

## Import Prices and the Exchange Rate

**B**etween December 2002 and December 2003, the dollar fell by almost 9 percent against a broad index of currencies. Despite this decline, prices for foreign goods sold in the United States showed little change. How is this possible?

If we ignore transport costs, the dollar price of U.S. imports ( $P^{\$}$ ) equals the foreign currency price of these goods ( $P^{FC}$ ) converted into dollars ( $e = \$/\text{foreign currency}$ ):  $P^{\$} = P^{FC} \times e$ . A depreciation of the dollar (increase in  $e$ ) must result in a rise in U.S. import prices, of the same magnitude, unless there is a decline in the prices foreign producers receive ( $P^{FC}$ ). The 9 percent fall in the dollar was accompanied by only a 1 percent rise in U.S. non-petroleum import prices, indicating that foreign producers absorbed much of the decline in the value of the dollar. Studies have shown that such behavior is common.

Why are changes in the exchange rate not fully passed-through into import prices? One possibility is that changes in import prices lag movements in the exchange rate. The prices for goods received today were contracted at some point in the past. If, as is typical, the prices in these contracts are invoiced in dollars, then a change in the exchange rate may have no immediate effect on import prices. Over time, however, firms may adjust their contract prices to reflect the change in the foreign currency value of the dollar. Even after accounting for such lags, U.S. import prices generally do not fully incorporate exchange rate movements.

Another possibility is that firms “price to market,” adjusting their markup according to local market conditions. As a result pass-through may depend on the amount of competition a firm faces in the local market, its market share, and the extent to which its product is differentiated from similar products. These factors are likely to vary not only across countries but across industries. Indeed, studies have shown that the extent to which exchange rate movements affect import prices does vary by industry.

It is also possible that firms vary their behavior depending on whether the dollar is depreciating or appreciating. For example, a foreign firm that is attempting to increase its share of the U.S. market may pass-through much of the change in the exchange rate when the dollar is appreciating, lowering the dollar price to gain market share. When the dollar is falling, the same firm will resist passing-through the exchange rate change in an effort to maintain the dollar price of its product and keep its market share. Under this strategy, U.S. import prices should fall more during an appreciation of the dollar than they rise during a depreciation.

The opposite behavior may occur if a firm is unable to increase its sales by lowering the dollar price. For example, a firm may face import restrictions or production bottlenecks that make it difficult to increase its sales to the United States. As a result, the firm may keep the dollar price of its products constant despite a rising dollar. In this case, U.S. import prices should rise more during a depreciation of the dollar than they fall during an appreciation.

The size of the change in the exchange rate also has an effect on pricing behavior. If it is costly to change their invoice prices, firms will only raise or lower prices in response to fairly large movements in the exchange rate. Pollard and Coughlin (2003),<sup>1</sup> for example, found that U.S. import prices in many industries do not respond to small changes in the exchange rate. If, however, the dollar rises or falls by 3 percent or more in a quarter, then import prices will be adjusted to partially reflect the new value of the dollar.

These considerations suggest that the link between the exchange rate and the price of imported goods is complex, with fluctuations affecting U.S. import prices to varying degrees, depending on the industry. Moreover, the price response depends on both the size and the direction of the change in the exchange rate. More research is needed to identify exactly how and why the prices of imported goods react to changes in the value of the dollar.

—Patricia S. Pollard

<sup>1</sup> Pollard, Patricia and Coughlin, Cletus. “Size Matters: Asymmetric Exchange Rate Pass-Through at the Industry Level.” Federal Reserve Bank of St. Louis Working Paper 2003-029B, November 2003.

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## Conventions used in this publication:

1. Charts and tables contain data that were current through January 2004. 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 quarter  $t-4$  and the current quarter  $t$  is:  $[(x_t/x_{t-4})-1] \times 100$ .
3. All data with significant seasonal patterns are adjusted accordingly.

Dear Reader,

Beginning with this issue, the inflation differentials presented with exchange rates are now reported as cumulative inflation differentials. We have made this change to be more consistent with the theory of purchasing power parity (PPP), which posits that cumulative exchange rate changes should be linked to cumulative inflation differentials. It seemed natural to compare exchange rates with cumulative inflation differentials. The graphs should be viewed with caution because PPP describes the data well only over fairly long horizons (i.e., more than 5 years). Please refer to the notes on page 46 for further information.

Christopher J. Neely  
Editor, *International Economic Trends*

**Real Gross Domestic Product**

Percent change from year ago

	00.4	01.1	01.2	01.3	01.4	02.1	02.2	02.3	02.4	03.1	03.2	03.3
Canada	4.22	3.12	2.35	0.86	1.39	2.48	3.15	4.02	3.46	2.54	1.40	1.01
Euro Area	2.79	2.49	1.65	1.51	0.77	0.47	0.92	0.97	1.12	0.71	0.13	0.28
France	3.83	3.10	2.25	2.30	0.67	0.84	1.47	1.30	1.30	0.66	-0.34	-0.20
Germany	1.88	1.95	0.81	0.73	0.55	-0.12	0.10	0.40	0.48	0.06	-0.30	-0.24
Italy	3.21	2.78	2.37	1.57	0.39	0.00	0.00	0.39	1.16	0.39	0.39	0.38
Japan	3.89	3.21	1.11	-0.42	-2.22	-3.09	-0.95	0.89	1.84	2.73	2.30	1.77
United Kingdom	2.93	2.56	2.23	1.80	1.95	1.37	1.44	1.93	1.99	1.93	2.07	2.09
United States	2.24	1.92	0.19	-0.02	-0.04	1.17	1.81	2.99	2.80	2.13	2.42	3.60

**Nominal Gross Domestic Product**

Percent change from year ago

	00.4	01.1	01.2	01.3	01.4	02.1	02.2	02.3	02.4	03.1	03.2	03.3
Canada	8.53	6.95	4.44	1.01	-0.29	0.73	3.12	5.70	7.67	7.91	4.50	4.43
Euro Area	4.46	4.73	4.16	3.81	3.62	3.15	3.21	3.59	3.29	2.67	2.28	2.17
France	4.96	4.43	3.90	4.24	2.65	3.01	3.45	3.15	3.23	2.28	1.29	1.31
Germany	1.84	2.90	2.14	1.61	2.59	1.74	1.64	2.42	1.45	0.89	0.61	0.87
Italy	4.96	5.57	4.47	3.74	4.05	2.97	2.63	3.61	3.25	2.88	3.53	4.43
Japan	1.66	1.34	-0.67	-1.82	-3.37	-3.61	-2.06	-0.42	0.06	-0.30	0.12	-0.43
United Kingdom	4.36	4.33	4.89	3.93	4.84	4.34	4.33	5.59	5.39	5.38	5.56	5.32
United States	4.56	4.11	2.70	2.37	2.41	3.04	3.37	4.42	4.22	3.94	4.01	5.36

**Consumer Price Index**

Percent change from year ago

	01.1	01.2	01.3	01.4	02.1	02.2	02.3	02.4	03.1	03.2	03.3	03.4
Canada	2.79	3.57	2.67	1.13	1.54	1.32	2.31	3.81	4.47	2.81	2.11	.
Euro Area	2.08	2.92	2.36	2.06	2.59	2.11	2.12	2.29	2.26	1.98	2.07	.
France	1.43	2.31	1.99	1.56	2.26	1.70	1.67	2.08	2.32	1.85	2.12	.
Germany	1.58	2.51	2.14	1.55	1.95	1.12	1.06	1.14	1.09	0.92	1.03	1.21
Italy	2.14	2.81	2.24	2.23	2.54	2.28	2.65	2.82	2.80	2.97	2.82	2.67
Japan	-0.44	-0.72	-0.79	-0.99	-1.41	-0.90	-0.82	-0.53	-0.24	-0.24	-0.25	.
United Kingdom	2.54	1.92	1.80	1.04	1.20	1.24	1.52	2.56	3.05	3.02	2.92	.
United States	3.41	3.38	2.72	1.84	1.19	1.24	1.58	2.25	2.87	2.17	2.22	1.93

**Employment**

Percent change from year ago

	01.1	01.2	01.3	01.4	02.1	02.2	02.3	02.4	03.1	03.2	03.3	03.4
Canada	1.61	1.39	1.03	0.42	1.04	1.79	2.69	3.37	3.14	2.33	1.57	1.69
Euro Area	1.90	1.39	1.12	0.88	0.70	0.51	0.31	0.14	0.01	0.09	.	.
France	3.56	2.89	2.16	1.65	0.95	0.64	0.35	0.19	-0.08	-0.06	-0.14	.
Germany	1.00	0.59	0.22	-0.11	-0.20	-0.49	-0.71	-1.11	-1.45	-1.30	-1.21	.
Italy	2.56	1.89	1.37	0.89	0.92	1.12	1.14	1.10	0.96	1.15	1.11	.
Japan	0.43	-0.42	-0.82	-1.30	-1.46	-1.56	-1.00	-1.06	-0.80	0.08	-0.05	.
United Kingdom	1.43	1.00	0.67	0.48	0.40	-0.20	-0.22	-0.28	-0.40	0.03	0.01	.
United States	0.80	0.09	0.04	-0.80	-1.19	-0.54	0.09	0.32	0.95	0.93	0.56	1.23

Note: Euro area employment growth prior to 2002 may not be strictly comparable with later figures (see Sources).

**Unemployment Rate**

Percent

	00.4	01.1	01.2	01.3	01.4	02.1	02.2	02.3	02.4	03.1	03.2	03.3
Canada	6.86	6.94	7.07	7.20	7.65	7.80	7.63	7.60	7.55	7.40	7.69	7.92
Euro Area	8.20	8.00	8.00	8.00	8.10	8.20	8.30	8.50	8.60	8.70	8.80	8.80
France	8.78	8.57	8.49	8.46	8.54	8.60	8.75	8.89	9.01	9.20	9.33	9.44
Germany	7.59	7.63	7.72	7.90	8.13	8.27	8.51	8.66	8.86	9.17	9.36	9.35
Italy	9.91	9.69	9.48	9.42	9.20	9.06	9.03	8.97	8.92	8.90	8.66	8.51
Japan	4.74	4.76	4.91	5.11	5.36	5.29	5.36	5.42	5.44	5.38	5.38	5.17
United Kingdom	5.16	5.02	4.94	5.05	5.08	5.07	5.13	5.19	5.04	5.05	4.97	4.95
United States	3.94	4.19	4.43	4.84	5.58	5.62	5.86	5.77	5.91	5.76	6.17	6.13

**Reserve Money**

Percent change from year ago

	01.1	01.2	01.3	01.4	02.1	02.2	02.3	02.4	03.1	03.2	03.3	03.4
Canada	3.27	6.79	7.31	4.22	7.33	5.17	8.02	5.64	2.25	3.32	0.95	.
Japan	0.66	7.50	14.50	17.60	31.83	27.42	21.73	20.05	10.46	20.22	20.96	13.45
United Kingdom	6.83	6.90	6.97	7.74	7.79	8.63	8.06	6.96	5.98	7.81	7.94	.
United States	2.09	4.26	7.56	8.50	9.78	10.08	7.80	7.35	6.84	6.54	5.87	5.81

**Narrow Money**

Percent change from year ago

	01.1	01.2	01.3	01.4	02.1	02.2	02.3	02.4	03.1	03.2	03.3	03.4
Canada	13.18	11.48	8.17	13.65	14.37	13.87	16.11	9.21	6.66	8.20	9.08	.
Euro Area	4.06	6.71	7.18	8.30	6.29	6.72	7.89	9.81	11.48	10.68	10.33	.
Japan	5.11	7.30	10.98	14.82	23.58	30.76	30.41	25.49	14.99	4.98	5.79	.
United Kingdom	8.51	9.62	10.04	9.86	9.19	8.32	8.29	8.36	8.70	8.87	9.17	.
United States	10.82	14.60	17.04	20.41	17.90	13.77	11.61	8.61	7.62	7.75	8.76	5.18

**Broad Money**

Percent change from year ago

	01.1	01.2	01.3	01.4	02.1	02.2	02.3	02.4	03.1	03.2	03.3	03.4
Canada	5.78	5.18	4.33	5.70	5.94	6.05	7.24	5.97	5.44	6.13	6.35	.
Euro Area	3.91	5.82	6.71	8.28	7.23	6.64	6.79	6.69	7.91	8.33	7.29	.
Japan	2.50	2.85	3.09	3.38	3.63	3.32	3.20	2.32	1.71	1.76	1.89	.
United Kingdom	8.42	7.55	7.88	6.52	5.52	5.62	5.41	7.01	6.24	6.81	5.63	.
United States	7.16	8.18	9.42	10.21	9.17	7.48	7.12	6.76	6.67	7.91	7.98	5.21

**Short-Term Interest Rates**

Percent

	01.1	01.2	01.3	01.4	02.1	02.2	02.3	02.4	03.1	03.2	03.3	03.4
Canada	5.10	4.48	3.95	2.39	2.11	2.58	2.89	2.84	2.99	3.27	.	.
Euro Area	4.75	4.59	4.27	3.44	3.36	3.44	3.36	3.11	2.68	2.37	2.14	.
Japan	0.36	0.04	0.04	0.04	0.12	0.04	0.04	0.04	0.05	0.04	0.04	.
United Kingdom	5.64	5.23	4.92	4.09	4.01	4.10	3.95	3.92	3.73	3.57	3.50	3.86
United States	5.26	4.10	3.34	2.06	1.82	1.83	1.76	1.49	1.26	1.17	1.07	1.10

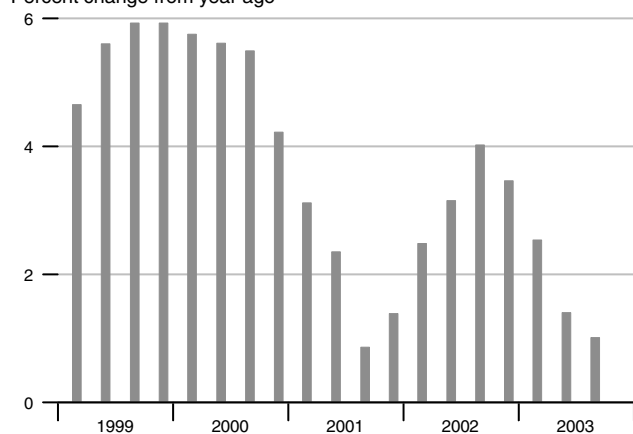
**Long-Term Interest Rates**

Percent

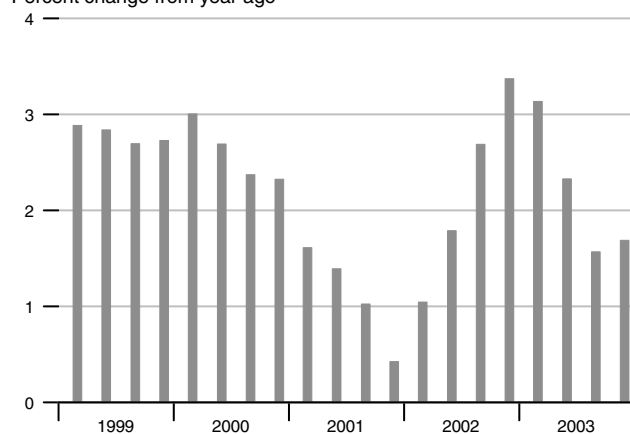
	01.1	01.2	01.3	01.4	02.1	02.2	02.3	02.4	03.1	03.2	03.3	03.4
Canada	5.39	5.78	5.48	5.22	5.51	5.50	5.10	5.07	5.03	4.59	4.79	4.77
Euro Area	4.99	5.19	5.12	4.82	5.14	5.25	4.76	4.54	4.15	3.96	4.16	4.37
France	5.48	5.55	5.34	5.15	5.46	5.53	5.12	4.91	4.43	4.10	4.20	.
Germany	4.77	4.97	4.87	4.60	5.00	5.13	4.63	4.43	4.07	3.87	4.09	4.29
Italy	5.16	5.37	5.27	4.94	5.25	5.36	4.85	4.68	4.24	4.16	4.33	4.45
Japan	1.39	1.28	1.36	1.35	1.41	1.28	1.11	0.89	0.70	0.53	1.17	.
United Kingdom	4.81	5.10	5.05	4.79	5.05	5.22	4.74	4.61	4.32	4.27	4.55	4.95
United States	5.56	5.81	5.59	5.44	5.70	5.72	5.09	4.92	4.77	4.44	5.01	5.00

**Real GDP**

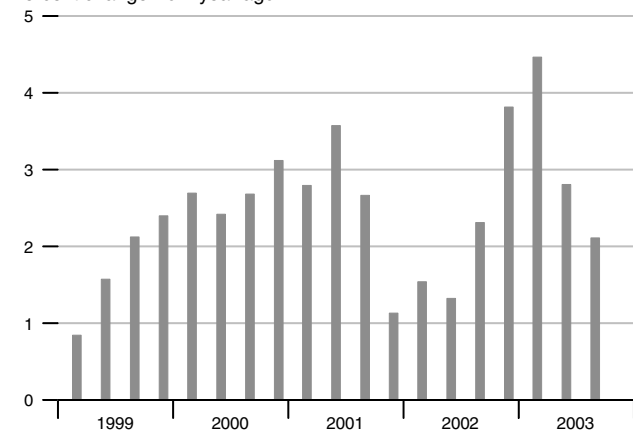
Percent change from year ago

**Employment**

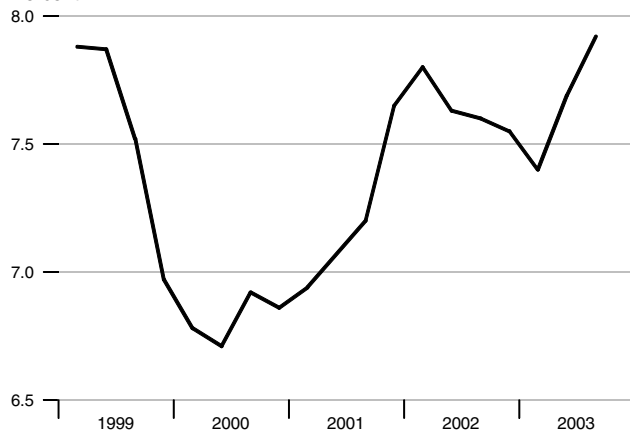
Percent change from year ago

**Consumer Price Index**

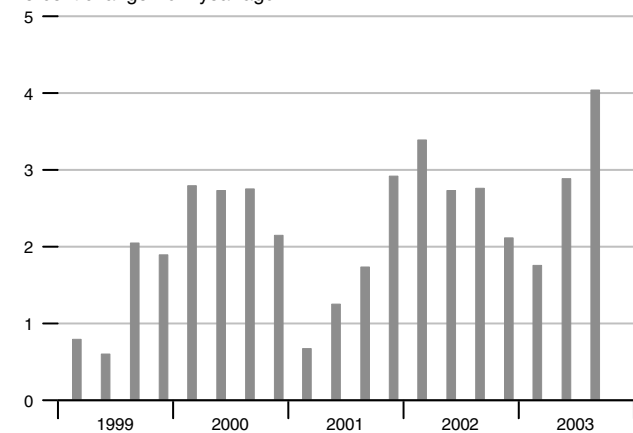
Percent change from year ago

**Unemployment Rate**

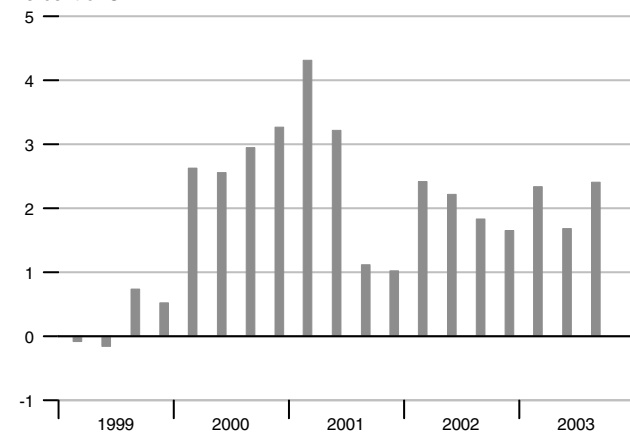
Percent

**Hourly Earnings**

Percent change from year ago

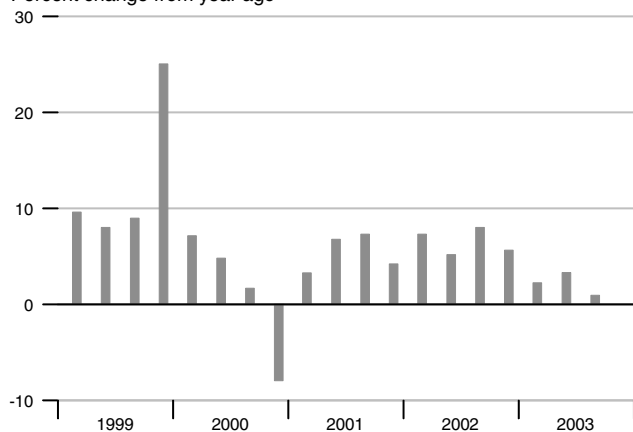
**Current Account Balance**

Percent of GDP

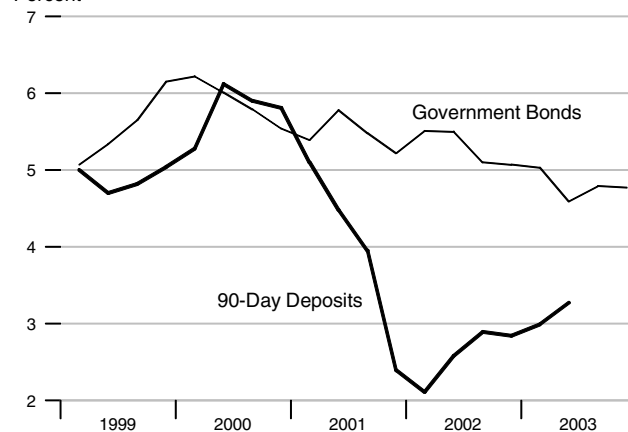


**Reserve Money**

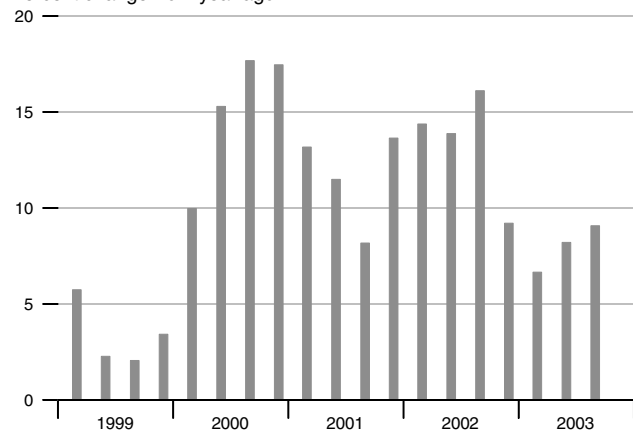
Percent change from year ago

**Interest Rates**

Percent

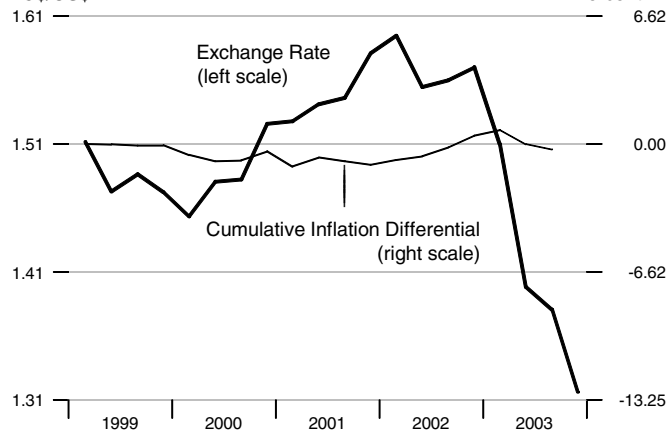
**M1**

Percent change from year ago

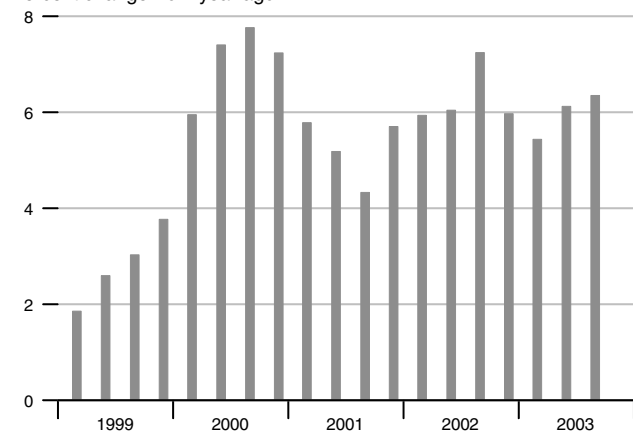
**Exchange Rate and Inflation Differential**

