

The regression of current inflation rate against real GDP growth rate shows a non-significant relation between the two.

In the meantime, a regression of the previous year's inflation rate against the current GDP growth rate shows a significant and negative effect of the former on the latter.

$$(\text{GDP growth rate})_t = 11.432^* - 0.363^* (\text{Inflation rate})_{t-1}$$

Standard Error: (1.104) (0.140)

Adj R-Square = 0.289

(* statistically significant at .05 level)

If the previous year's inflation rate is 1 percent higher, the current GDP growth rate will be reduced by 0.363 percent. During periods of serious inflation, the inflation rate is at least 10 percent higher than previous level. For example, during the inflation of 1988-1989, inflation rate jumped from 7.3 percent to 18.5 percent in 1988. This is an 11.2 percent increase, and the GDP growth rate in 1989 is theoretically reduced by 4.1 percent. The reality is that the slow down is 7 percent.

However, a regression of the previous year's GDP growth rate against the current inflation rate suggests a significant and positive effect of the previous growth rate on current inflation.

$$(\text{Inflation rate})_t = -4.111 + 1.284^* (\text{GDP growth rate})_{t-1}$$

Standard Error: (4.16) (0.404)

Adj R-Square = 0.393

(* statistically significant at .05 level)

If the previous year's GDP growth rate increases by 1 percent, the current inflation rate is 1.284 percent higher.

It seems that the higher previous inflation rate is correlated with the lower current growth rate, and the higher previous growth rate is connected with higher current inflation. The direction of causation, if there is any, still cannot be decided.

How to explain these puzzling facts?

In China, the central government's weak control on local government-led investment surge and the central bank's obligation to finance the government deficit are the major causes of an increasing money supply and, hence, recurring inflation. However, investment is also a major impetus behind economic growth in China. A simple regression of the investment growth rate against the GDP growth rate reveals that the impact of the investment growth on GDP growth is significant, positive and strong.

GDP Growth Rate = 8.829* + 0.495* Investment Growth Rate

Standard Error: (2.043) (0.089)

Adj R-Square = 0.654

(* statistically significant at .05 level)

This result shows that if the investment growth rate goes up by 1 percent, the GDP growth rate increases by 0.495 percent.

Regression result also shows that the investment growth rate has a significant, positive and strong impact on the inflation rate.

$$\text{Inflation rate} = 3.664 + 0.227 * \text{Investment Growth Rate}$$

Standard Error: (2.589) (0.112)

