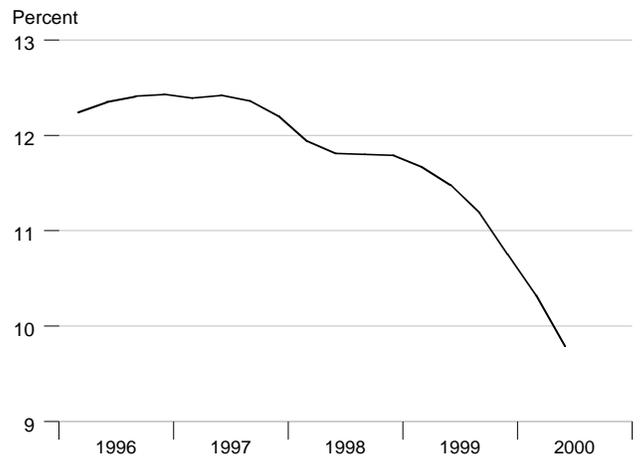
Employment Growth



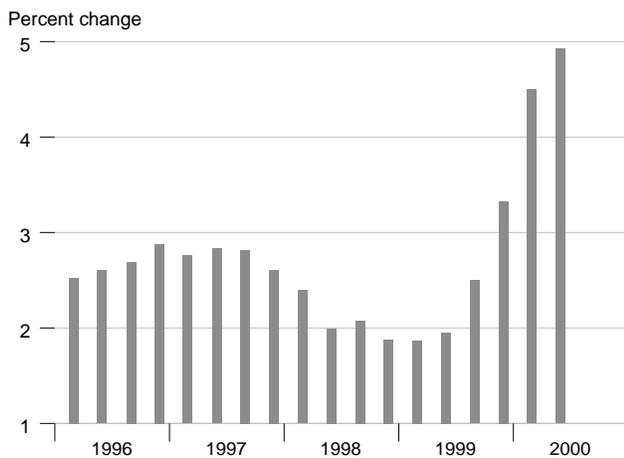
Consumer Price Index



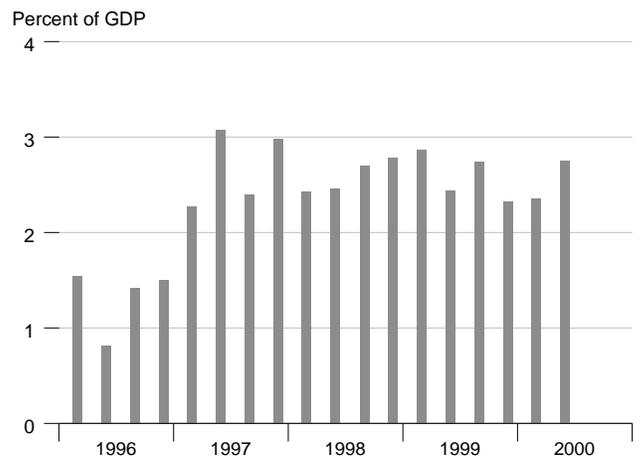
Unemployment Rate



Hourly Earnings

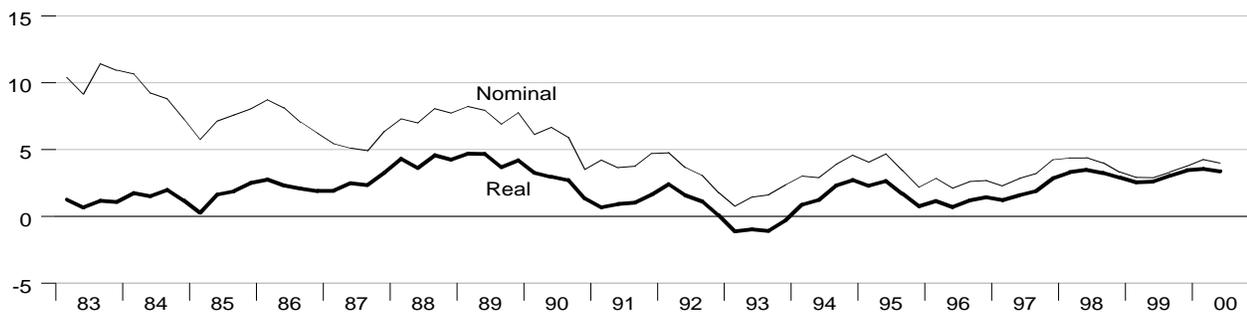


Current Account Balance



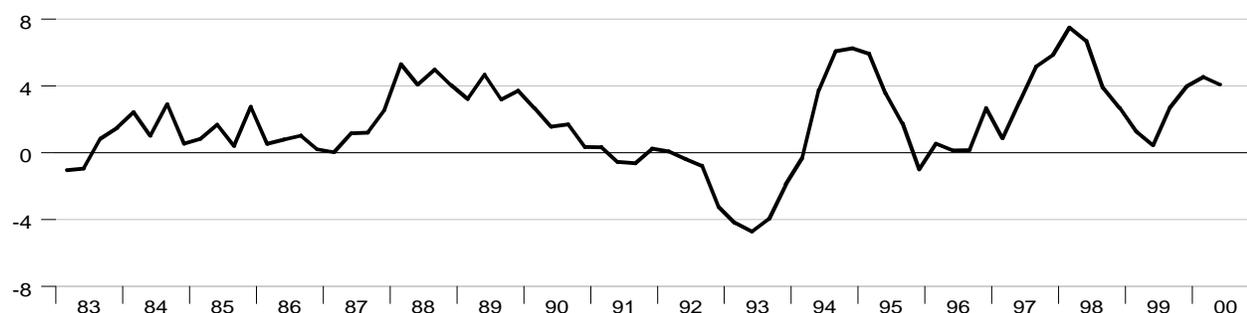
GDP Growth

Percent change



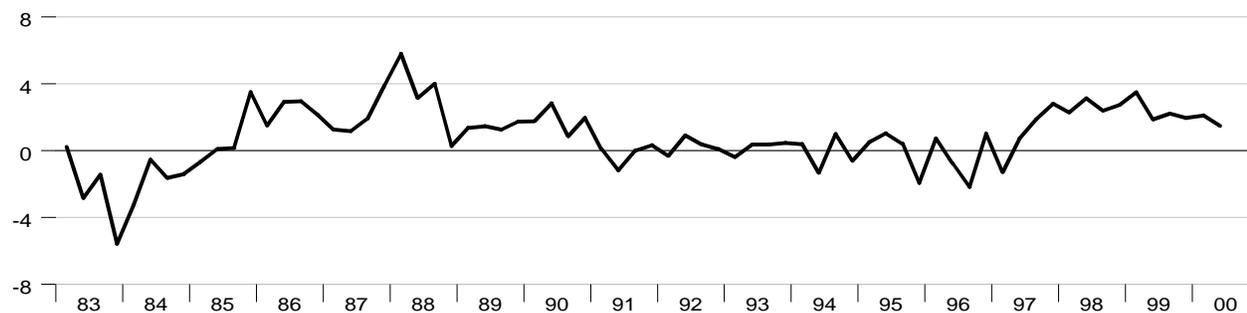
Industrial Production

Percent change



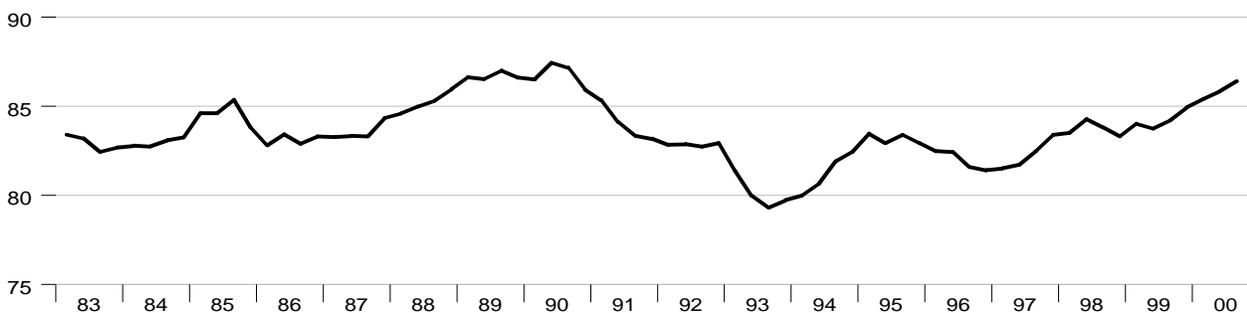
Retail Sales

Percent change

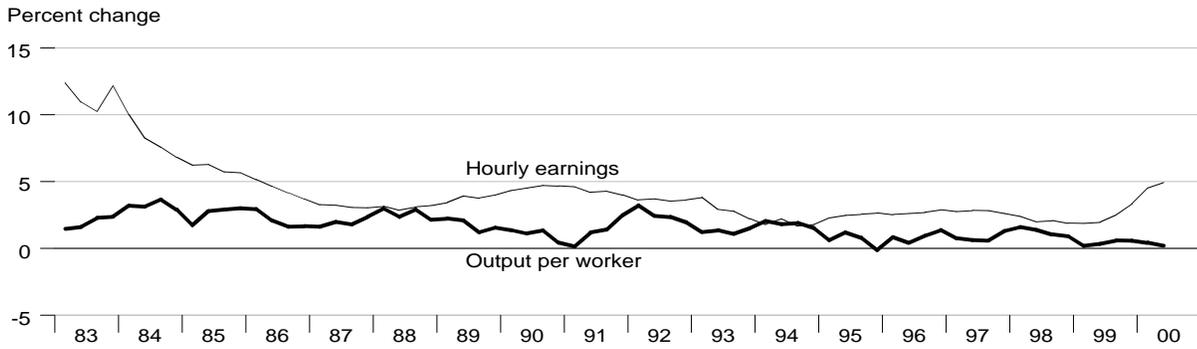


Capacity Utilization

Percent



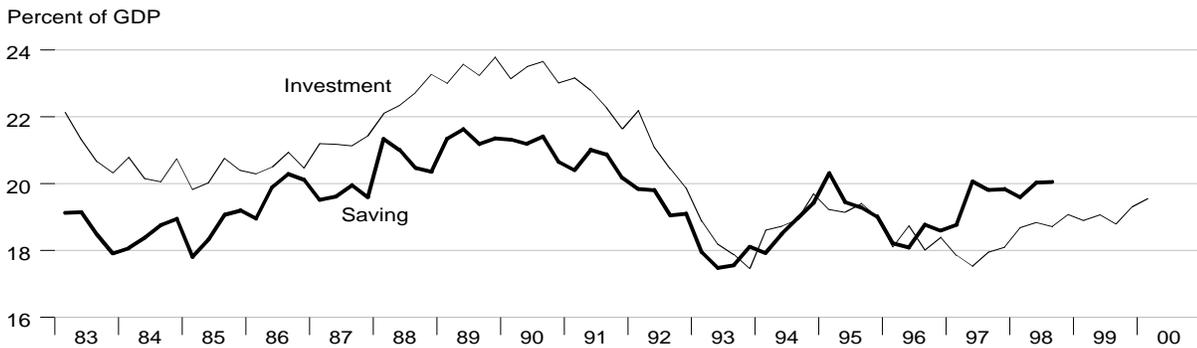
Hourly Earnings and Output per Worker



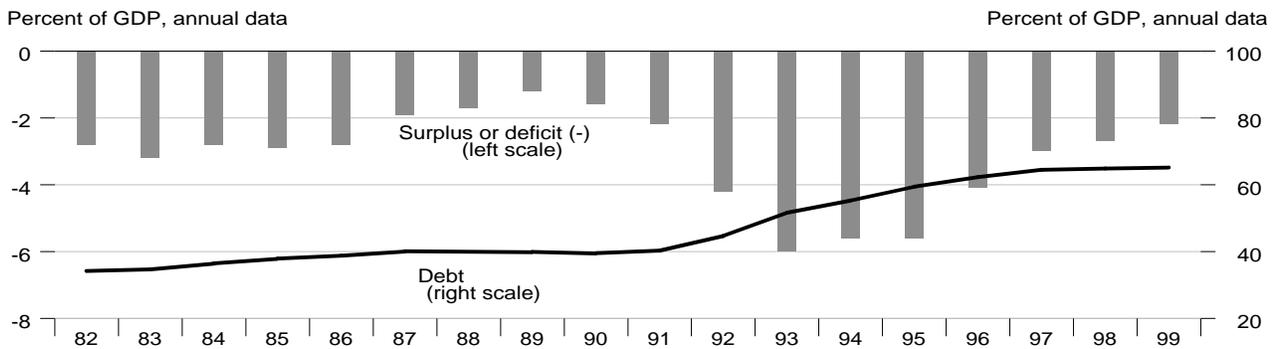
Labor Force Indicators



Saving and Investment

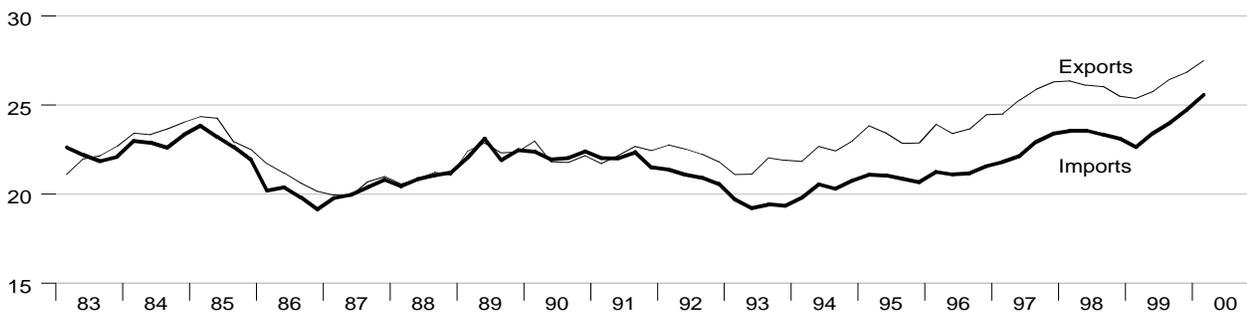


Government Debt and Budget Surplus or Deficit (-)



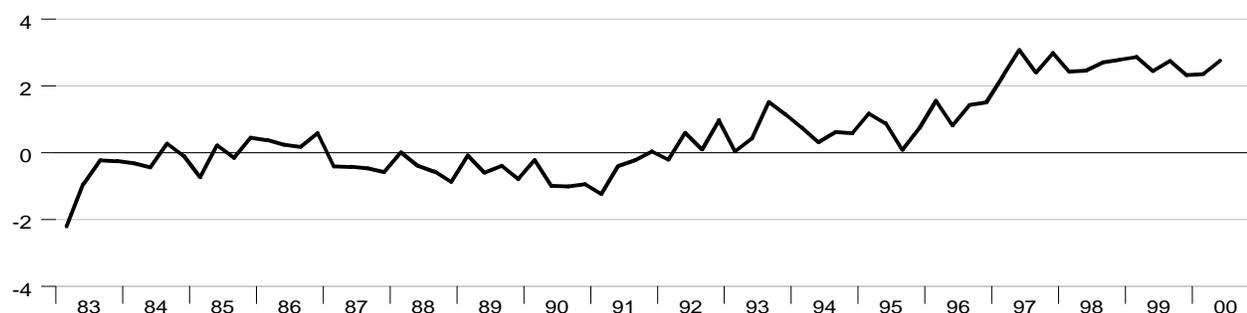
International Trade - Goods and Services