C\$/US\$

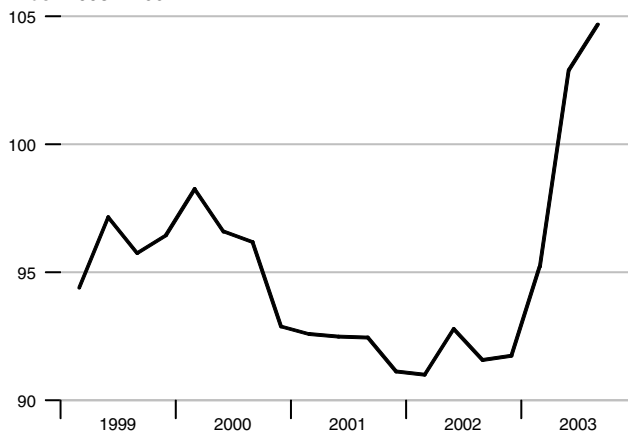
Percent

**M2**

Percent change from year ago

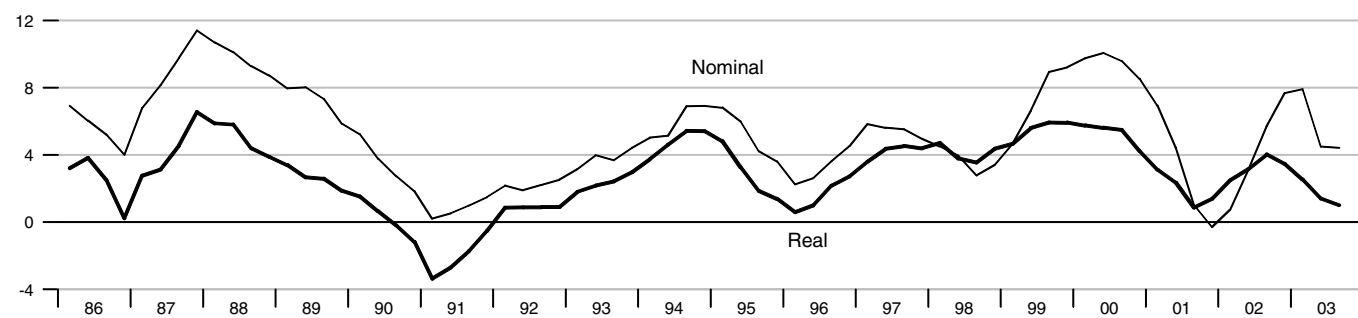
**Real Effective Exchange Rate**

Index 1995 = 100

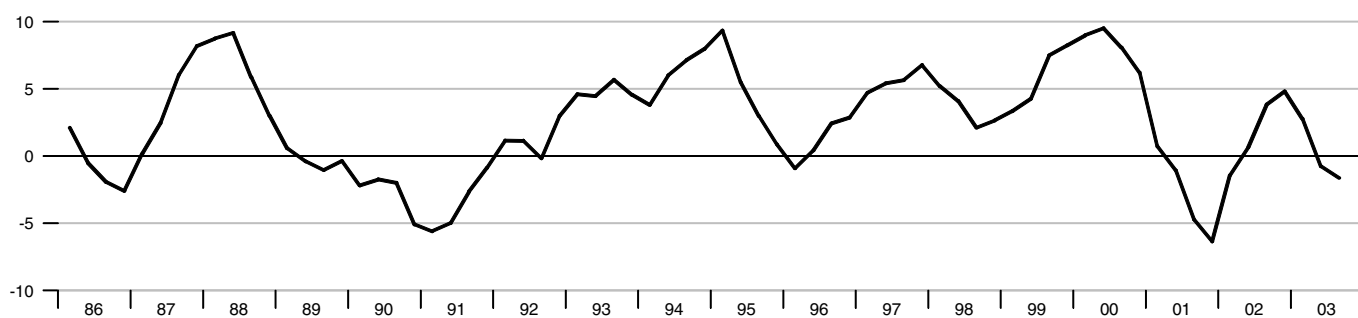


**GDP**

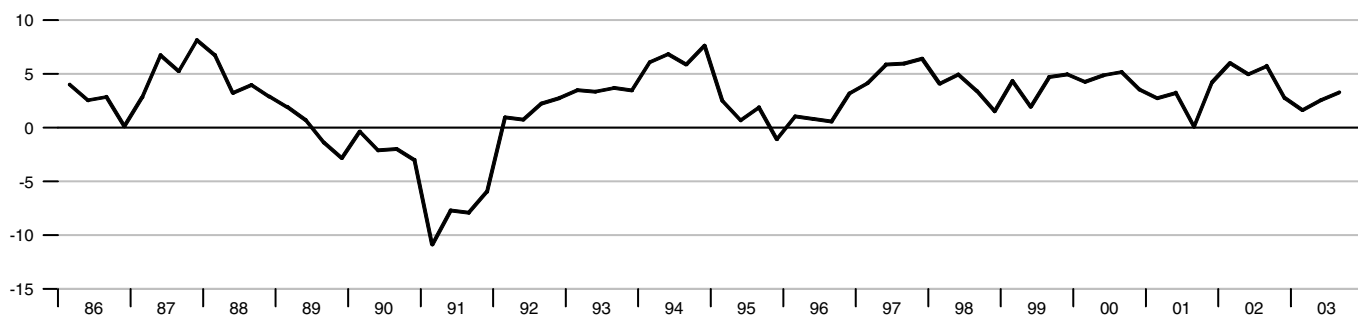
Percent change from year ago

**Industrial Production**

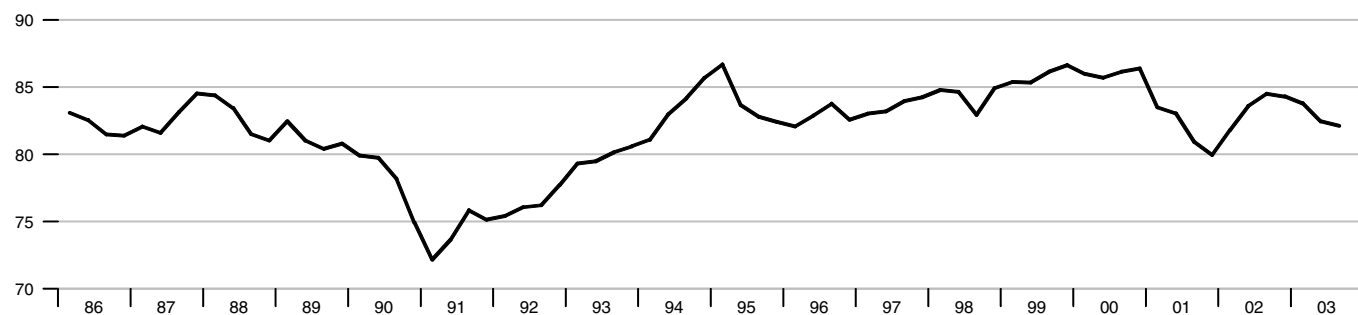
Percent change from year ago

**Retail Sales**

Percent change from year ago

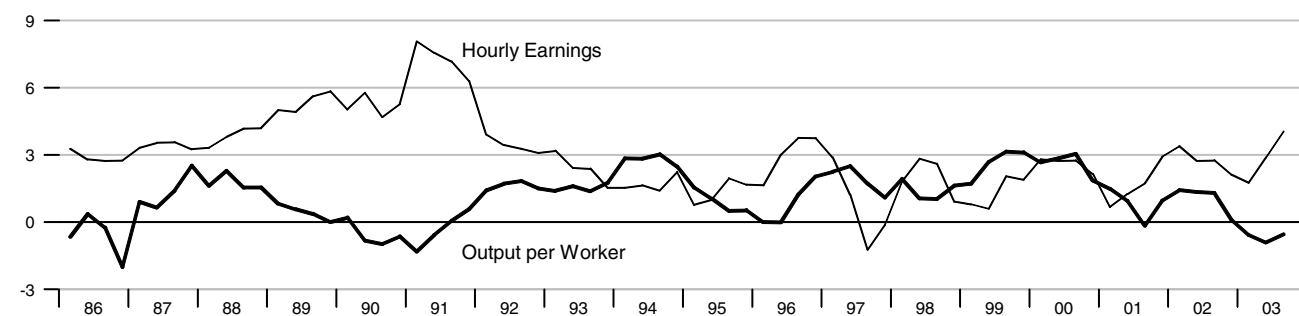
**Capacity Utilization**

Percent



## Hourly Earnings and Output per Worker

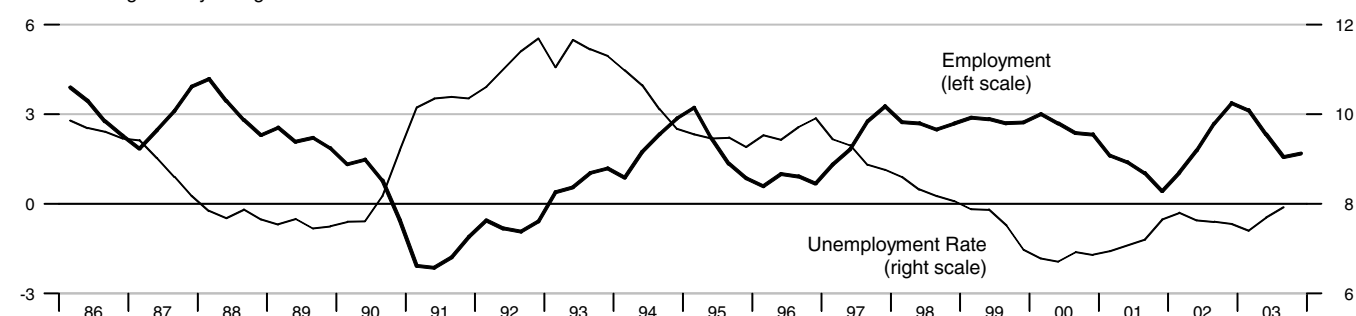
Percent change from year ago



## Labor Force Indicators

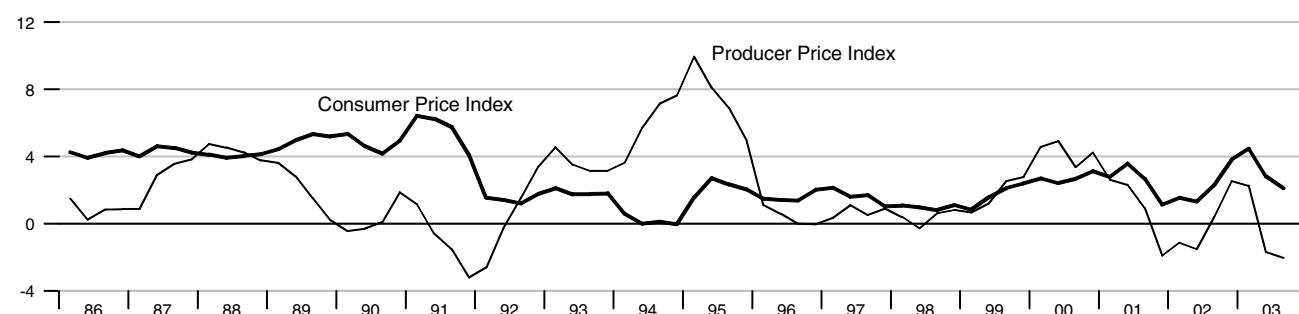
Percent change from year ago

Percent



## Inflation

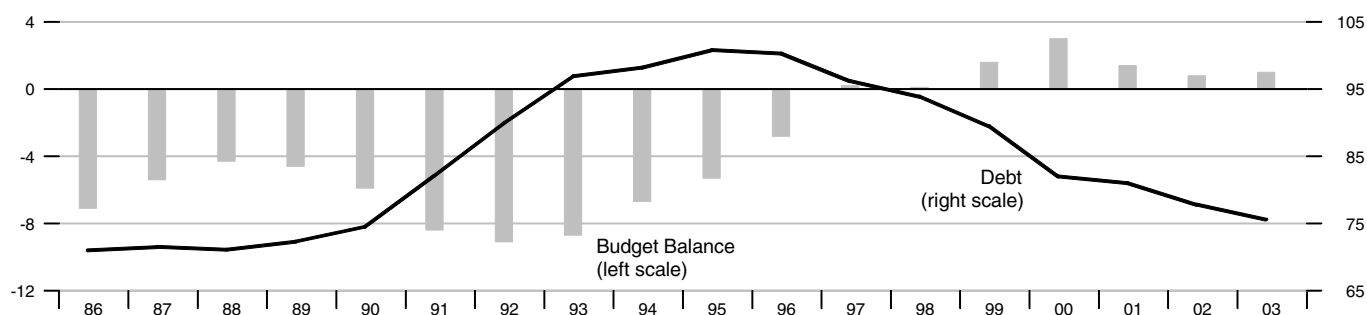
Percent change from year ago



## Government Debt and Budget Balance

Percent of GDP, annual data

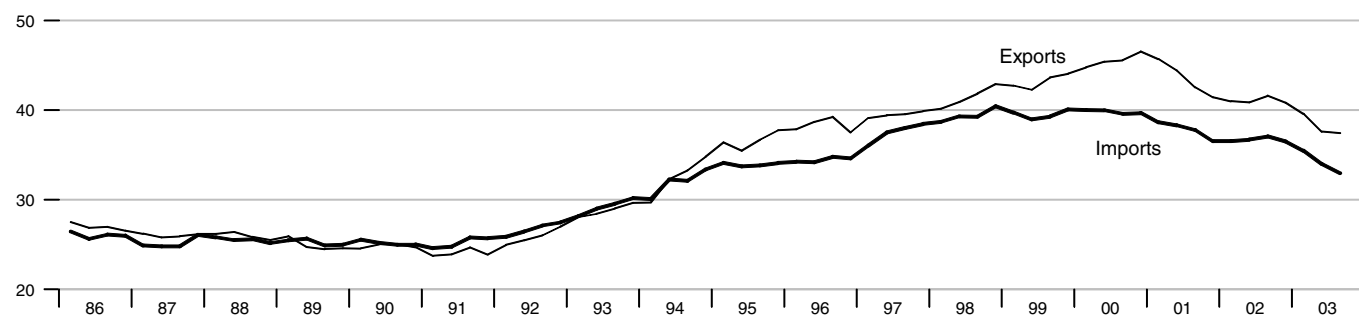
Percent of GDP, annual data



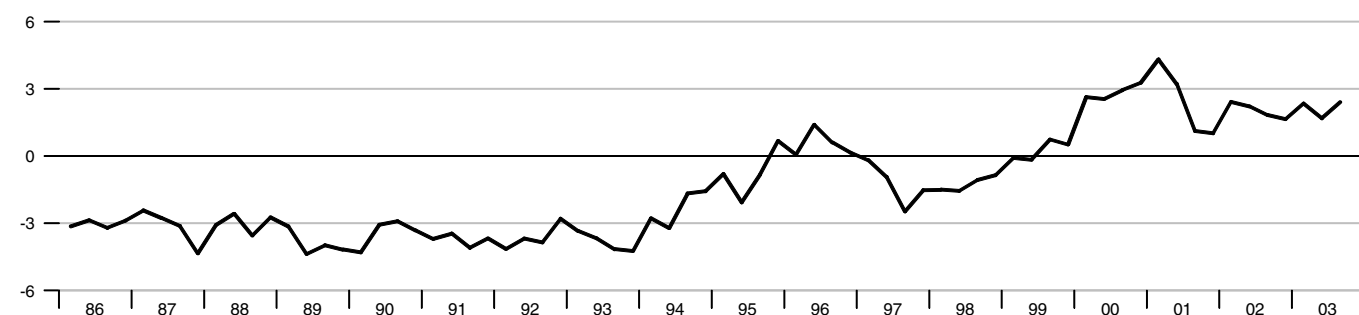


**International Trade - Goods and Services**

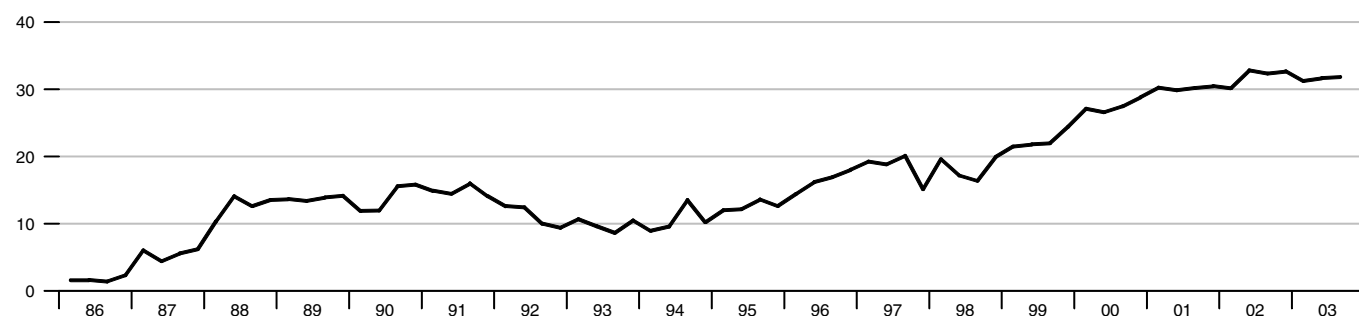
Percent of GDP

**Current Account Balance**

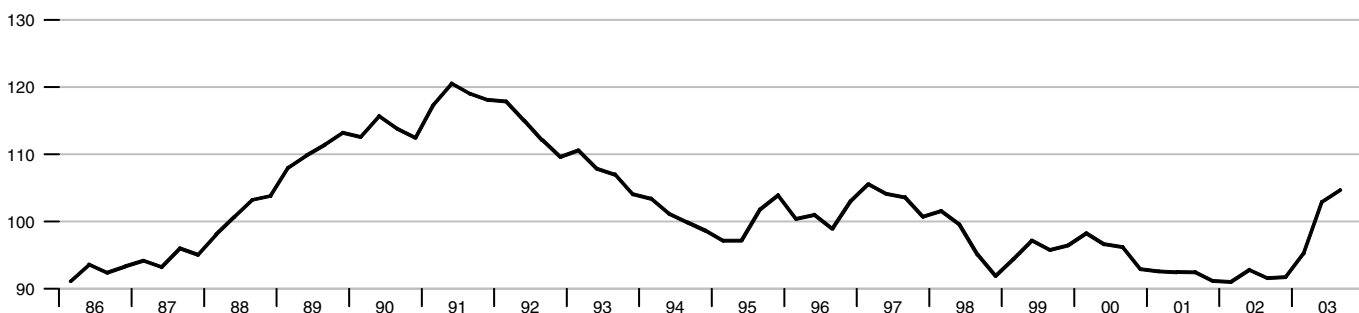
Percent of GDP

**Foreign Exchange Reserves**

Billions of US\$

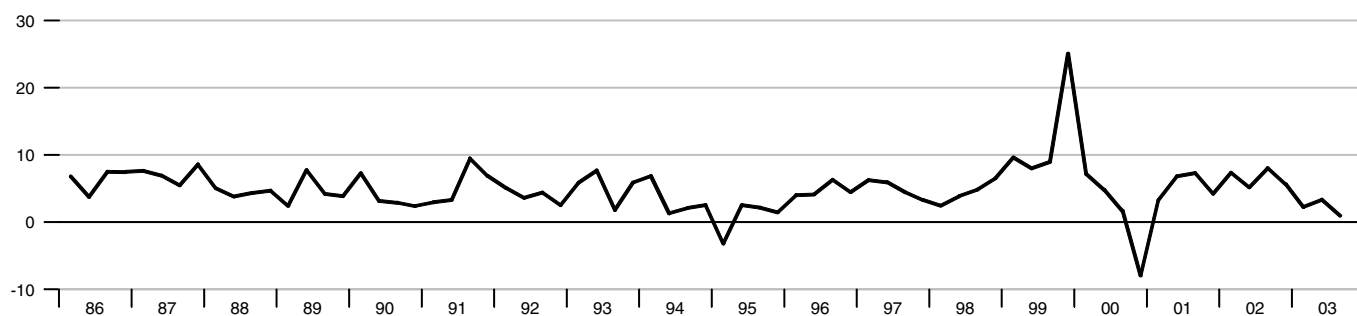
**Real Effective Exchange Rate**

Index 1995 = 100



### Reserve Money

Percent change from year ago



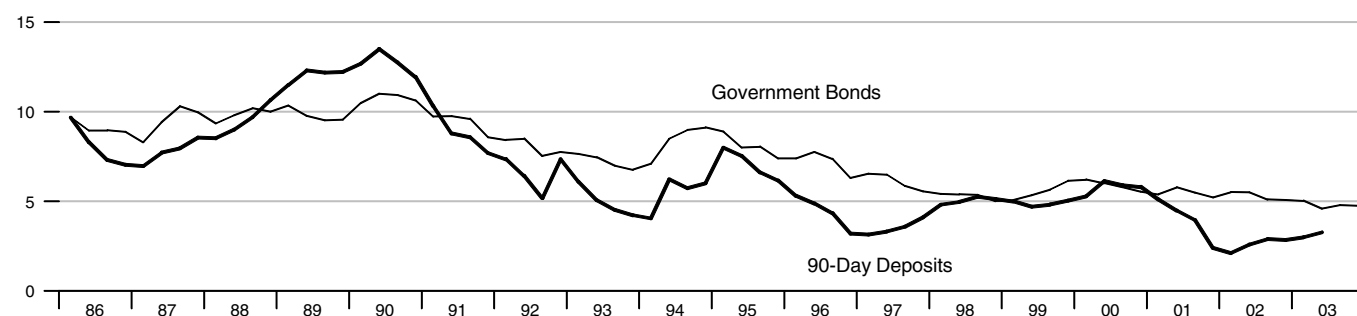
### Monetary Aggregates

Percent change from year ago



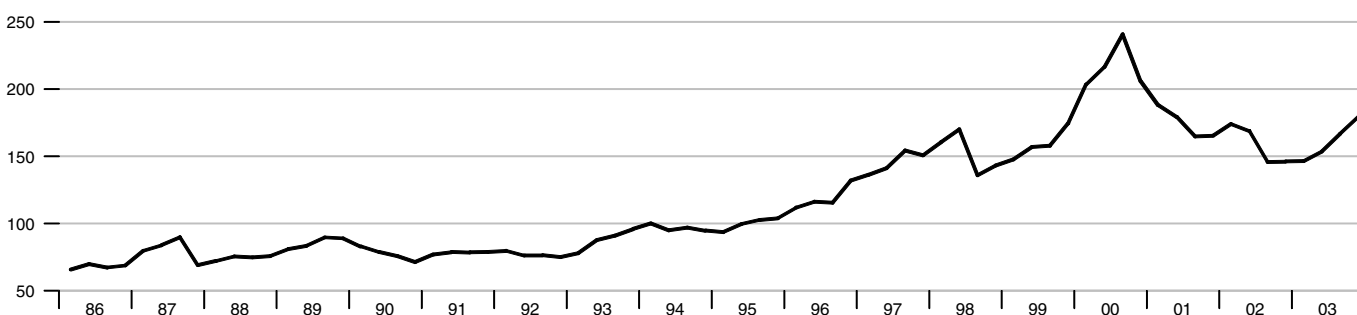
### Interest Rates

Percent



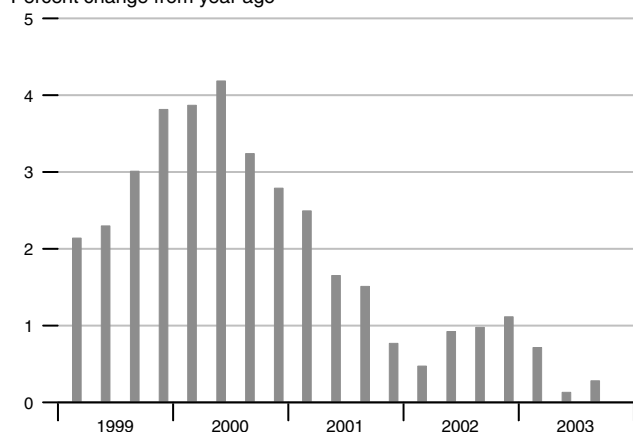
### Stock Exchange Index - Toronto Stock Exchange

1995 = 100

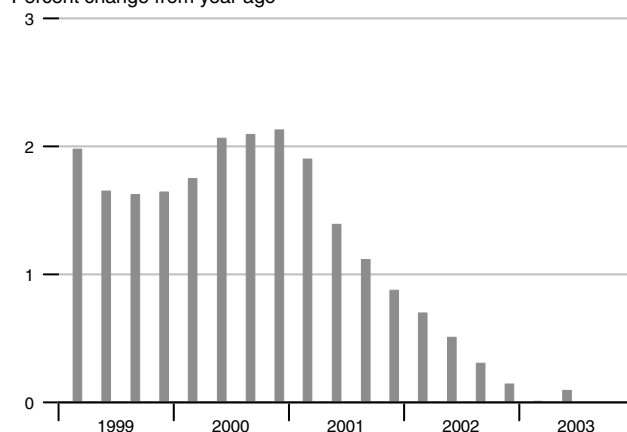


**Real GDP**

Percent change from year ago

**Employment**

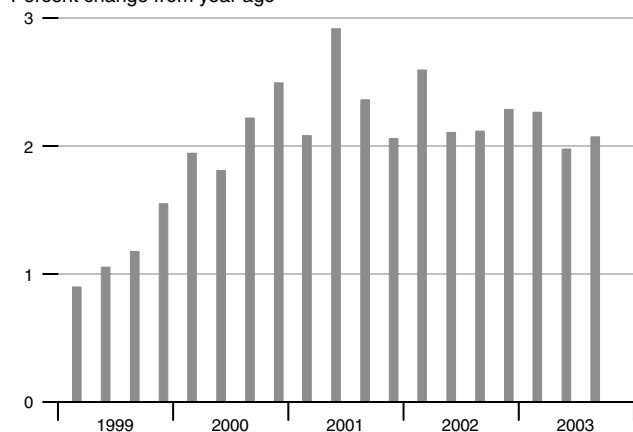
Percent change from year ago



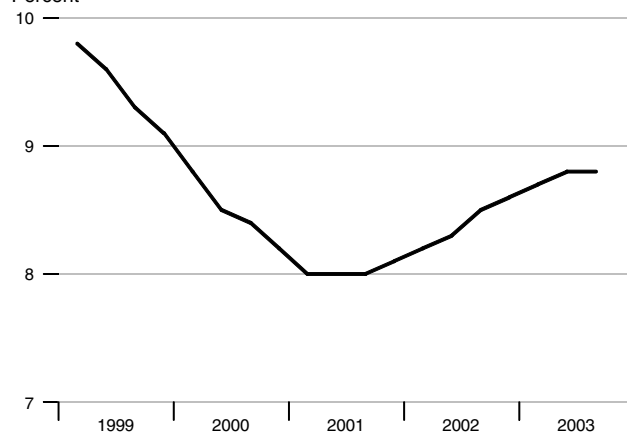
Note: Data prior to 2002 may not be strictly comparable with later figures (see Sources).

**Consumer Price Index**

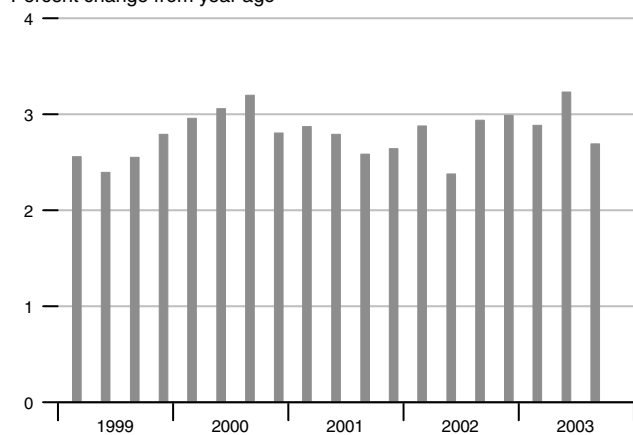
Percent change from year ago

**Unemployment Rate**

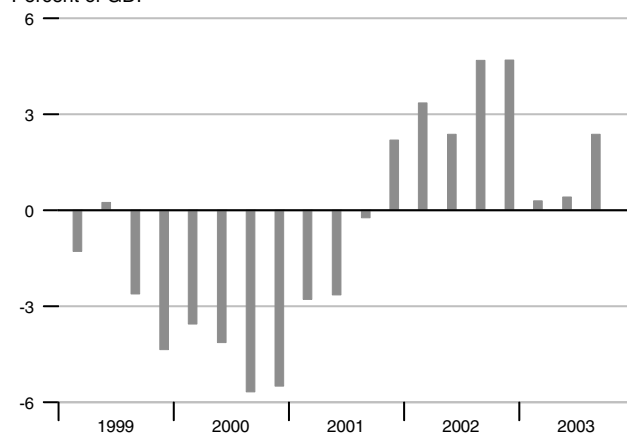
Percent

**Hourly Earnings**

Percent change from year ago

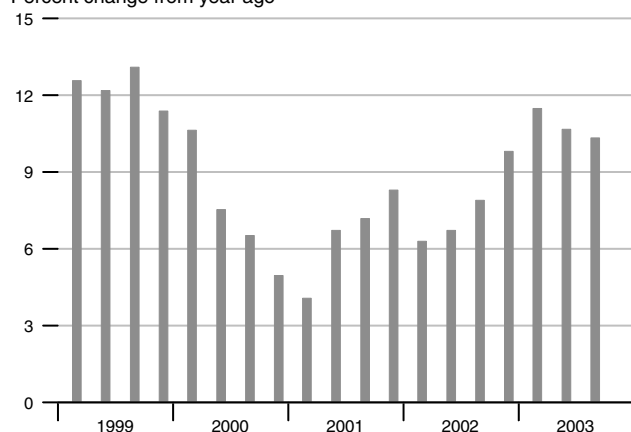
**Current Account Balance**

Percent of GDP



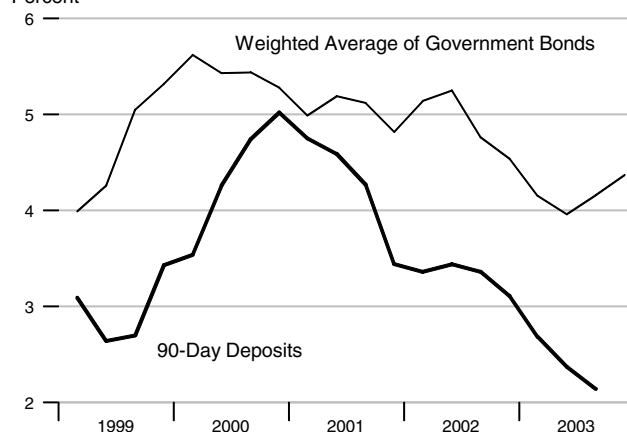
## M1

Percent change from year ago



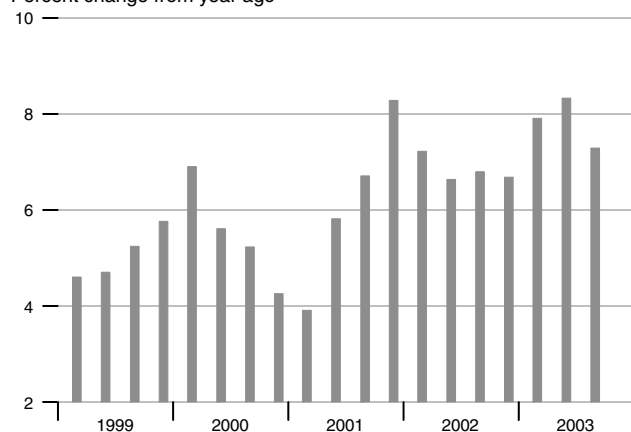
## Interest Rates

Percent



## M3

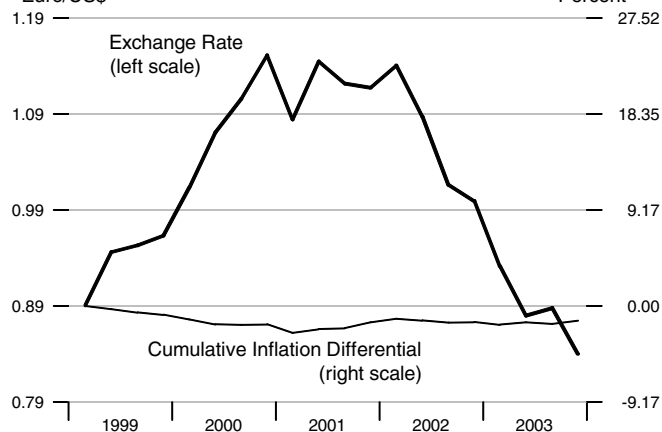
Percent change from year ago



## Exchange Rate and Inflation Differential

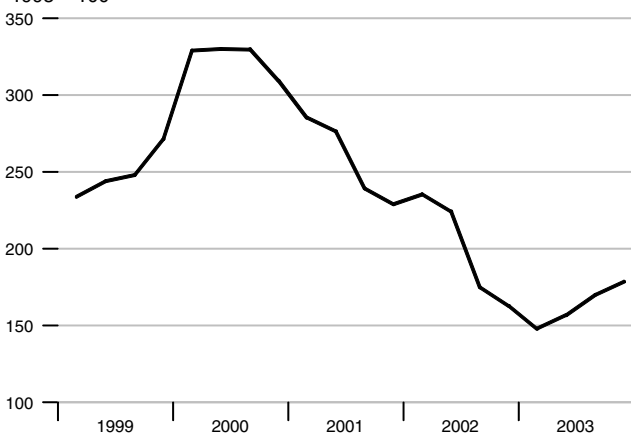
Euro/US\$

Percent



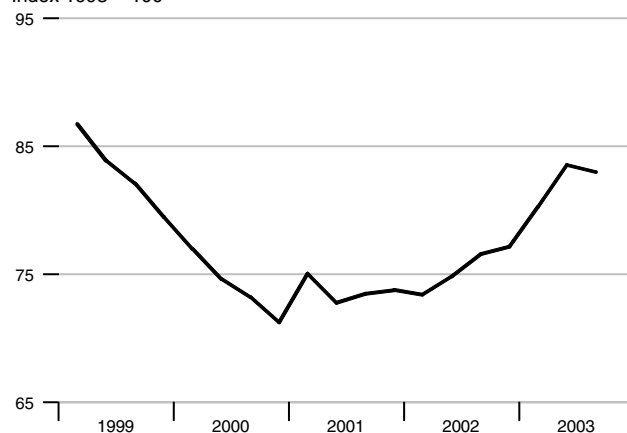
## Stock Exchange Index - Dow Jones EURO STOXX<sup>SM</sup>