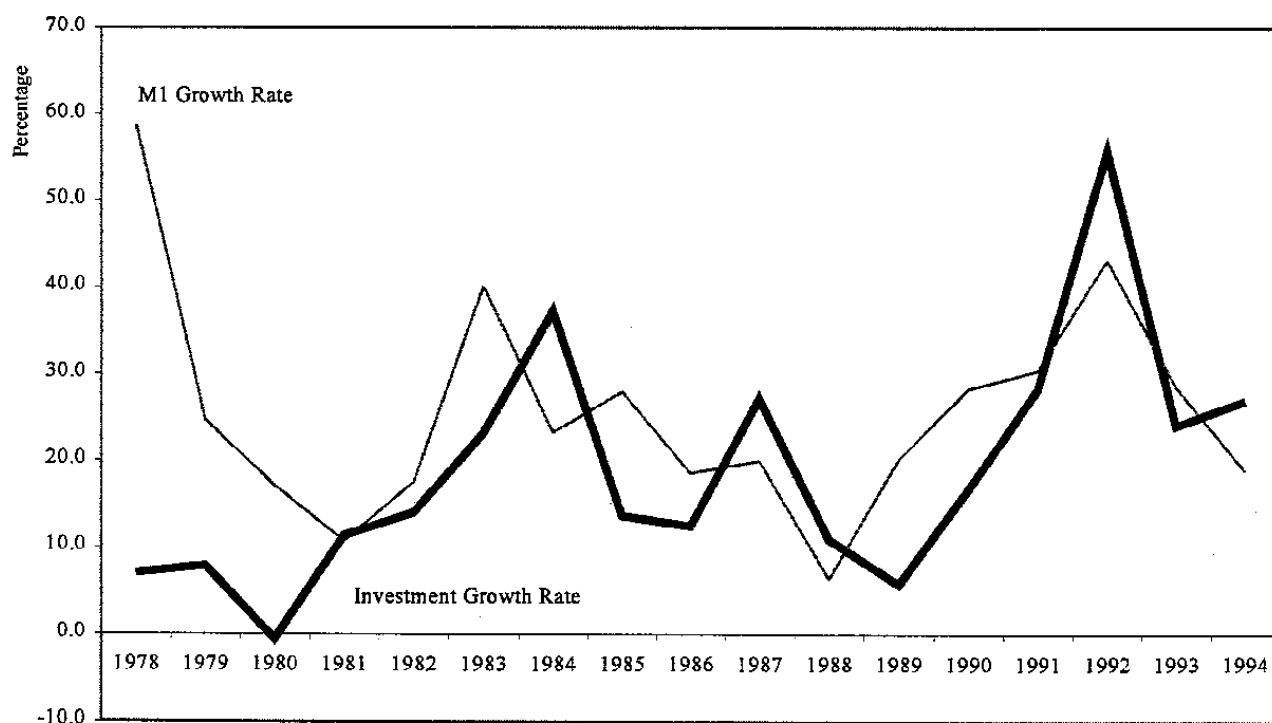
Adj R-Square = 0.162

(* statistically significant at .05 level)

1 percent increase in the investment growth rate leads to 0.227 percent point increase in the inflation rate.

At surges of local government-led investment activities, the rate of increases of money supply accelerates (Graph 4.1), pushing price level up (Graph 9). At the same

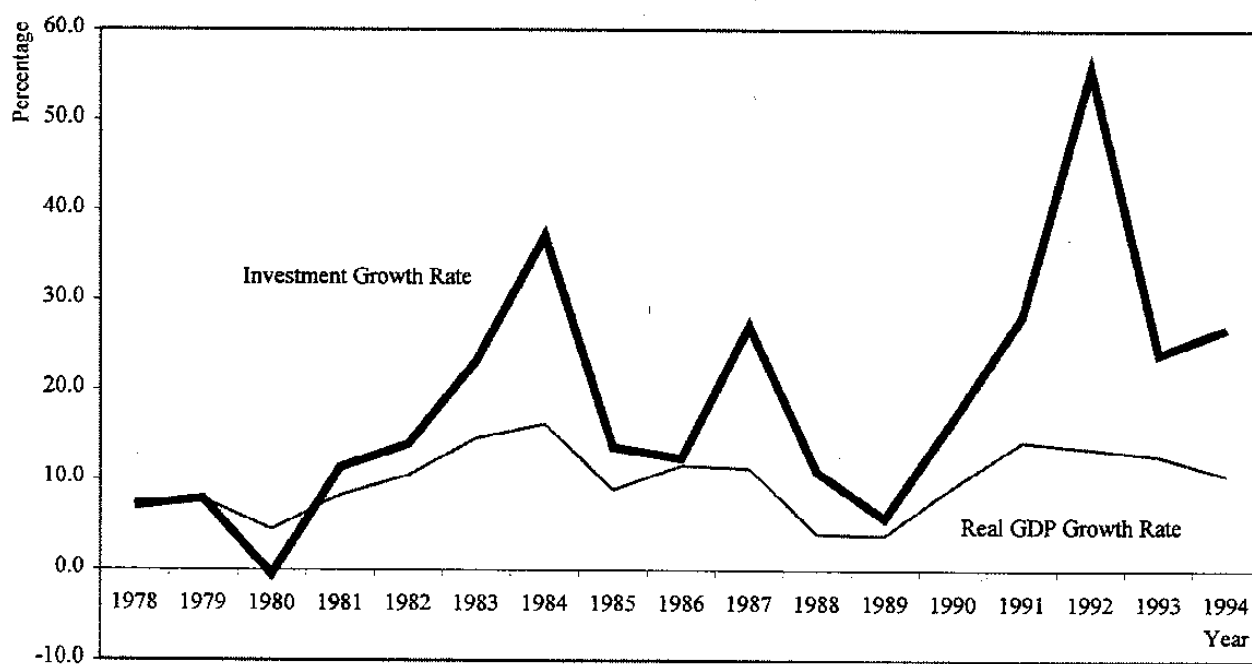
Graph 4.1: M1 Growth Rate and Investment Growth Rate



Source: China Statistical Yearbook

time, GDP level is pushed up by its robust investment component (Graph 4.2). The prices of those related to investment activities, usually construction materials, raw materials, etc., are the first prices pushed up due to excess demand. Over time, the price pressure spills over to other sectors; hence, the general price level continues to rise even if investment growth has lost its momentum. This is clearly illustrated by the graph of