Percent of GDP



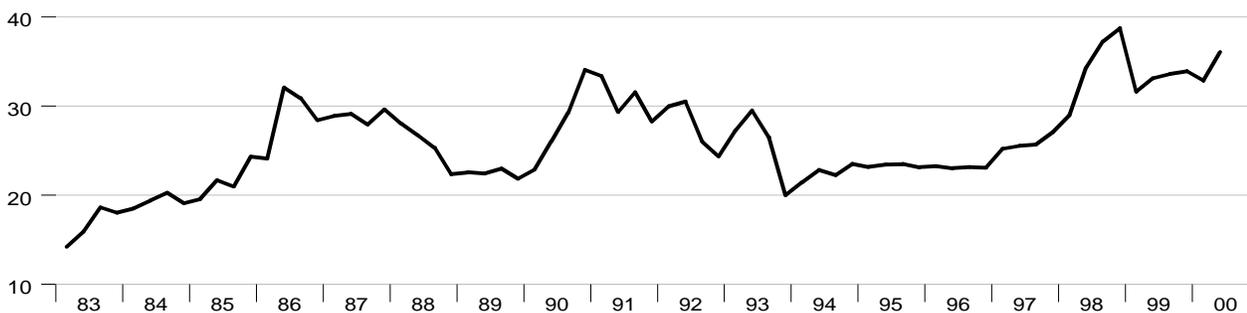
Current Account Balance

Percent of GDP



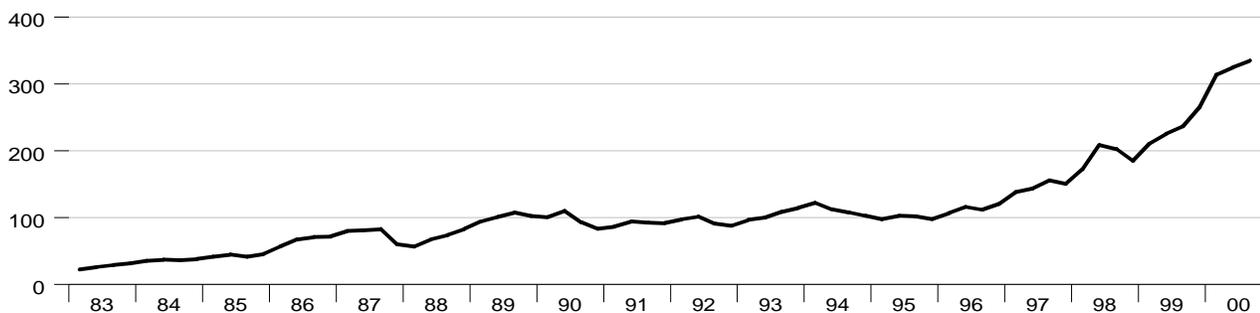
Foreign Exchange Reserves

Billions of US\$

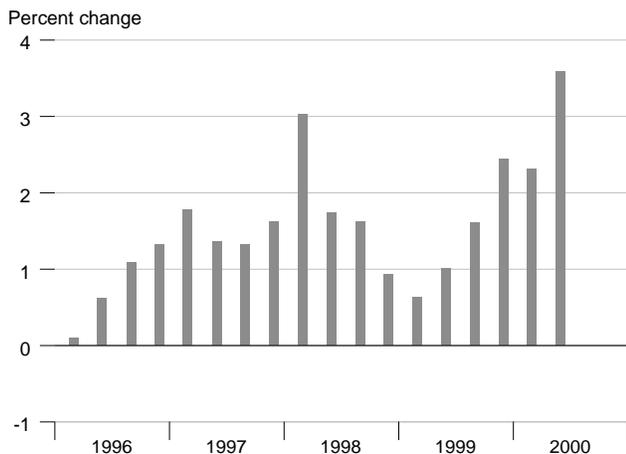


Stock Exchange Index - SBF 250

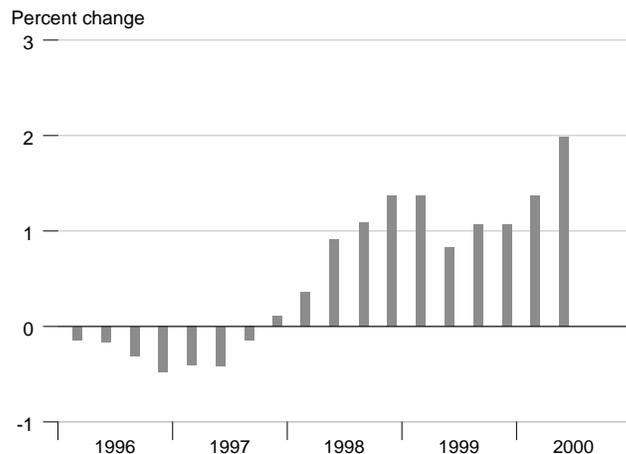
1995 = 100



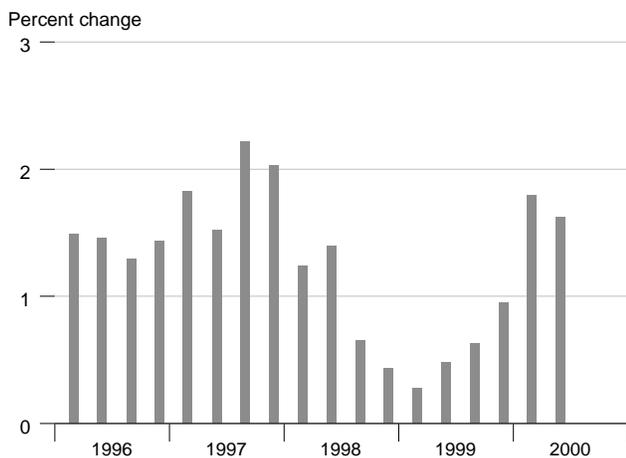
Real GDP Growth



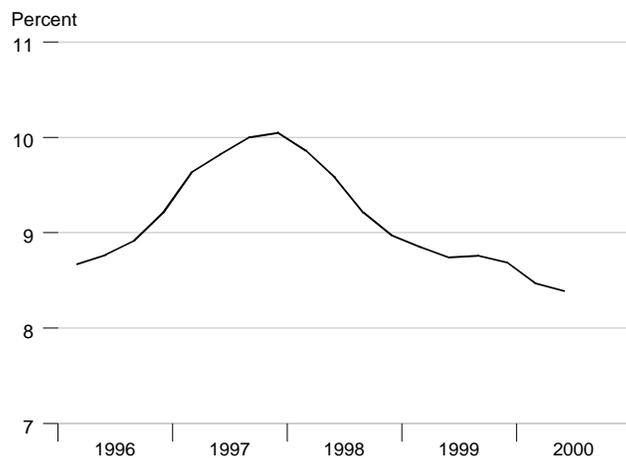
Employment Growth



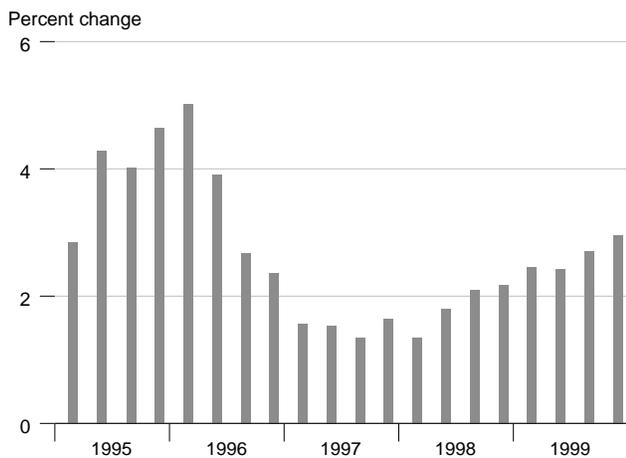
Consumer Price Index



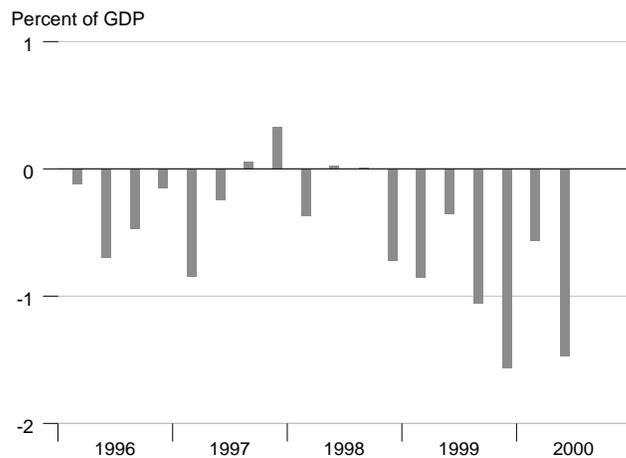
Unemployment Rate



Hourly Earnings

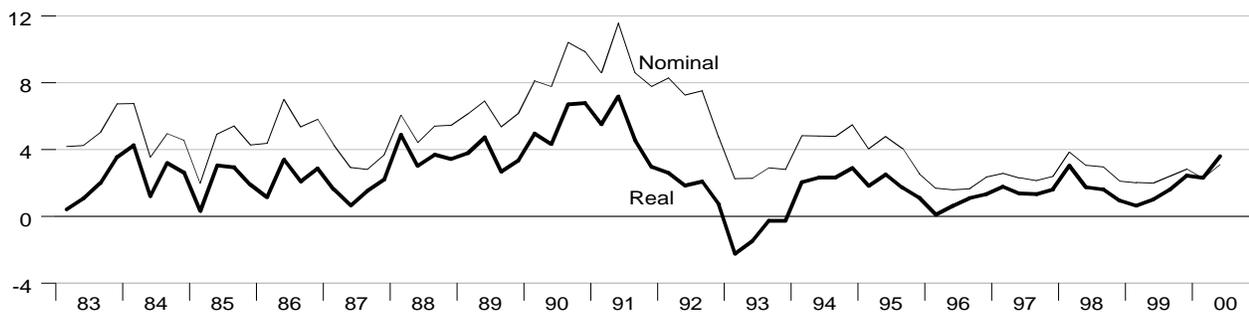


Current Account Balance



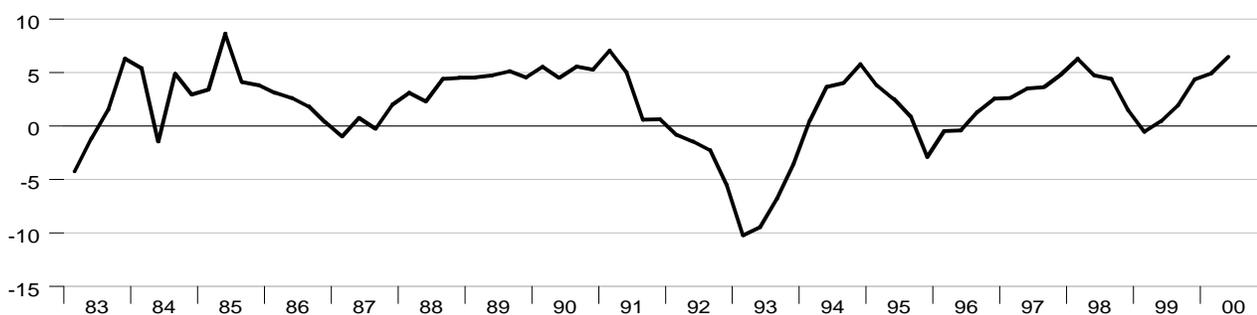
GDP Growth

Percent change



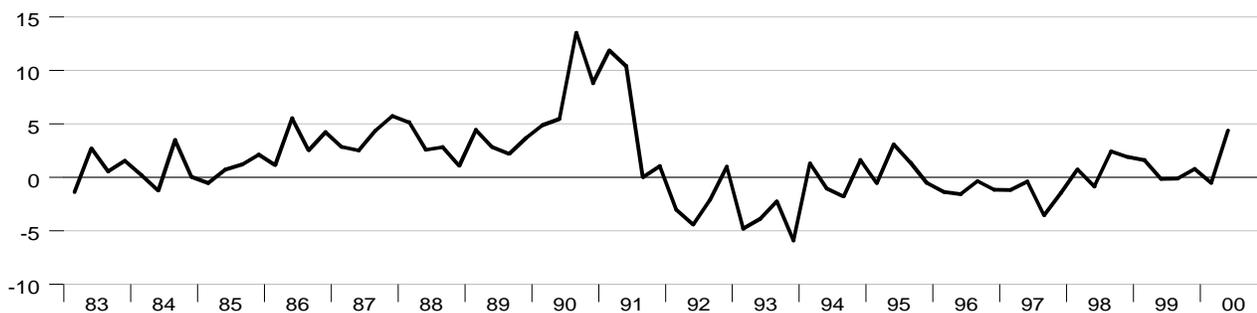
Industrial Production

Percent change



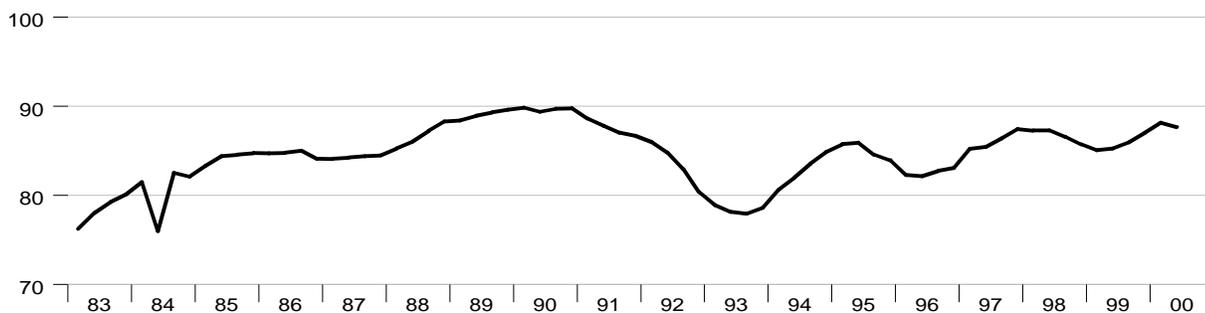
Retail Sales

Percent change



Capacity Utilization

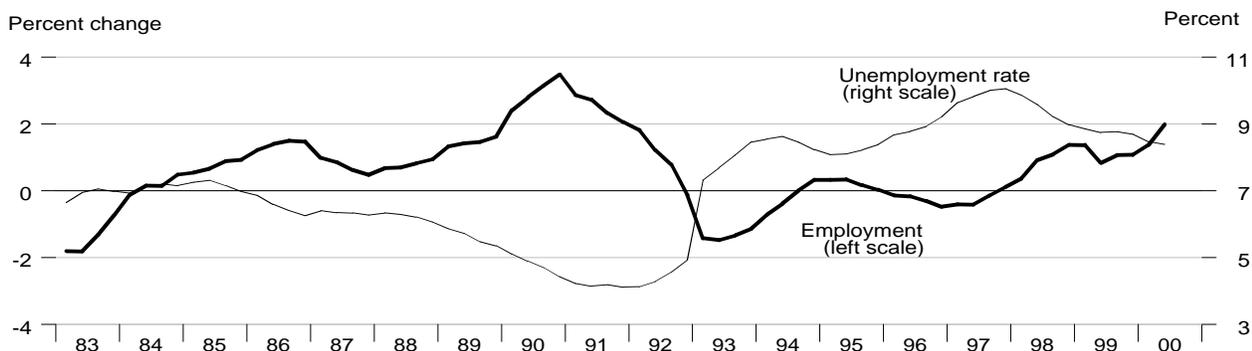
Percent



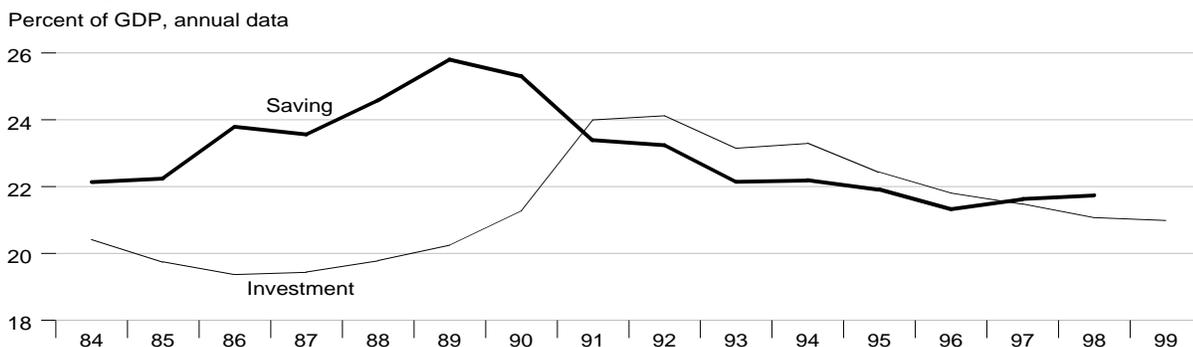
Hourly Earnings and Output per Worker



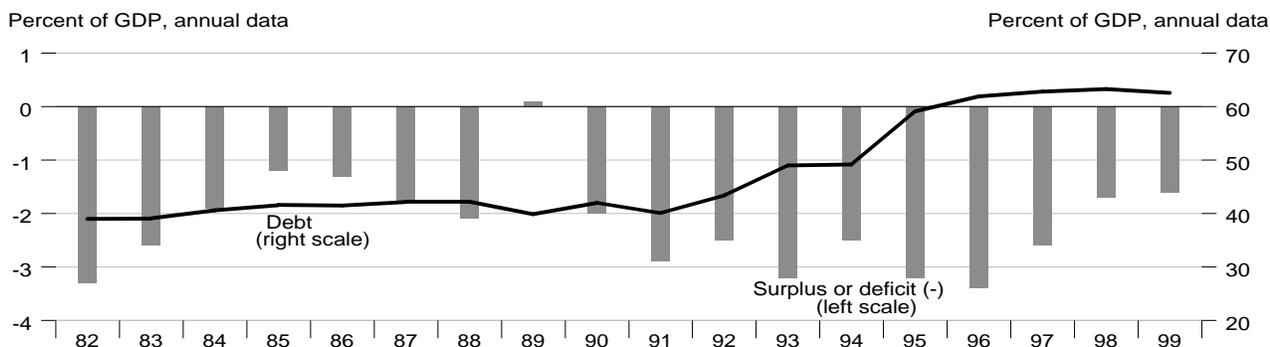
Labor Force Indicators



Saving and Investment

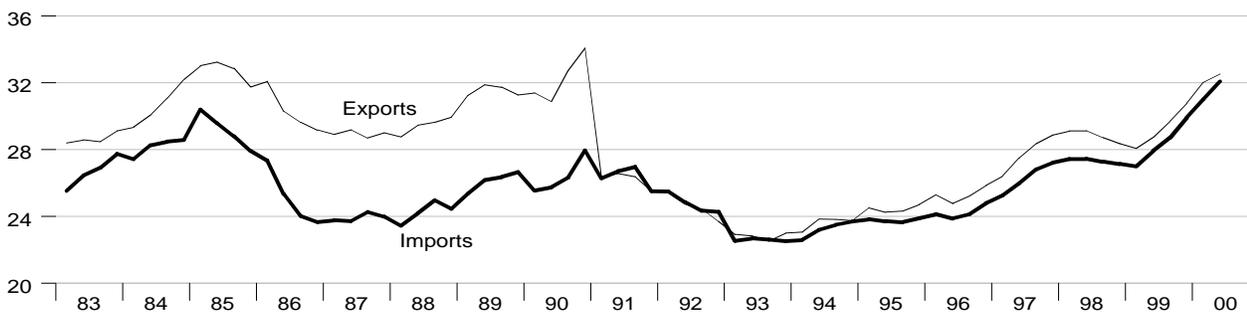


Government Debt and Budget Surplus or Deficit (-)



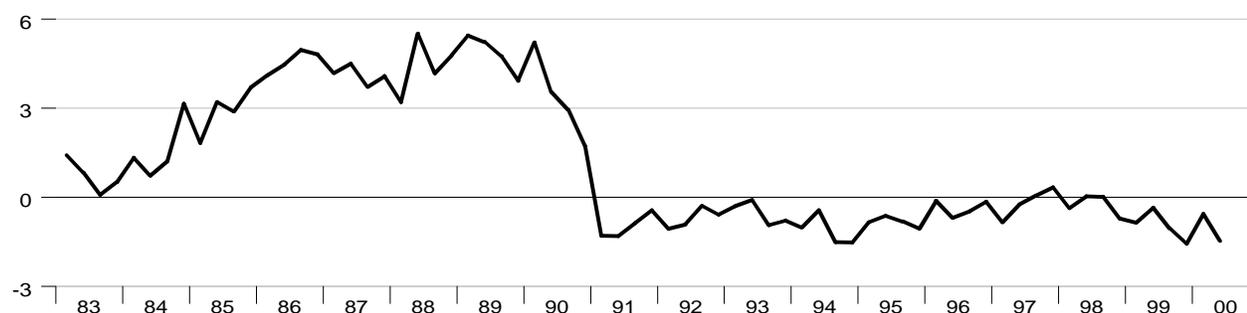
International Trade - Goods and Services