1995 = 100



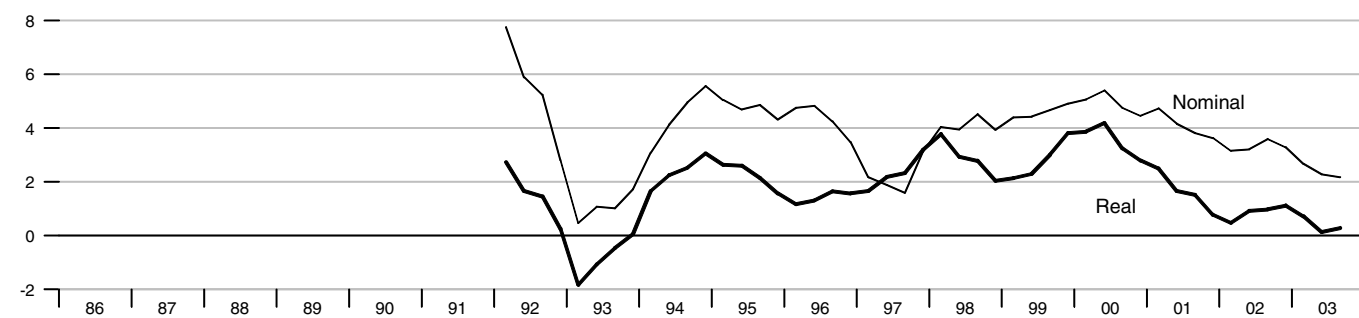
## Real Effective Exchange Rate

Index 1995 = 100

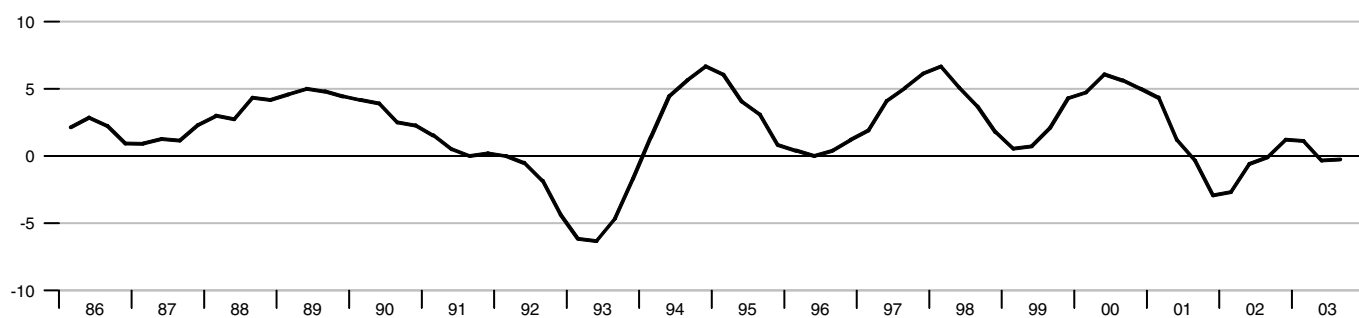


**GDP**

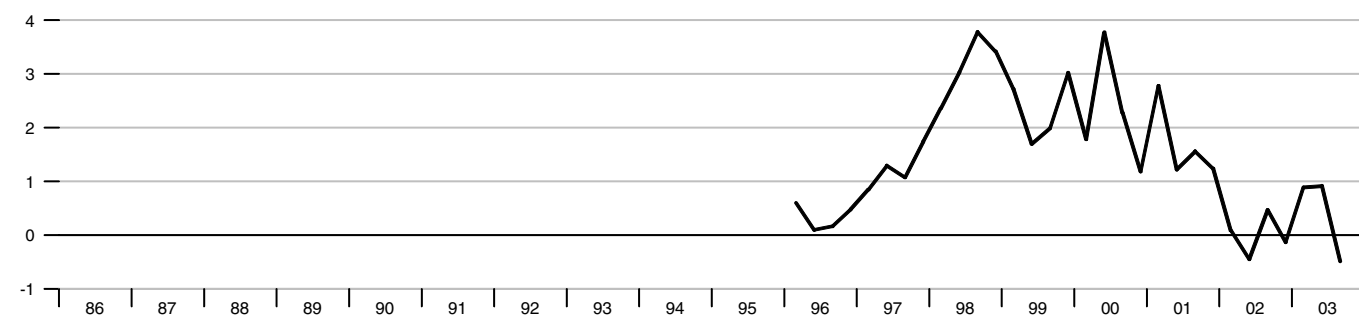
Percent change from year ago

**Industrial Production**

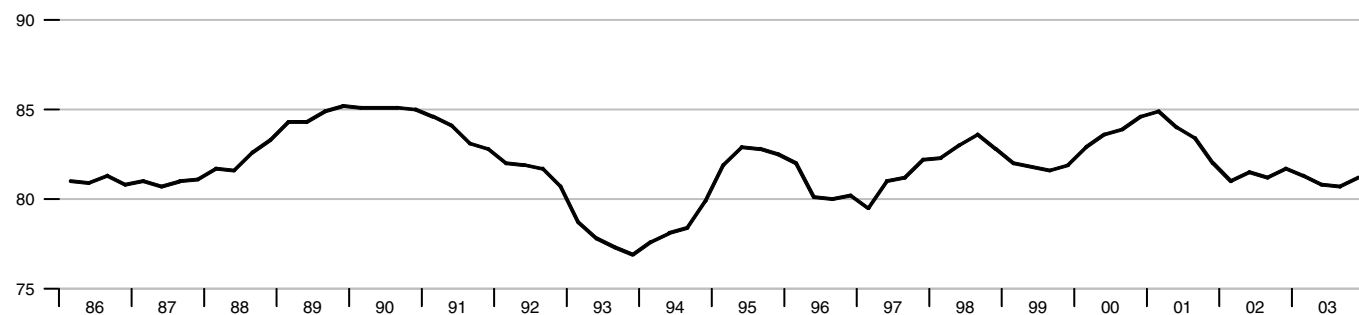
Percent change from year ago

**Retail Sales**

Percent change from year ago

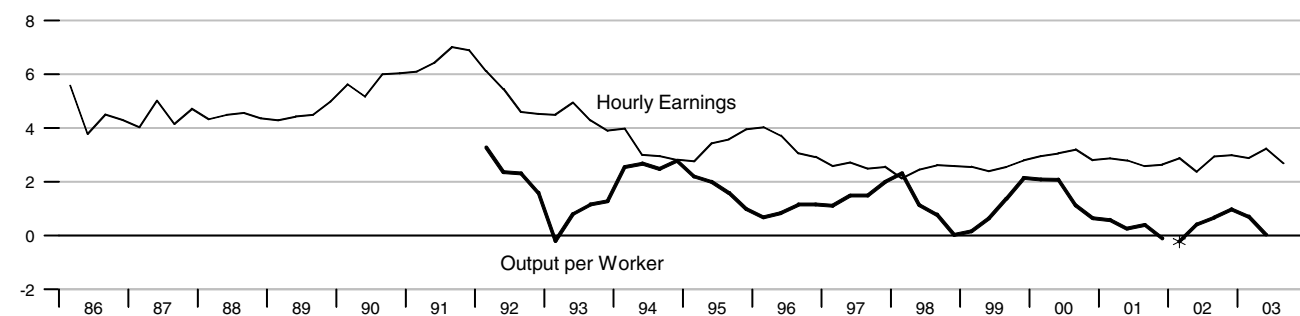
**Capacity Utilization**

Percent



## Hourly Earnings and Output per Worker

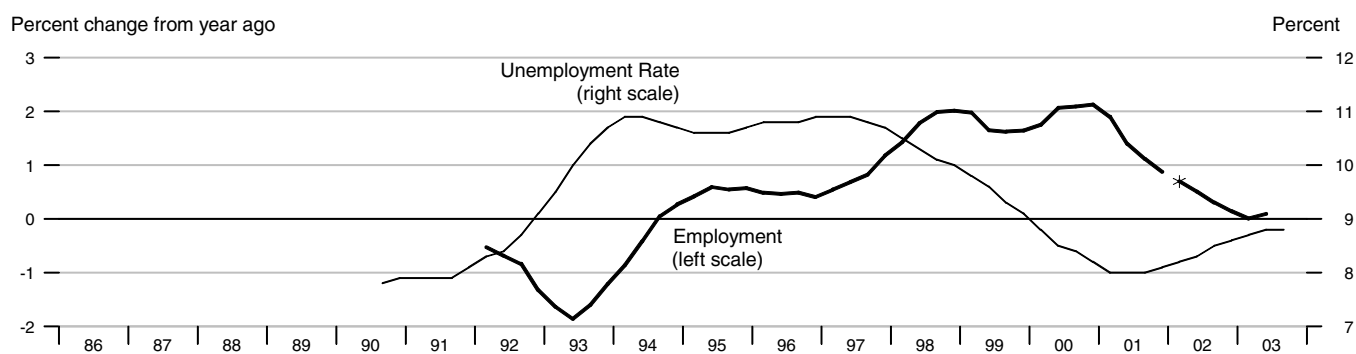
Percent change from year ago



\*Data prior to 2002 may not be strictly comparable with later figures (see Sources).

## Labor Force Indicators

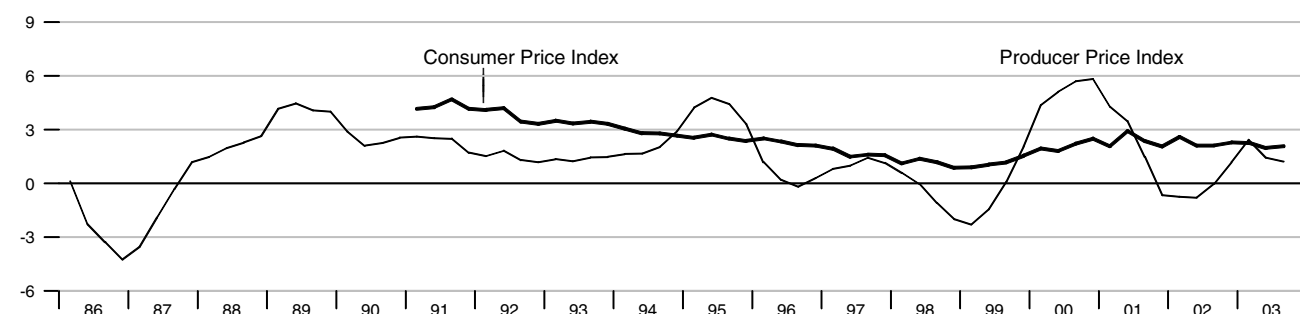
Percent change from year ago



\*Data prior to 2002 may not be strictly comparable with later figures (see Sources).

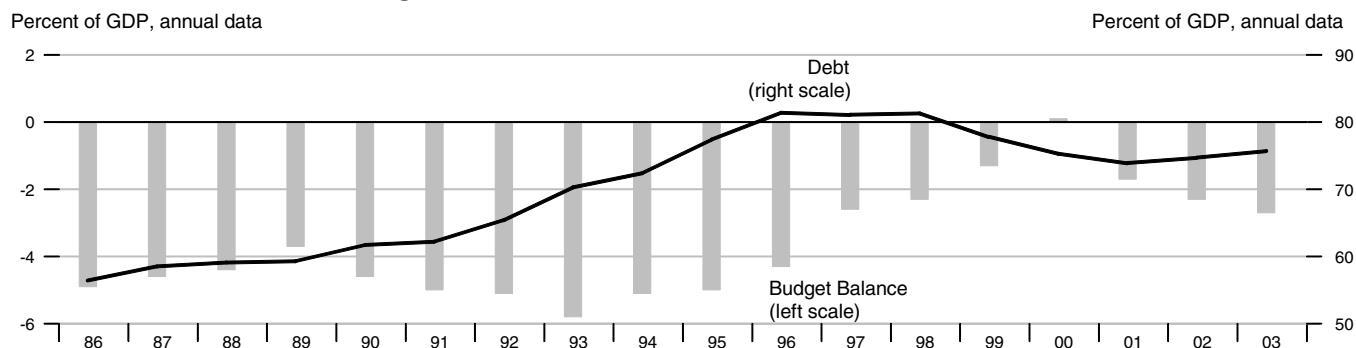
## Inflation

Percent change from year ago



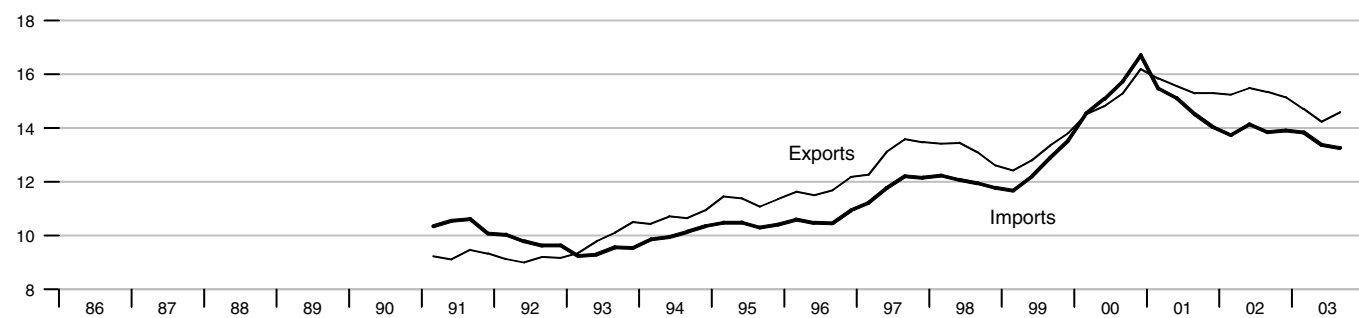
## Government Debt and Budget Balance

Percent of GDP, annual data

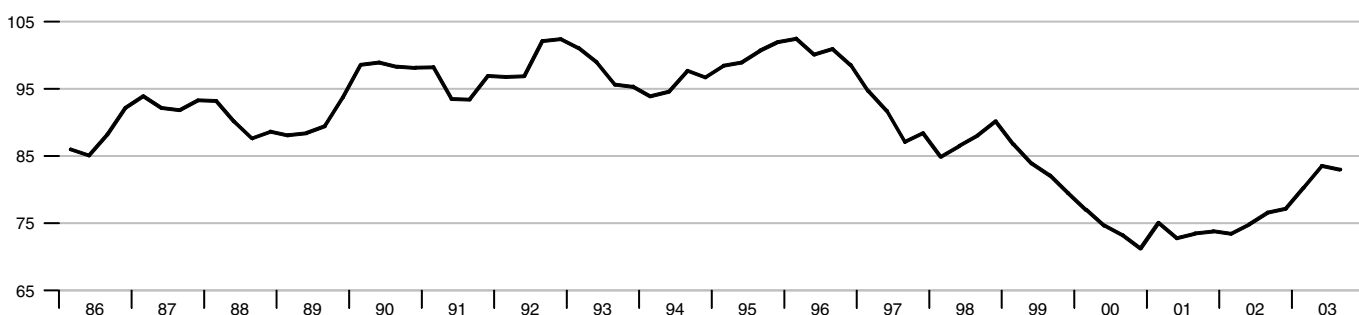


**International Trade - Goods**

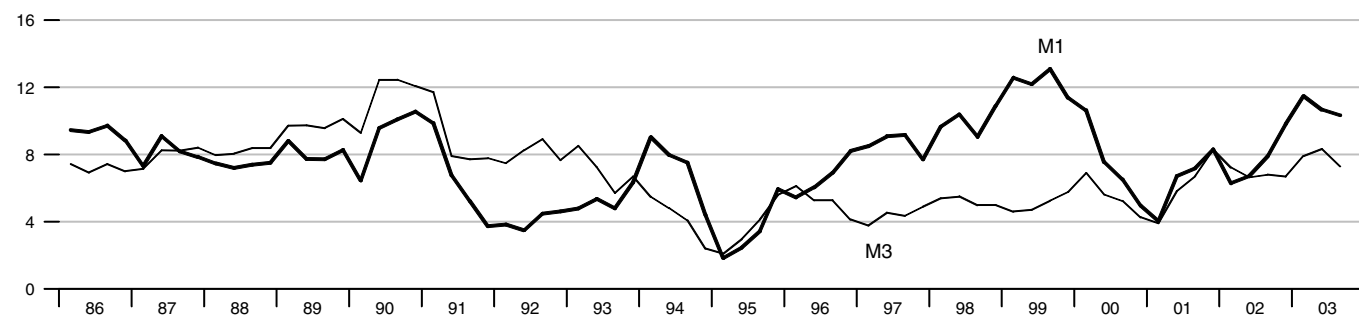
Percent of GDP

**Real Effective Exchange Rate**

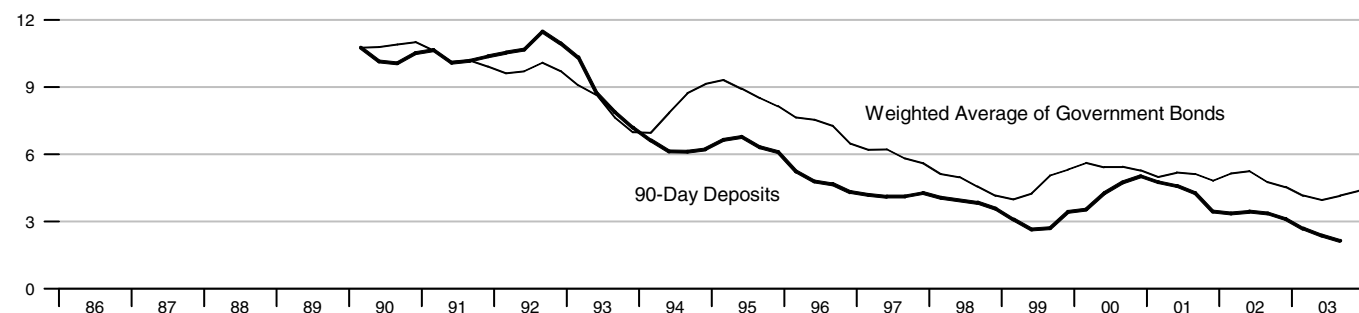
Index 1995 = 100

**Monetary Aggregates**

Percent change from year ago

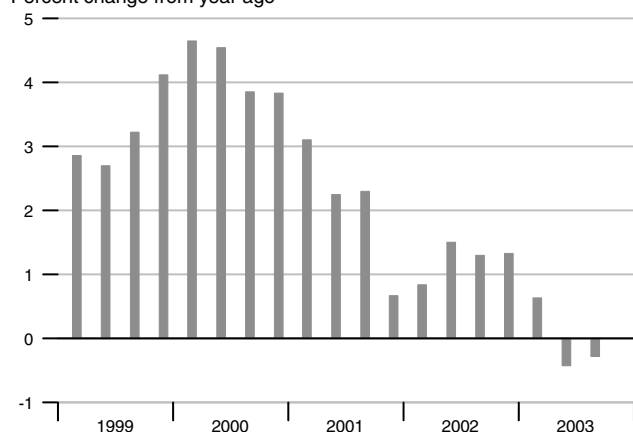
**Interest Rates**

Percent



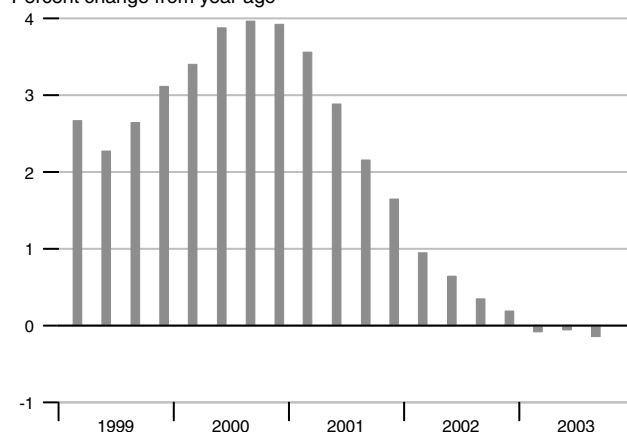
### Real GDP

Percent change from year ago



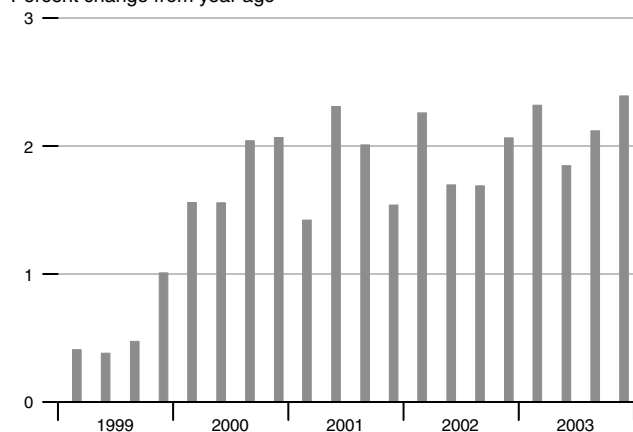
### Employment

Percent change from year ago



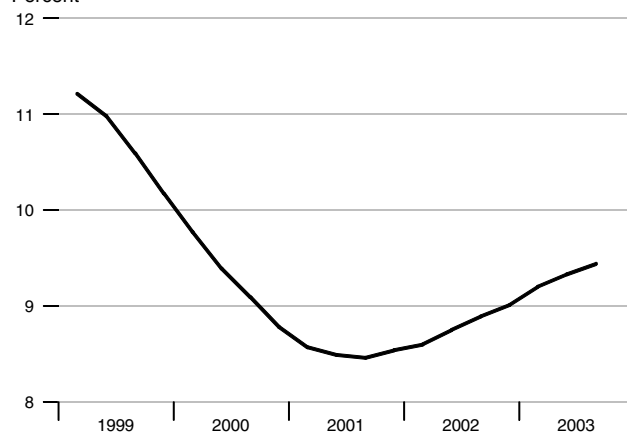
### Consumer Price Index

Percent change from year ago



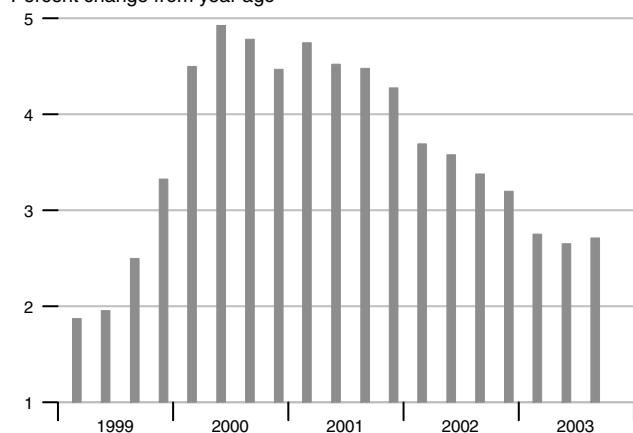
### Unemployment Rate

Percent



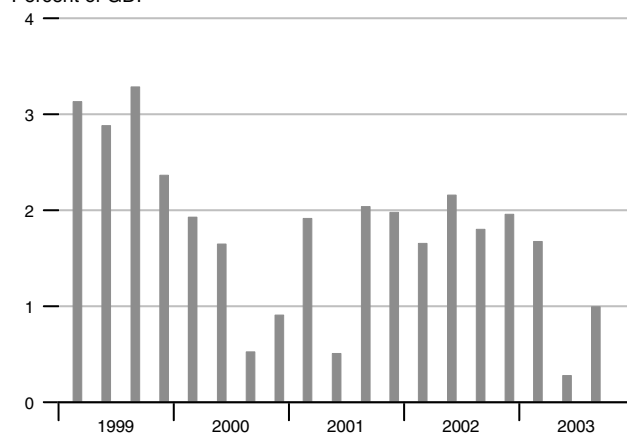
### Hourly Earnings

Percent change from year ago



### Current Account Balance

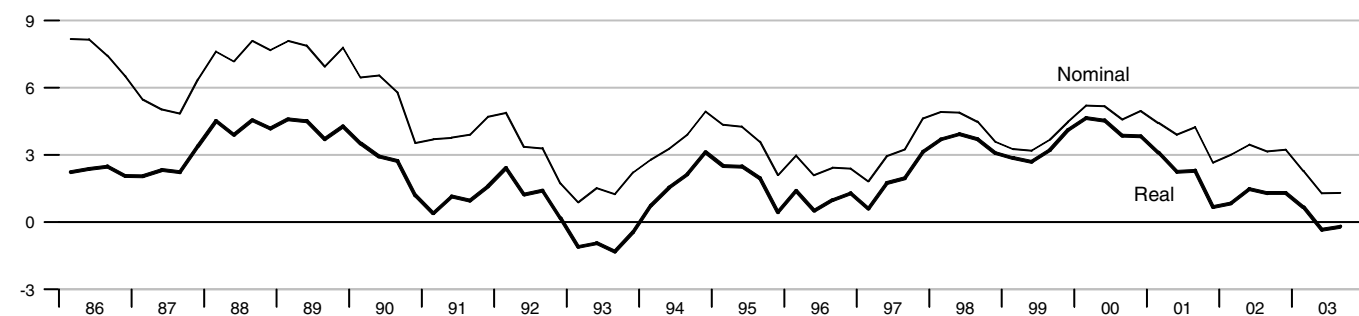
Percent of GDP



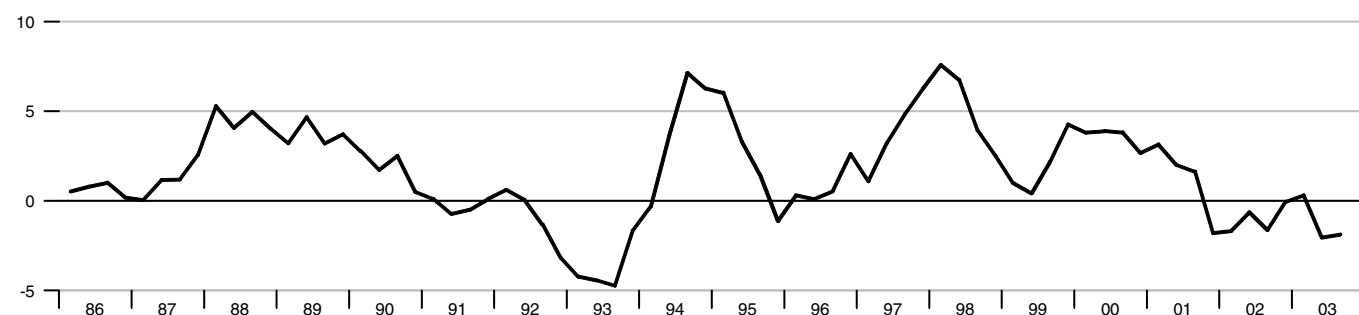


**GDP**

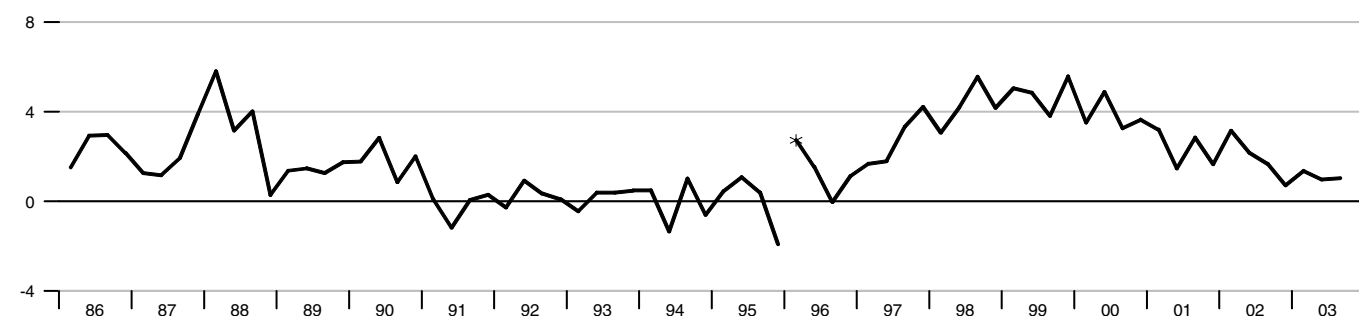
Percent change from year ago

**Industrial Production**

Percent change from year ago

**Retail Sales**

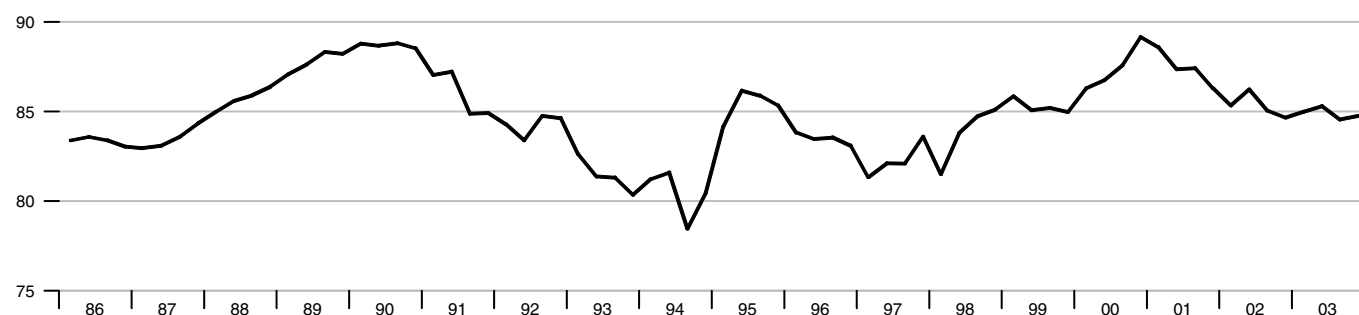
Percent change from year ago



\*Data prior to 1996 may not be strictly comparable with later figures (see Sources).