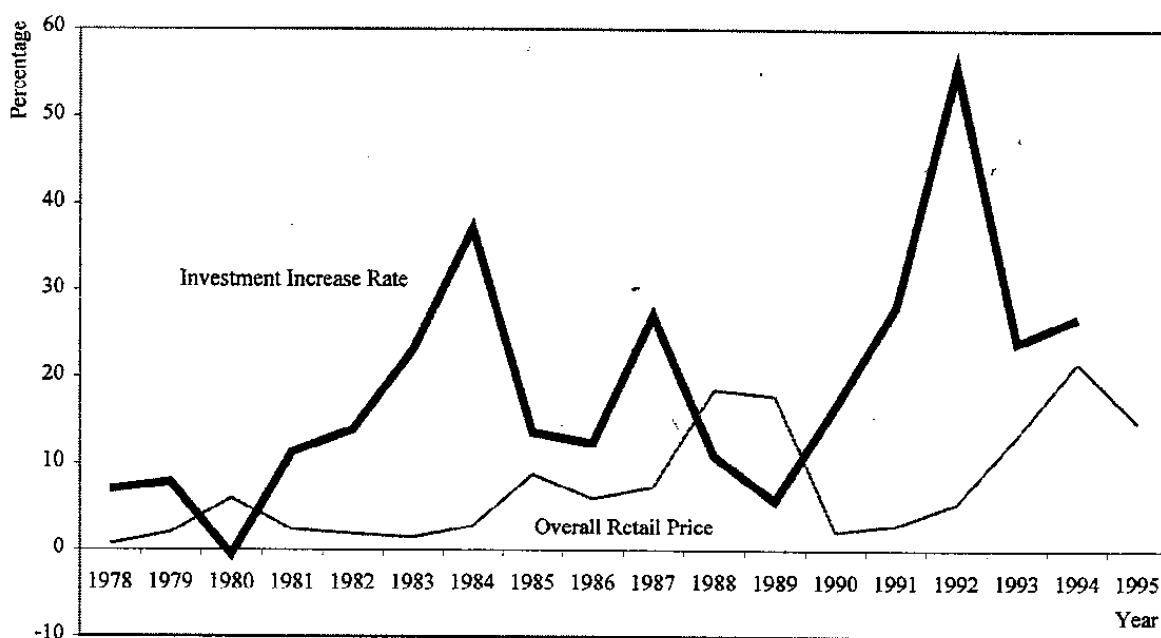
Graph 4.2: Real GDP Growth Rate and Investment Growth Rate



Source: China Statistical Yearbook

investment growth rate versus inflation rate (Graph 4.3). The peaks of the inflation rate always lag behind the peaks of the investment growth rate; and each upward trend of the investment growth invariably corresponds to rising inflation. Because the growth rates of investment and GDP are synchronized, and the general price level lags behind

Graph 4.3: Investment Growth Rate and Inflation



Source: China Statistical Yearbook, various issues

the investment level, it appears that the previous GDP growth rate is positively correlated with future price levels.

When facing high inflation, the central government does not have any effective fiscal or monetary policy instruments to control inflation. Each inflationary surge has been reversed largely through ad hoc administrative measures, which are intended to recentralize decision-making authority and hence reduce expenditures (especially investment expenditure). These measures typically include recentralization of the power of approval of new SOE fixed investments, recentralization (at PBC headquarters) of licensing authority over NBFIs and over central bank lending to the state banks, and tightened supervision over the activities of the state banks (world bank, 1995). These austere policies lead to substantial reductions in investment and, hence, slowdown of

GDP growth. There is a time lag both between the observation of high inflation and the actual implementation of the policies, and between the implementation of the policies and the policies taking effect on the economic growth. As a result, there appears to be a time lag between high inflation and slow GDP growth.

However, these recentralization measures can only provide a temporary reprieve from the problem. Local government cannot bear its loss of power for long. They both complain to the center and come up with methods to side-step the austere central control. Most importantly, SOEs have experienced shortage of working capitals and some of them even have had difficulty to keep their payroll due to the tight control on bank credit. This exerts enormous pressure on the central government. Therefore, the tight control is lifted as soon as the economy starts to cool down. With regained power, local governments restart what they were doing before and a new cycle of excess demand and inflation emerges.

V CONCLUSION

(a) Causes of Inflation and Its Relation to Economic Growth

Monetary accommodation of a rising Consolidated Government Deficit is the major cause of recurring high inflation in the Chinese economy. However, we can not simply characterize the inflation as monetary, because it has a deep root within China's institutional structure.

The inter-governmental relationship and the role of the central bank are the keys to understand this root. Reforms have put the previous central-planning economy on the course towards a market economy, and have led to decentralization in every aspect of the economy. The decentralized central-local government relationship has given local government more autonomy over budgetary revenue and expenditure.

Lack of effort by the local government to collect taxes further reduces government revenue, which has already been declining due to reforms in the tax system. Subsidizing poorly managed SOEs and "investment hunger" lead to rising government expenditure. The net result is a persistent Consolidated Government Deficit. Moral hazards exist both in investment activities and in subsidizing SOE losses, which further pushes up the deficit.

The central bank, the People's Bank of China, acts as "the lender of last resort". It is obligated to finance the government deficit by creating reserve money. Money supply has been constantly rising at a high rate. Inflationary pressure is mounting over time, and occasionally breaks into severe inflation.