Percent of GDP



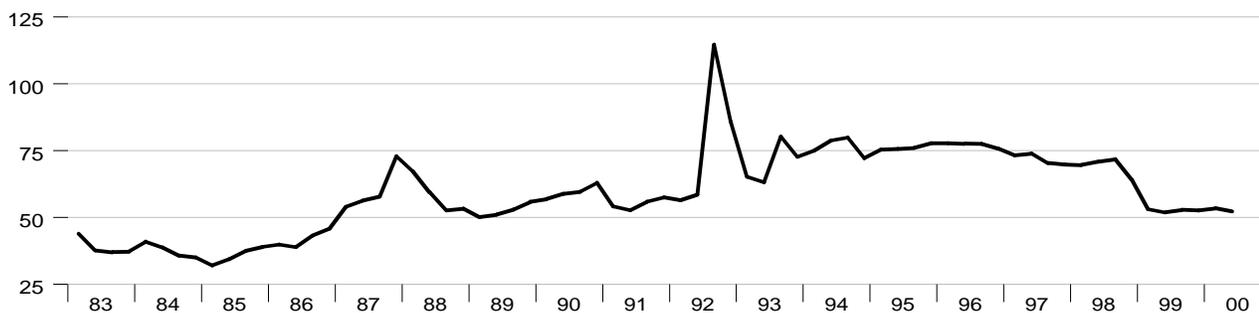
Current Account Balance

Percent of GDP



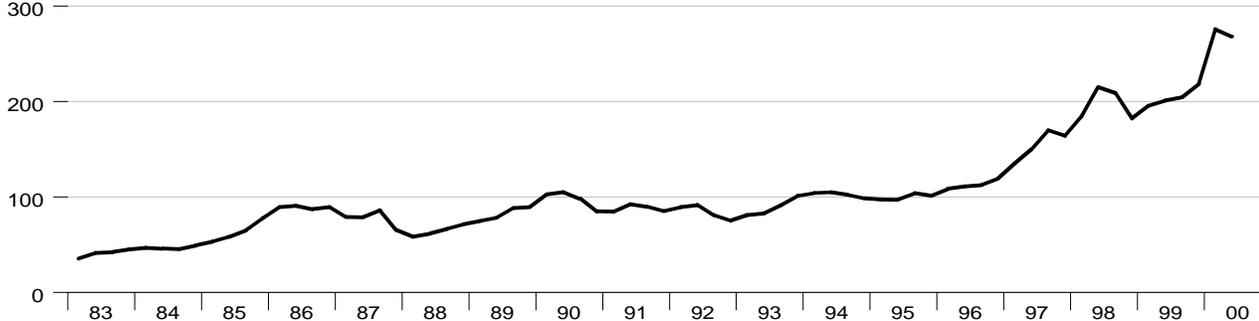
Foreign Exchange Reserves

Billion of US\$

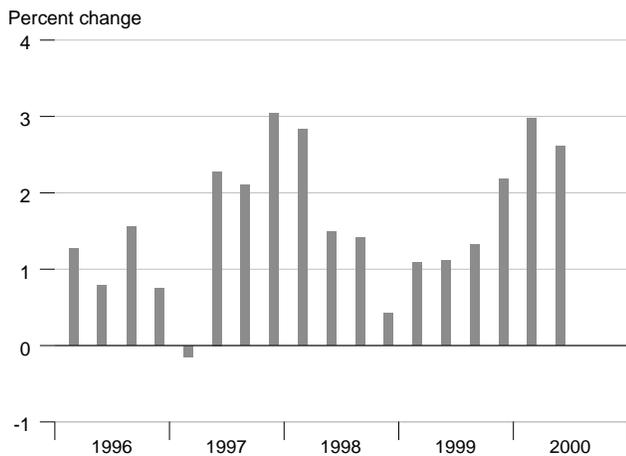


Stock Exchange Index - CDAX

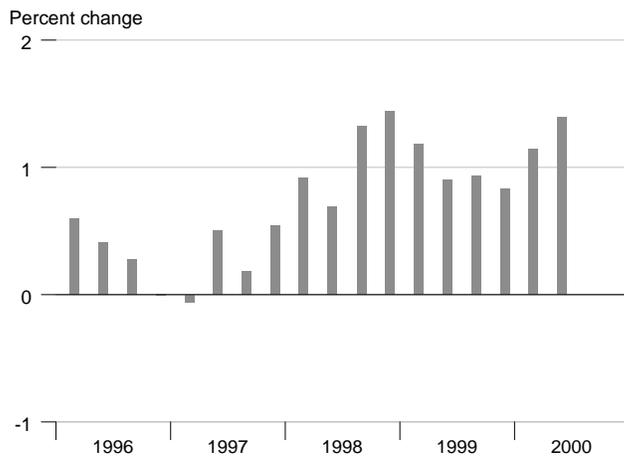
1995 = 100



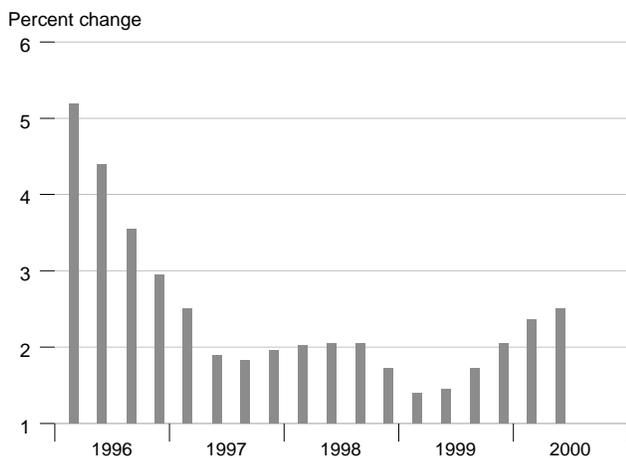
Real GDP Growth



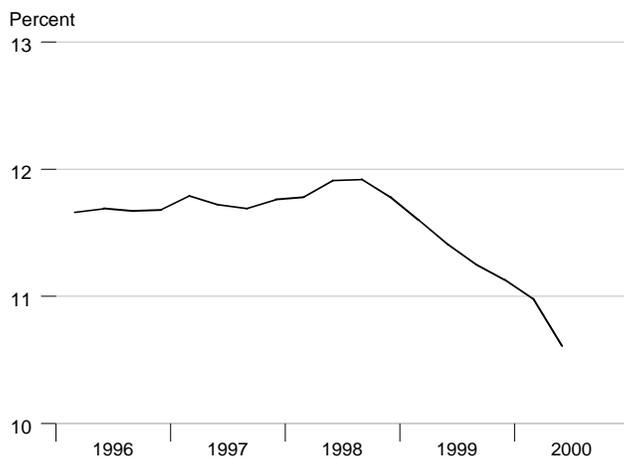
Employment Growth



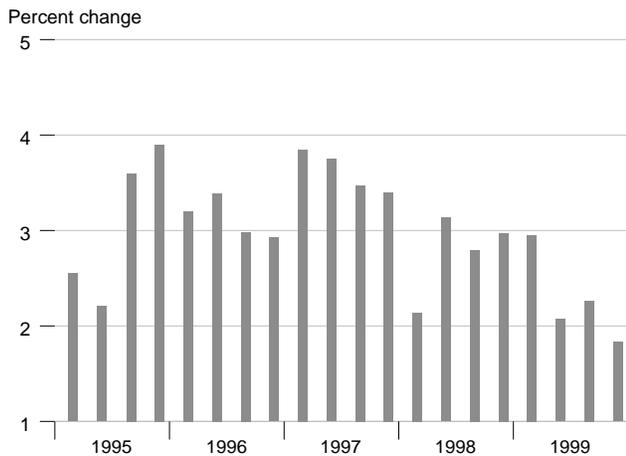
Consumer Price Index



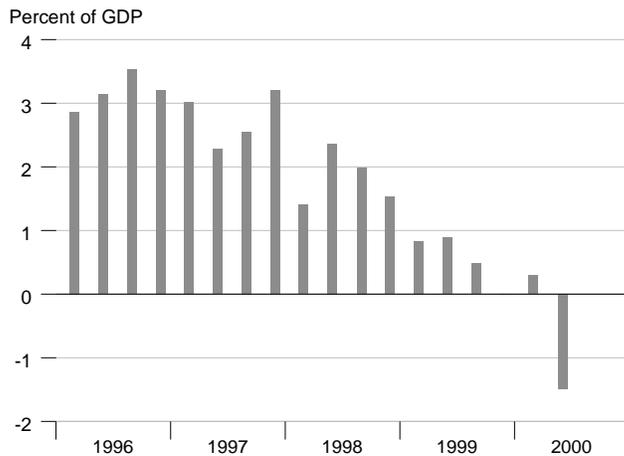
Unemployment Rate



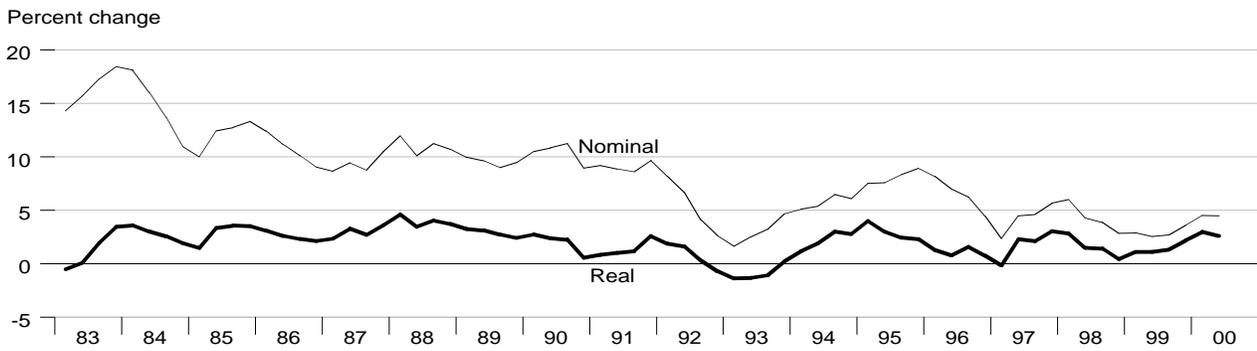
Hourly Earnings



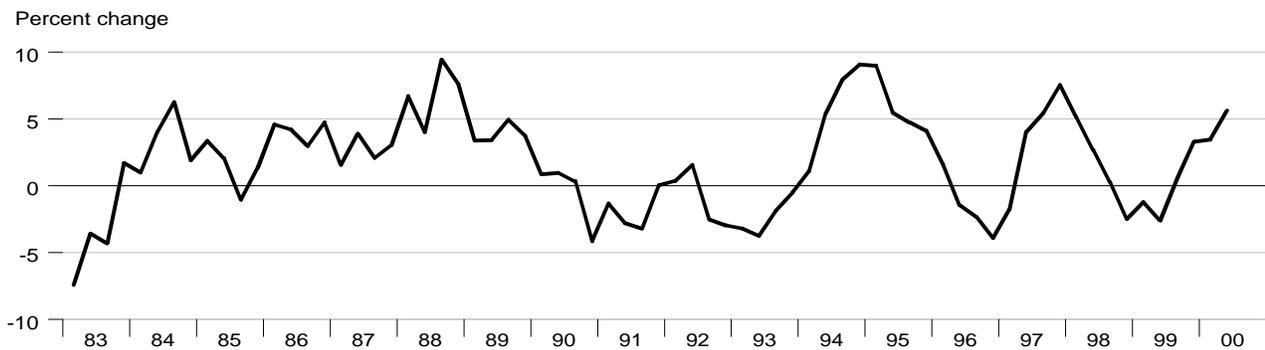
Current Account Balance



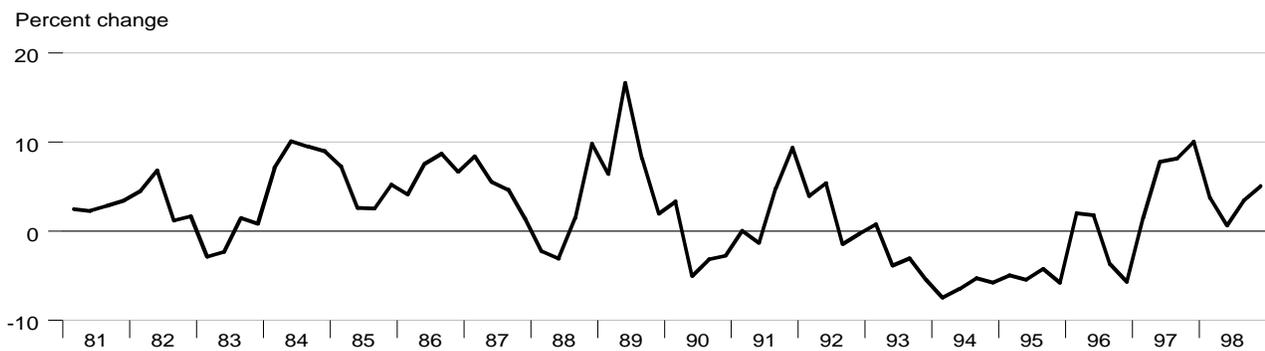
GDP Growth



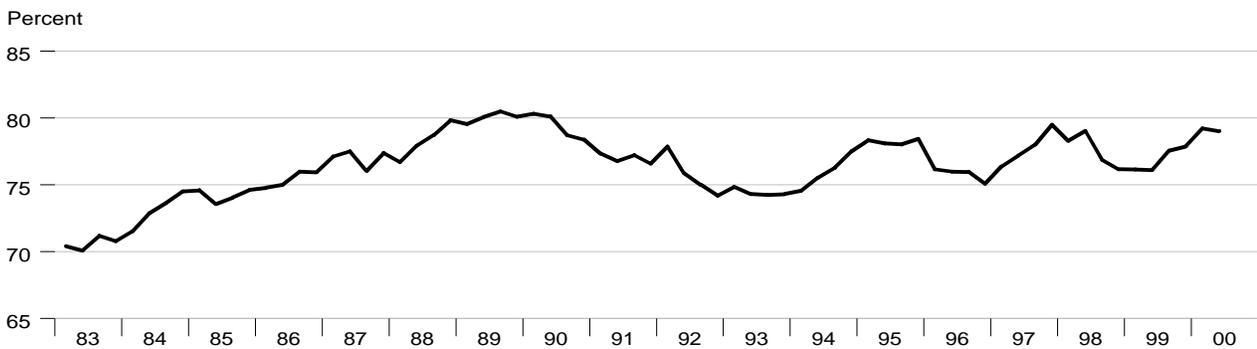
Industrial Production



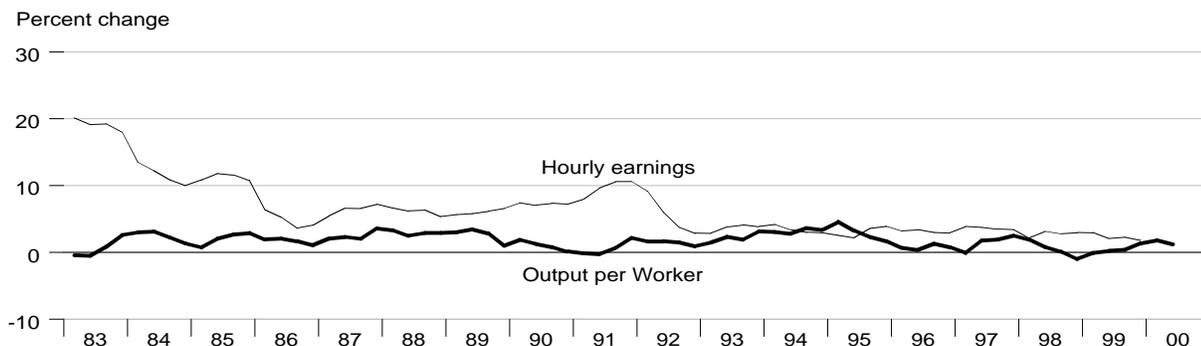
Retail Sales



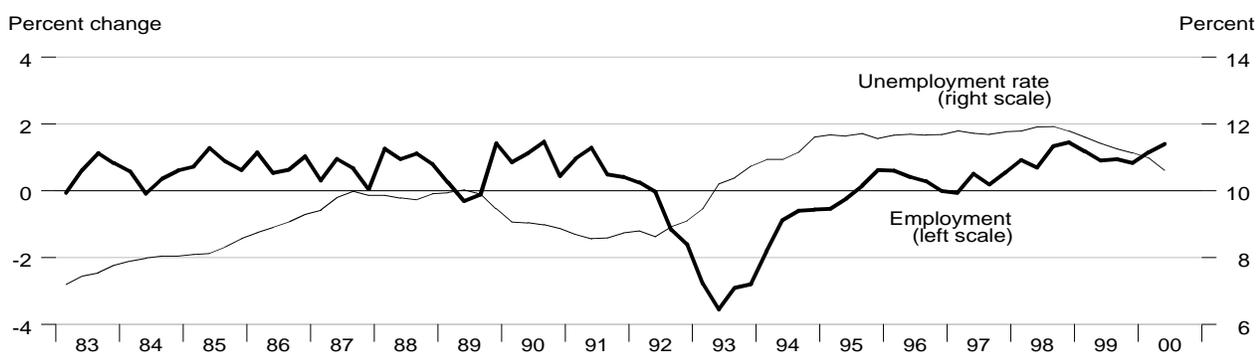
Capacity Utilization



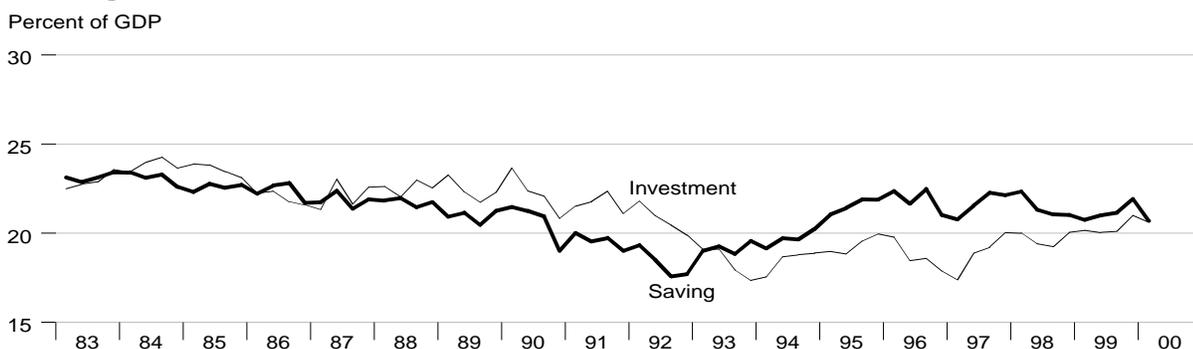
Hourly Earnings and Output per Worker



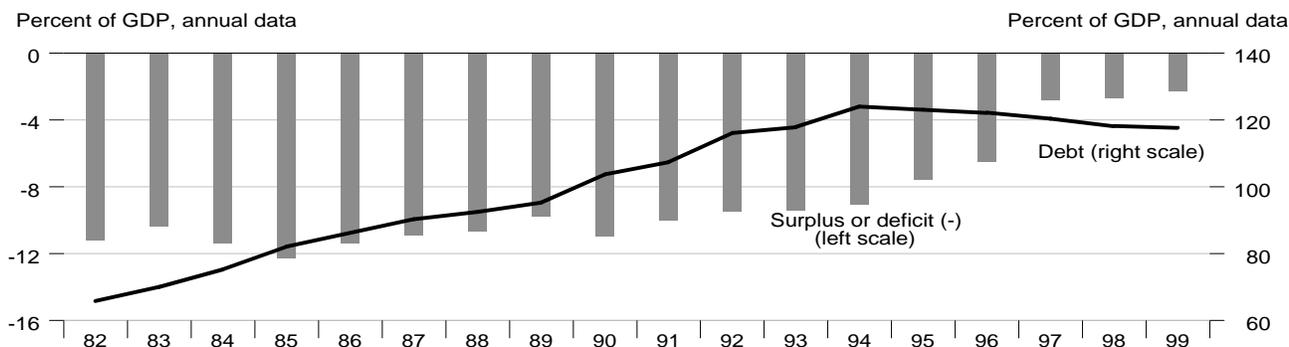
Labor Force Indicators



Saving and Investment

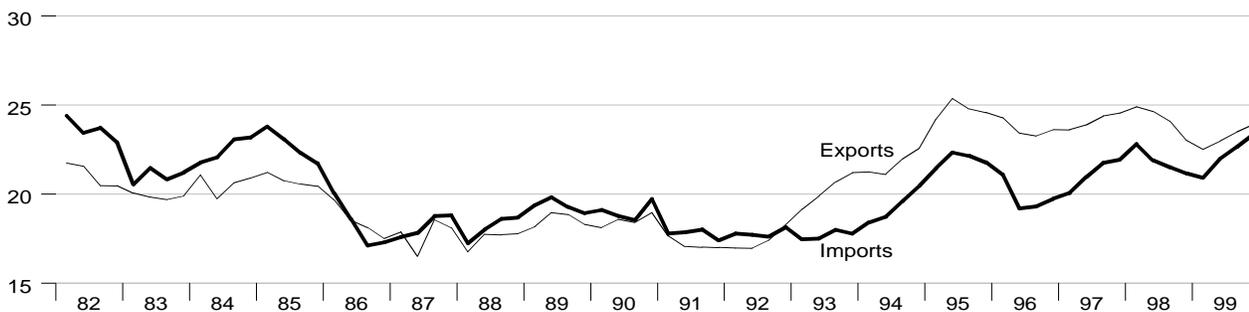


Government Debt and Budget Surplus or Deficit (-)



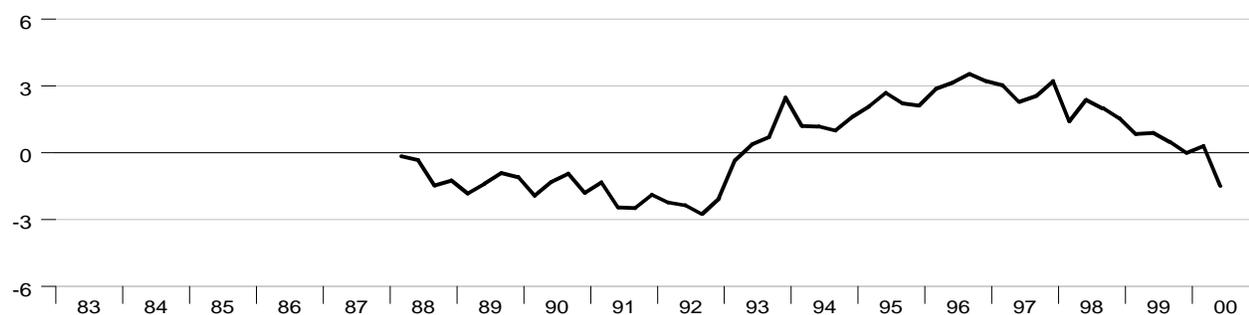
International Trade - Goods and Services