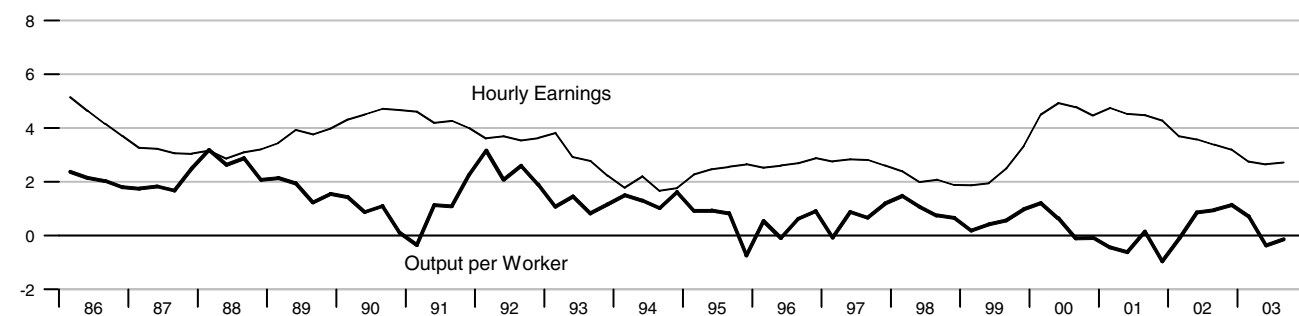
**Capacity Utilization**

Percent



## Hourly Earnings and Output per Worker

Percent change from year ago



## Labor Force Indicators

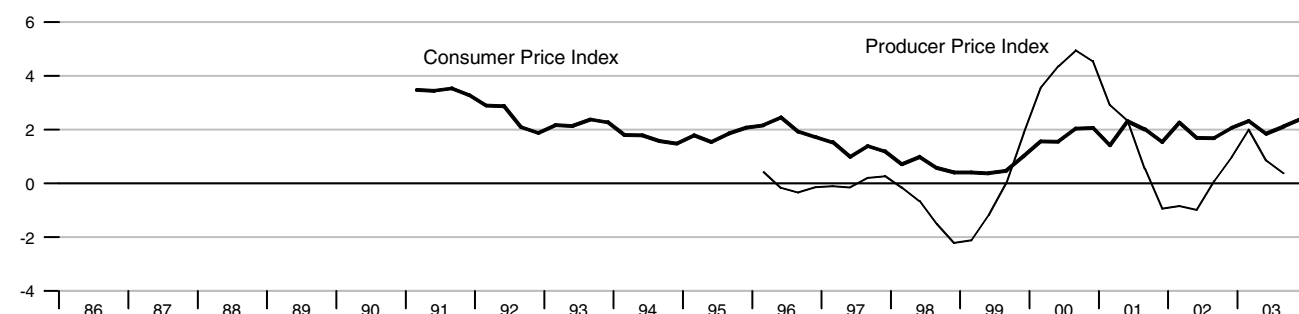
Percent change from year ago

Percent



## Inflation

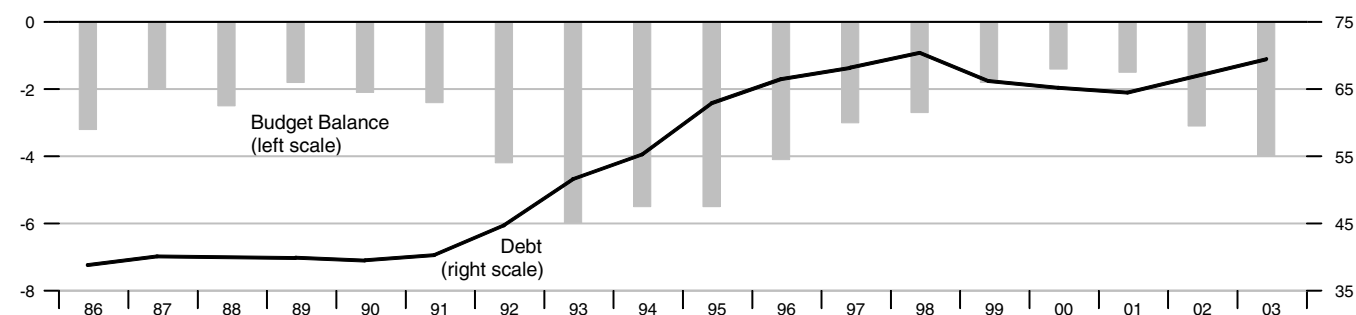
Percent change from year ago



## Government Debt and Budget Balance

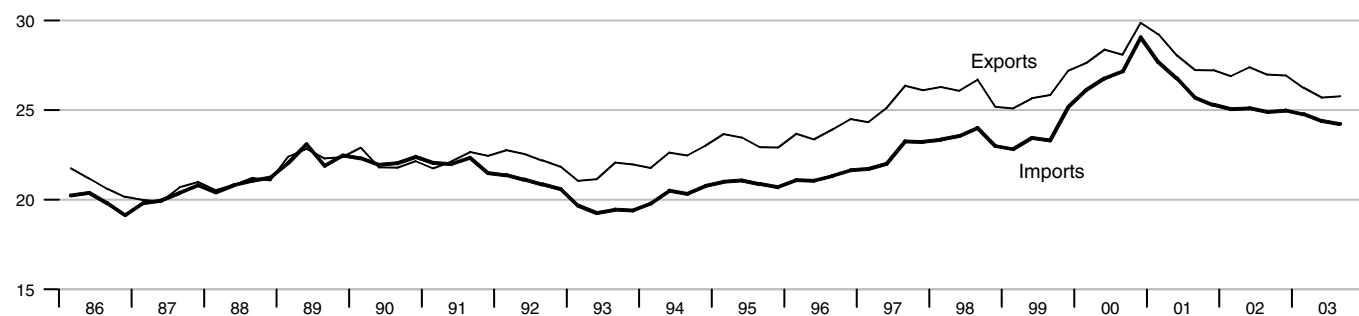
Percent of GDP, annual data

Percent of GDP, annual data

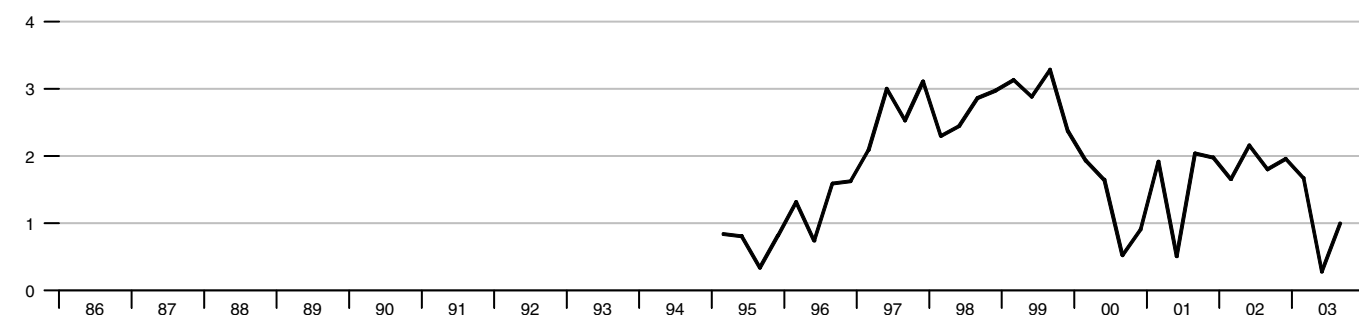


**International Trade - Goods and Services**

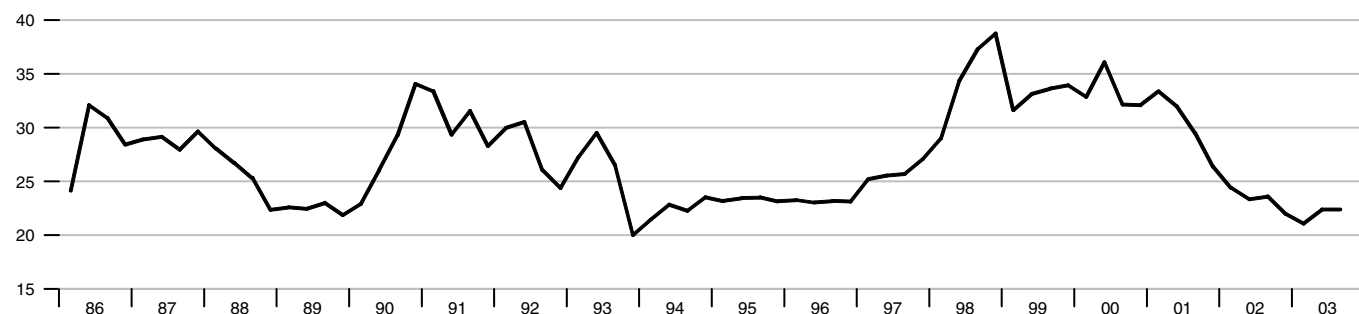
Percent of GDP

**Current Account Balance**

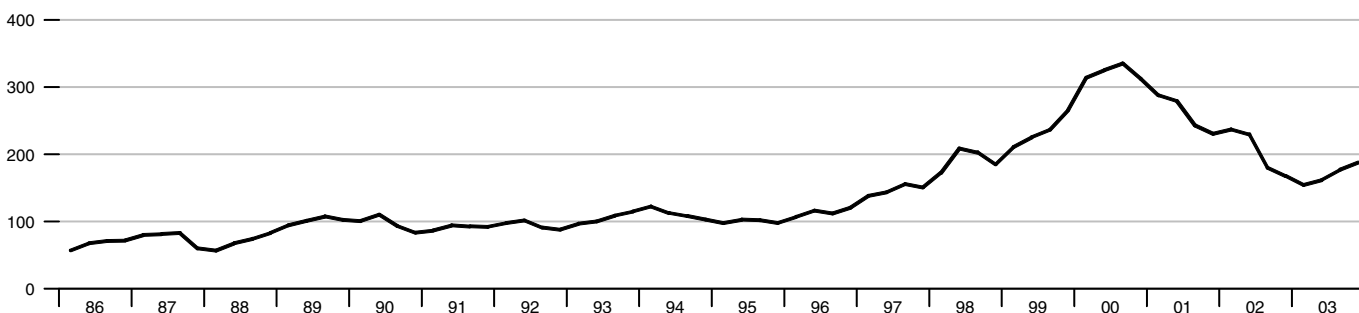
Percent of GDP

**Foreign Exchange Reserves**

Billions of US\$

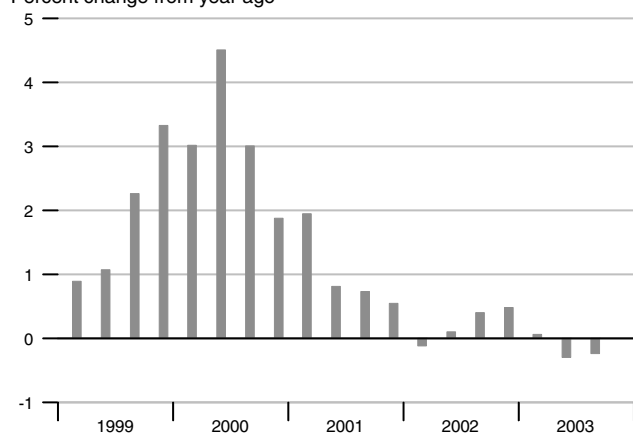
**Stock Exchange Index - SBF 250**

1995 = 100



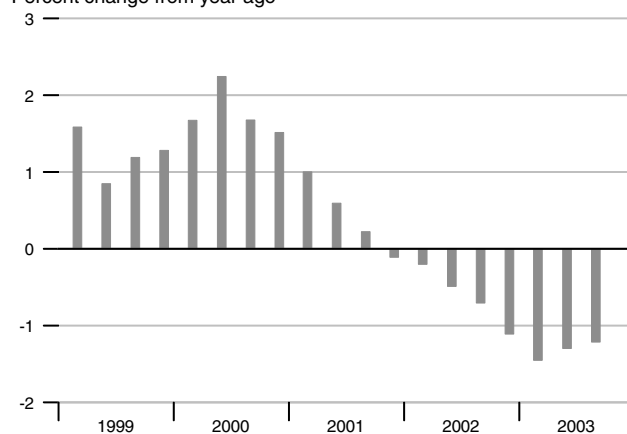
### Real GDP

Percent change from year ago



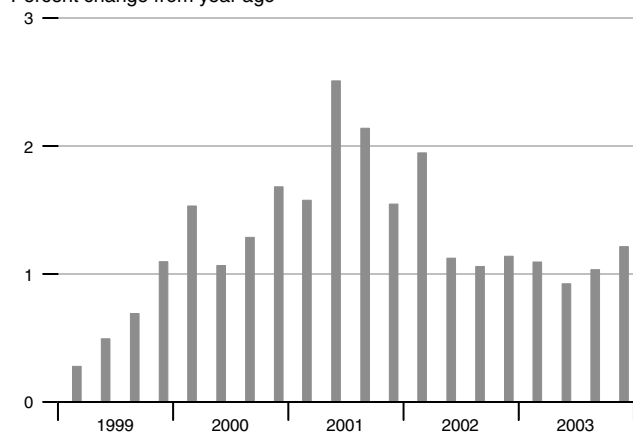
### Employment

Percent change from year ago



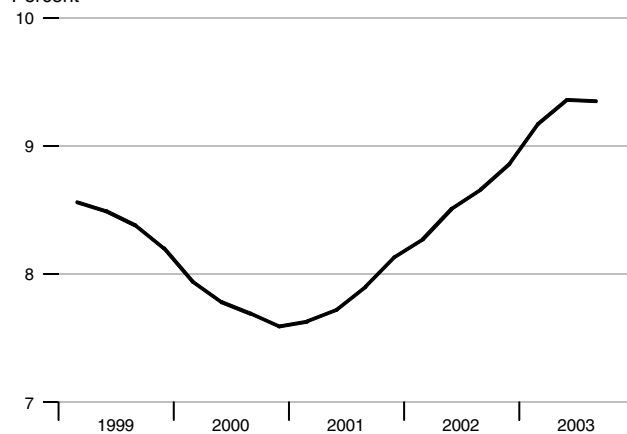
### Consumer Price Index

Percent change from year ago



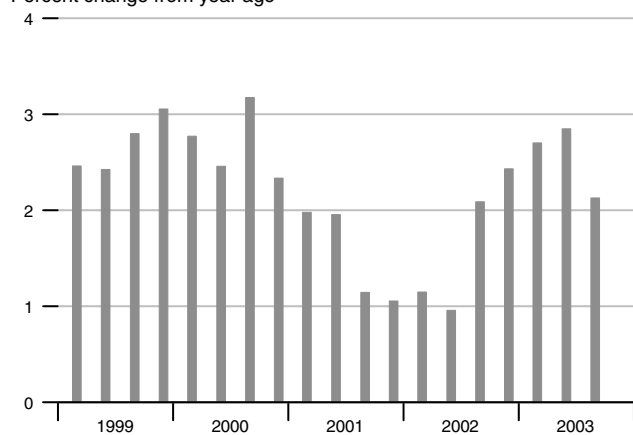
### Unemployment Rate

Percent



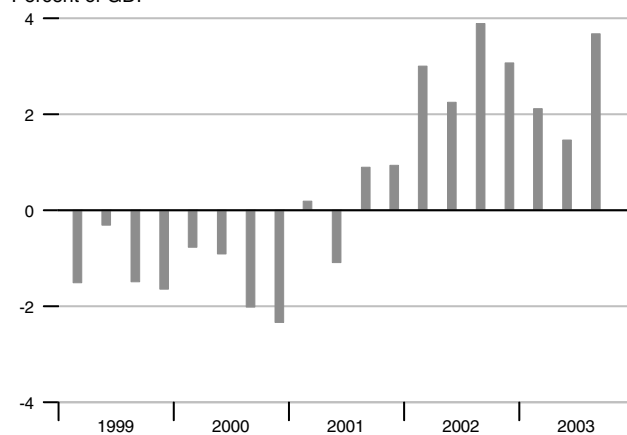
### Hourly Earnings

Percent change from year ago



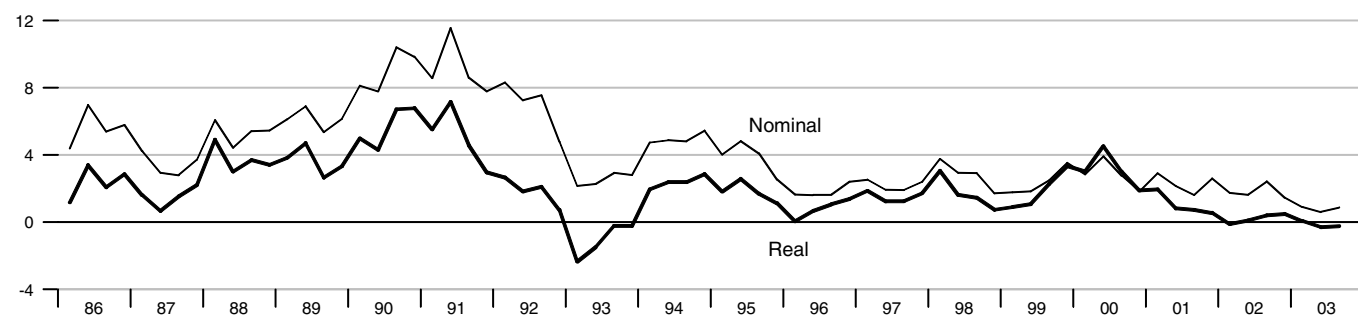
### Current Account Balance

Percent of GDP

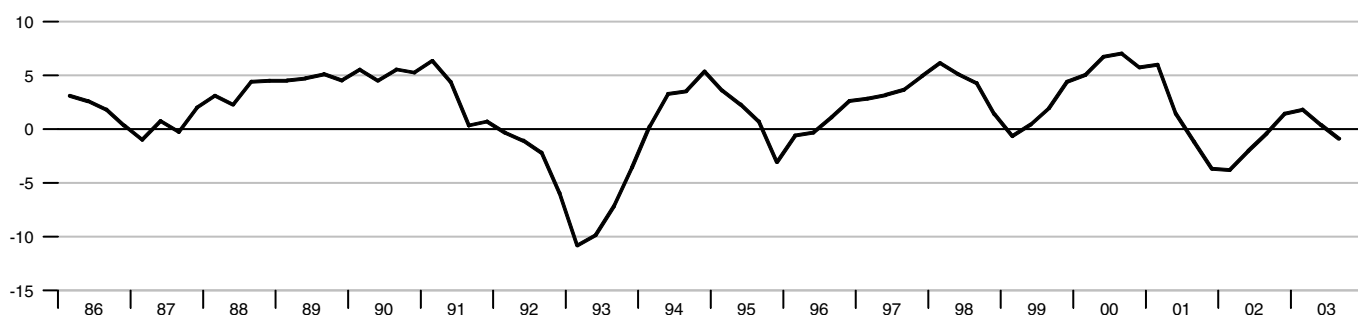


**GDP**

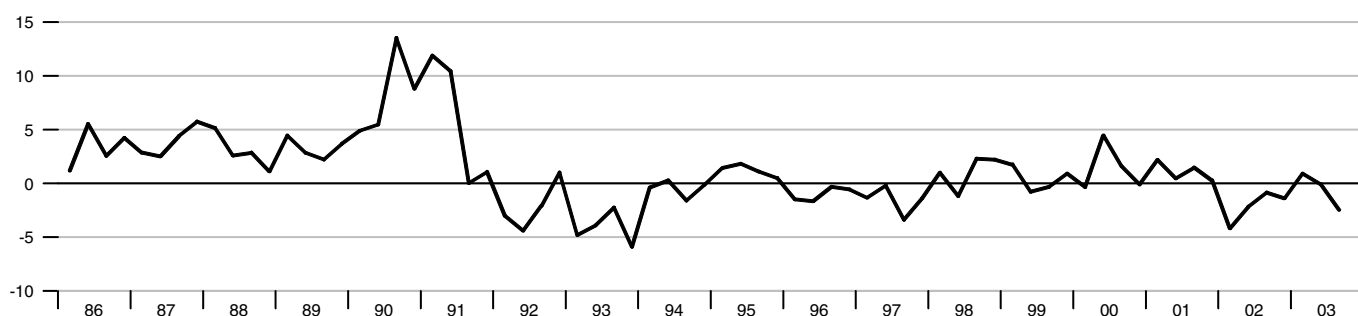
Percent change from year ago

**Industrial Production**

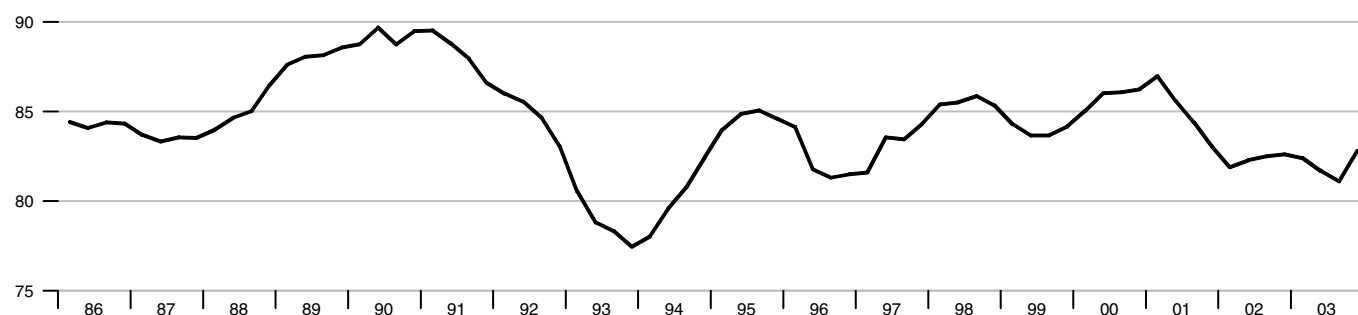
Percent change from year ago

**Retail Sales**

Percent change from year ago

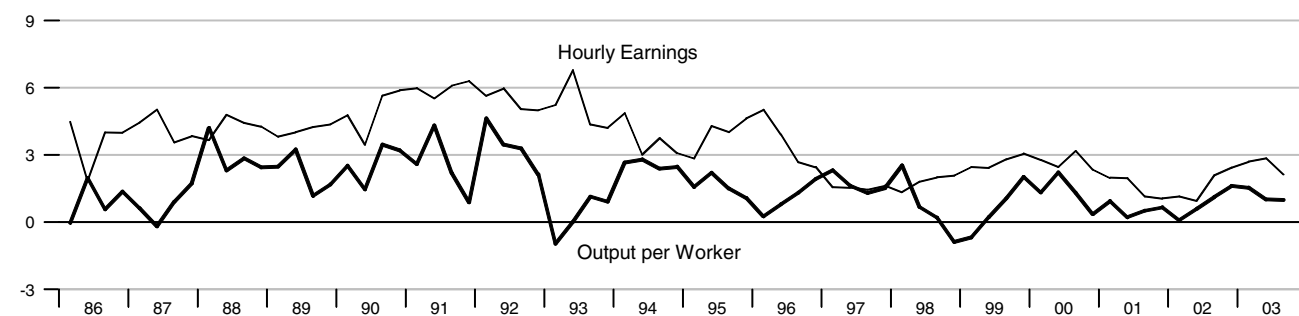
**Capacity Utilization**

Percent



## Hourly Earnings and Output per Worker

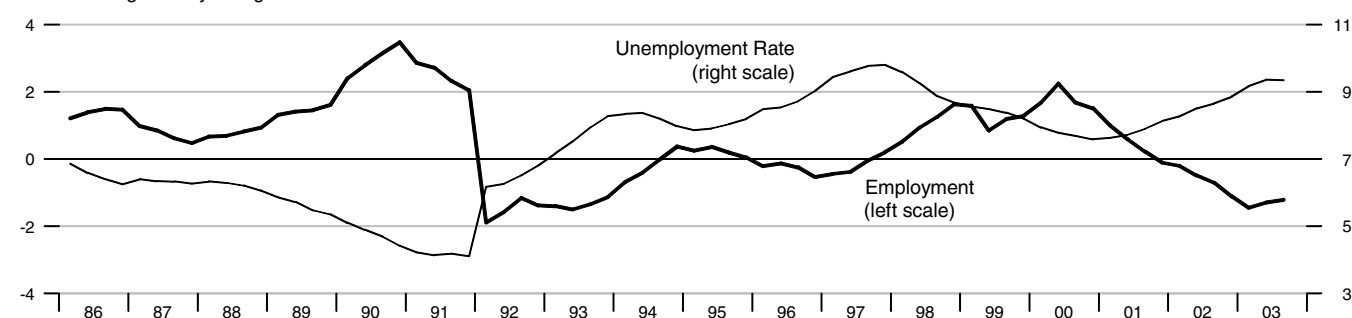
Percent change from year ago



## Labor Force Indicators

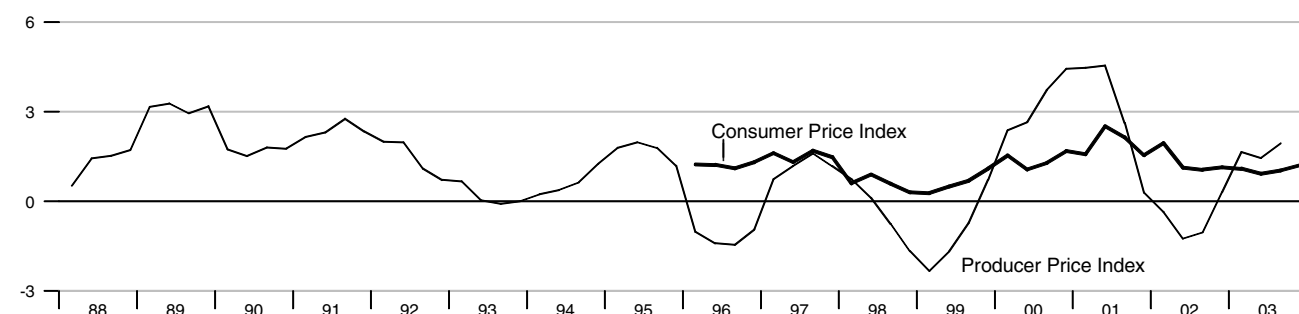
Percent change from year ago

Percent



## Inflation

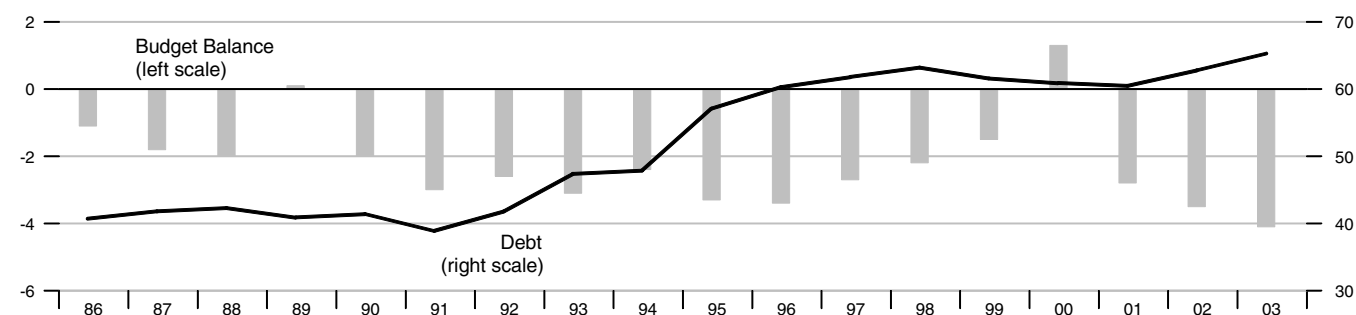
Percent change from year ago



## Government Debt and Budget Balance

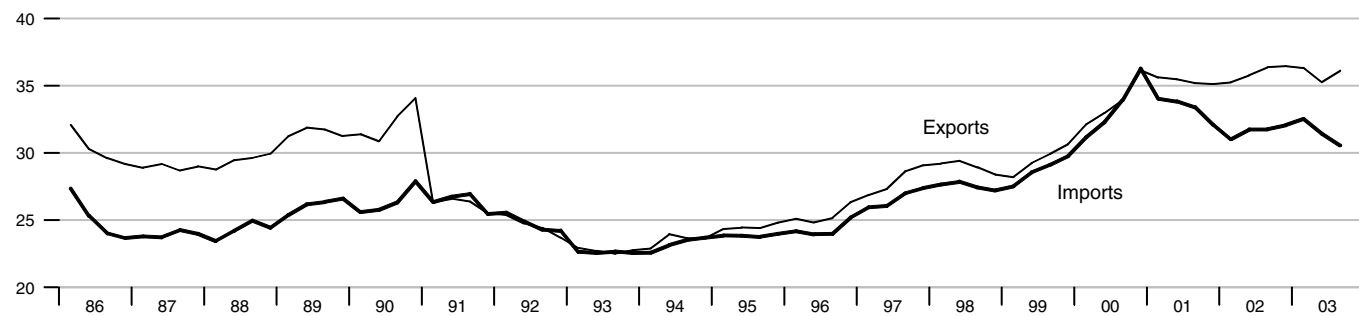
Percent of GDP, annual data

Percent of GDP, annual data

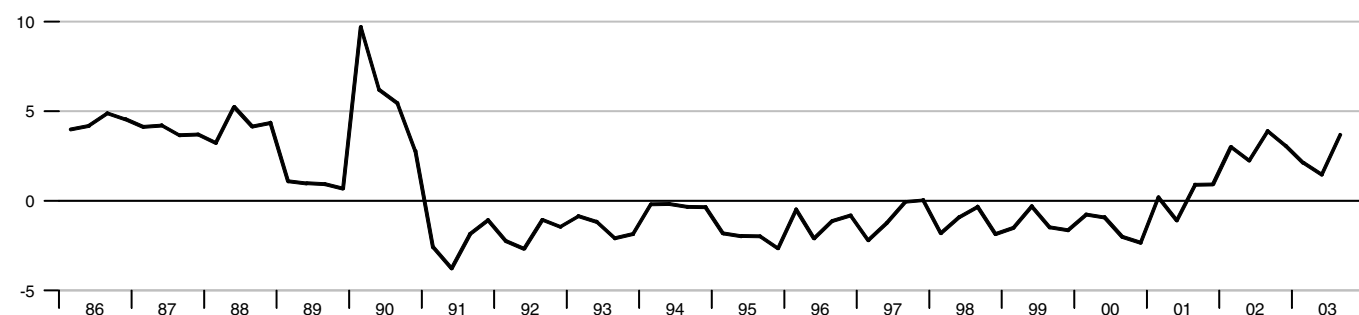