The peculiar institutional relationships between central and local government and between governments and the central bank system have rendered money supply endogenous. This shows the structuralist character of China's inflation.

Neither the monetarist school nor the structuralist school can on its own totally explain the cause of inflation in China. A combination of both will provide a complete explanation.

No causal relation can be established between the inflation rate and the economic growth in China. There are reciprocal influences between the two. High growth rates are sustained by high rates of investment, which push up general price levels gradually. A high inflation rate alarms the government and austere policies are imposed to slow down the economic growth rate.

As SOEs experience hardships from the austere measures and local governments are discontented, the central government endures tremendous pressure implementing those policies. As soon as the pressure of inflation abates, austere policies are lifted. Investment activities surge again; economic growth regains its momentum; and consequently, the inflation rate accelerates again. When the inflation rate increases to a dangerous level, the government has to impose contractionary policies to bring it down. This cycle repeats over time and the macroeconomic instability becomes the major concern of the economy.

It is necessary to consider China's structural framework when analyzing the relation between its GDP growth and inflation. The political and structural features of Chinese economy have determined the cyclical motion of inflation and GDP growth.

(b) Policy Recommendations

Encouraging economic growth has been the focus of the Chinese government since the beginning of the reforms. Meanwhile, fighting inflation is also a constant concern for the Chinese government. It is more so since Tiananmen in 1989, which was triggered by mass discontent of high inflation occurring in 1988 through 1989. Given the trade-off relation between rates of growth and inflation, the government faces the task of striking a balancing between the two. A slight inflation rate should be tolerated as long as the economy keeps its pace of growth.

However, the problem of recurring high inflation will not go away without eliminating the institutional weaknesses, which have made money supply endogenous. To some extent, the inflation problem is a by-product of decentralization. Because decentralization has contributed greatly to the economic growth, total recentralization is not a wise choice in fighting inflation.

Further institutional reforms should be advanced to raise central government revenue, to cut government spending, and to reform the banking system. The new tax system introduced in 1994 and the establishment of a national tax collection agency are all in the right direction. However, tremendous challenges exist with regard to its implementation. Top priority must be given to training and equipping the new National Tax Service.

The authorities should introduce measures to improve control over investment expenditure. In this case, some administrative recentralization of investment decision-making power may be helpful.

The central bank, the People's Bank of China, should be strengthened and given more independence. New supervision methodologies should be introduced. The PBC system should be reorganized and downsized to a limited number of regional branches. This would both strengthen the system in its ability to resist pressures from local governments, and give the organization a stronger national focus.

To eliminate moral hazards problem, stringent loan policies should be imposed and interest rates should be guided by market forces; management of SOEs should be appointed based on its competence, and the managers' financial benefits should be linked to enterprises' profitability.

Though China has issued new reform policies that would move the economy towards a healthier state, one could expect the actual implementation to be slow and difficult. Given all the present conditions, the macroeconomic instability will persist in the Chinese economy, at least in the near future. From past experiences, the Chinese government had been successful in combating the inflation in the time of emergency. However, the cost of social instability and economic inefficiency brought by high inflation is so significant that top priorities should be given to the problem of macroeconomic instability within Chinese economy. Deeper and complete structural changes are necessary to cure this problem.