Percent of GDP



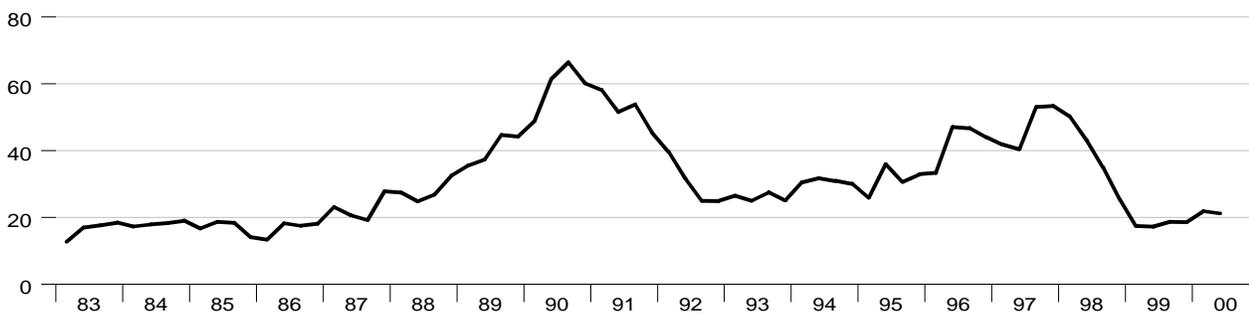
Current Account Balance

Percent of GDP



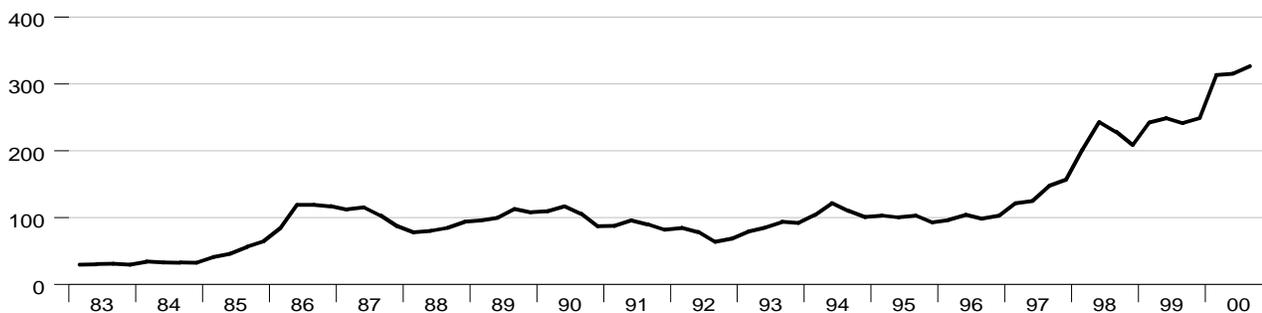
Foreign Exchange Reserves

Billions of US\$

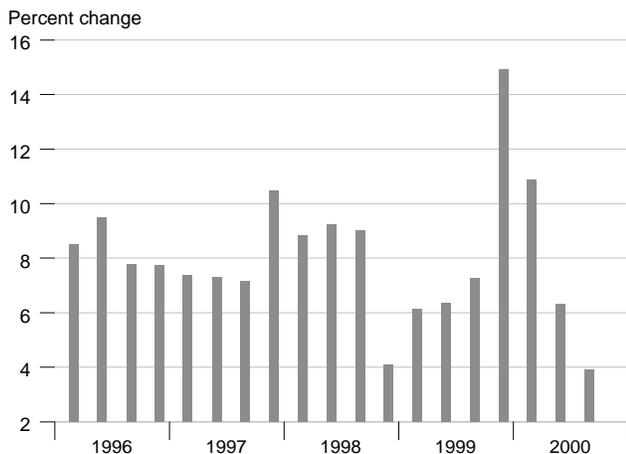


Stock Exchange Index - Milan Stock Exchange

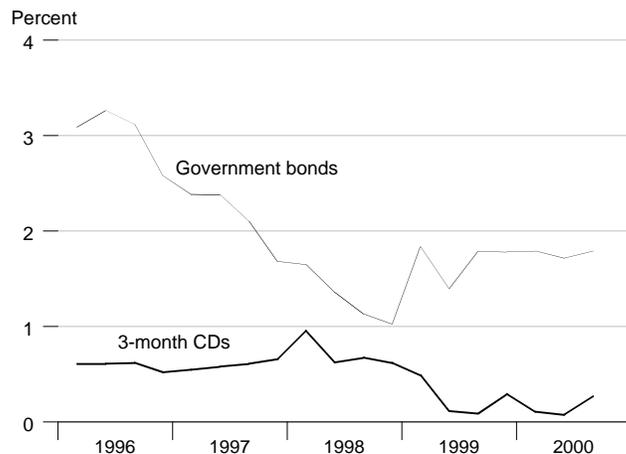
1995 = 100



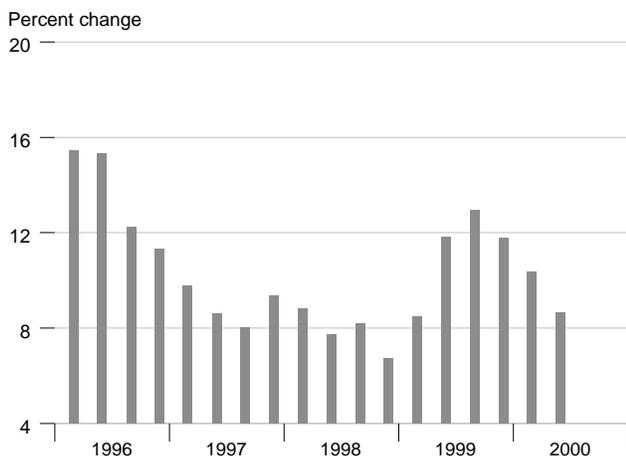
Adjusted Monetary Base Growth



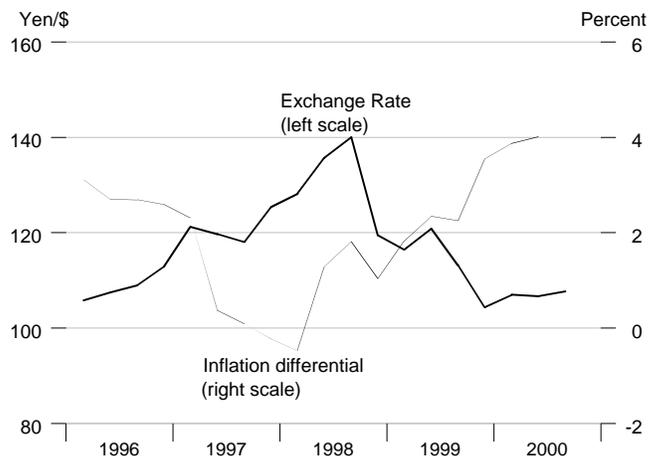
Interest Rates



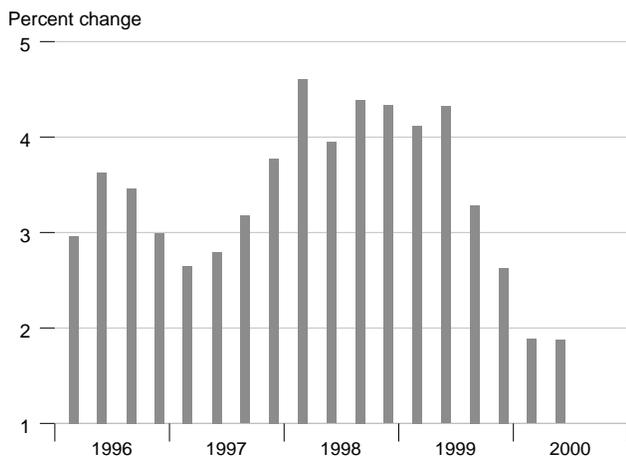
M1 Growth



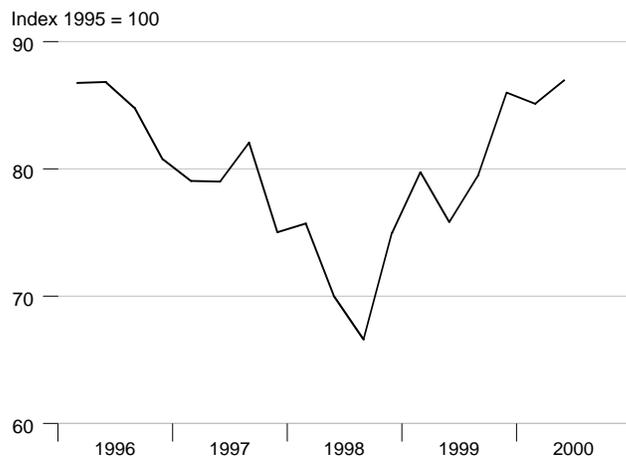
Exchange Rate and Inflation Differential



M2 Growth

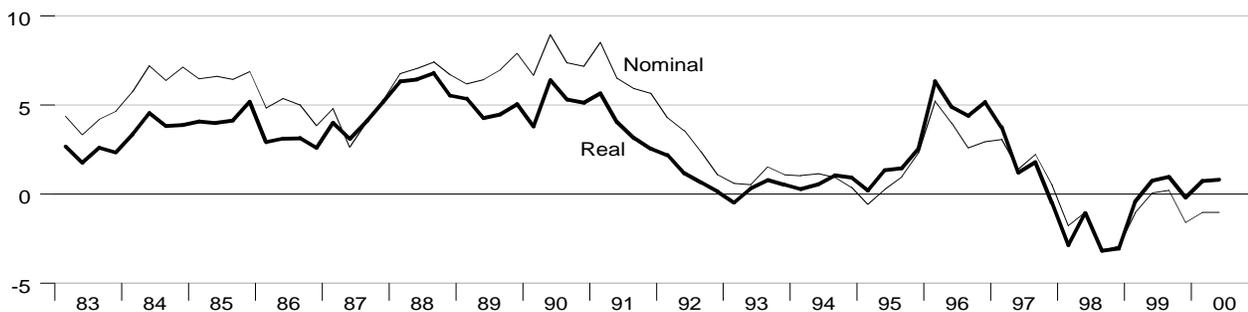


Real Effective Exchange Rate



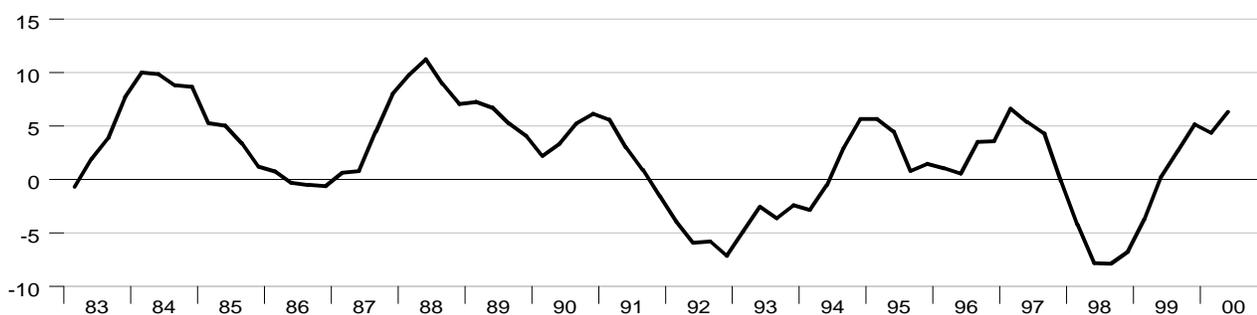
GDP Growth

Percent change



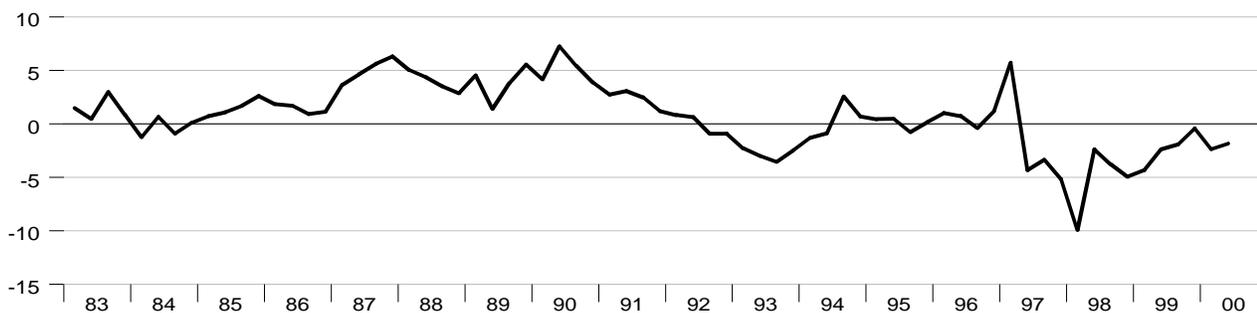
Industrial Production

Percent change



Retail Sales

Percent change

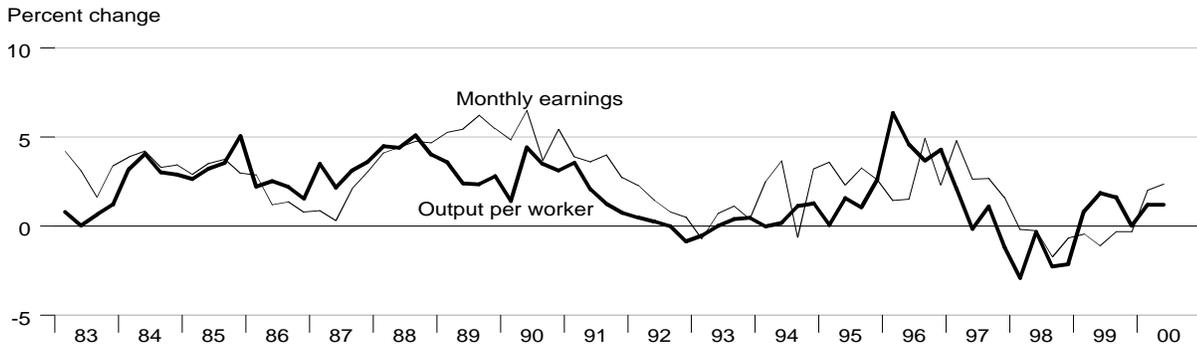


Capacity Utilization

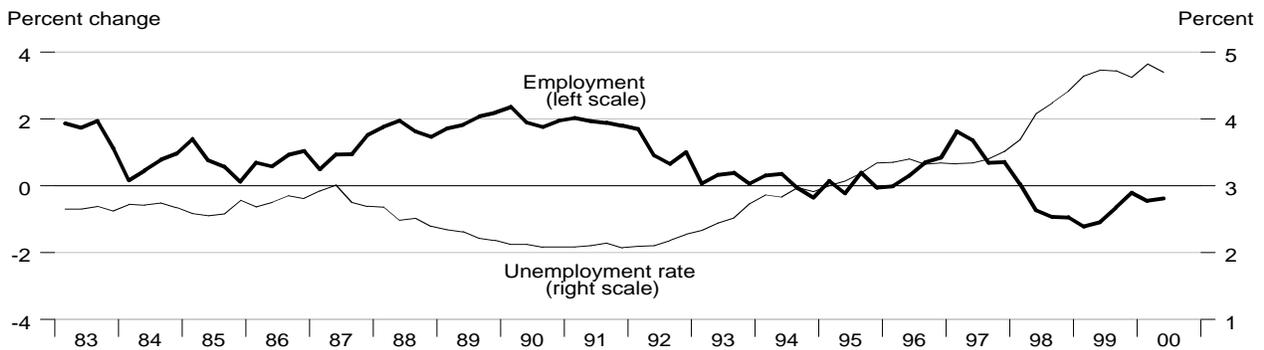
1995 = 100



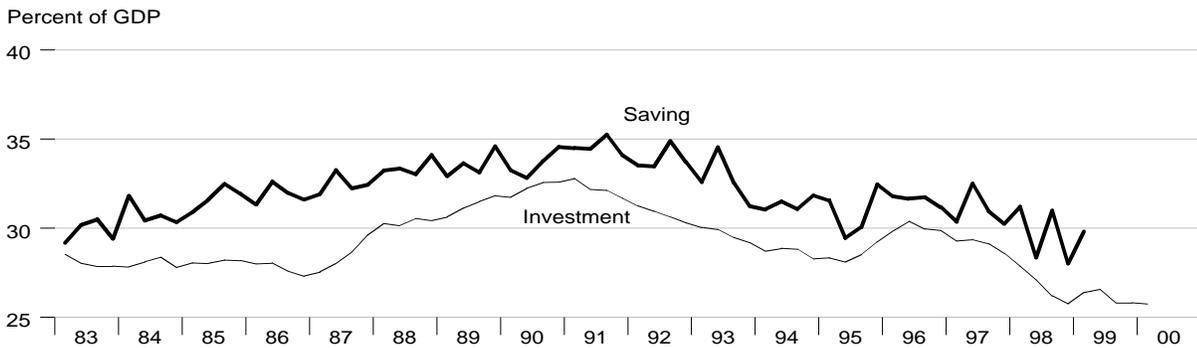
Monthly Earnings and Output per Worker



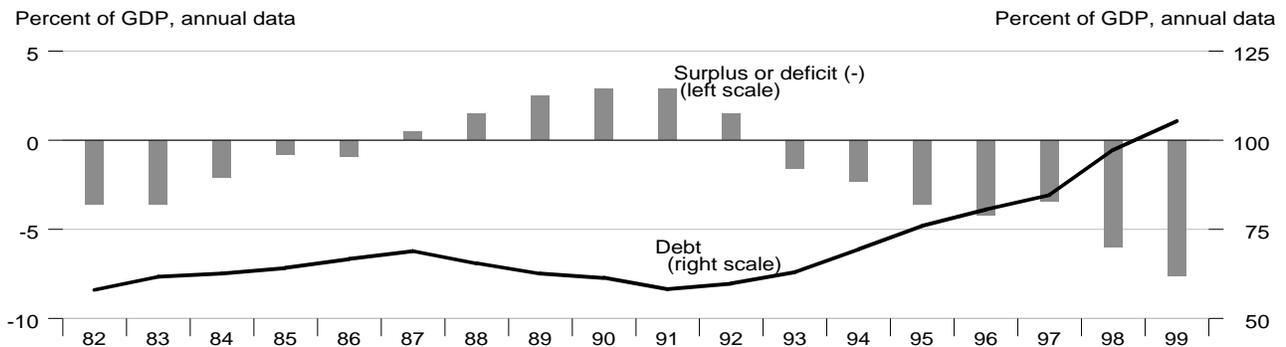
Labor Force Indicators



Saving and Investment

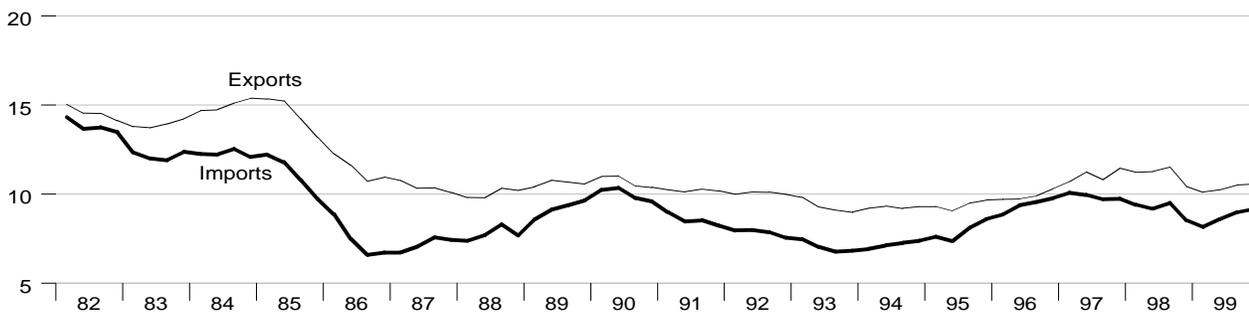


Government Debt and Budget Surplus or Deficit (-)