**International Trade - Goods and Services**

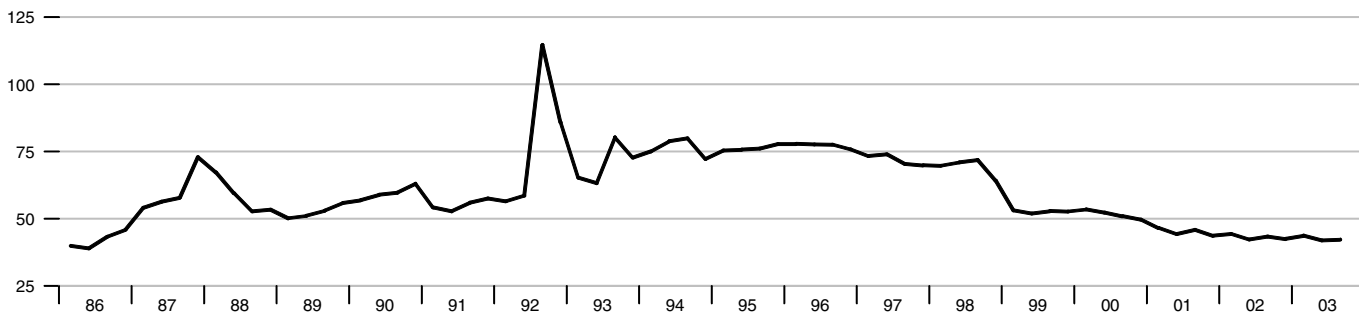
Percent of GDP

**Current Account Balance**

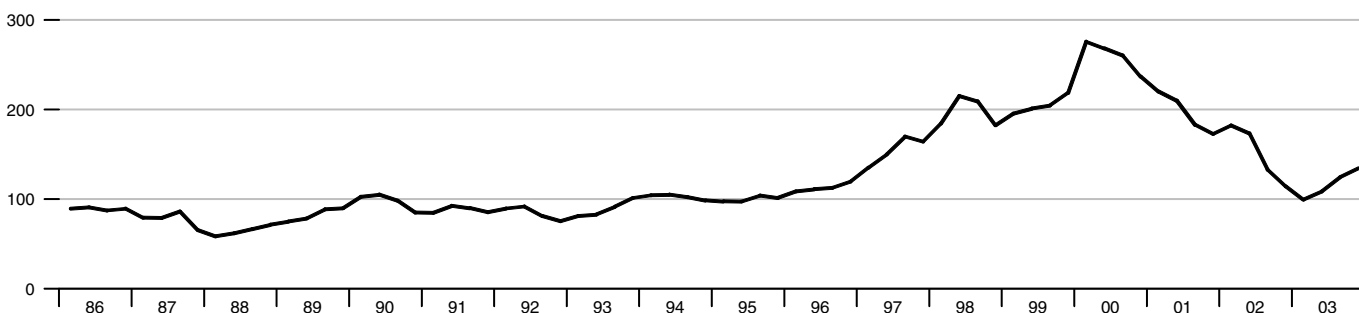
Percent of GDP

**Foreign Exchange Reserves**

Billions of US\$

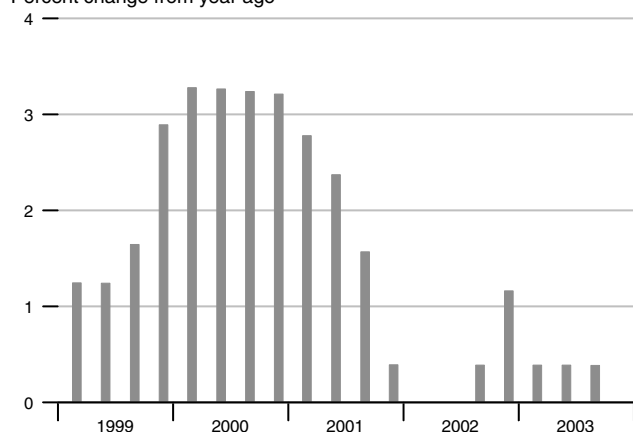
**Stock Exchange Index - CDAX**

1995 = 100



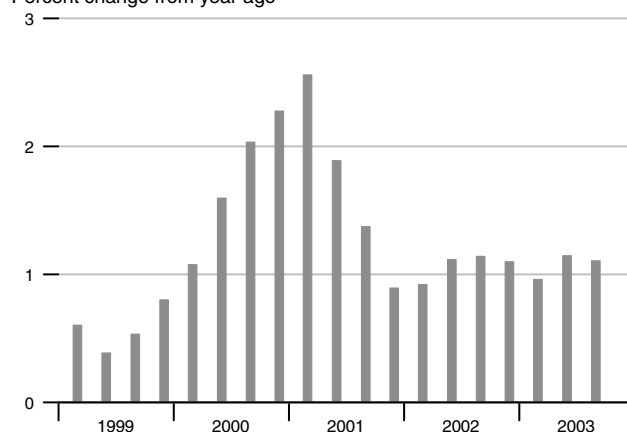
### Real GDP

Percent change from year ago



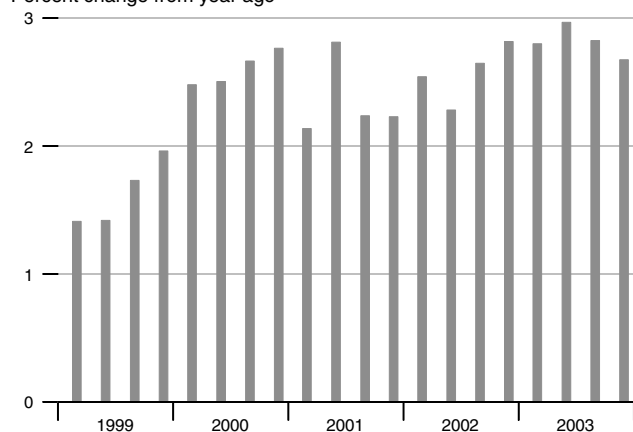
### Employment

Percent change from year ago



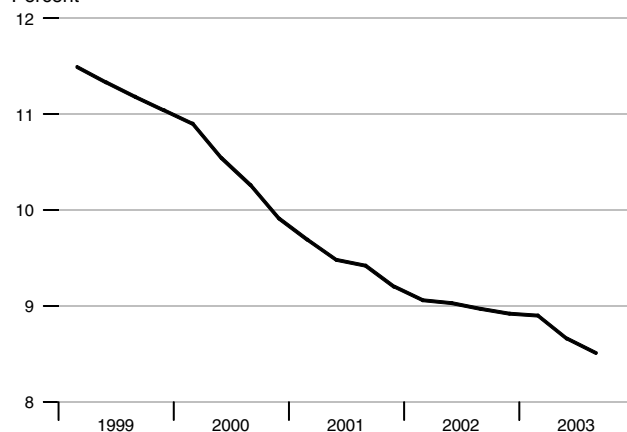
### Consumer Price Index

Percent change from year ago



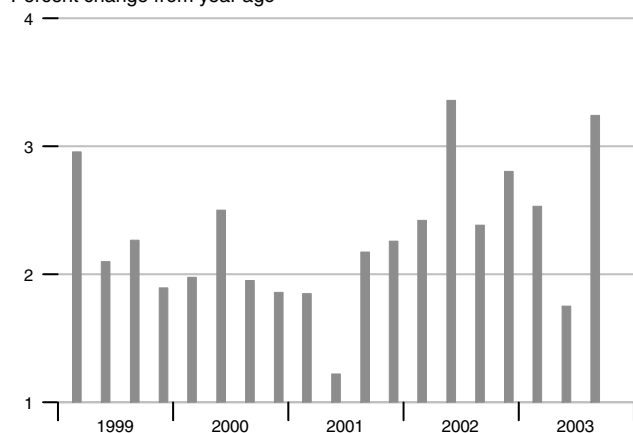
### Unemployment Rate

Percent



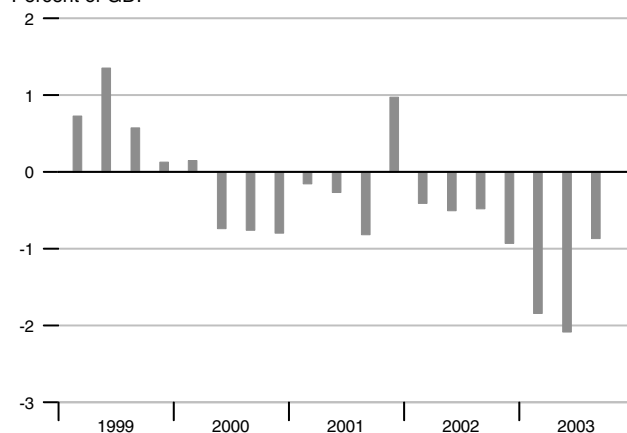
### Hourly Earnings

Percent change from year ago



### Current Account Balance

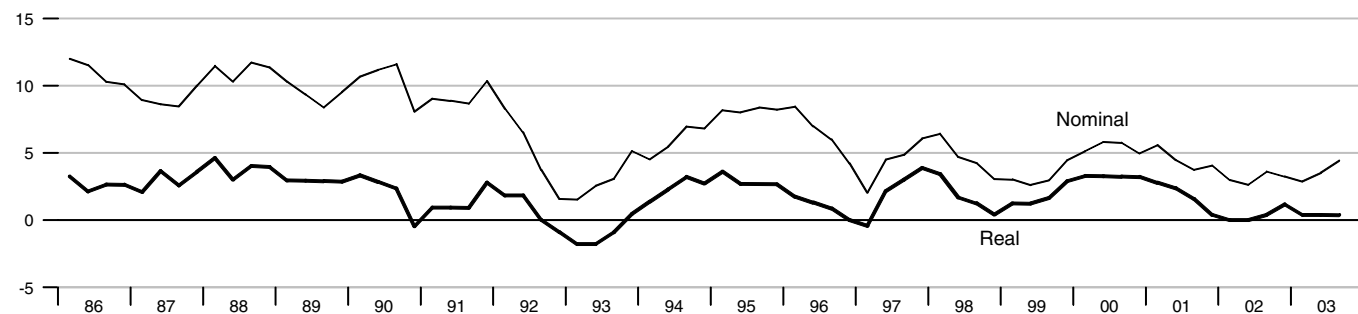
Percent of GDP



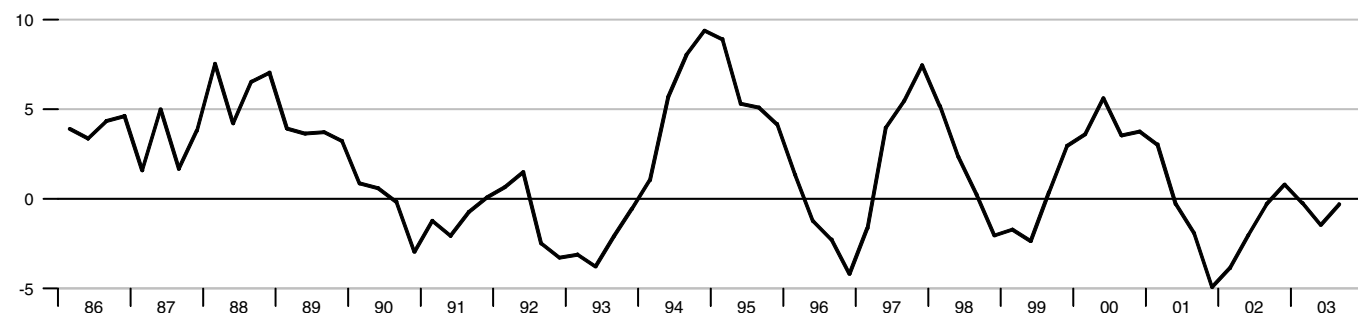


**GDP**

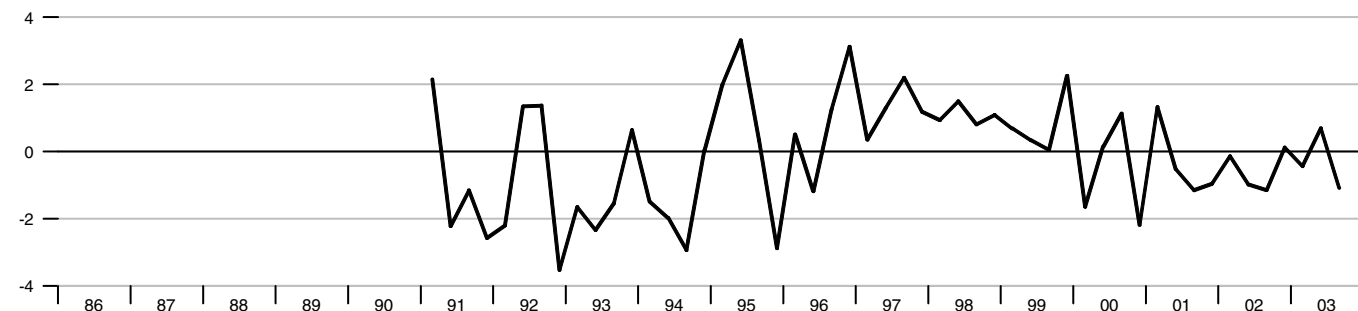
Percent change from year ago

**Industrial Production**

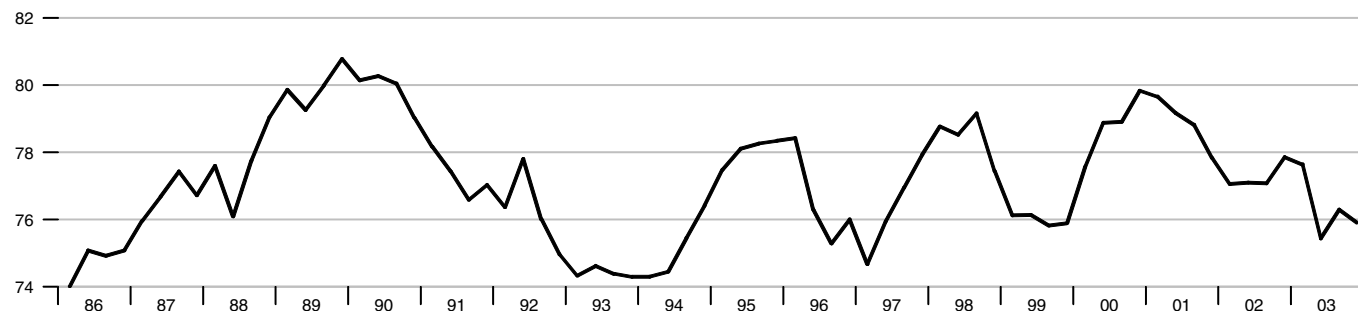
Percent change from year ago

**Retail Sales**

Percent change from year ago

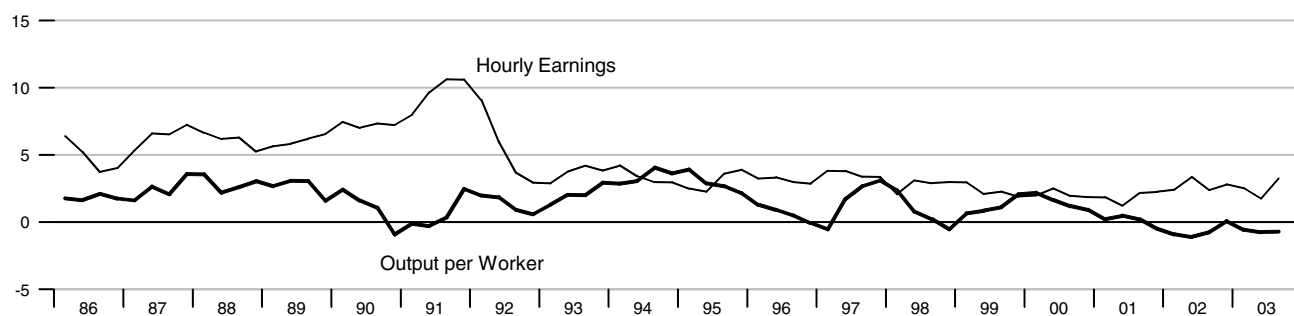
**Capacity Utilization**

Percent



## Hourly Earnings and Output per Worker

Percent change from year ago



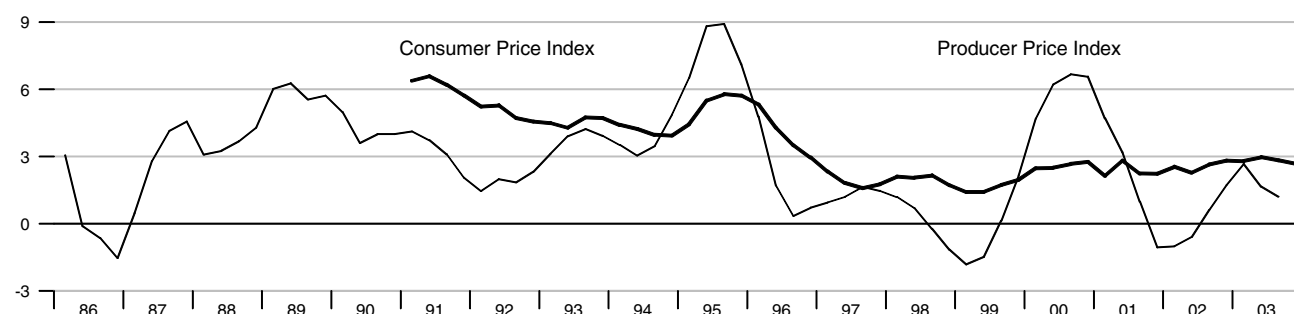
## Labor Force Indicators

Percent change from year ago



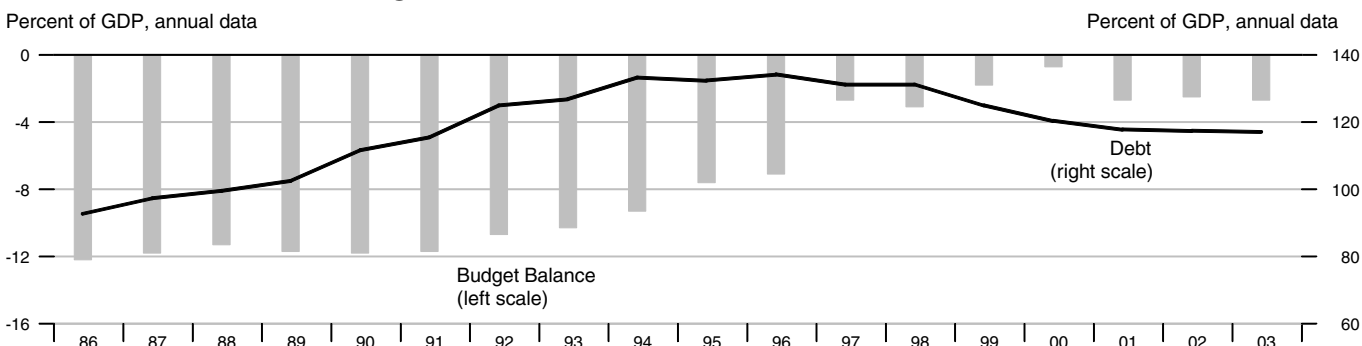
## Inflation

Percent change from year ago



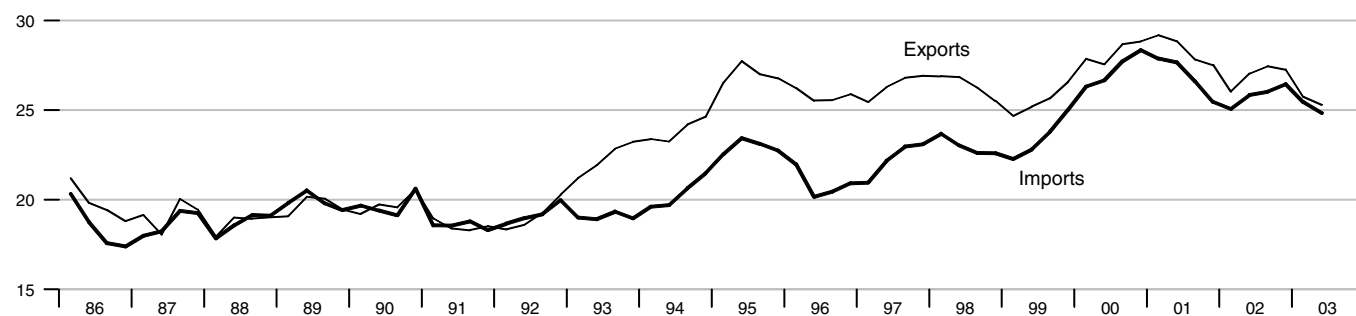
## Government Debt and Budget Balance

Percent of GDP, annual data



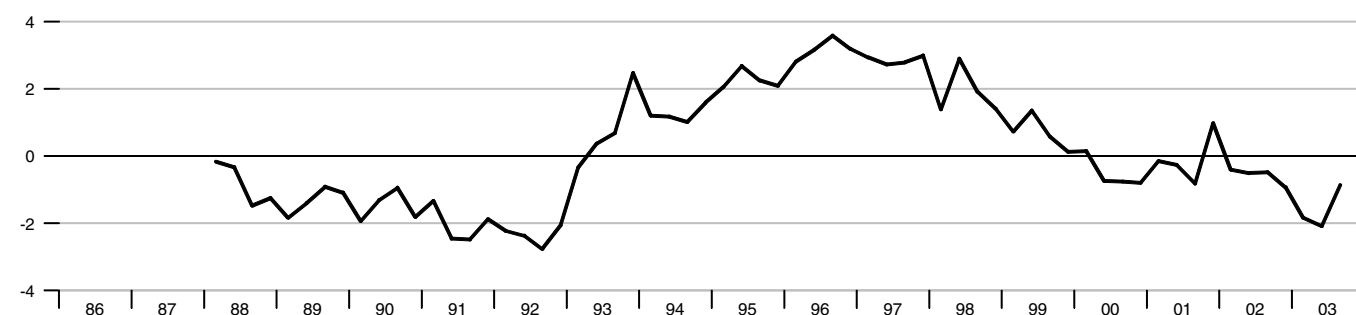
## International Trade - Goods and Services

Percent of GDP



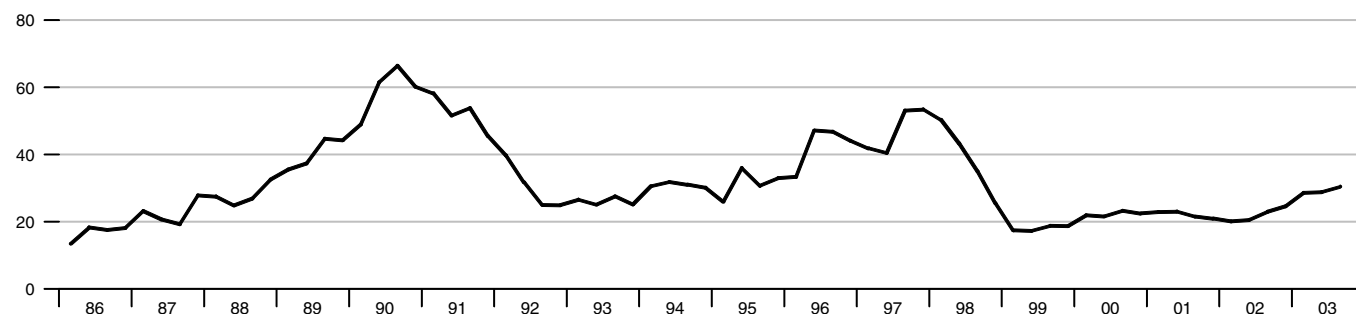
## Current Account Balance

Percent of GDP



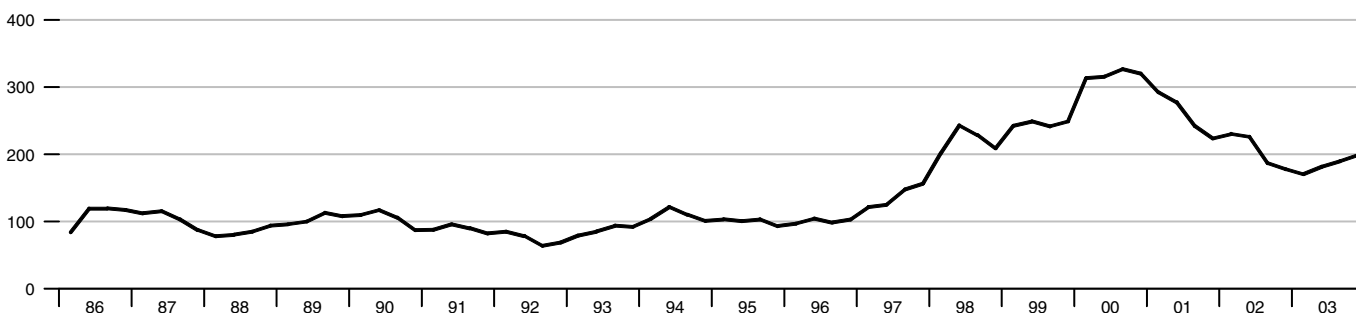
## Foreign Exchange Reserves

Billions of US\$



## Stock Exchange Index - Milan Stock Exchange

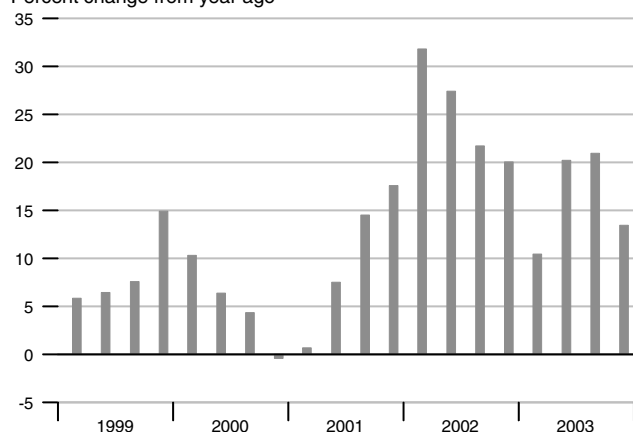
1995 = 100



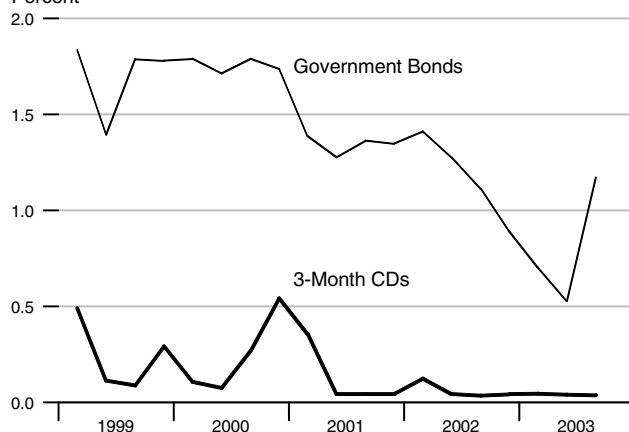


**Adjusted Monetary Base**

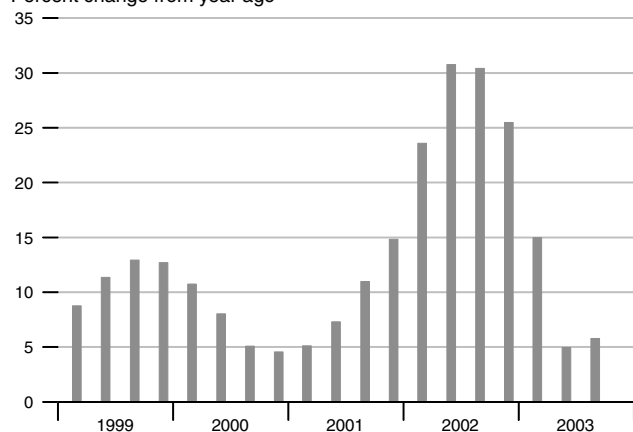
Percent change from year ago

**Interest Rates**

Percent

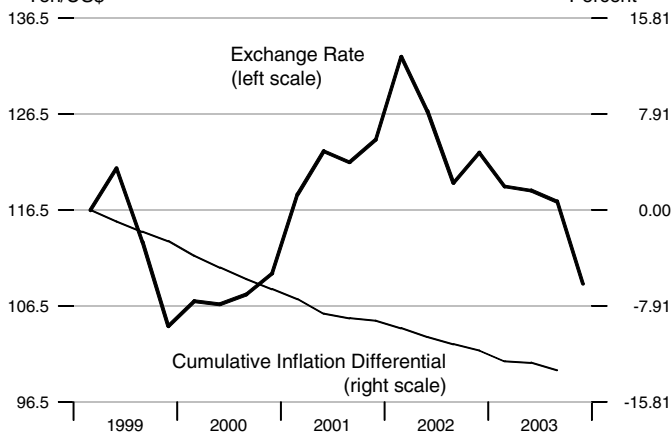
**M1**

Percent change from year ago

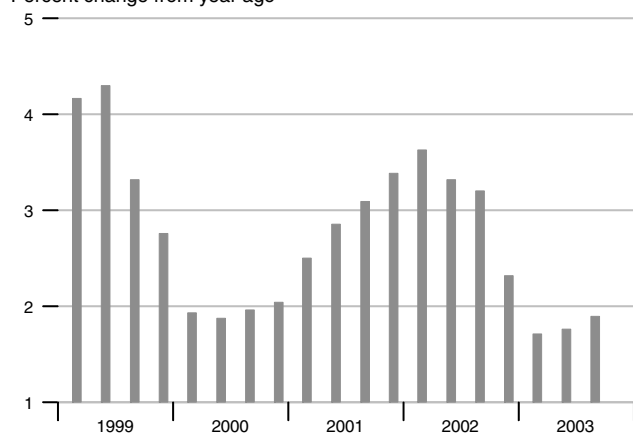
**Exchange Rate and Inflation Differential**