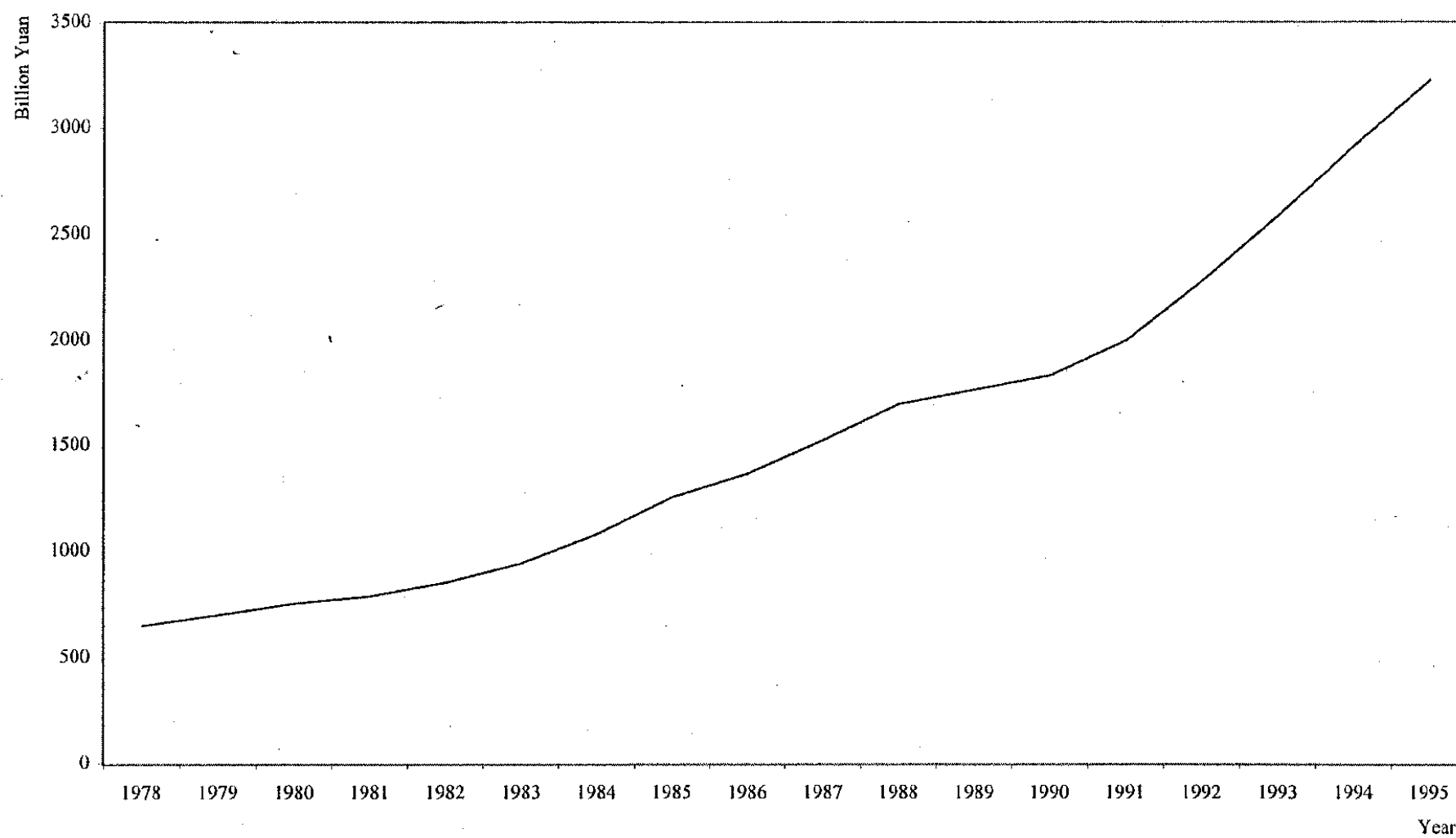
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GRAPHS AND TABLES

- Graph 1: Real GDP Growth (at 1990 Prices)
Graph 2: Real GDP Growth Rate (at 1990 Prices)
Graph 3: Overall Retail Price
Graph 4: Money Supply (M1)
Graph 5: Government Revenue and Expenditure as Share of GDP
Graph 6: Tax Income from SOEs as a Share of GDP
Graph 7: Local and Center Extra-Budgetary Funds as Share of GDP
Graph 8: Actual Investment as a Ratio of State Appropriation
Graph 9: M1 Growth Rate and Inflation
- Table 1: Seignorage in China, 1985-92
Table 2: Components of the Consolidated Government Deficit, 1987-93
Table 3: The Consolidated Government Deficit Financing, 1987-93
Table 4: Components of Reserve Money Growth, 1989-93
Table 5: Structure of the People's Bank of China, 1995
Table 6: Inflation and Growth Rate: Comparison Between Asia and Latin America