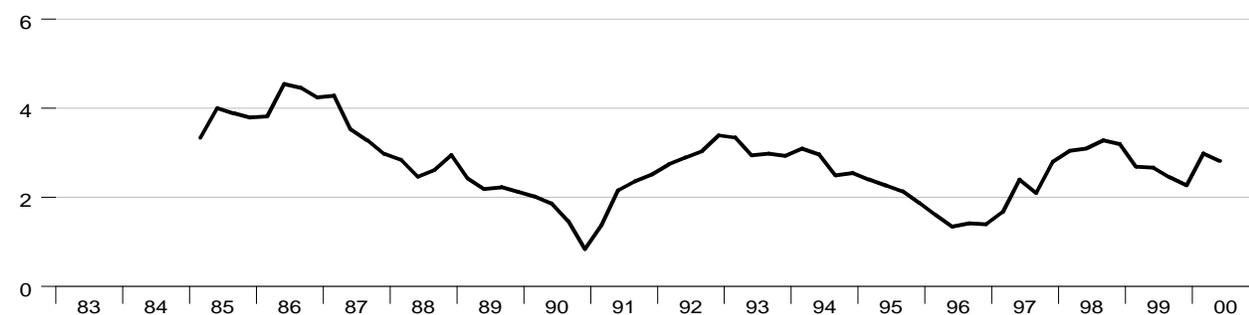
International Trade - Goods and Services