Yen/US\$

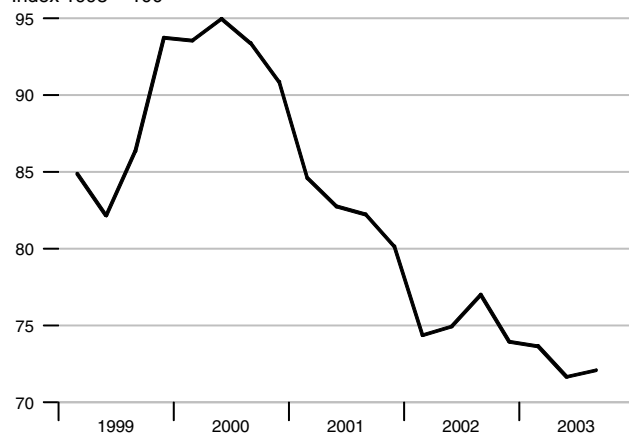
Percent

**M2**

Percent change from year ago

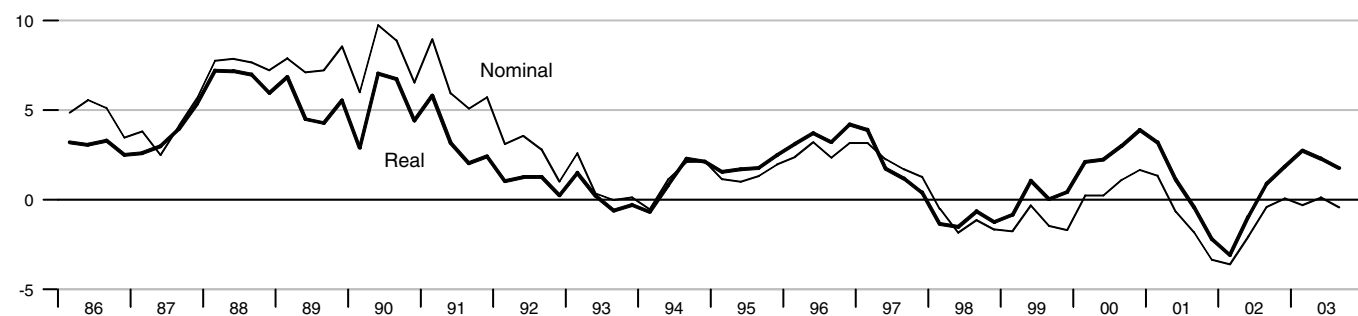
**Real Effective Exchange Rate**

Index 1995 = 100



## GDP

Percent change from year ago



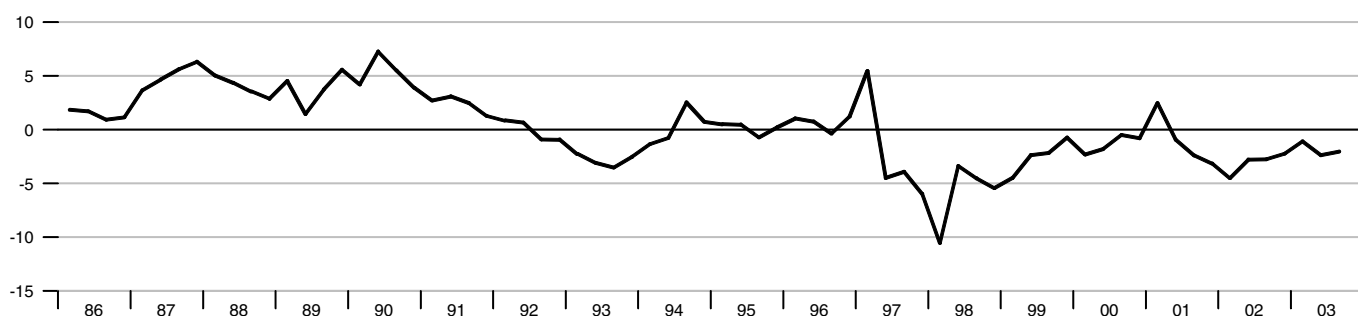
## Industrial Production

Percent change from year ago



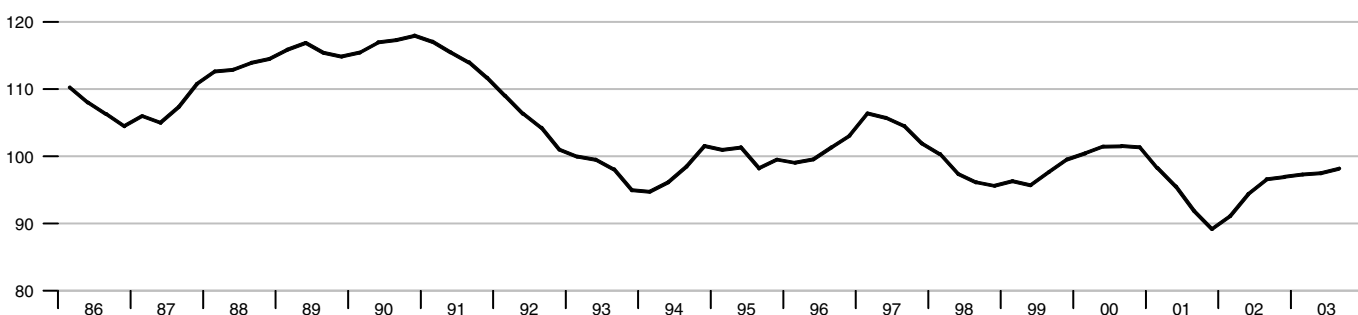
## Retail Sales

Percent change from year ago



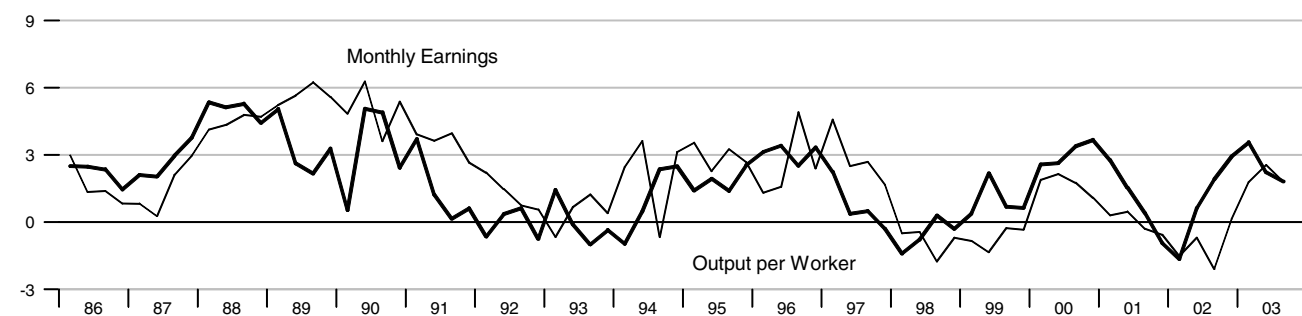
## Capacity Utilization

1995 = 100



## Monthly Earnings and Output per Worker

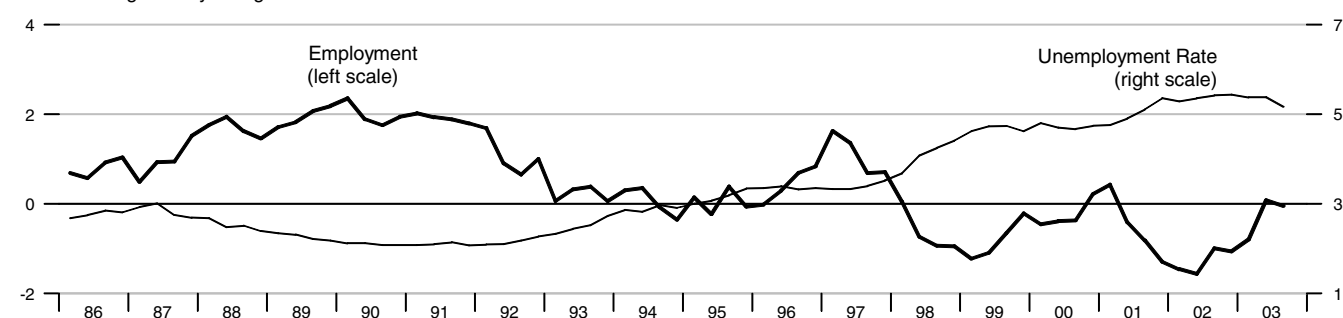
Percent change from year ago



## Labor Force Indicators

Percent change from year ago

Percent



## Inflation

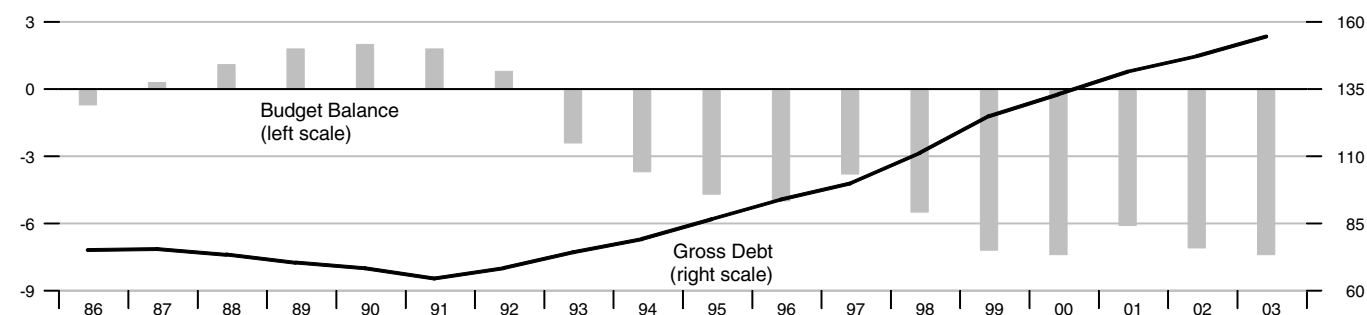
Percent change from year ago



## Government Debt and Budget Balance

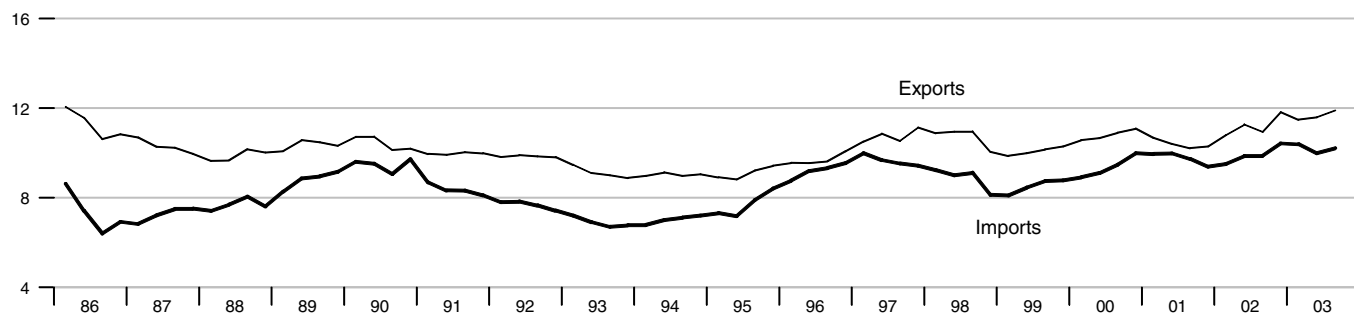
Percent of GDP, annual data

Percent of GDP, annual data



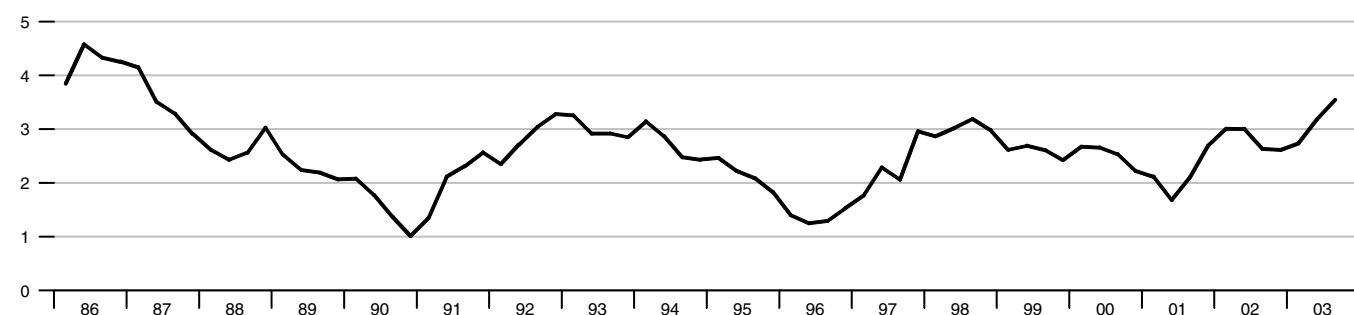
## International Trade - Goods and Services

Percent of GDP



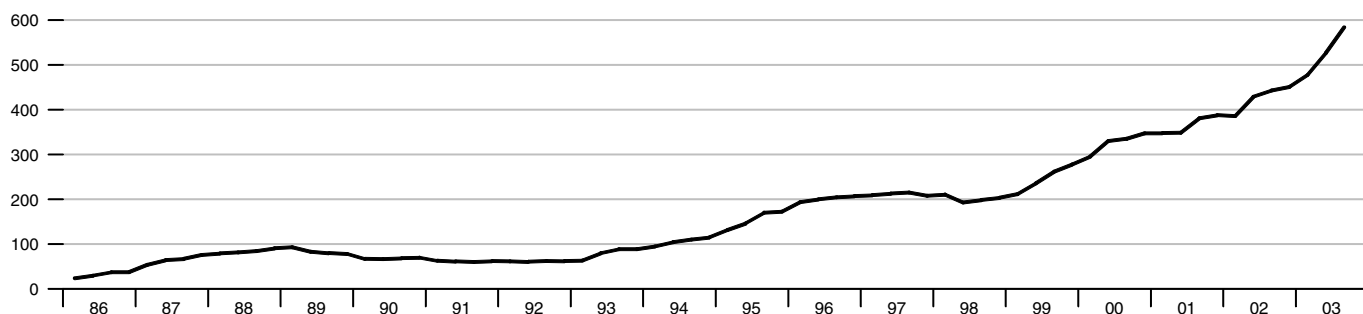
## Current Account Balance

Percent of GDP



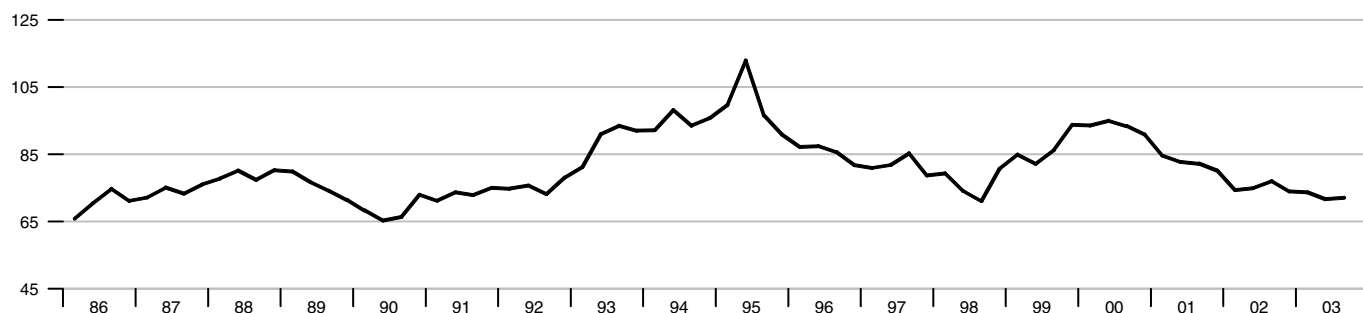
## Foreign Exchange Reserves

Billions of US\$



## Real Effective Exchange Rate

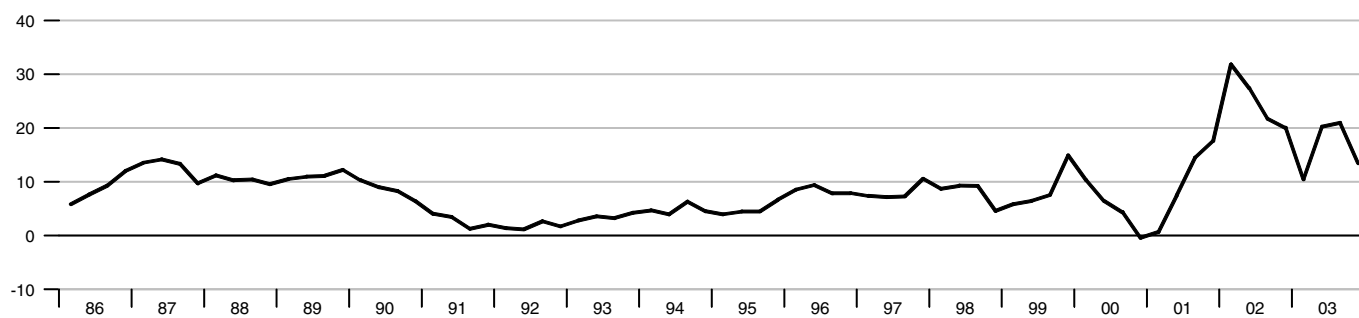
Index 1995 = 100



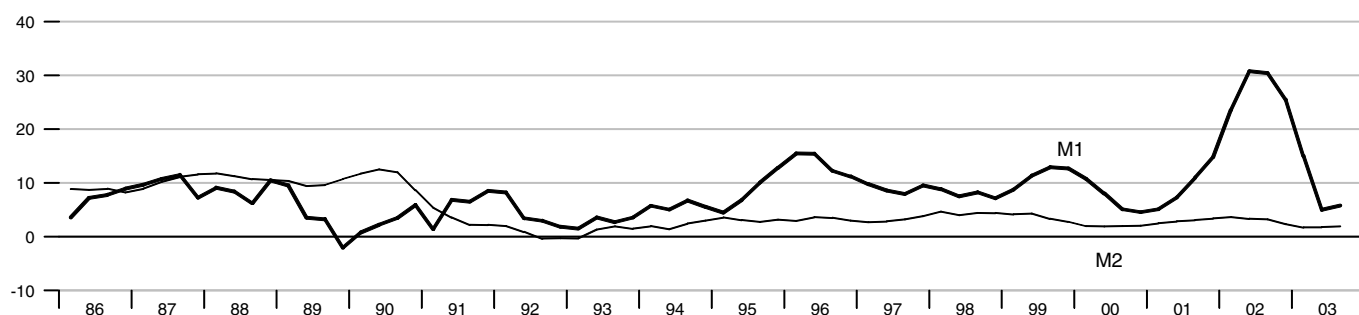


**Adjusted Monetary Base**

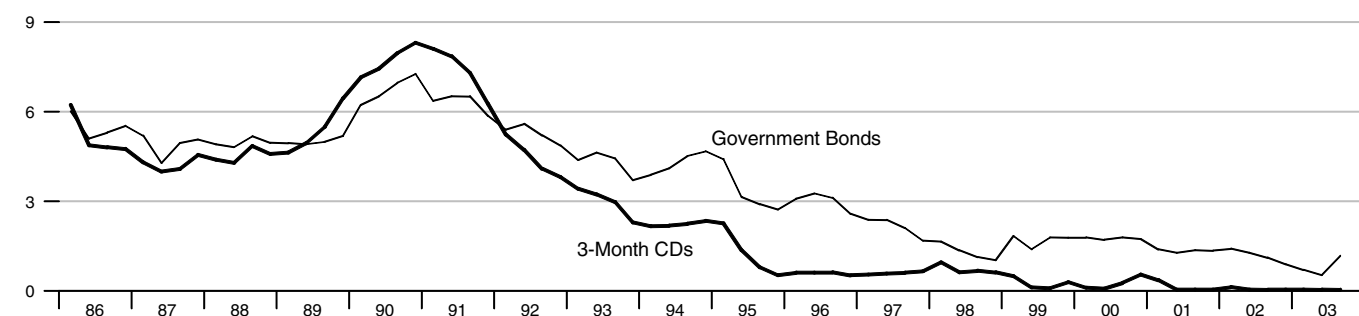
Percent change from year ago

**Monetary Aggregates**

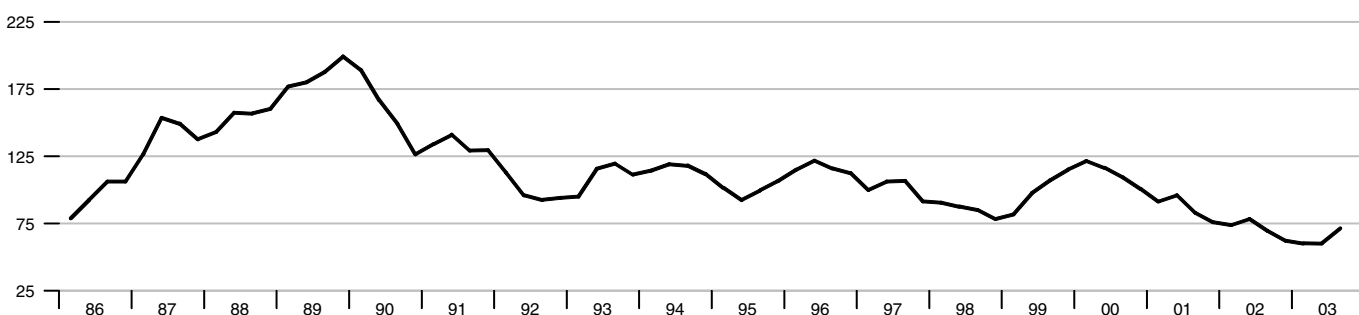
Percent change from year ago

**Interest Rates**

Percent

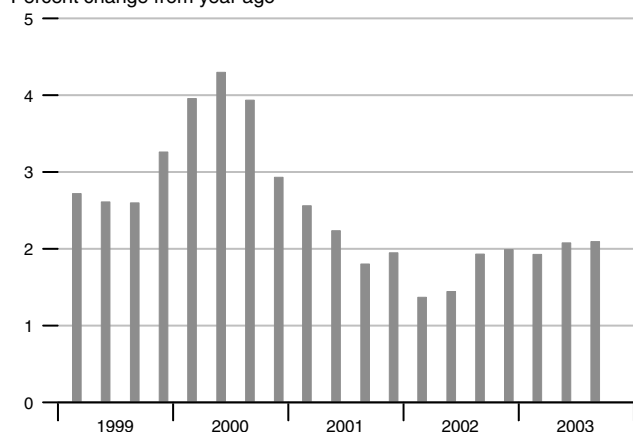
**Stock Exchange Index - Tokyo Stock Exchange**