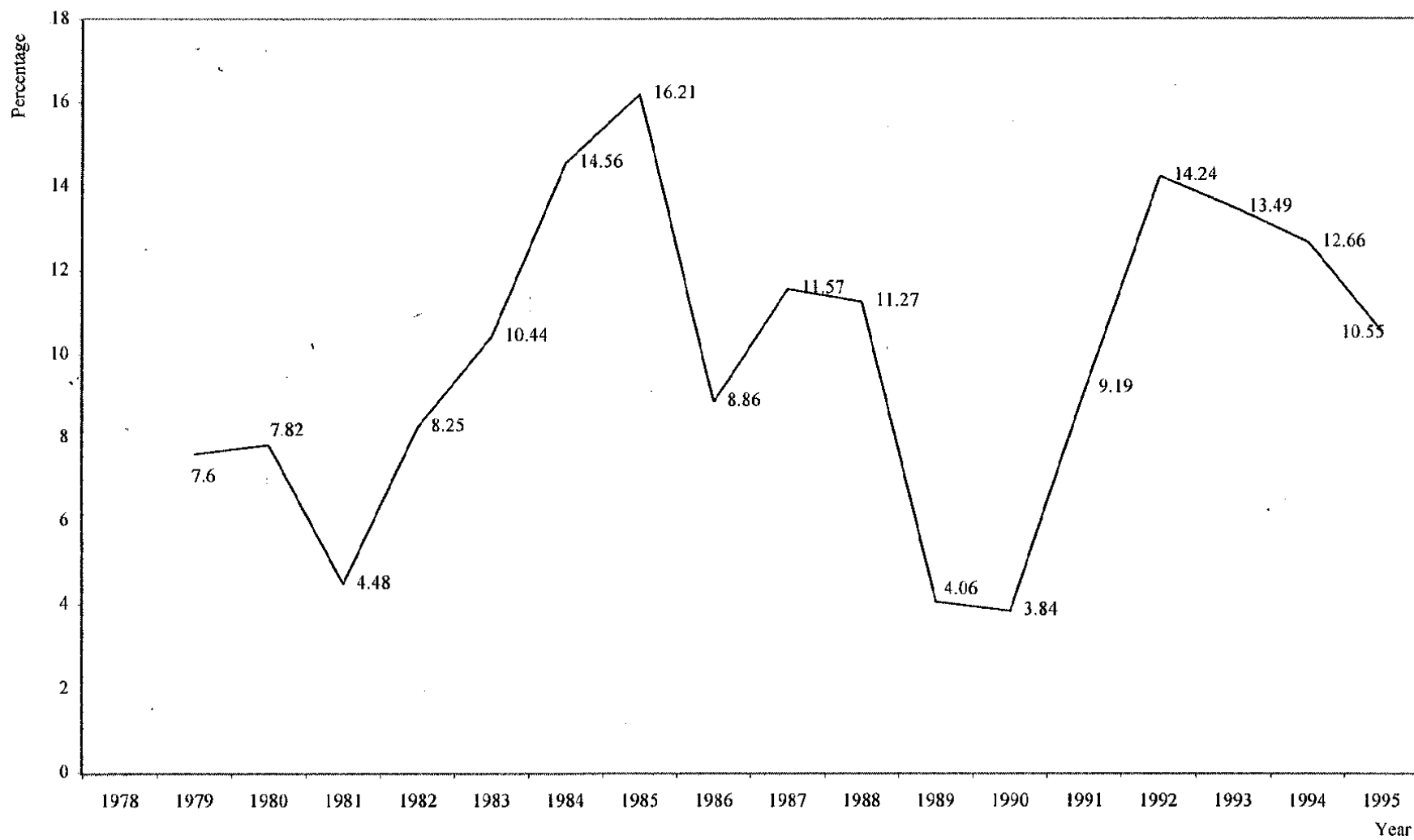
Graph 1: Real GDP Growth*



* at 1990 Prices

Source: IMF

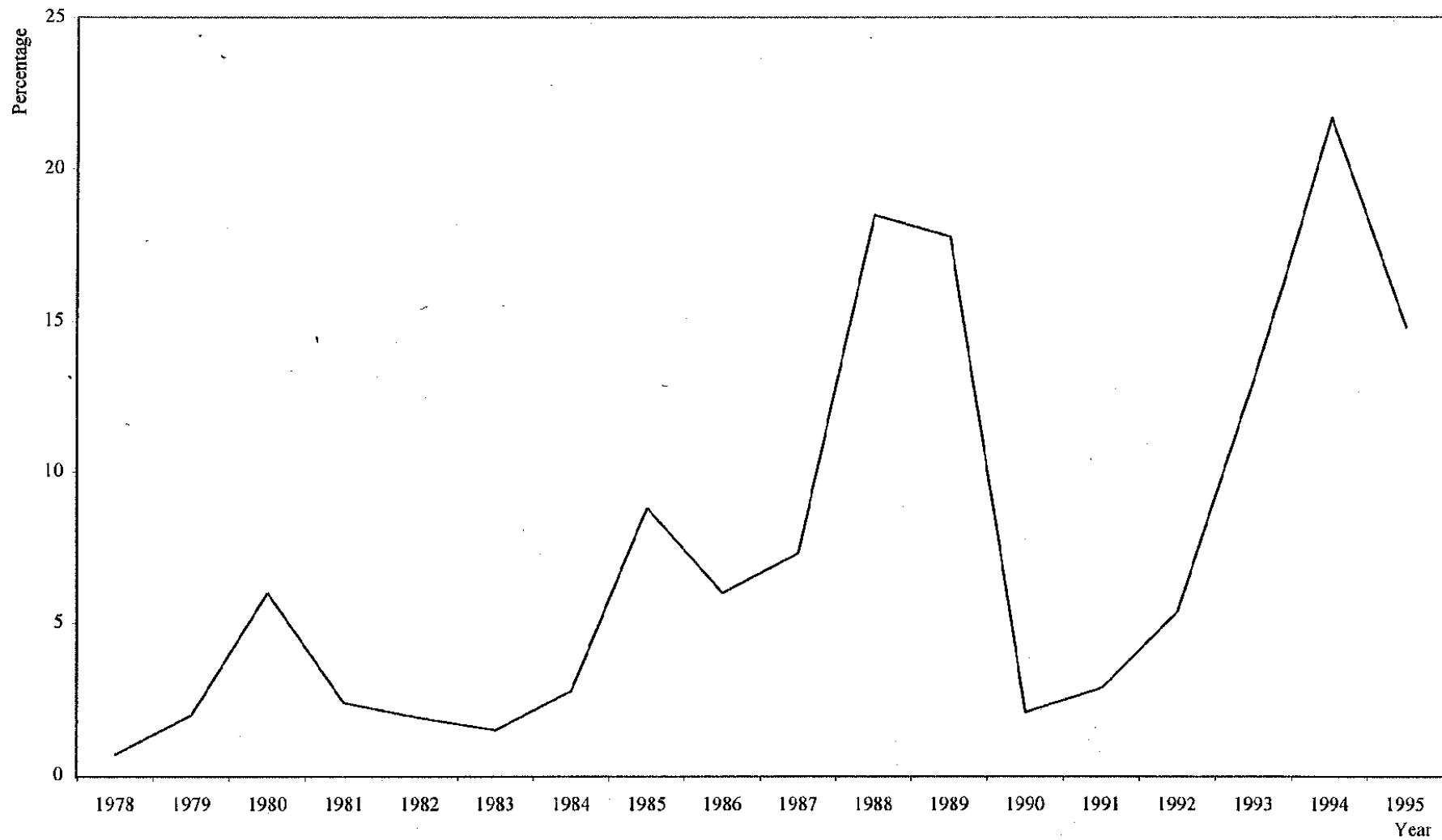