Percent of GDP



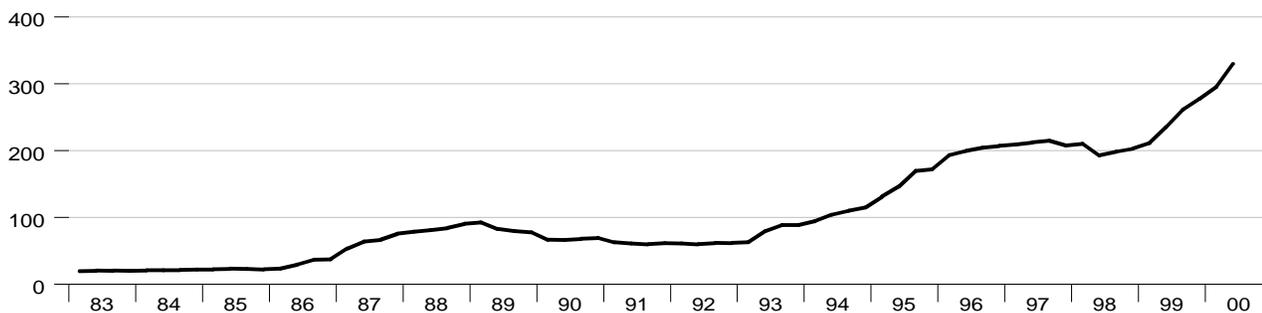
Current Account Balance

Percent of GDP



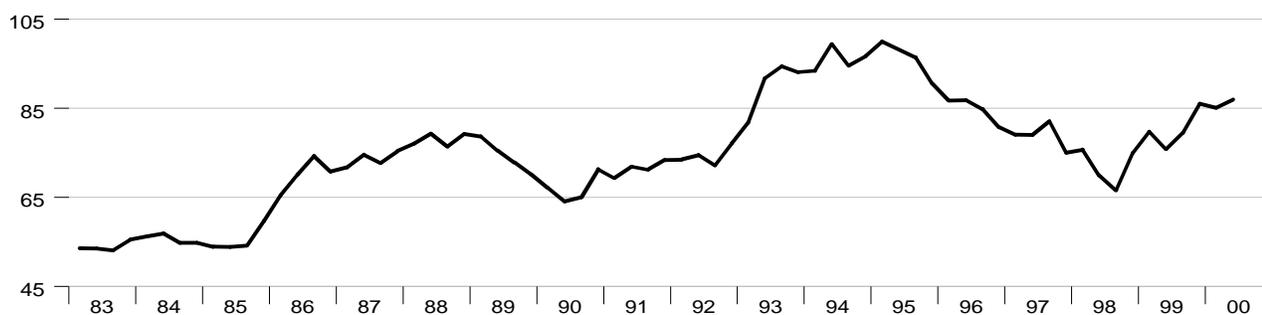
Foreign Exchange Reserves

Billions of US\$



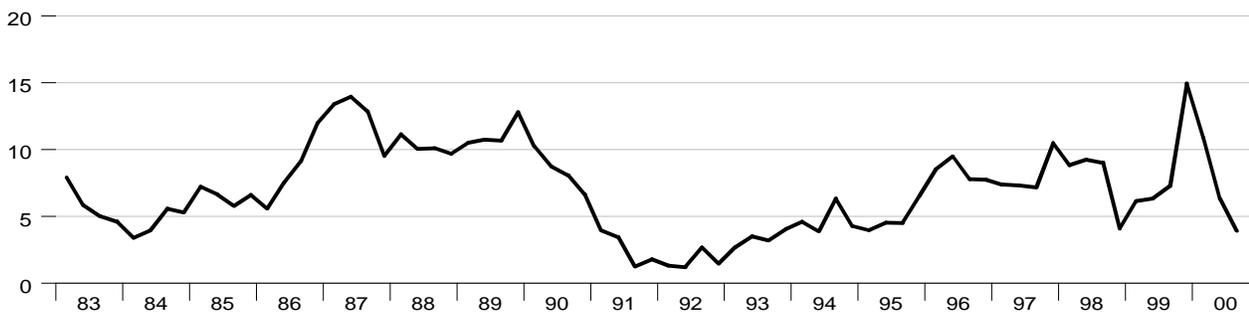
Real Effective Exchange Rate

Index 1995 = 100



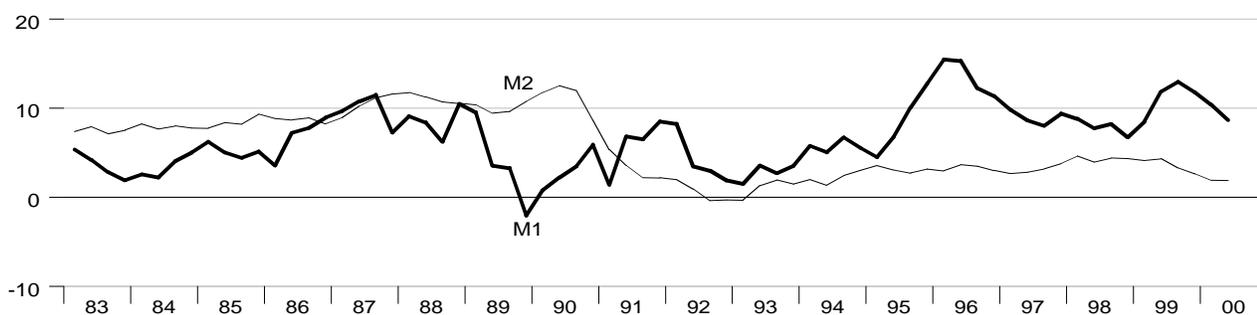
Adjusted Monetary Base Growth

Percent change



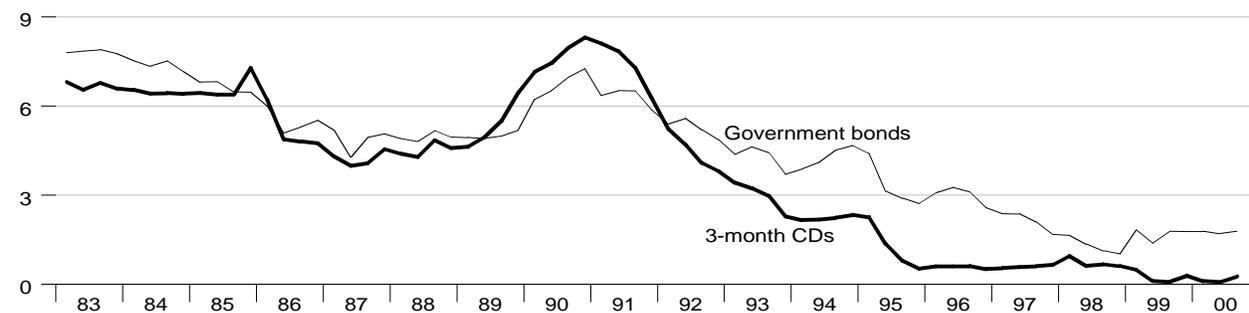
Monetary Aggregates

Percent change



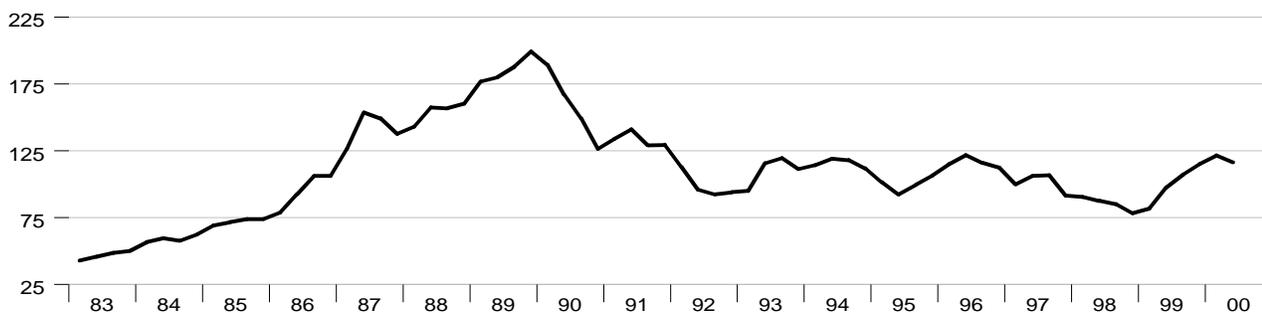
Interest Rates

Percent

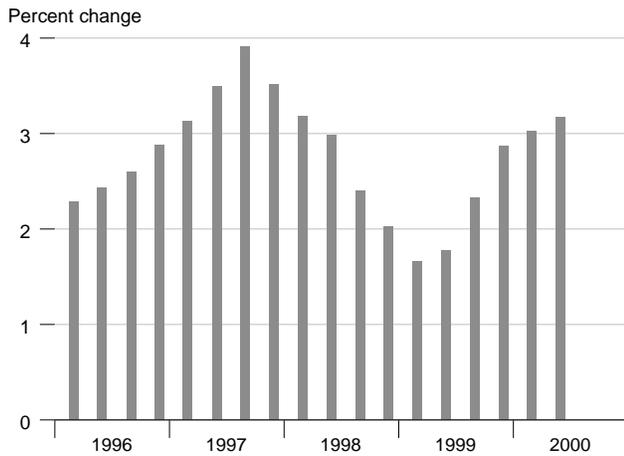


Stock Exchange Index - Tokyo Stock Exchange

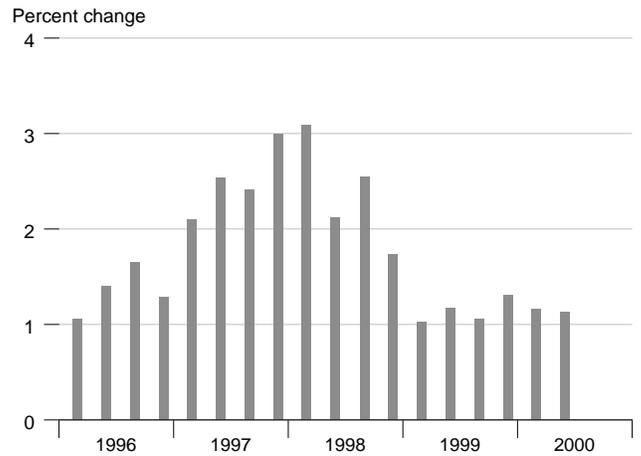
1995 = 100



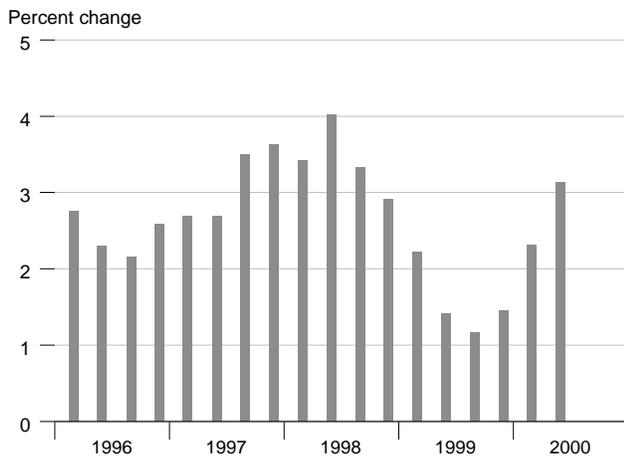
Real GDP Growth



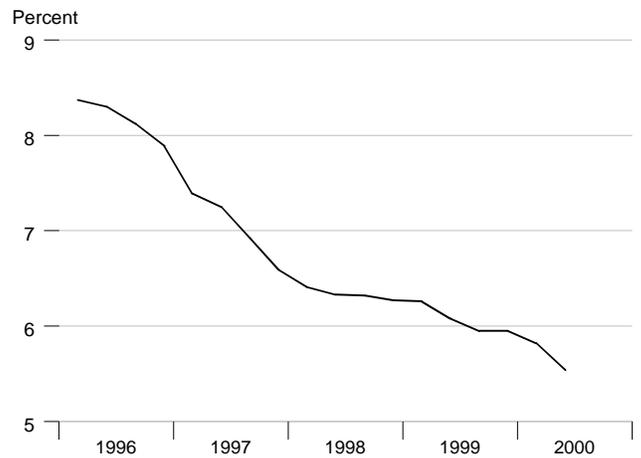
Employment Growth



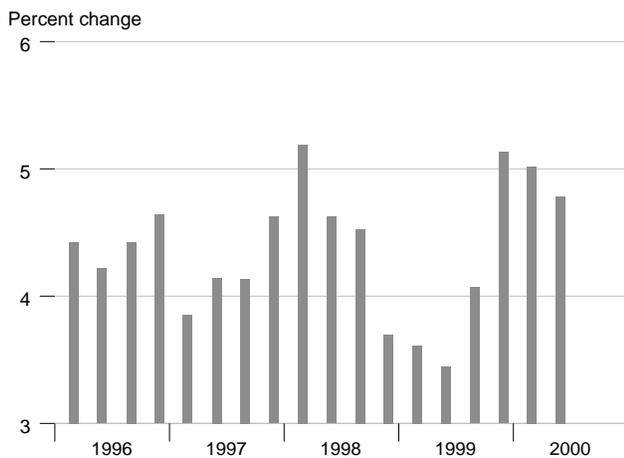
Consumer Price Index



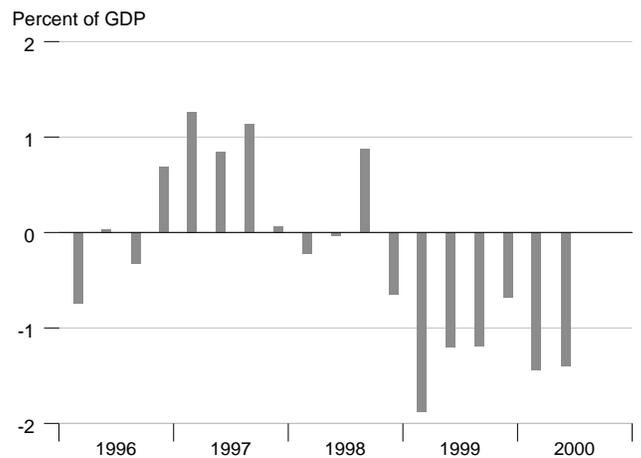
Unemployment Rate



Weekly Earnings

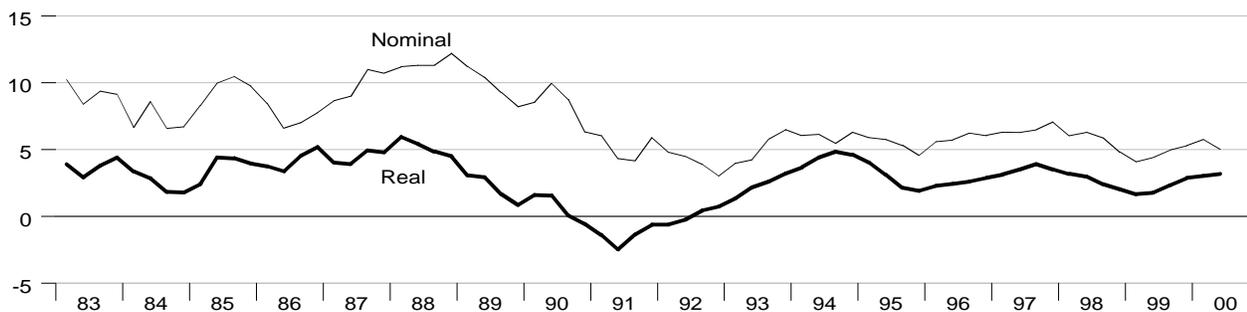


Current Account Balance



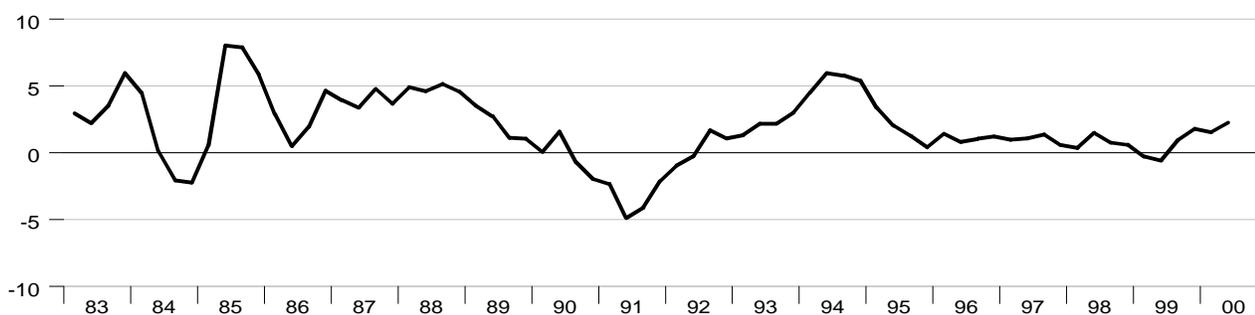
GDP Growth

Percent change



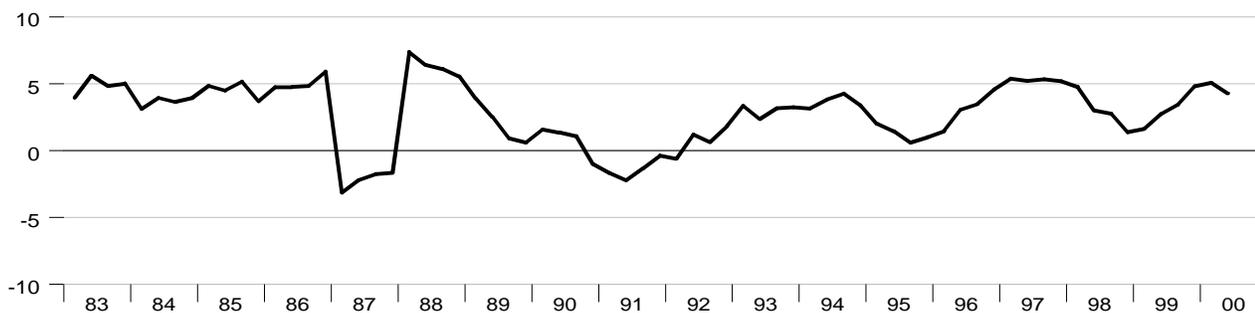
Industrial Production

Percent change



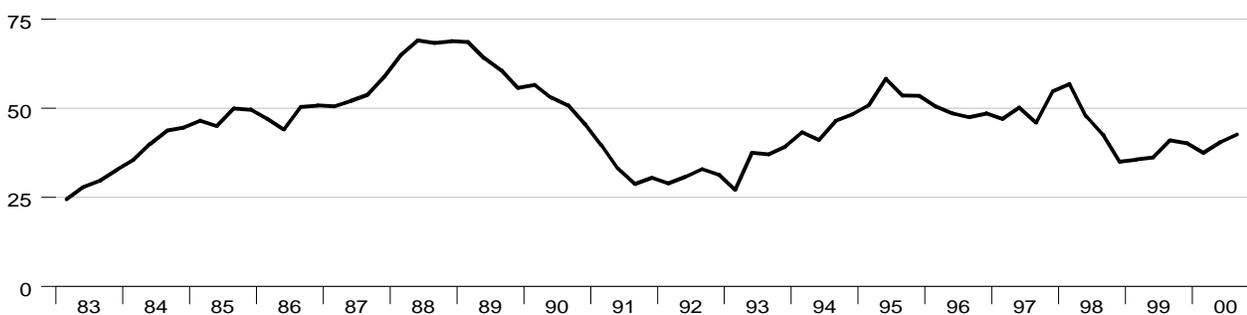
Retail Sales

Percent change

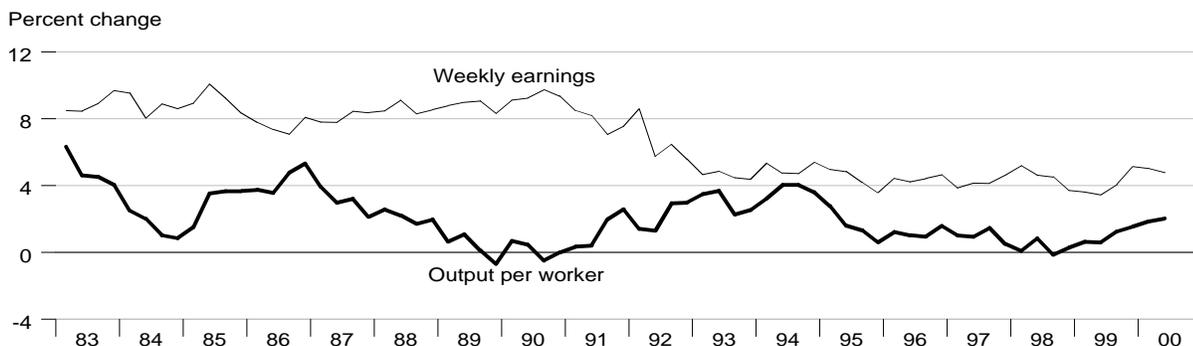


Firms Operating at Capacity

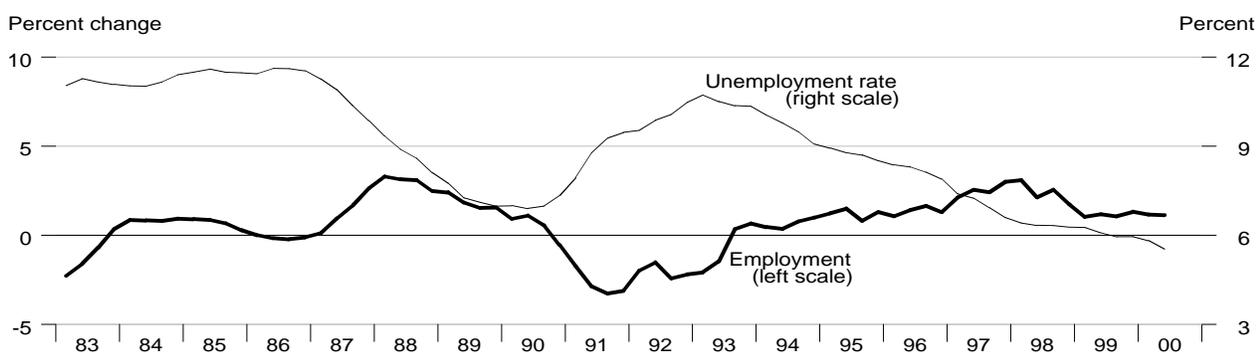
Percent



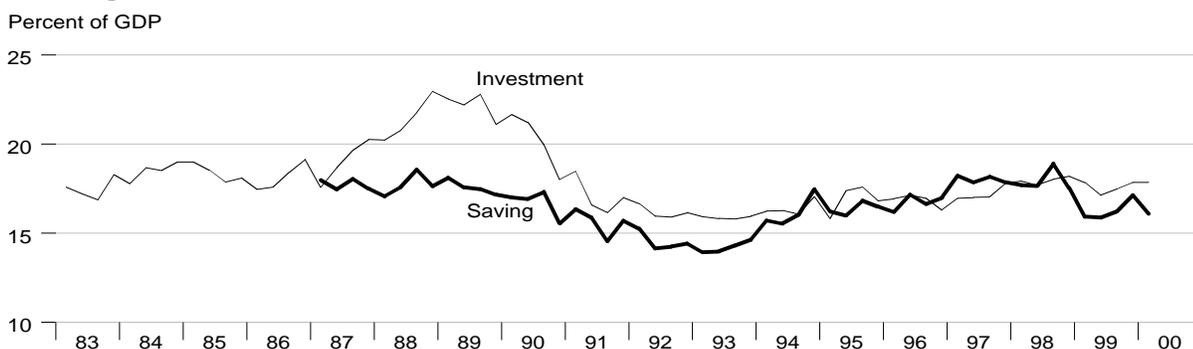
Weekly Earnings and Output per Worker



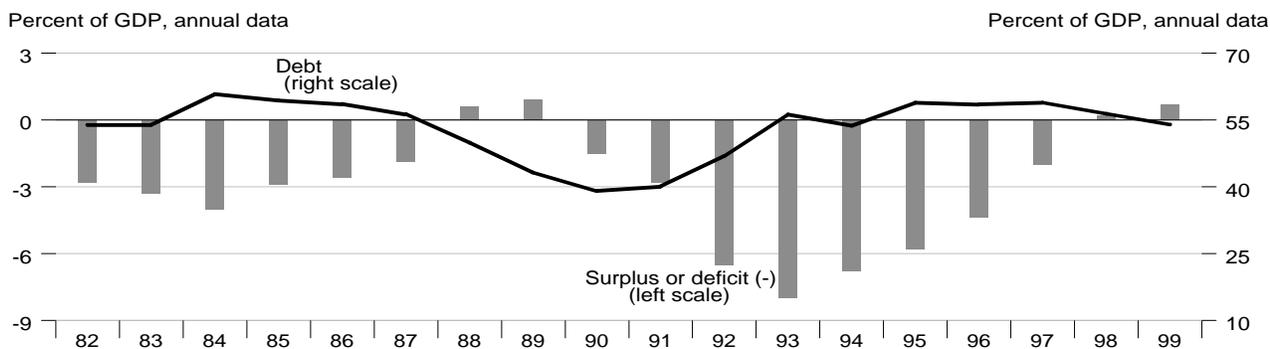
Labor Force Indicators



Saving and Investment

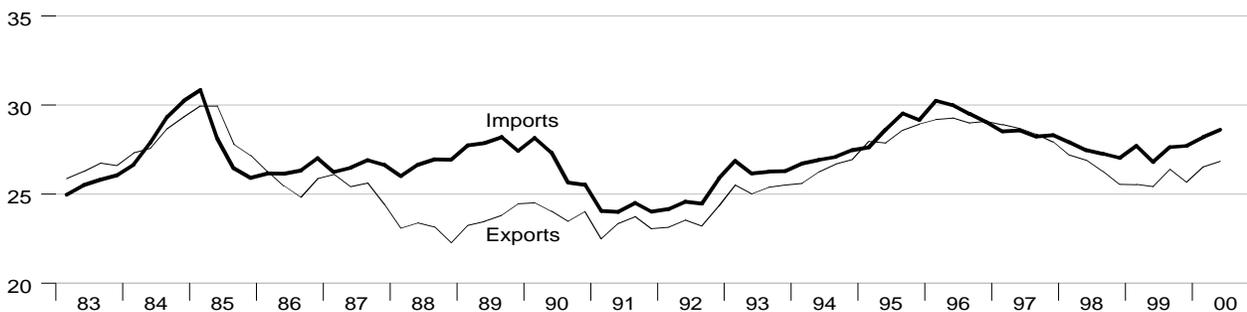


Government Debt and Budget Surplus or Deficit (-)



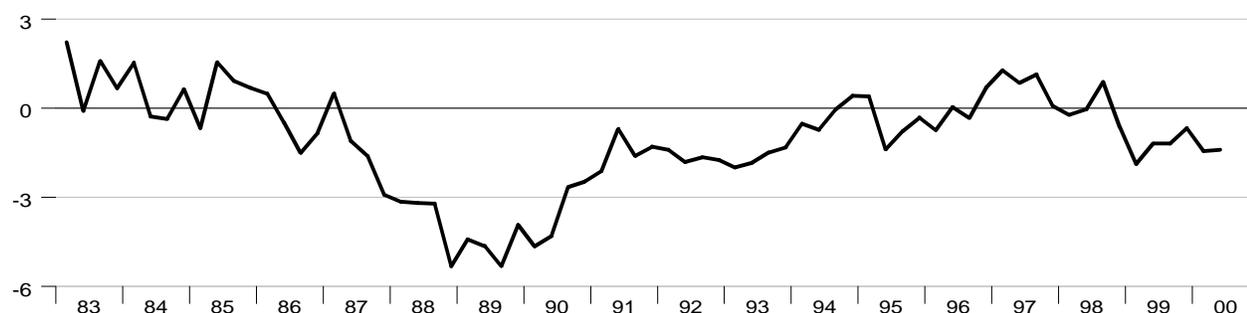
International Trade - Goods and Services

Percent of GDP



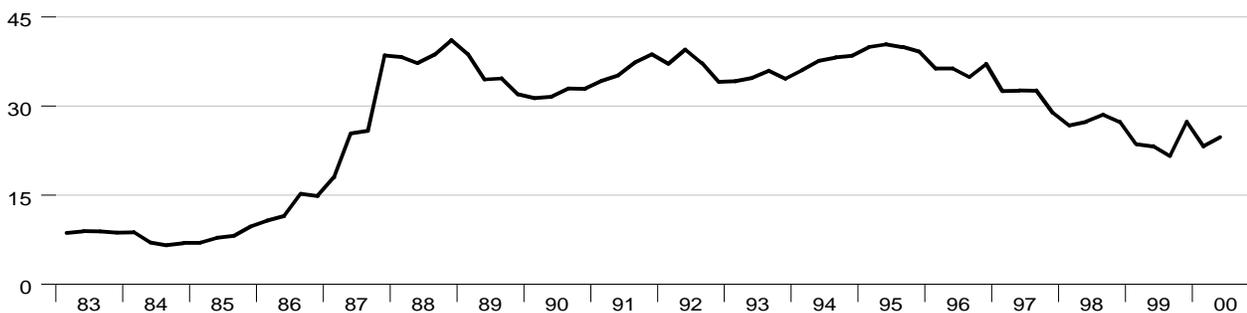
Current Account Balance

Percent of GDP



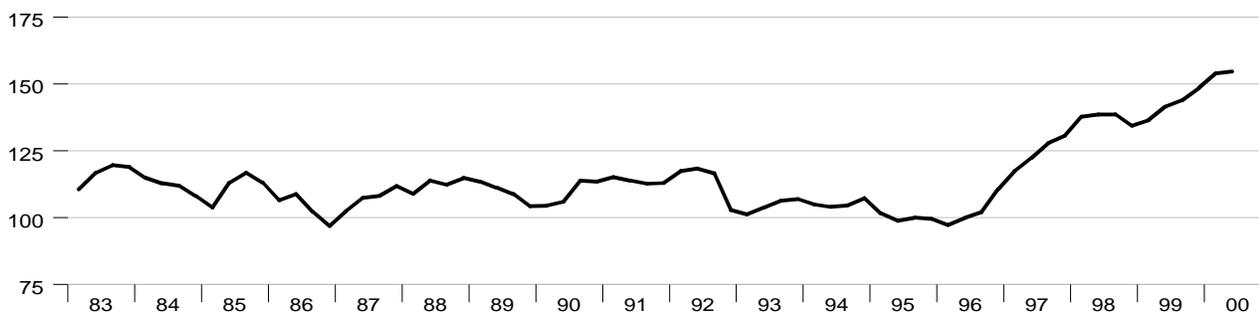
Foreign Exchange Reserves

Billions of US\$



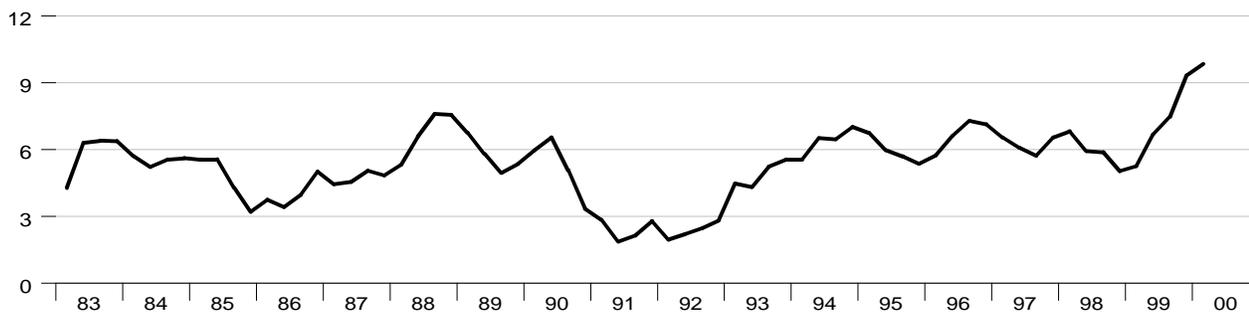
Real Effective Exchange Rate

Index 1995 = 100



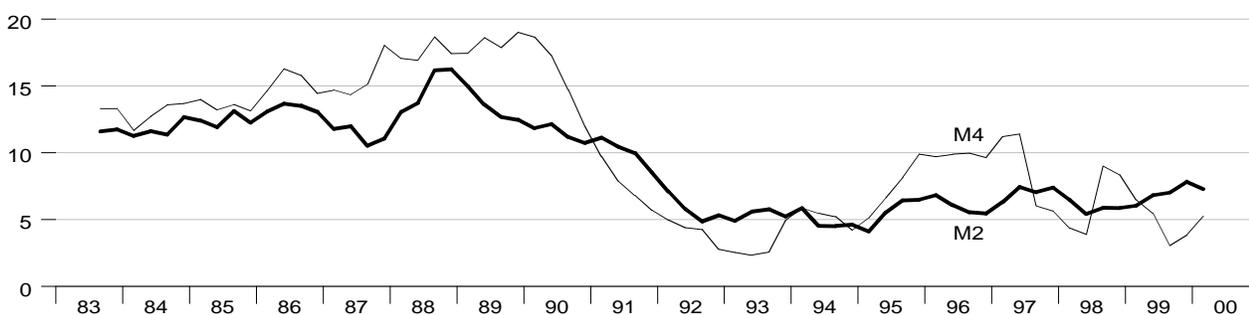
M0 Growth

Percent change



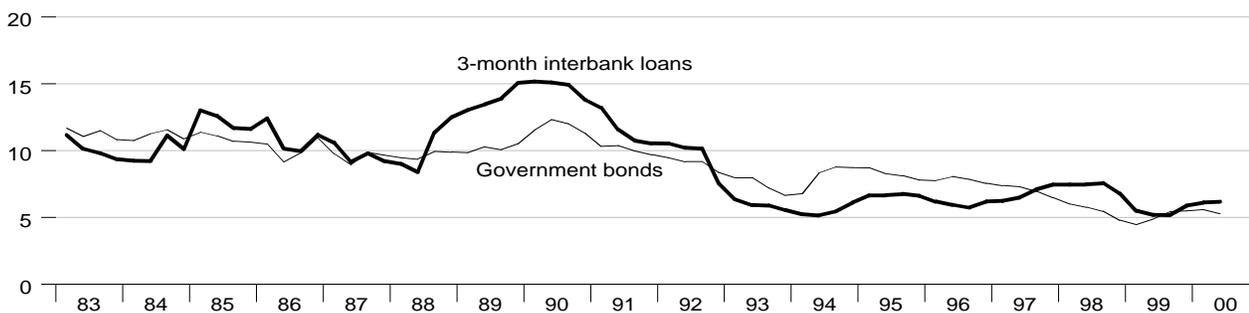
Monetary Aggregates

Percent change



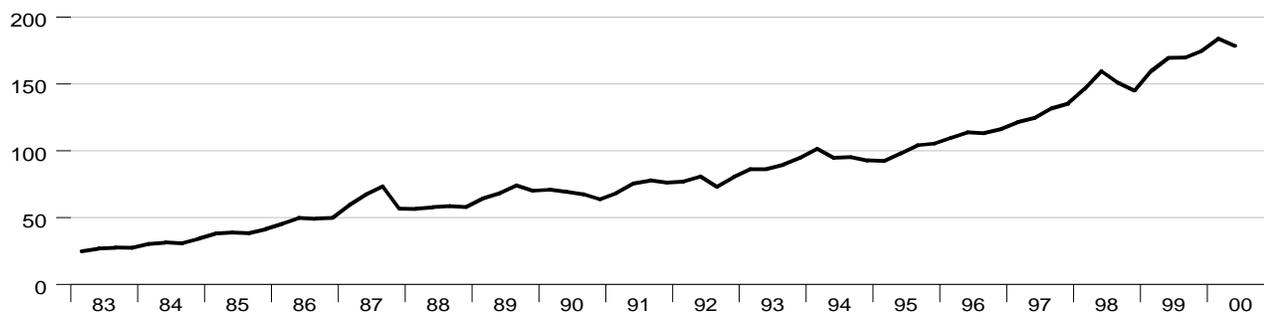
Interest Rates

Percent



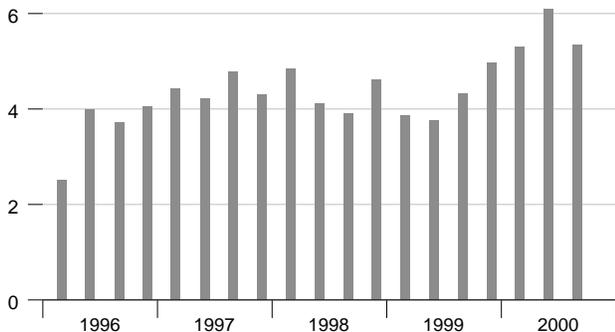
Stock Exchange Index - Financial Times Stock Exchange