1995 = 100



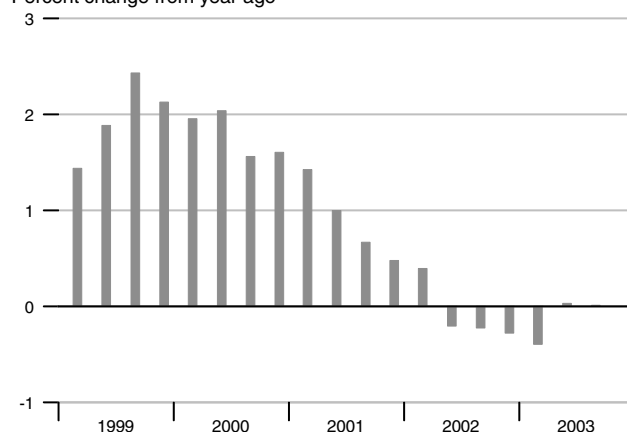
### Real GDP

Percent change from year ago



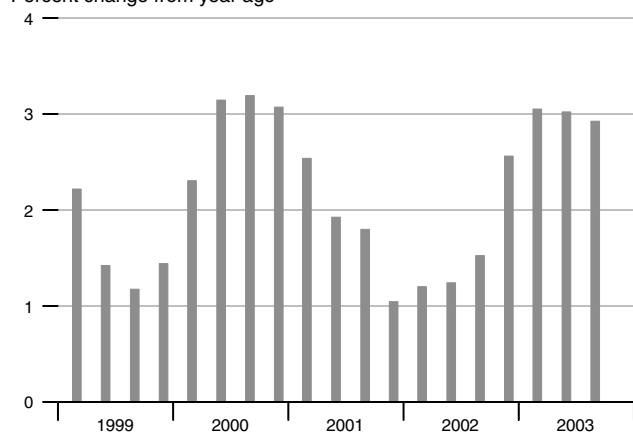
### Employment

Percent change from year ago



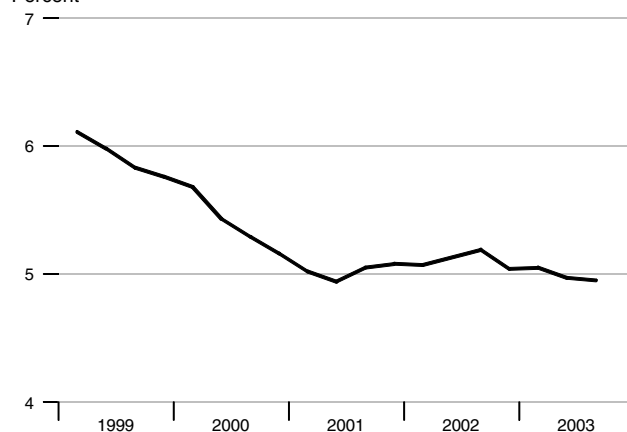
### Consumer Price Index

Percent change from year ago



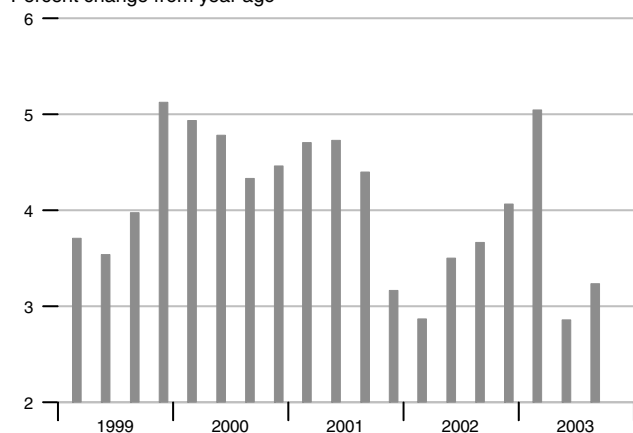
### Unemployment Rate

Percent



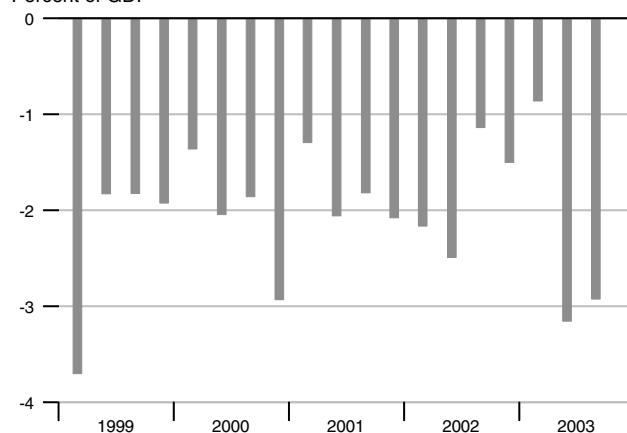
### Weekly Earnings

Percent change from year ago



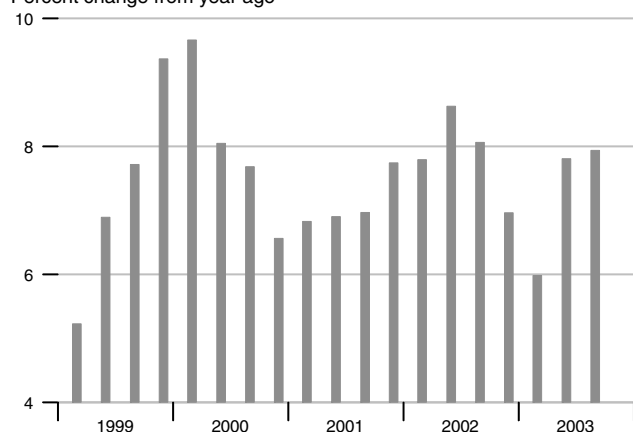
### Current Account Balance

Percent of GDP



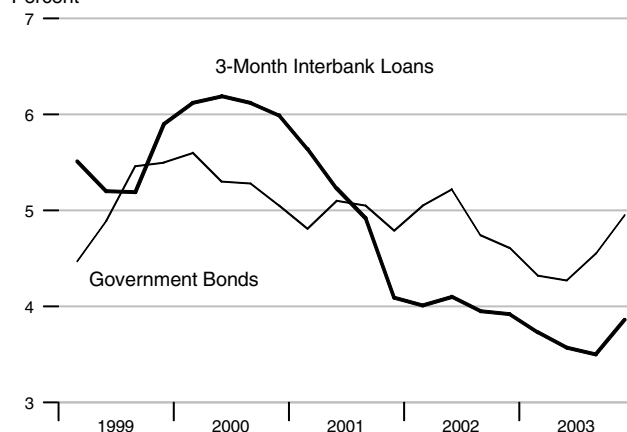
**MO**

Percent change from year ago



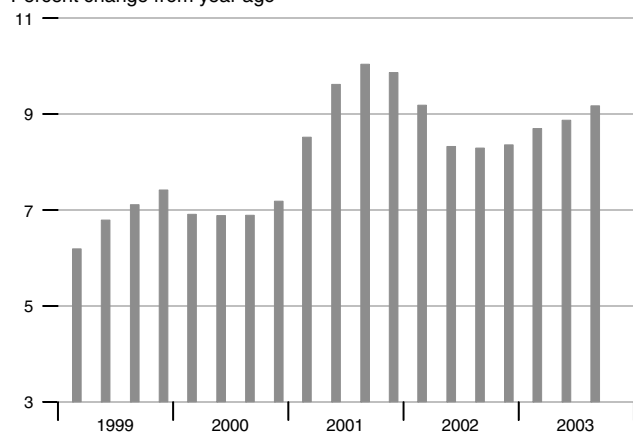
## Interest Rates

Percent



## M2

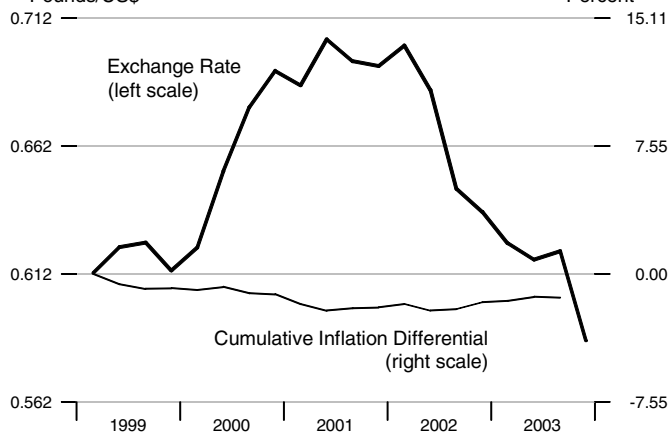
Percent change from year ago



### Exchange Rate and Inflation Differential

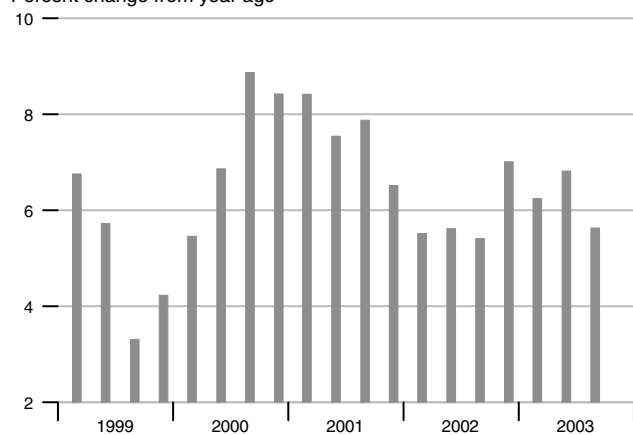
Pounds/US\$

Percent



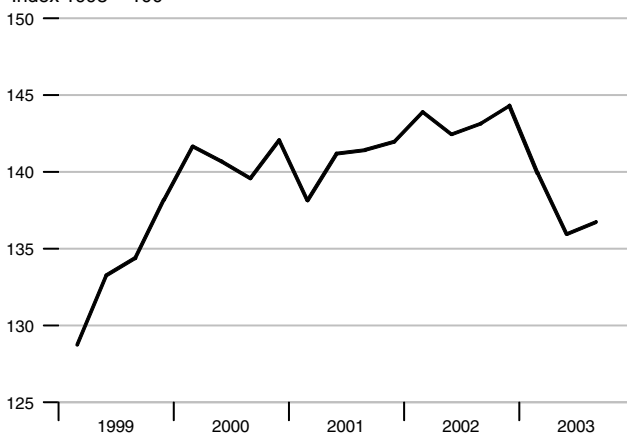
## M4

Percent change from year ago



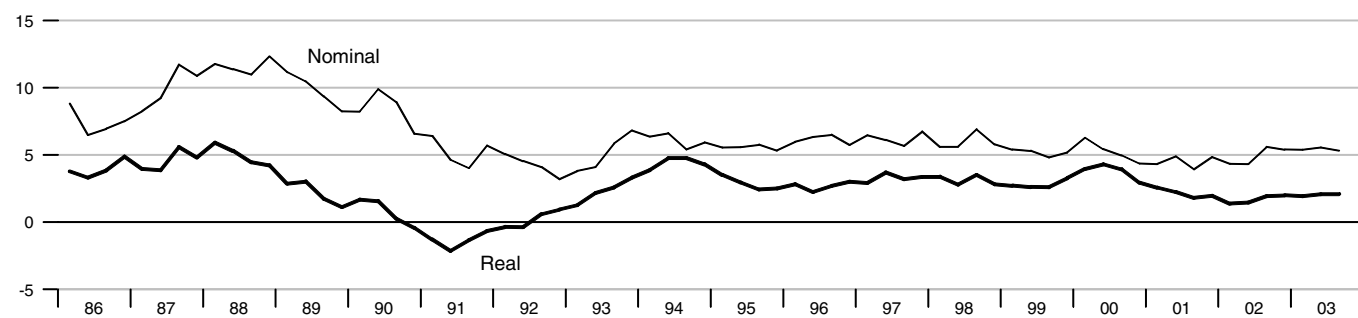
### Real Effective Exchange Rate

Index 1995 = 100

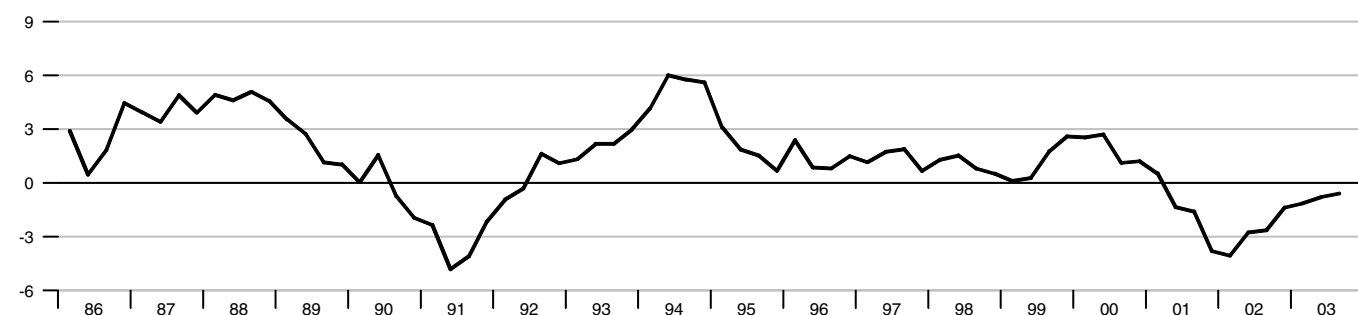


**GDP**

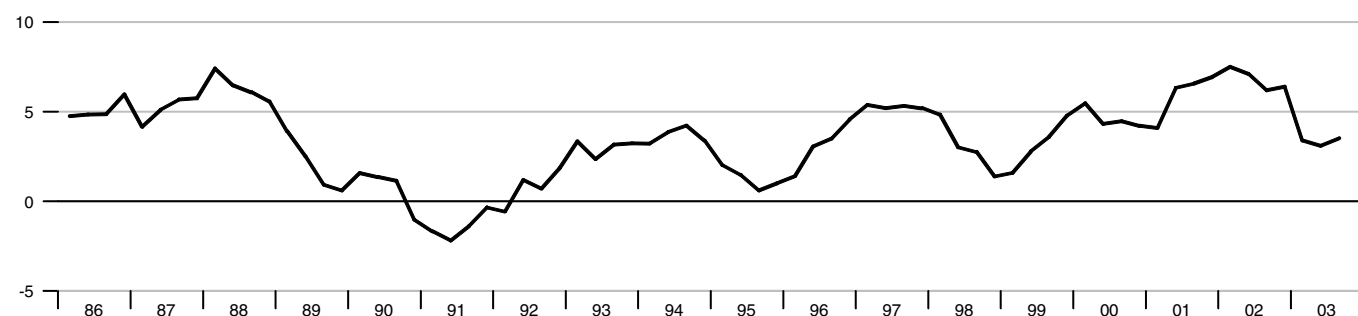
Percent change from year ago

**Industrial Production**

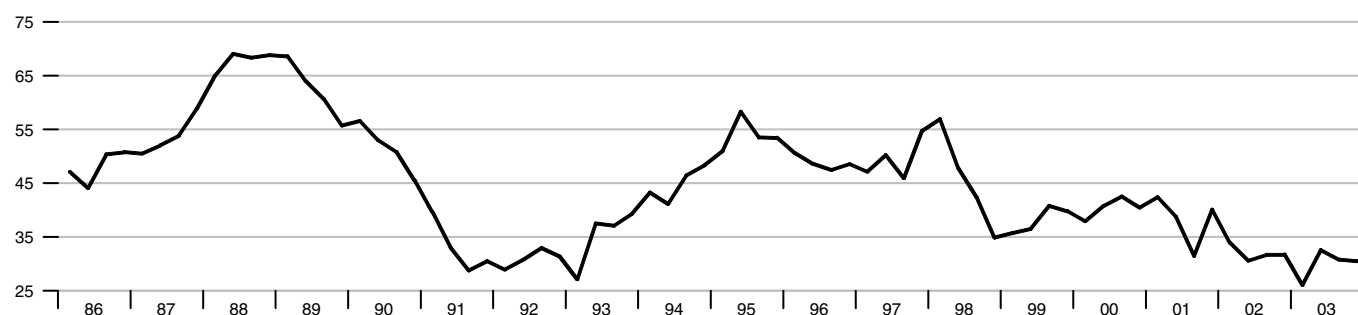
Percent change from year ago

**Retail Sales**

Percent change from year ago

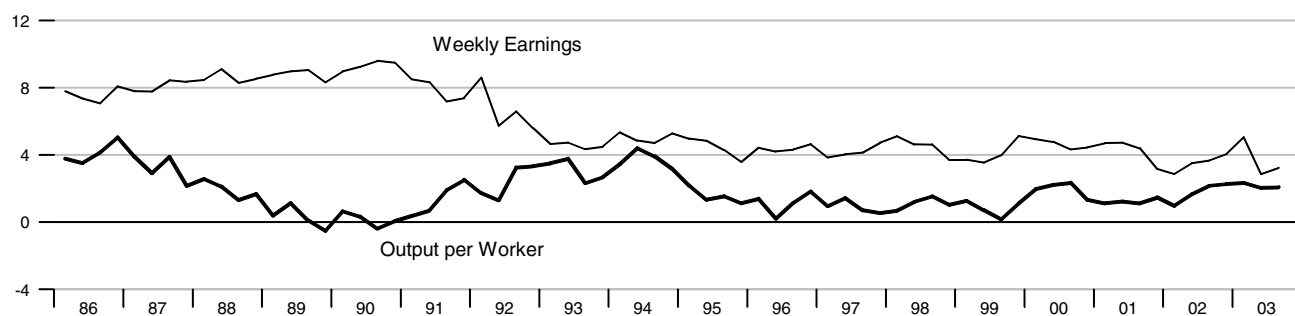
**Firms Operating at Capacity**

Percent



## Weekly Earnings and Output per Worker

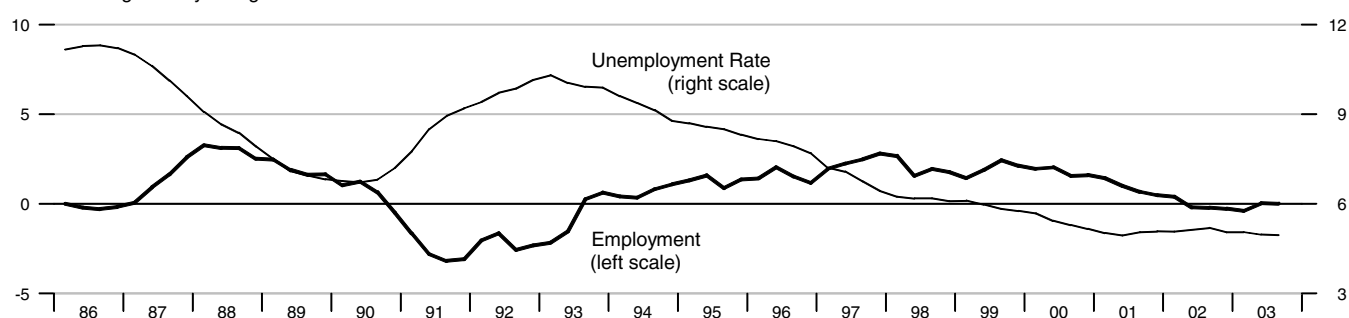
Percent change from year ago



## Labor Force Indicators

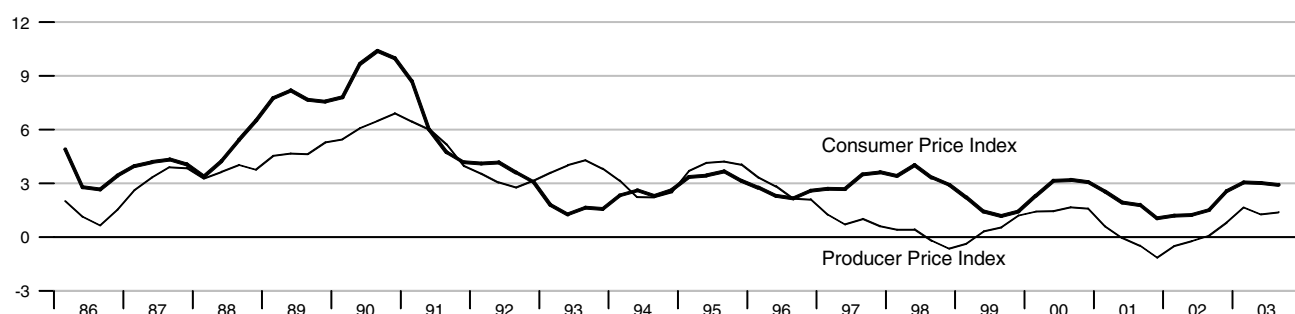
Percent change from year ago

Percent



## Inflation

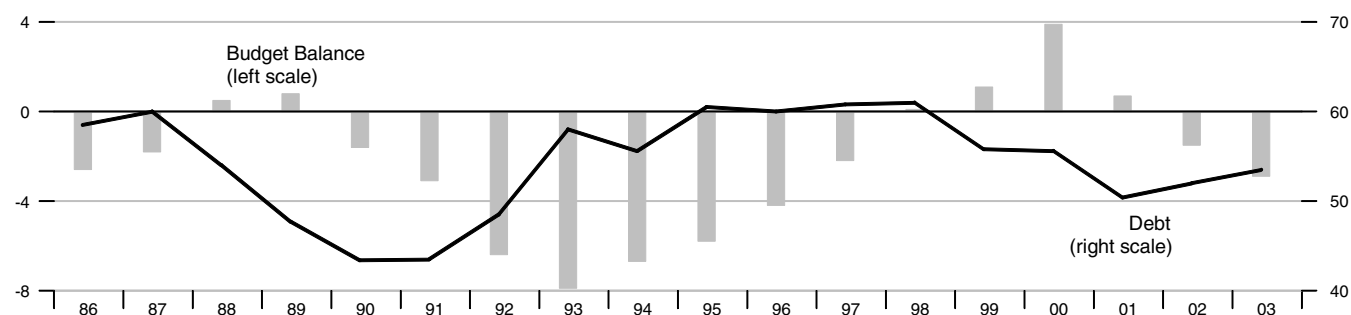
Percent change from year ago



## Government Debt and Budget Balance

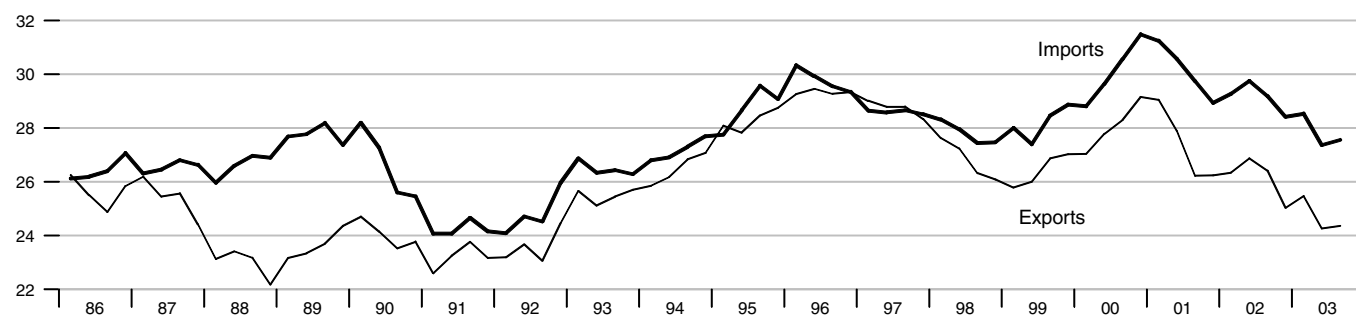
Percent of GDP, annual data

Percent of GDP, annual data



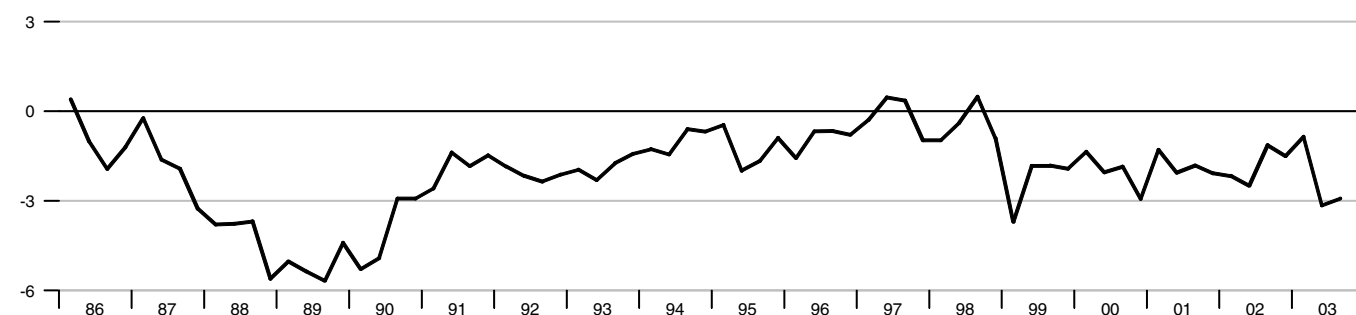
### International Trade - Goods and Services

Percent of GDP



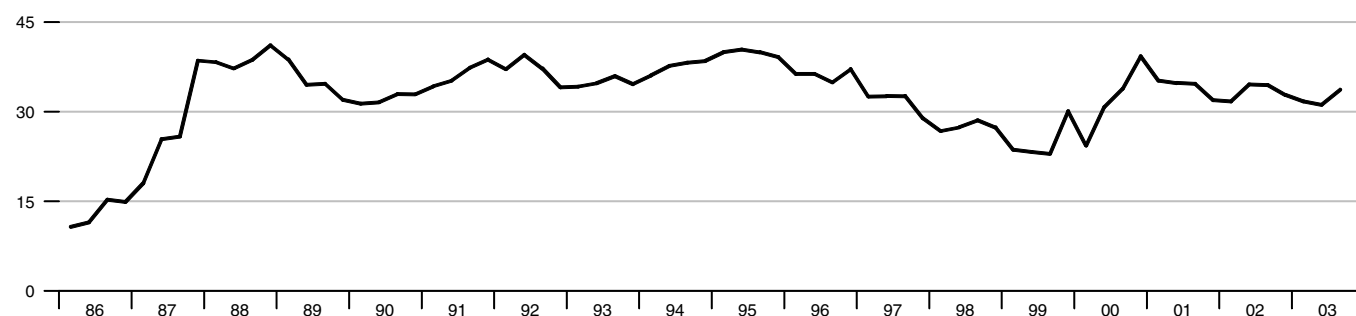
### Current Account Balance

Percent of GDP



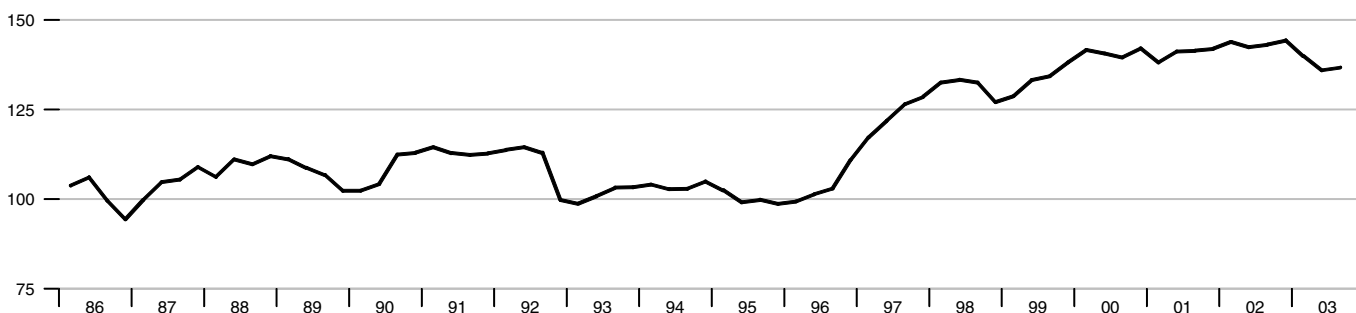
### Foreign Exchange Reserves

Billions of US\$



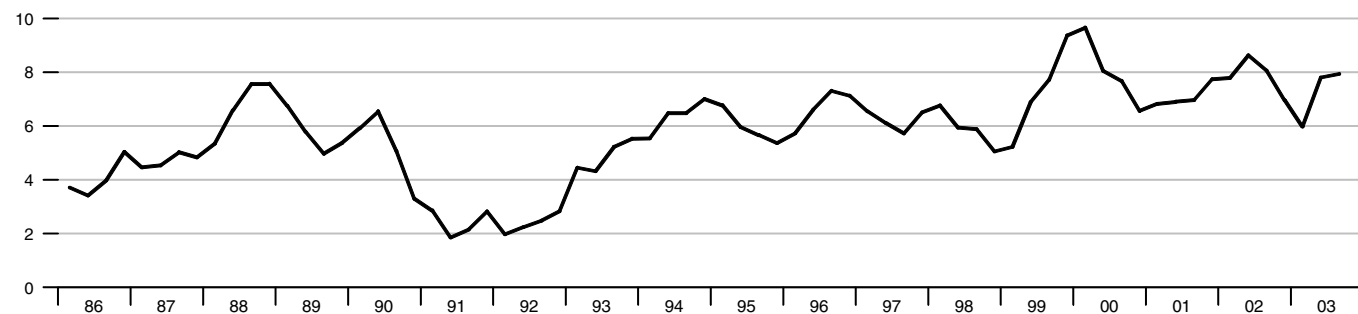
### Real Effective Exchange Rate

Index 1995 = 100

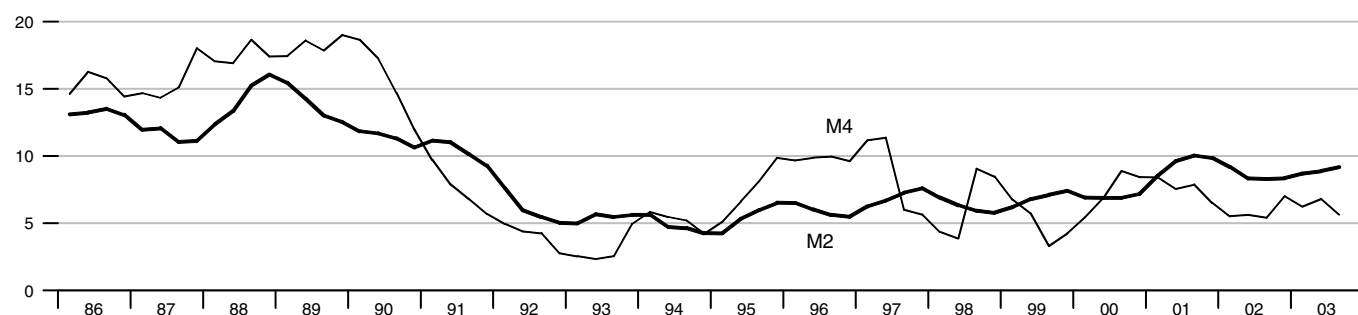


**M0**

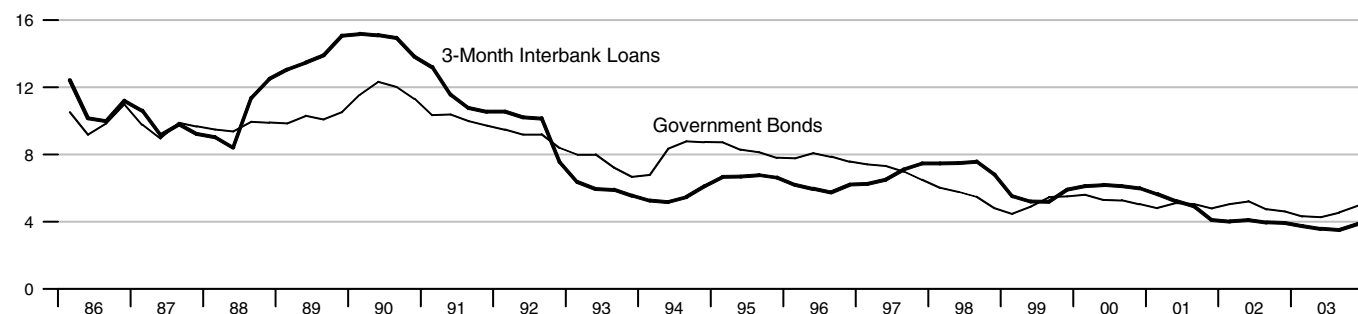
Percent change from year ago

**Monetary Aggregates**

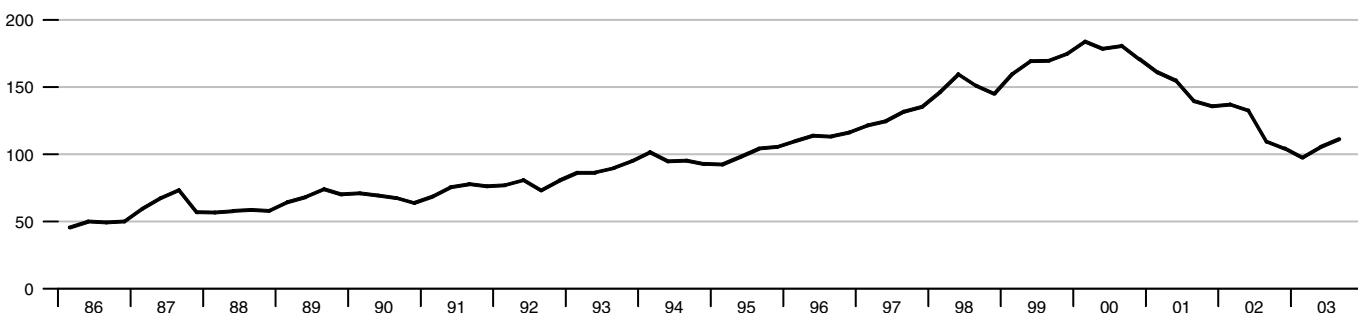
Percent change from year ago

**Interest Rates**

Percent

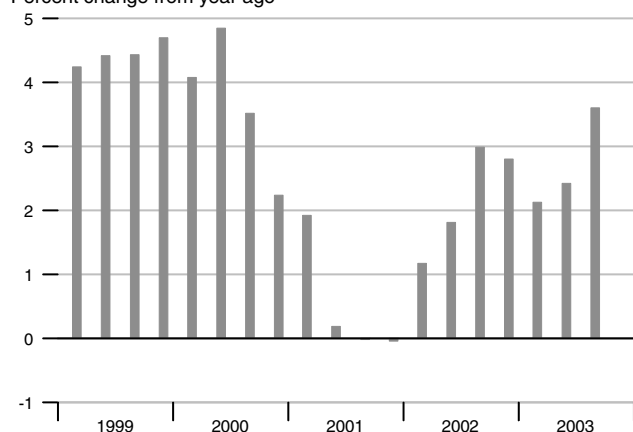
**Stock Exchange Index - Financial Times Stock Exchange**

1995 = 100



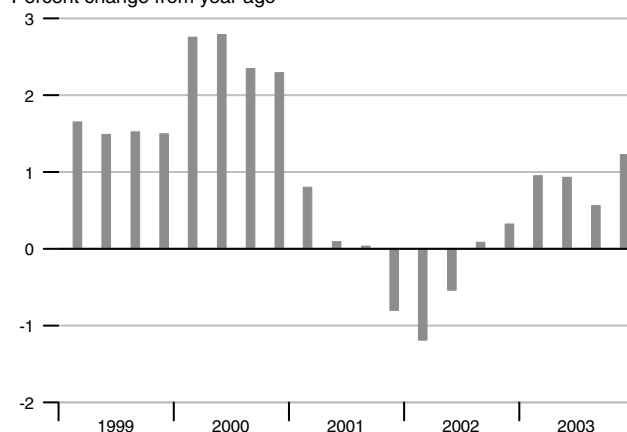
### Real GDP

Percent change from year ago



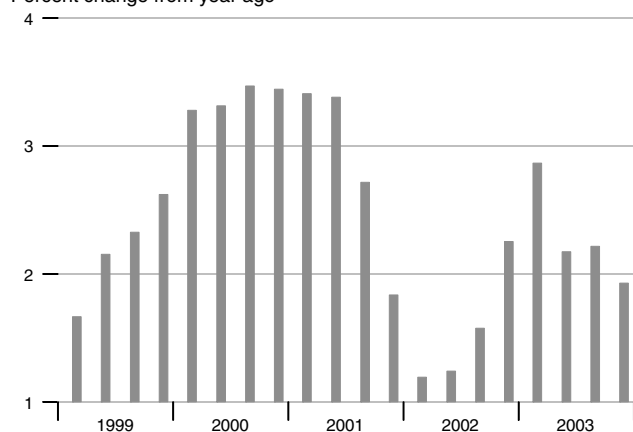
### Employment

Percent change from year ago



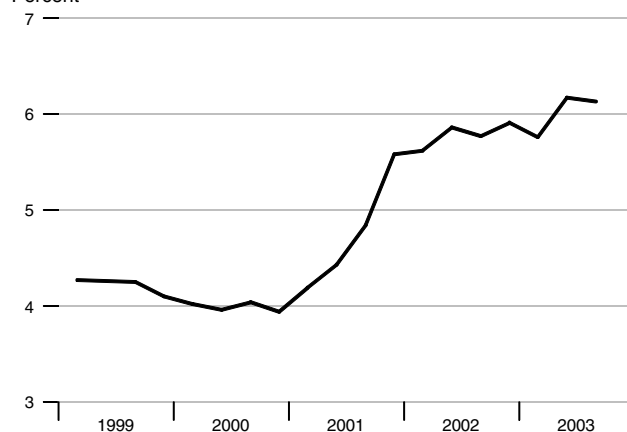
### Consumer Price Index

Percent change from year ago



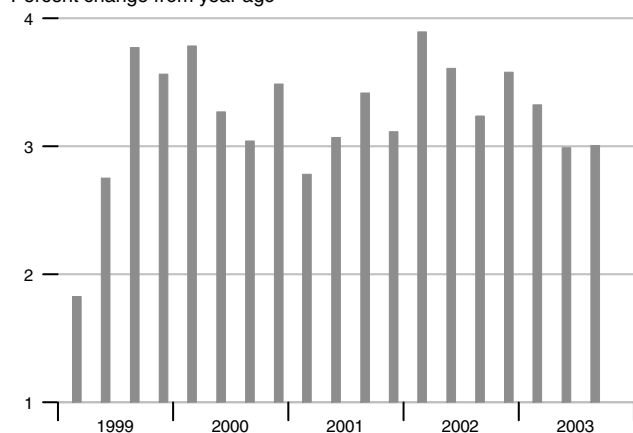
### Unemployment Rate

Percent



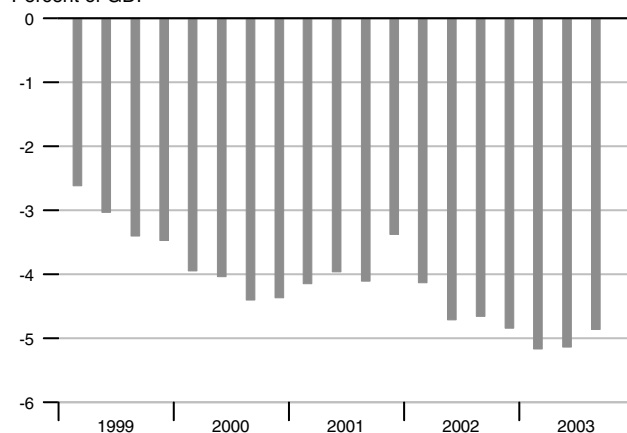
### Hourly Earnings

Percent change from year ago



### Current Account Balance

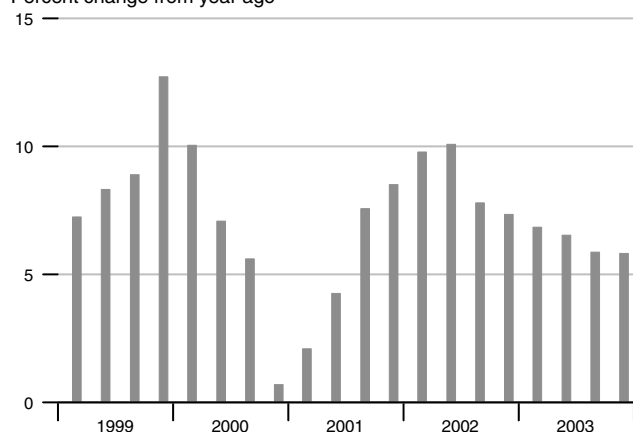
Percent of GDP



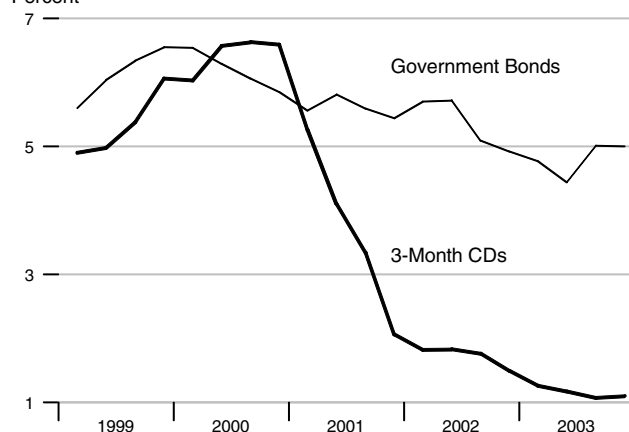


**Adjusted Monetary Base**

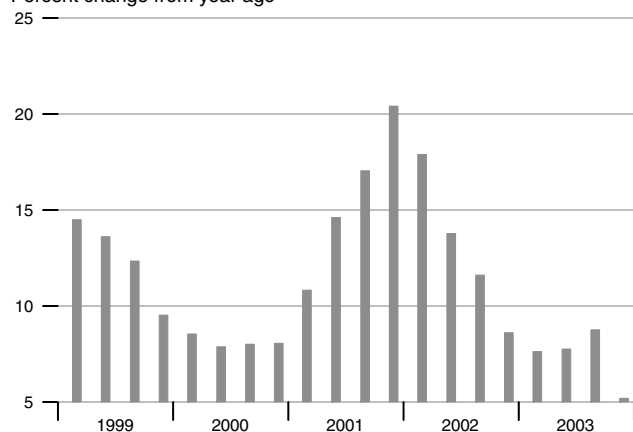
Percent change from year ago

**Interest Rates**

Percent

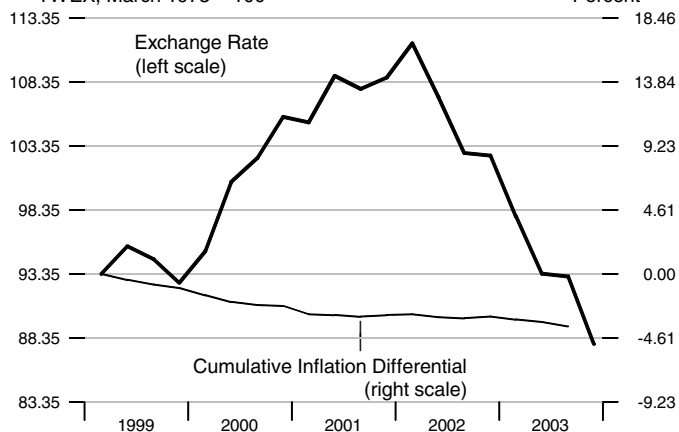
**MZM**

Percent change from year ago

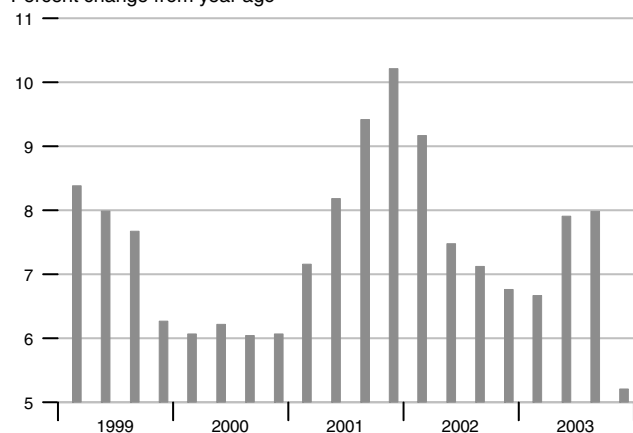
**Exchange Rate and Inflation Differential**