Graph 2: Real GDP Growth Rate*



* at 1990 Prices

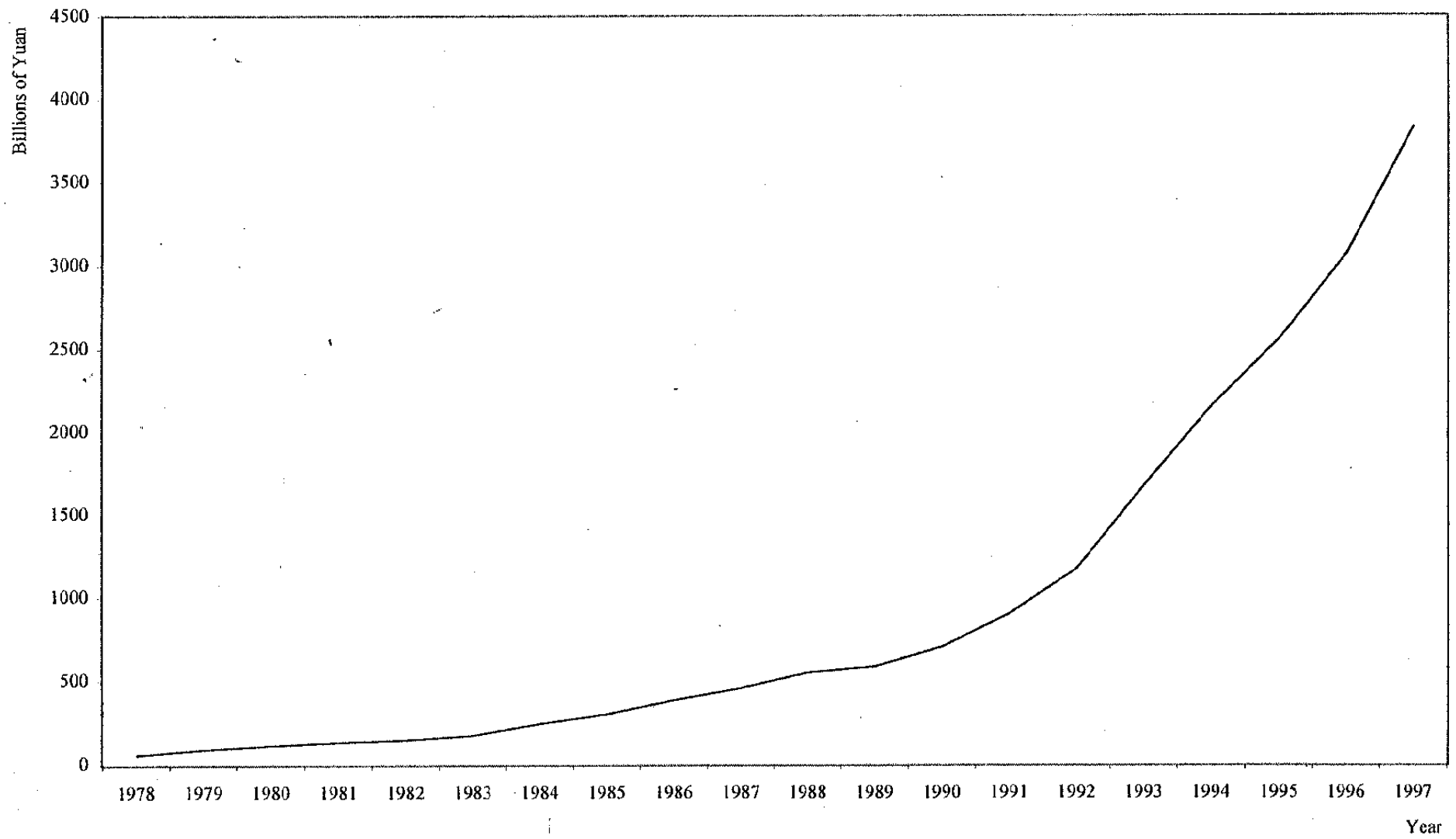
Source: IMF

Graph 3: Overall Retail Price