1995 = 100



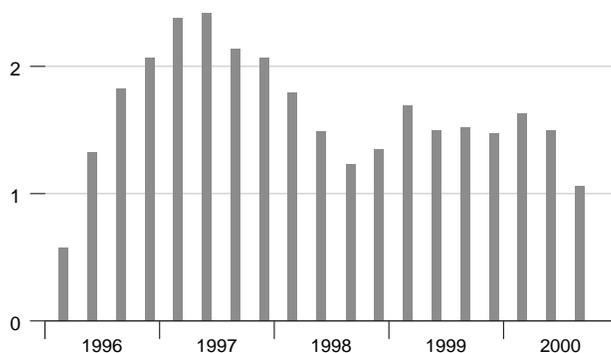
Real GDP Growth

Percent change
8



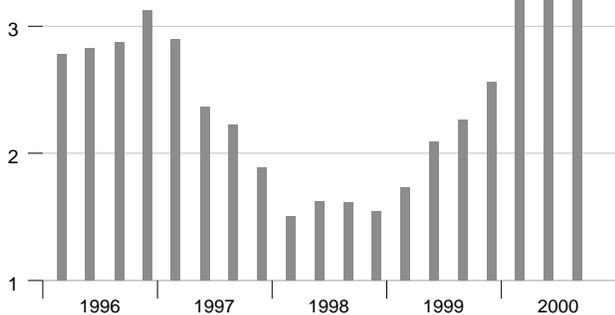
Employment Growth

Percent change
3



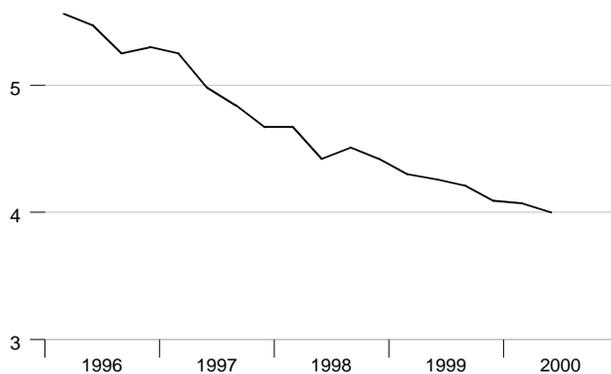
Consumer Price Index

Percent change
4



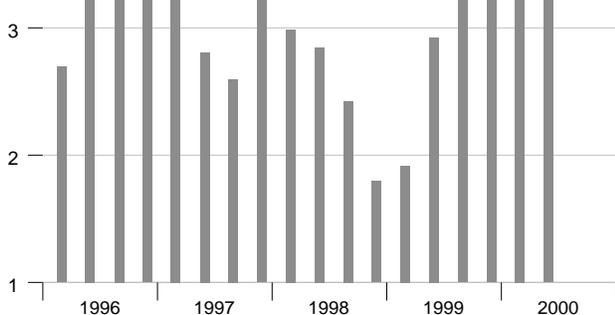
Unemployment Rate

Percent
6



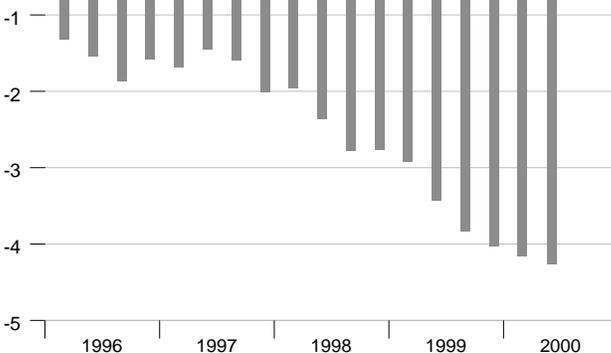
Hourly Earnings

Percent change
4



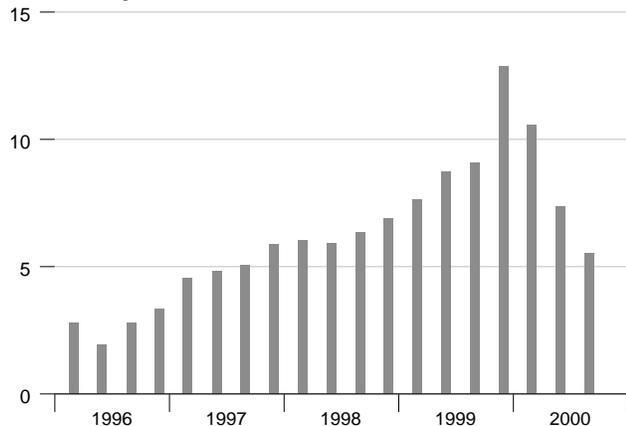
Current Account Balance

Percent of GDP
0



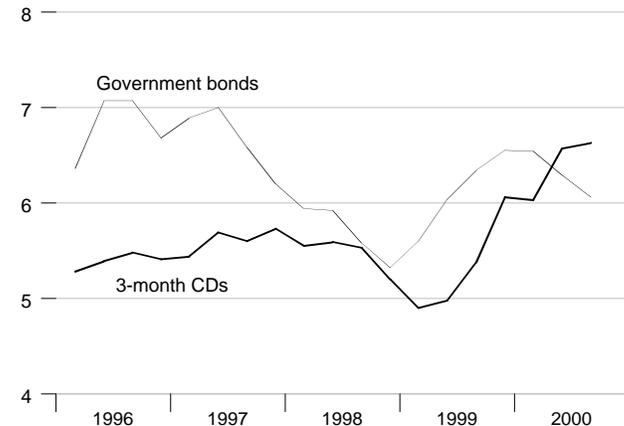
Adjusted Monetary Base Growth

Percent change



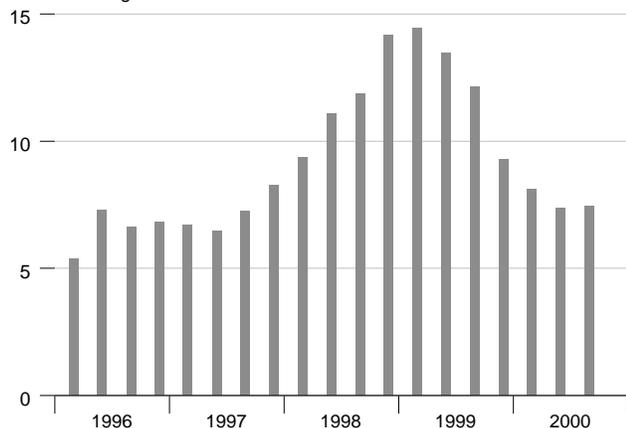
Interest Rates

Percent



MZM Growth

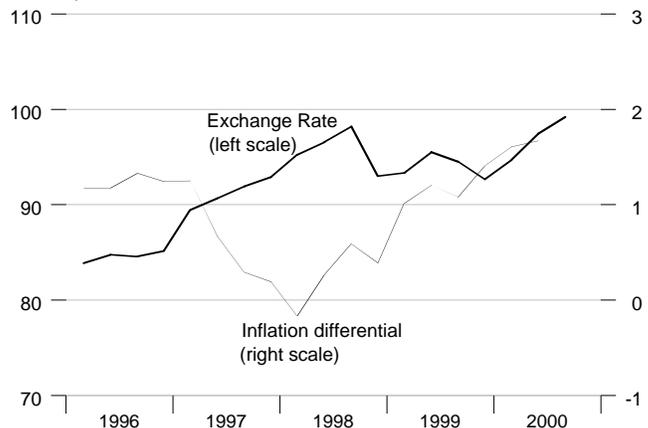
Percent change



Exchange Rate and Inflation Differential

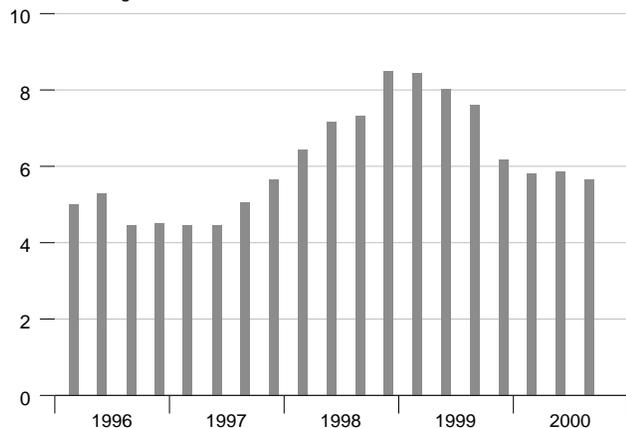
TWEX, March 1973=100

Percent



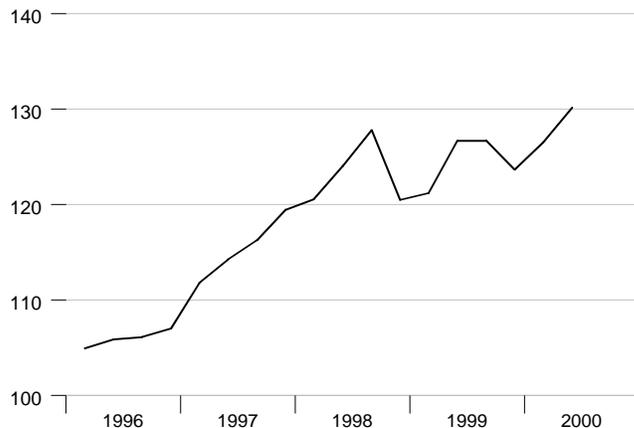
M2 Growth

Percent change



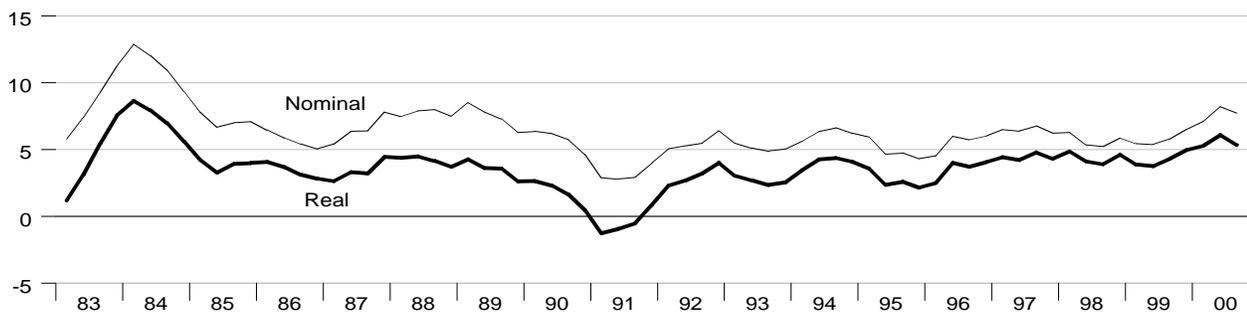
Real Effective Exchange Rate

Index 1995 = 100



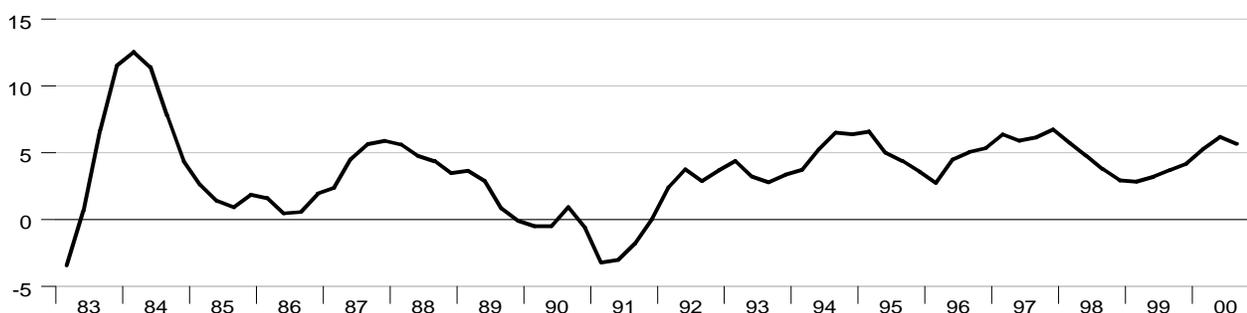
GDP Growth

Percent change



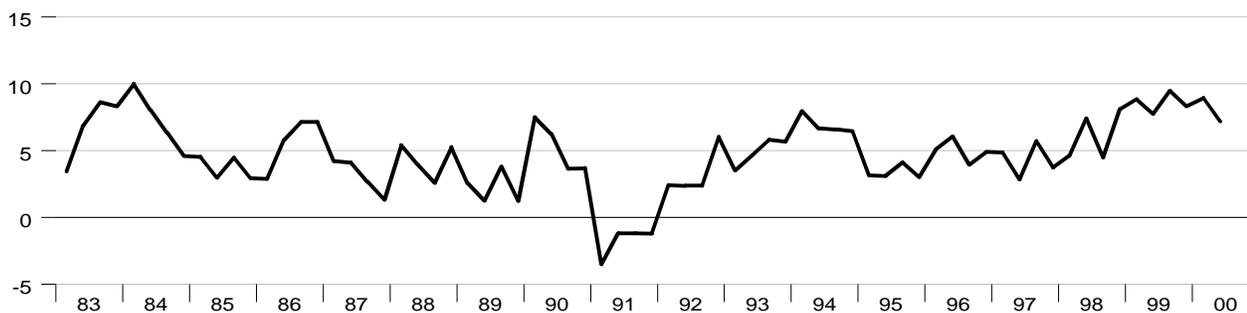
Industrial Production

Percent change



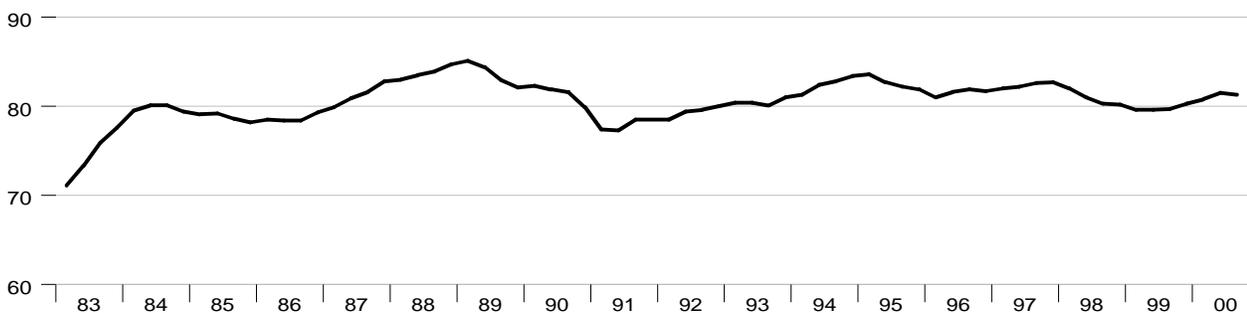
Retail Sales

Percent change

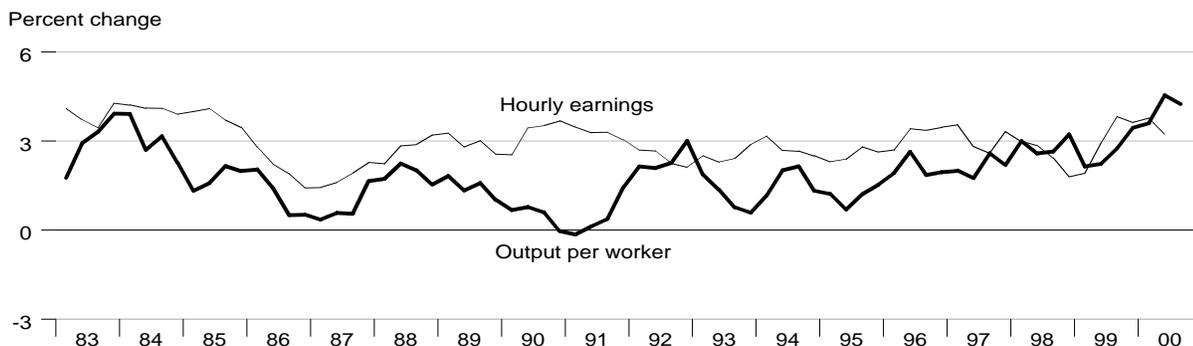


Capacity Utilization

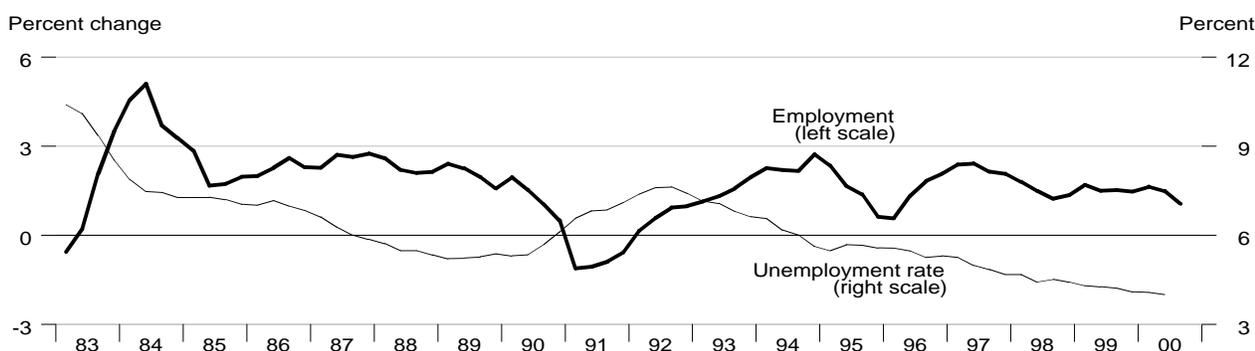
Percent



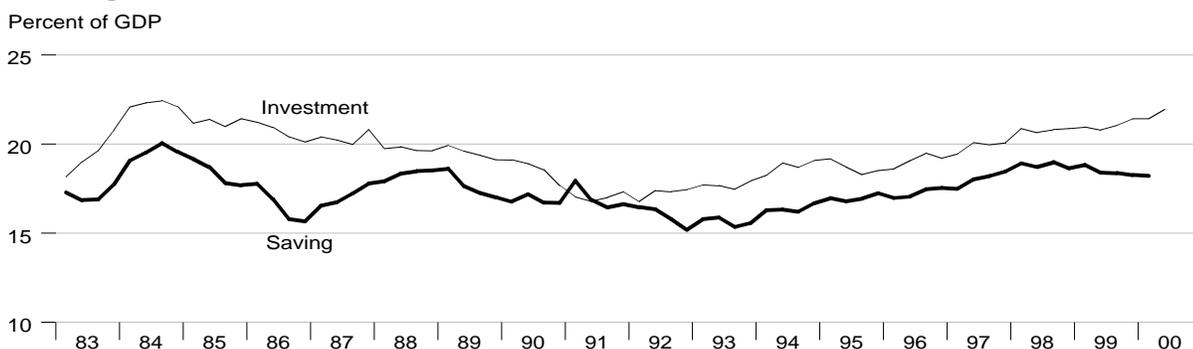
Hourly Earnings and Output per Worker



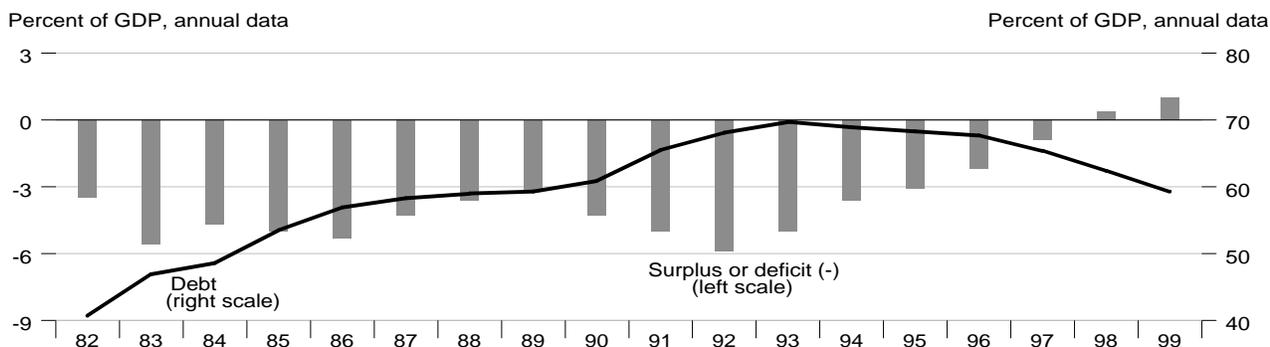
Labor Force Indicators



Saving and Investment

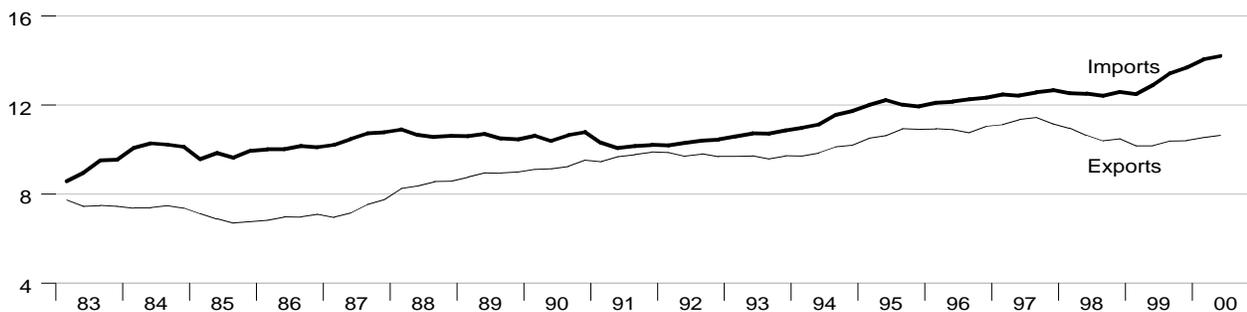


Government Debt and Budget Surplus or Deficit (-)