TWEX, March 1973 = 100

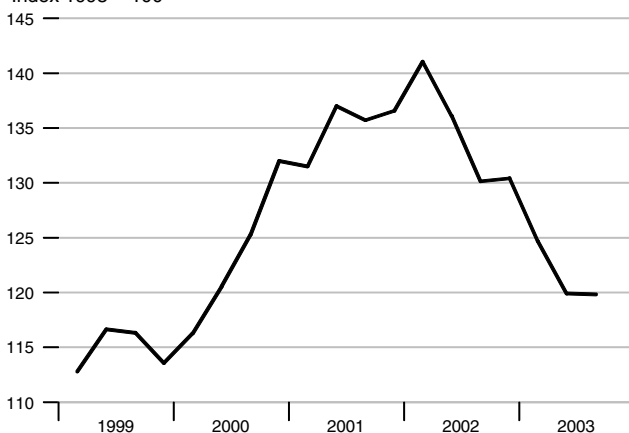
Percent

**M2**

Percent change from year ago

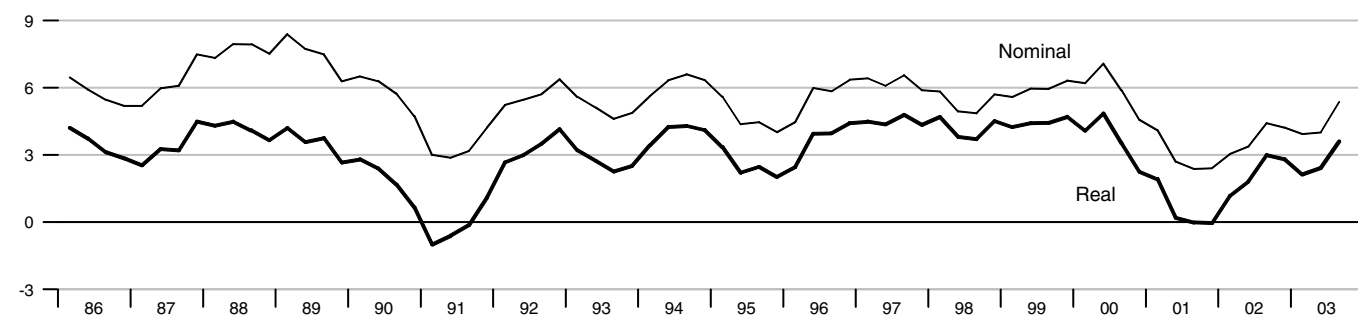
**Real Effective Exchange Rate**

Index 1995 = 100

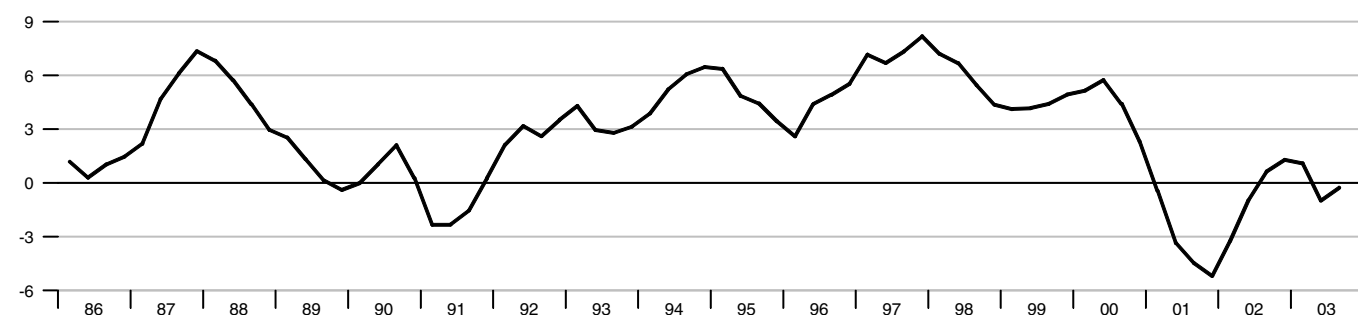


**GDP**

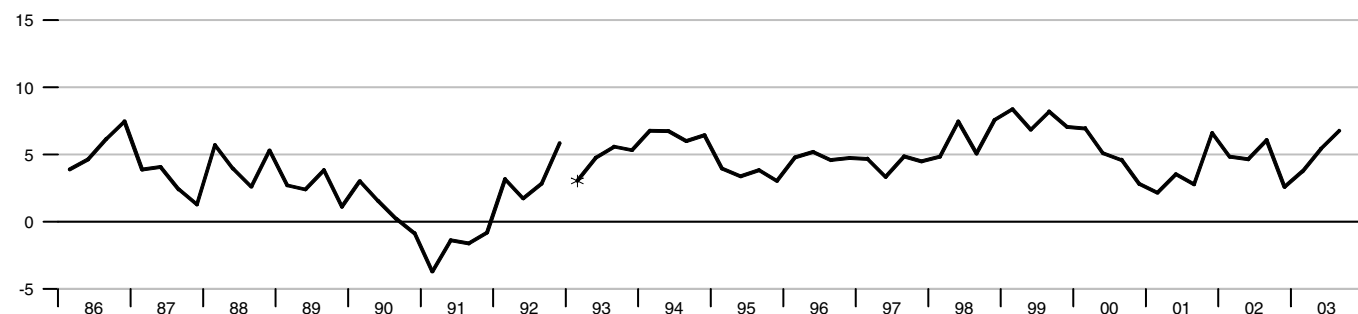
Percent change from year ago

**Industrial Production**

Percent change from year ago

**Retail Sales**

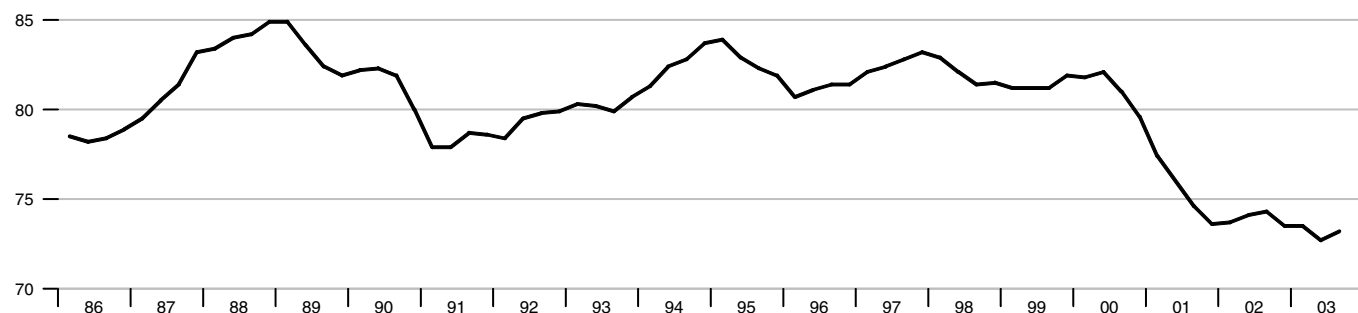
Percent change from year ago



\*Data prior to 1993 may not be strictly comparable with later figures (see Notes).

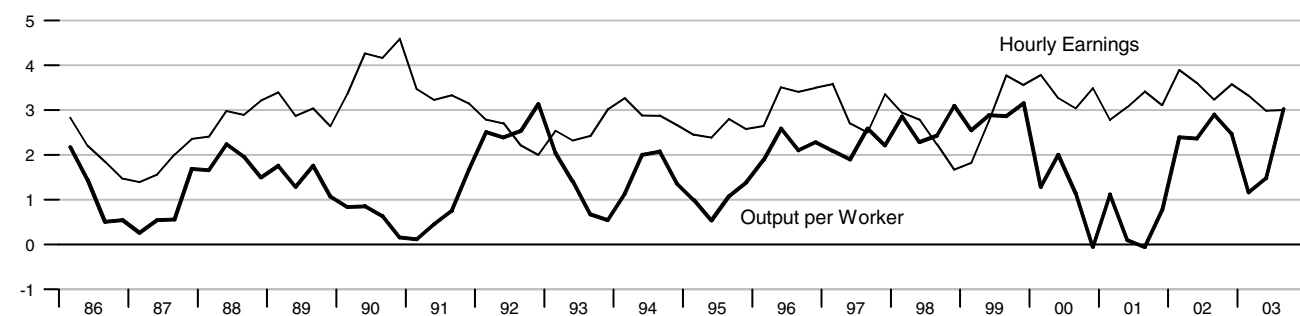
**Capacity Utilization**

Percent



## Hourly Earnings and Output per Worker

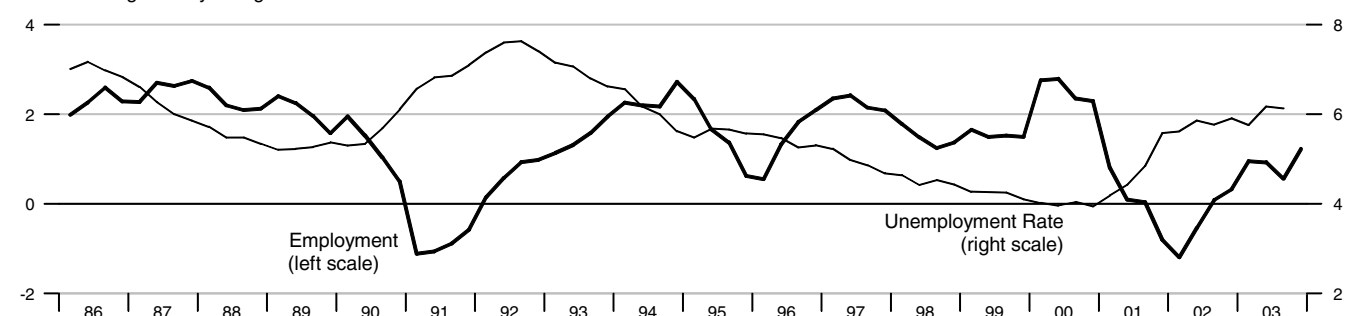
Percent change from year ago



## Labor Force Indicators

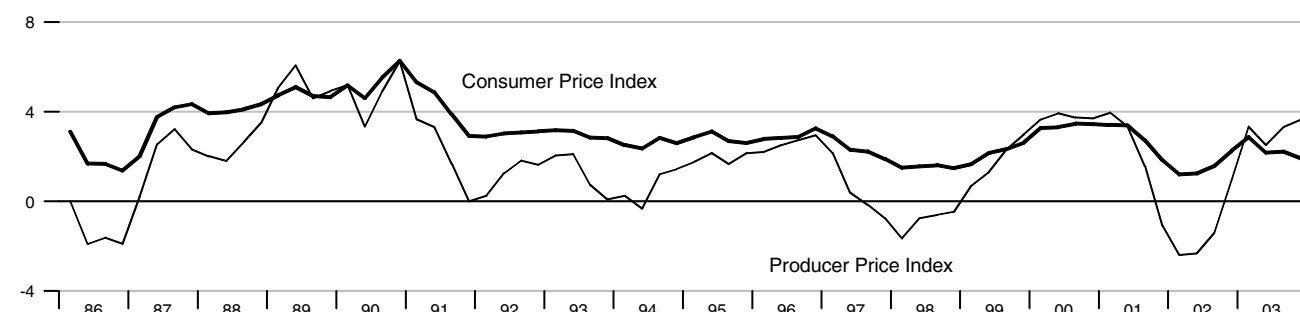
Percent change from year ago

Percent



## Inflation

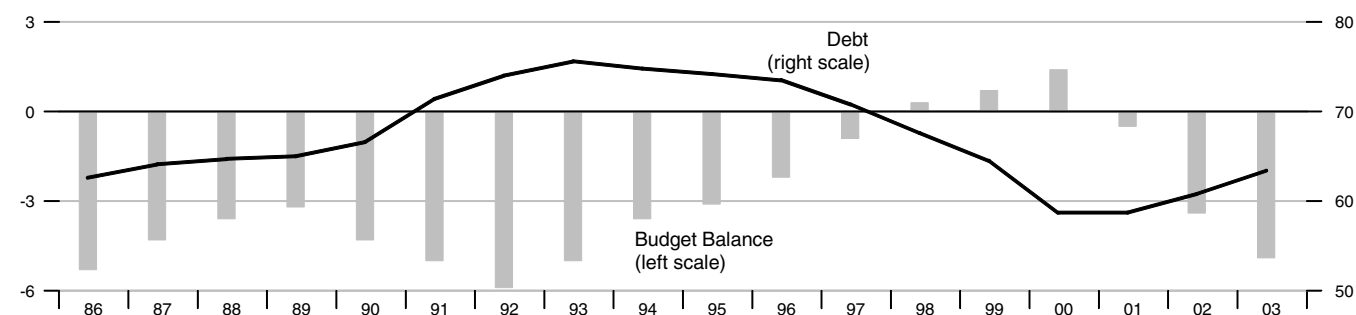
Percent change from year ago



## Government Debt and Budget Balance

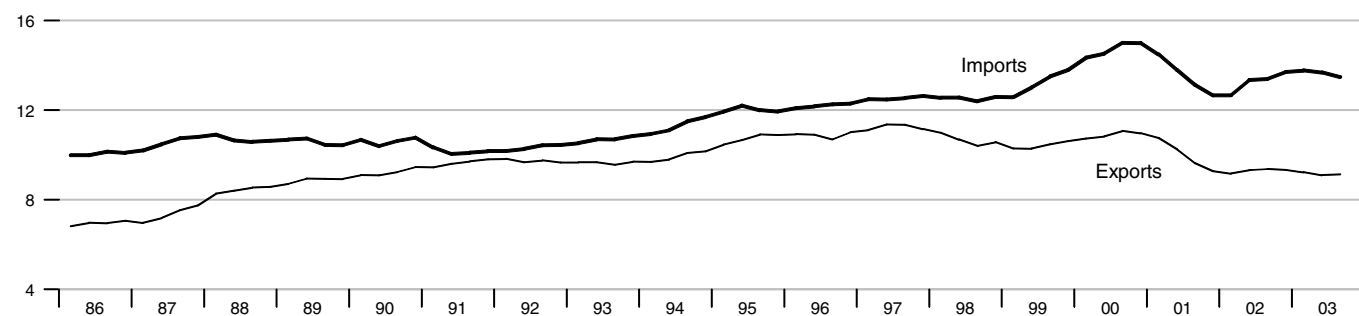
Percent of GDP, annual data

Percent of GDP, annual data



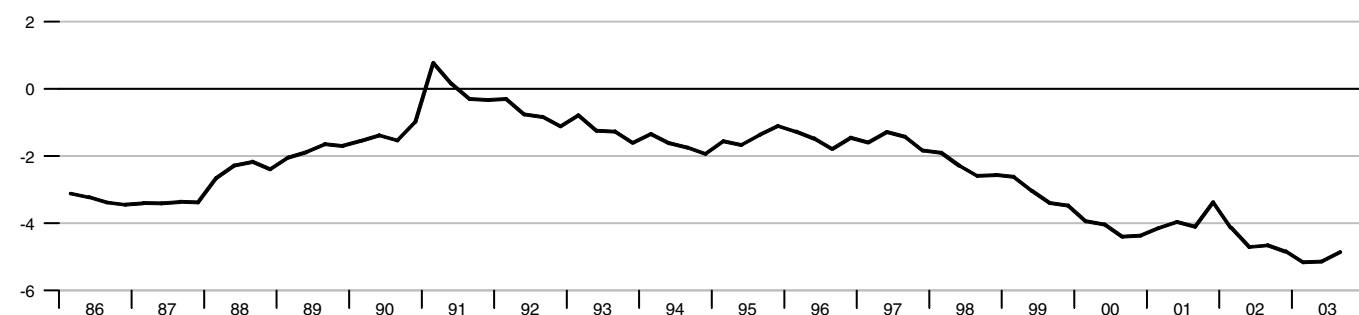
## International Trade - Goods and Services

Percent of GDP



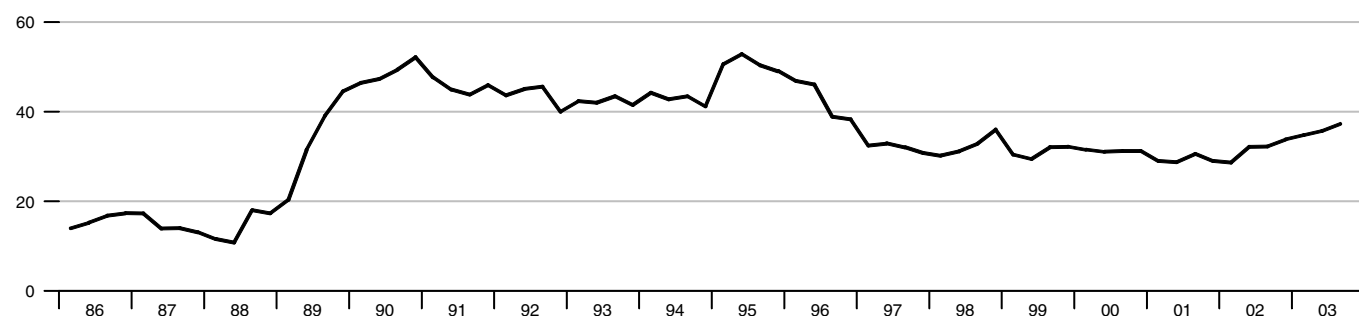
## Current Account Balance

Percent of GDP



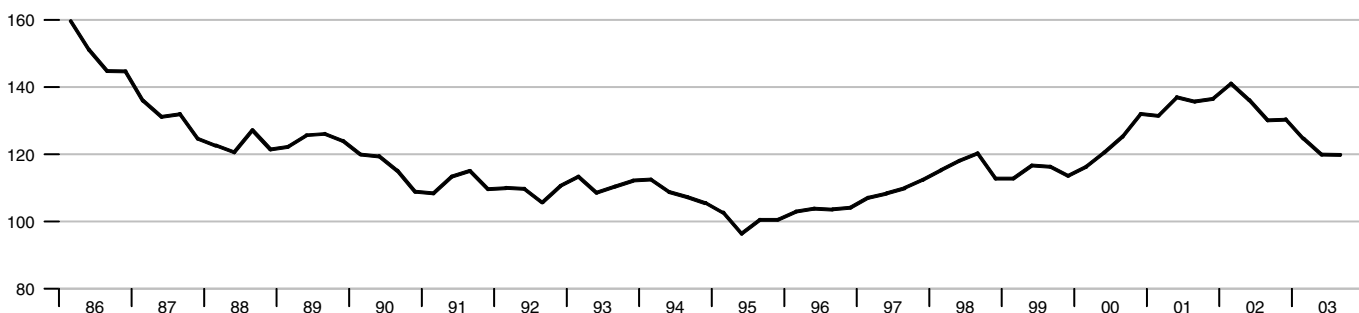
## Foreign Exchange Reserves

Billions of US\$



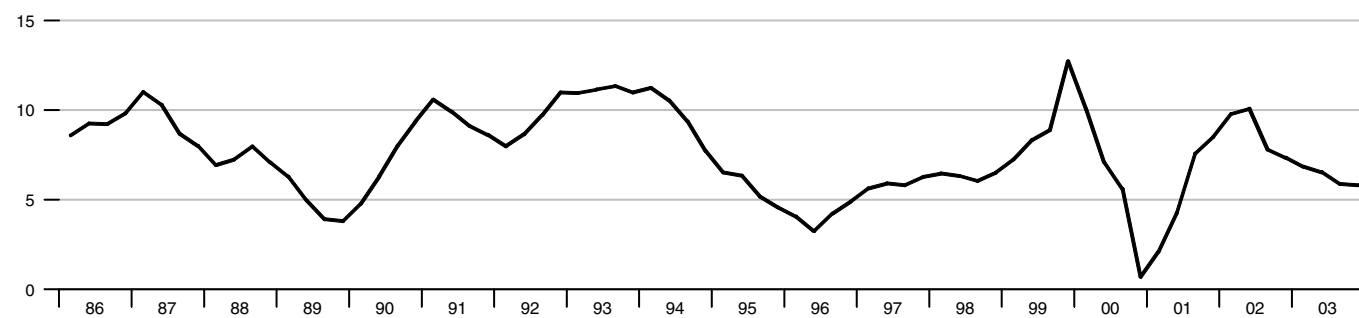
## Real Effective Exchange Rate

Index 1995 = 100

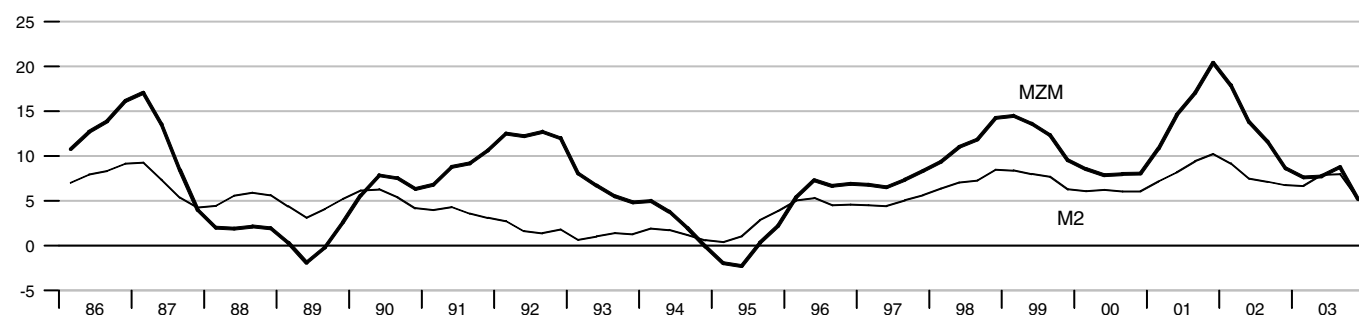


**Adjusted Monetary Base**

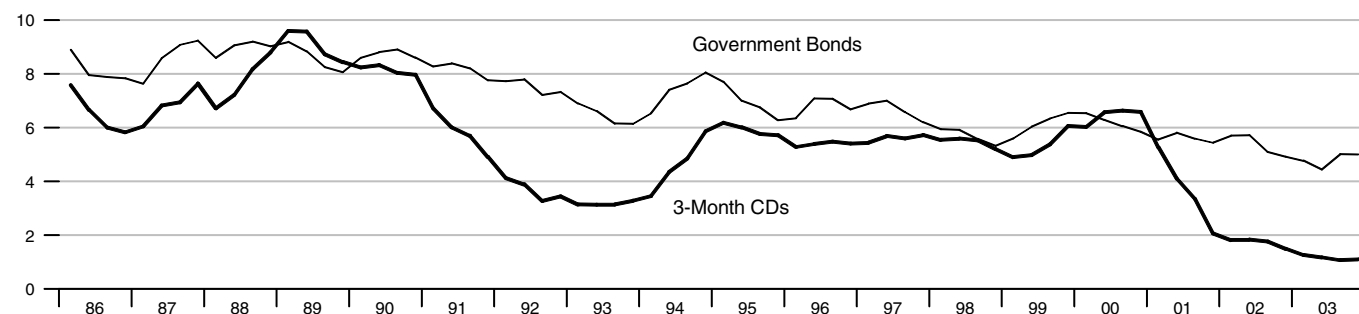
Percent change from year ago

**Monetary Aggregates**

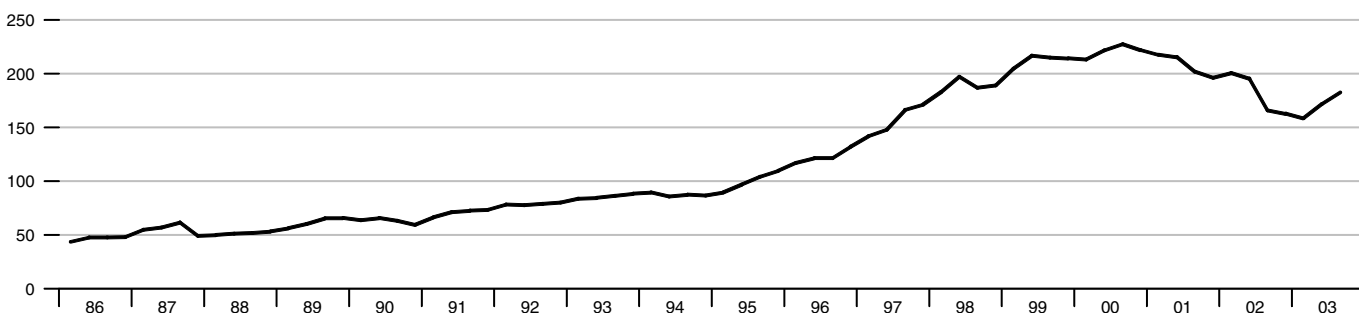
Percent change from year ago

**Interest Rates**

Percent

**Stock Exchange Index - New York Stock Exchange**

1995 = 100



## Notes

**Euro-Area Data:** On January 1, 2001, the euro area was enlarged to include Greece as its 12th member country. Historical euro area series for capacity utilization, the consumer price index, current account balance, earnings, employment, government debt and budget balance, gross domestic product (GDP), industrial production, merchandise trade, the producer price index, and unemployment include Greece. The series for interest rates, monetary aggregates, the real effective exchange rate, retail sales, and the stock exchange index incorporate Greece starting in January 2001.

Euro-area interest rates prior to December 1998 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.

The euro/dollar 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 euro-area countries, excluding Greece and Luxembourg, 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 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.

Third quarter 1990: current account balance, international trade, and unemployment.

First quarter 1991: consumer price index, GDP, industrial production, output per worker.

Third quarter 1992: capacity utilization.

First quarter 1993: stock exchange index.

Third quarter 1993: employment.

First quarter 1995: hourly earnings.

**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; 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. Data for the euro area, France, Germany, and Italy are based on the harmonized index of consumer prices.

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

The **Exchange Rate** for all countries except the United States is expressed as units of local currency per U.S. dollar. For the United States the trade-weighted exchange rate, **TWEX**, is used. This is a weighted average of the exchange value of the U.S. dollar relative to the major international currencies—the euro, Canadian dollar, Japanese yen, British pound, Swiss franc, Australian dollar, and Swedish kronor. Prior to 1999, the currencies of the euro-area countries (with the exception of Greece) are used instead of the euro.

**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 1995. 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, Italy, Japan, and the United States; industrial employment for France; and total employment for the euro area and the United Kingdom.

**Foreign Exchange Reserve** data are end of period. The dollar value of reserves may fluctuate as a result of changes in reserve holdings and/or changes in the value of the currencies held vis-à-vis the U.S. dollar.

**Government Budget Balance** 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.

**Cumulative Inflation Differential** is the cumulative change in the foreign consumer price index (CPI) over the change in the U.S. CPI, in percentage terms. The base period for the cumulative rate of change is taken to be the first period of the chart. For example, if the base period is 1999:Q1, then the cumulative inflation differential for Japan for 2003:Q3 is as follows:

$$\text{inflation differential} = 100 \cdot \left( \frac{P_{2003Q3}^J / P_{1999Q1}^J}{P_{2003Q3}^{US} / P_{1999Q1}^{US}} - 1 \right)$$

where  $P_{2003Q3}^J$  is the Japanese CPI in the third quarter of 2003. For the U.S. chart on page 41, foreign CPI is calculated as the weighted average of the CPIs of countries whose currencies are used in the major currency trade-weighted exchange rate index. Starting in 1999, the euro-area harmonized consumer price index is used for the euro area. Prior to 1999, the price levels for the individual euro area countries (excluding Greece and Luxembourg) are used. The cumulative inflation differential is shown because the theory of purchasing power parity states that exchange rate changes should be systematically positively related to this variable.

**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 the United States; long-term public and semi-public sector bonds for France; 7- to 15-year public sector bonds for Germany; 15- to 20-year government bonds through 1990 and 10-year government bonds starting in 1991 for Italy; and 10-year government bonds for Canada, the euro area, Japan, and the United Kingdom.

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, 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 U.K. 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 2 years.

**M4**

United Kingdom: M2 plus wholesale deposits with the U.K. banks and building societies.

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

**Producer Price Index** covers manufacturing for Canada and the United Kingdom; and total industry for Japan and the United States. Data for the euro area, France, Germany, and Italy are based on the harmonized index of total industry excluding construction.

**Retail Sales** are based on a volume index. The percent change in retail sales for the United States is based on the Standard Industrial Classification system through 1992 and the North American Industrial Classification System from 1993 on.

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

**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

**Abbreviations**

Board of Governors of the Federal Reserve System (BOG)  
 Bureau of Economic Analysis, U.S. Department of Commerce (BEA)  
 Bureau of Labor Statistics, U.S. Department of Labor (BLS)  
 International Monetary Fund, *International Financial Statistics* (IMF)  
 Organization for Economic Cooperation and Development,  
*Economic Outlook* (OECD1)  
*Main Economic Indicators* (OECD2)  
*National Accounts Quarterly* (OECD3)

**Canada**

Bank of Canada: M1 and M2.  
 BOG: exchange rate.  
 IMF: foreign exchange reserves, merchandise and service trade, real effective exchange rate, and reserve money.  
 OECD1: government debt and budget balance.  
 OECD2: capacity utilization, consumer price index, current account balance, GDP, hourly earnings, industrial production, interest rates, producer price index, retail sales, stock exchange index, and unemployment rate.  
 Statistics Canada: employment.

**Euro Area**

European Central Bank: employment (starting in 2002).  
 Eurostat: capacity utilization, consumer price index, current account balance, employment (prior to 2002), GDP, interest rates, merchandise trade, producer price index, and retail sales.

Haver Analytics: synthetic euro exchange rate.

IMF: real effective exchange rate.

OECD1: government debt and budget balance.

OECD2: hourly earnings, industrial production, M1, M3, stock exchange index, and unemployment.

**France**

BOG: exchange rate.

Eurostat: capacity utilization, consumer price index, producer price index, and retail sales (starting in 1996).

IMF: foreign exchange reserves, merchandise and service trade, and real effective exchange rate.

Institut National de la Statistique et des Etudes Economiques: employment.

OECD1: government debt and budget balance.

OECD2: current account balance, GDP, hourly earnings, industrial production, retail sales (prior to 1996), interest rates, stock exchange index, and unemployment.

**Germany**

BOG: exchange rate.

Bundesanstalt Für Arbeit: employment.

Eurostat: capacity utilization, consumer price index, and producer price index.

IMF: foreign exchange reserves, merchandise and service trade, and real effective exchange rate.

OECD1: government debt and budget balance.

OECD2: current account balance, GDP, hourly earnings, industrial production, M1, M3, retail sales, interest rates, stock exchange index, and unemployment.

**Italy**

BOG: exchange rate.

Eurostat: capacity utilization, consumer price index, and producer price index.

IMF: foreign exchange reserves, merchandise and service trade, and real effective exchange rate.

Instituto Nazionale di Statistica: employment.

OECD1: government debt and budget balance.

OECD2: current account balance, GDP, hourly earnings, industrial production, long-term interest rates, retail sales, stock exchange index, and unemployment.

**Japan**

Bank of Japan: adjusted monetary base and long-term interest rate.

BOG: exchange rate.

IMF: foreign exchange reserves, merchandise and service trade, and real effective exchange rate.

OECD1: government debt and budget balance.

OECD2: capacity utilization, consumer price index, current account balance, employment, GDP, hourly earnings, industrial production, M1, M2, producer price index, retail sales, short-term interest rate, stock exchange index, and unemployment.

**United Kingdom**

Bank of England: M2.

BOG: exchange rate.

IMF: foreign exchange reserves, merchandise and service trade, and real effective exchange rate.

OECD1: government debt and budget balance.

OECD2: capacity utilization, consumer price index, current account balance, GDP, industrial production, interest rates, M4, producer price index, retail sales, stock exchange index, unemployment, and weekly earnings.

U.K. Office for National Statistics: employment and M0.

**United States**

BOG: capacity utilization, exchange rate, industrial production index, M2, and interest rates.

BEA: GDP, current account balance, merchandise and service trade, and retail sales.

BLS: employment, consumer price index, and producer price index.

Federal Reserve Bank of St. Louis: adjusted monetary base and MZM.

IMF: foreign exchange reserves and real effective exchange rate.

OECD1: government debt and budget balance.

OECD2: hourly earnings, stock exchange index, and unemployment.