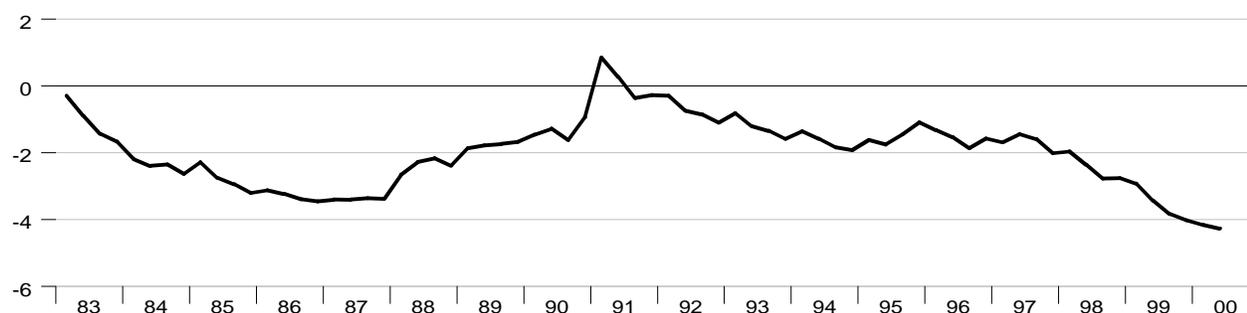
International Trade - Goods and Services

Percent of GDP



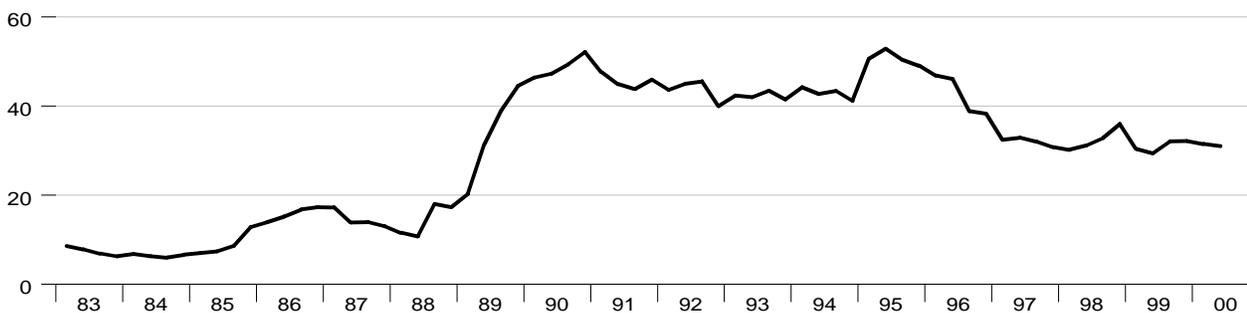
Current Account Balance

Percent of GDP



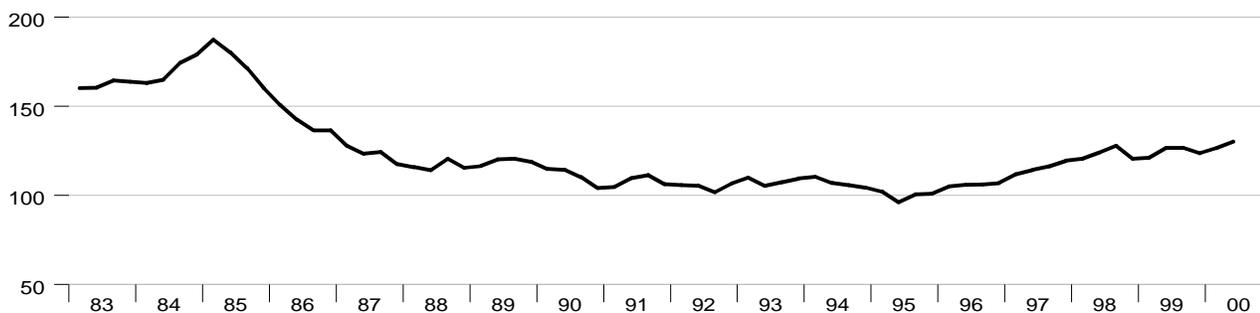
Foreign Exchange Reserves

Billions of US\$



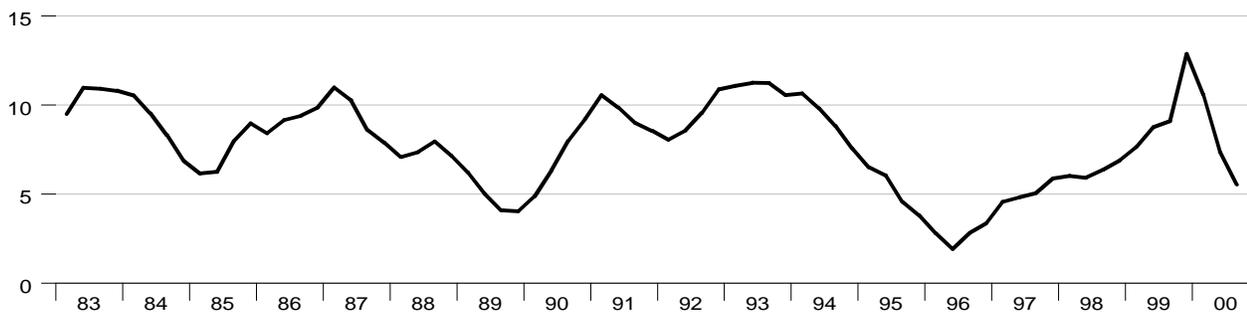
Real Effective Exchange Rate

Index 1995 = 100



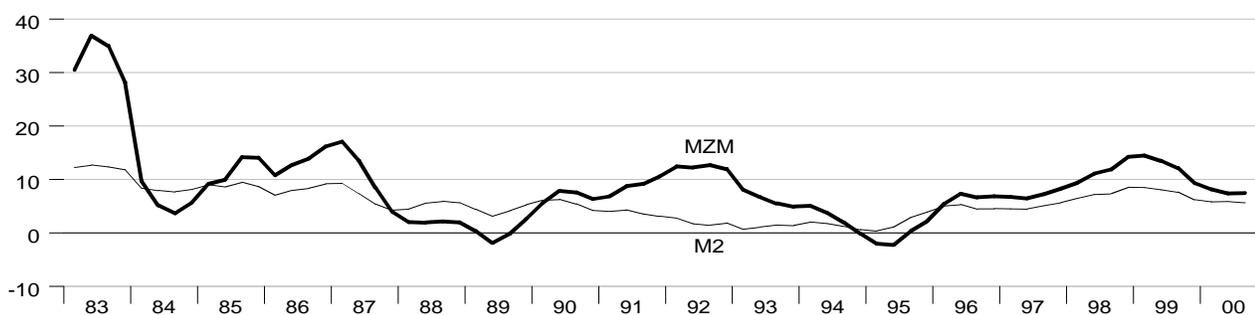
Adjusted Monetary Base Growth

Percent change



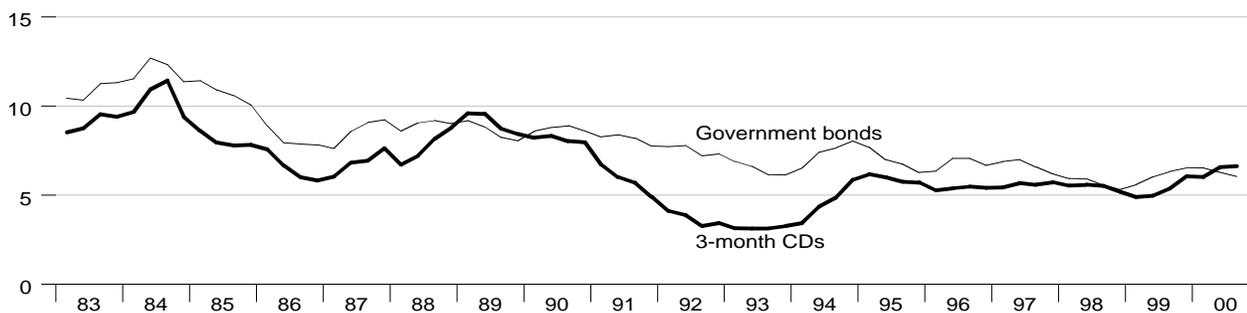
Monetary Aggregates

Percent change



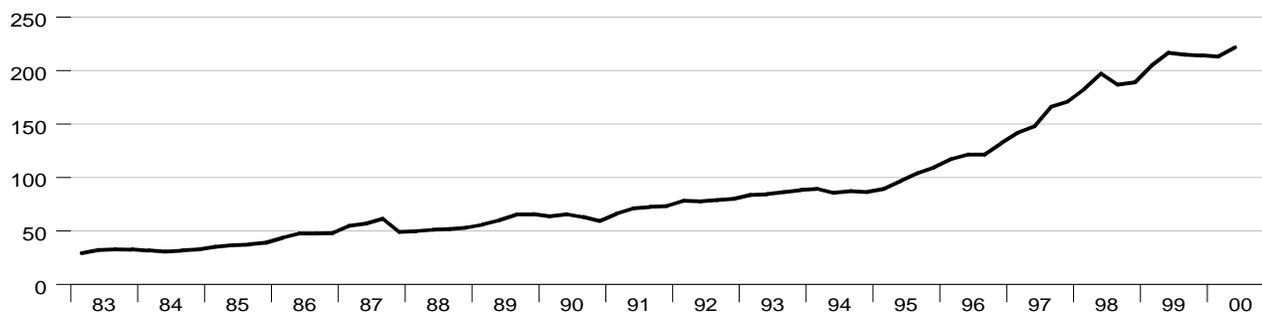
Interest Rates

Percent



Stock Exchange Index - New York Stock Exchange

1995 = 100



Notes

Euro-area Data – The unit of account for most series is the euro.

Prior to December 1998, euro-area interest rates are calculated on the basis of national government yields weighted by GDP. Starting in 1999 short-term rates are euro interbank offered rates. Long-term rates are calculated on the basis of national government bond yields weighted by the nominal outstanding amounts of government bonds in each maturity band.

Inflation data for the euro area is based on the harmonized index of consumer prices. Data for individual countries in this publication continues to be based on national consumer price indexes.

The dollar/euro exchange rate used in the chart on page 12 is a synthetic rate prior to January 1999. This is constructed by calculating a weighted average of the exchange rates of the 10 euro-area countries against the dollar. The weights are based on 1997 GDP shares.

German Data – As a result of reunification, data for all of Germany are now incorporated in most of the statistical series. The starting periods for unified German data are listed below. Care should be exercised when interpreting the data around these break periods. Data for capacity utilization and hourly earnings remain for western Germany only.

Third quarter 1990: current account balance and international trade.
First quarter 1991: CPI, GDP, industrial production, investment and saving.

First quarter 1992: employment and output per worker.

First quarter 1993: stock exchange index and unemployment rate.

First quarter 1994: retail sales.

Capacity Utilization covers the manufacturing sector for Canada, France, Japan, the United Kingdom, the United States, and the euro area; manufacturing excluding food, beverage and tobacco for Germany; and mining and manufacturing for Italy.

Consumer Price Index is for all items. The current index is based on goods and services consumed by all individuals for Canada and Italy; all households for France; households with a monthly income of less than 25,000 DM for Germany; all multi-person households excluding those mainly engaged in agriculture, forestry and fisheries for Japan; all households except pensioners dependent on state pension and high income households for the United Kingdom; and all urban households for the United States.

Current Account Balance is the sum of merchandise and service exports and income receipts on domestic assets abroad minus the sum of merchandise and service imports and income payments from foreign assets in the domestic economy plus net unilateral transfers.

Earnings are based on hourly earnings in manufacturing for Canada, France, Germany, the United States, and the euro area; hourly earnings in industry excluding construction for Italy; monthly earnings in manufacturing for Japan; and weekly earnings in manufacturing for the United Kingdom.

The **Real Effective Exchange Rate** uses normalized unit labor costs in manufacturing. The weighting scheme used to construct the rates, for all except the euro area, is based on disaggregated data for trade among 21 industrial countries in manufactured goods for 1989-91. For the euro area the weights relate to the trade of the euro area with the other countries. The weights reflect the relative importance of a country's trading partners in its direct bilateral trade relations and competition in third markets. Normalized unit labor costs in manufacturing are calculated by dividing an index of actual hourly compensation per worker by a five-year moving average index of output per man-hour.

Employment data refer to civilian employment for Canada, Germany, the United States, and the euro area; industrial employment for France; employed persons excluding conscripts for Italy; and total employment for Japan and the United Kingdom.

Fluctuations in the dollar value of **Foreign Exchange Reserves** occur as a result of changes in reserve holdings and/or changes in the dollar value of the currencies held.

Government Surplus is the difference between general government current receipts and total outlays. Total outlays consist of current expenditures and net capital expenditures. **Government Debt** incorporates all financial liabilities of the general government sector. The general government sector consolidates the accounts of the central, state, local and social security sectors.

The **Inflation Differential** is the difference between the U.S. inflation rate and the foreign inflation rate, as measured by the consumer price index. For the U.S. chart on page 41, the inflation differential is the difference between the U.S. inflation rate and a weighted average of the inflation rates in the 17 countries used in the major currency trade-weighted exchange index. For the euro-area chart on page 12, the inflation differential is the difference between the U.S. inflation rate and the euro-area inflation rate as measured by the harmonized consumer price index.

Industrial Production measures the change in the volume of output in the mining, manufacturing, oil, electricity, gas and water industries.

The **Short-Term Interest Rate** table on page 4 uses the relevant 3-month interest rate shown in the country pages.

The **Long-Term Interest Rate** table on page 4 uses the government bond rate. The government bond rate is a composite of yields on Federal government bonds with maturities of more than 10 years for Canada and the United States; long-term public and semi-public sector bonds for France; 7-15 year public sector bonds for Germany; 15-20 year government bonds through 1990, and 10-year government bonds starting in 1991 for Italy; 10-year government bonds for Japan, the United Kingdom, and the euro area.

Investment is gross fixed capital formation and changes in stocks (inventories) of the government and business sectors.

The **Reserve Money** table on page 4 refers to the adjusted monetary base for Japan and the United States; reserve money for Canada; and M0 for the United Kingdom. **Reserve Money** is currency in circulation, deposits of the deposit money banks, and demand deposits of other residents (with the exception of the central government) with the monetary authority.

Adjusted Monetary Base

Japan – currency in circulation and current deposits at the Bank of Japan.
United States – the sum of currency in circulation outside Federal Reserve Banks and the U.S. Treasury, deposits of depository financial institutions at Federal Reserve Banks, and an adjustment for the effects of changes in statutory reserve requirements on the quantity of base money held by depositories.

M0

United Kingdom – notes and coins in circulation outside the Bank of England and bankers' operational deposits at the Bank of England.

M1

Canada – currency in circulation and chartered bank net demand deposits.
Japan – cash, currency in circulation and deposit money.
Euro area – currency in circulation and overnight deposits.

MZM

United States – currency in circulation, travelers' checks and total publicly-held checkable deposits minus cash items in the process of collection and Federal Reserve float, savings deposits, shares in retail money market mutual funds (funds with initial investments of less than \$50,000), net of retirement accounts and institutional money market mutual funds.

M2

Canada – M1 plus all checkable notice deposits and personal term deposits.
United Kingdom – currency in circulation and sterling retail deposits with the UK banks and building societies.
United States – MZM less institutional money market mutual funds plus small denomination (less than \$100,000) time deposits.

M2 + CDs

Japan – M1 plus private deposits, public deposits less demand deposits, and certificates of deposit.

M3

Euro area – M1 plus deposits with a maturity up to 2 years, deposits redeemable at notice up to 3 months, repurchase agreements, money market funds and debt securities up to two years.

M4

United Kingdom – M2 plus wholesale deposits with the UK banks and building societies.

Output Per Worker is the ratio of real GDP to employment.

Retail Sales are based on a volume index.

Saving is gross national saving which includes net national saving (receipts less disbursements of households, business and the government) and consumption of fixed capital.

The **Stock Market Index** refers to all share prices except for the United Kingdom, which excludes financial firms.

The trade-weighted exchange rate, **TWEX**, is the Board of Governors of the Federal Reserve System's major currency trade-weighted dollar exchange rate. This is a weighted average of the exchange value of the U.S. dollar relative to the major international currencies of 17 industrial countries.

The **Unemployment Rate** is the standardized unemployment rate. It is the percentage of the civilian labor force that is unemployed. The unemployed are all persons of working age who are without work, readily available for work and actively seeking work. The standardized rate may differ from the national unemployment rate calculations.

Sources

Except as noted below, all data are from the *Organization for Economic Cooperation and Development (OECD)*. For more details on these data see: OECD, *Main Economic Indicators, Sources and Definitions 1997*, July 1997. This publication is available on the Internet at: <http://www.oecd.org/std/meta.htm>.

Bank of Canada

M1 and M2 (Canada)

Bank of England

M2 (U.K.)

Banca D'Italia

Long-term interest rate (Italy)

Bank of Japan

Adjusted monetary base (Japan), long-term interest rate (Japan), employment (Japan)

Board of Governors of the Federal Reserve System

Exchange rates, short and long-term interest rates (U.S.), M2 (U.S.), industrial production index (U.S.), capacity utilization (U.S.)

Bundesanstalt Fur Arbeit

Employment (Germany)

Bureau of Economic Analysis (BEA), U.S. Department of Commerce

Gross domestic product (U.S.), current account balance (U.S.), merchandise and service trade (U.S.)

Bureau of Labor Statistics (BLS), U.S. Department of Labor

Employment (U.S.), consumer price index (U.S.)

Eurostat

Current account balance (euro area), gross domestic product (euro area), retail sales (euro area)

Federal Reserve Bank of St. Louis

Inflation differential (U.S. and euro area), adjusted monetary base (U.S.), MZM (U.S.)

Financial and Economic Research International

Employment (euro area), merchandise trade (euro area)

Haver Analytics

Synthetic euro exchange rate

Istituto Centrale di Statistica

Employment (Italy)

International Monetary Fund (IMF)

Foreign exchange reserves, reserve money (Canada), merchandise and service trade (except U.S. and euro area), and real effective exchange rate. For more details on these data see: *IMF, International Financial Statistics*.

Ministere du Travail et des Affaires Sociales

Employment (France)

Statistics Canada

Employment (Canada)

U.K. Office for National Statistics

Employment (U.K.) and M0 (U.K.)