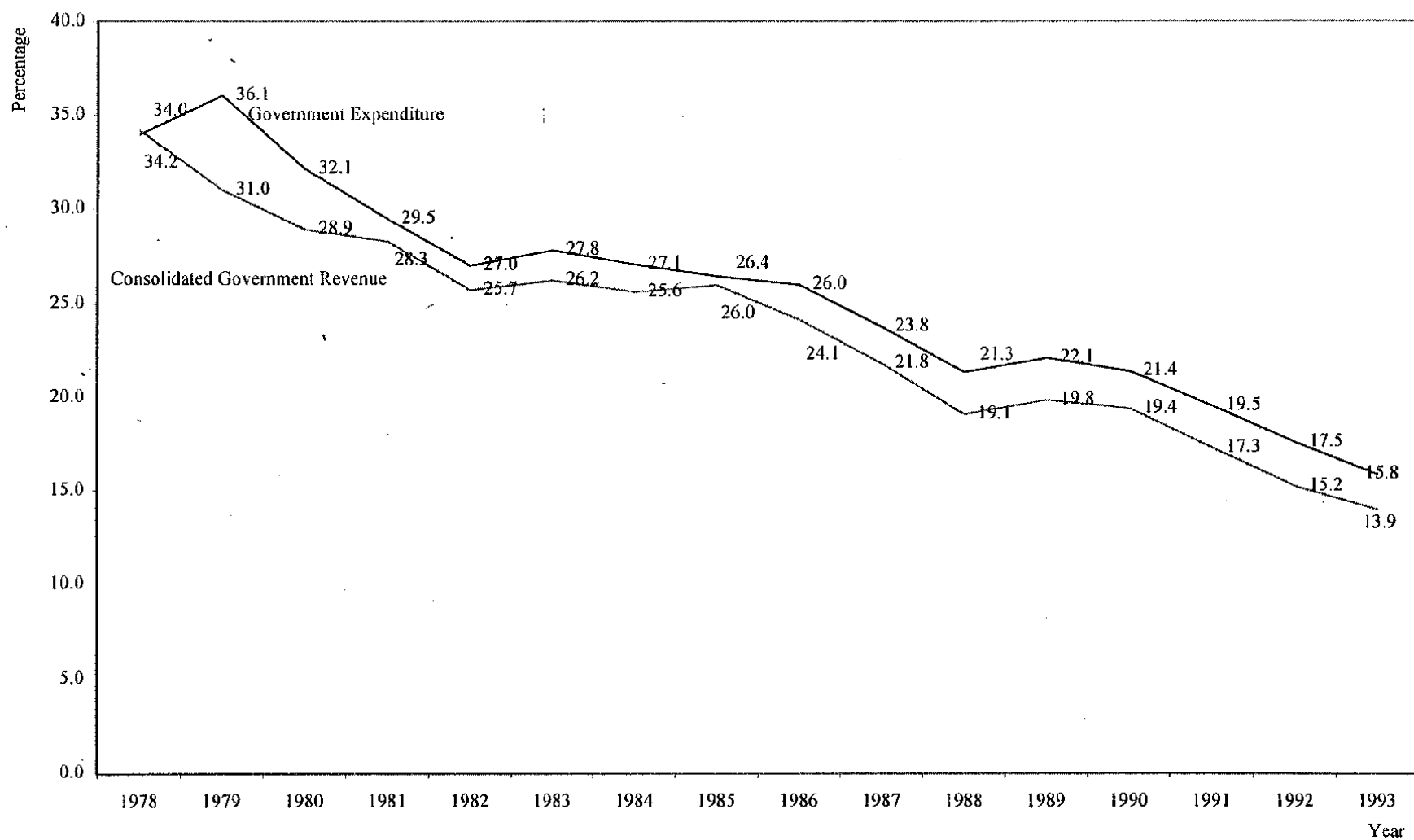
Source: China Statistical Yearbook, various issues

Graph 4; Money Supply (M1)



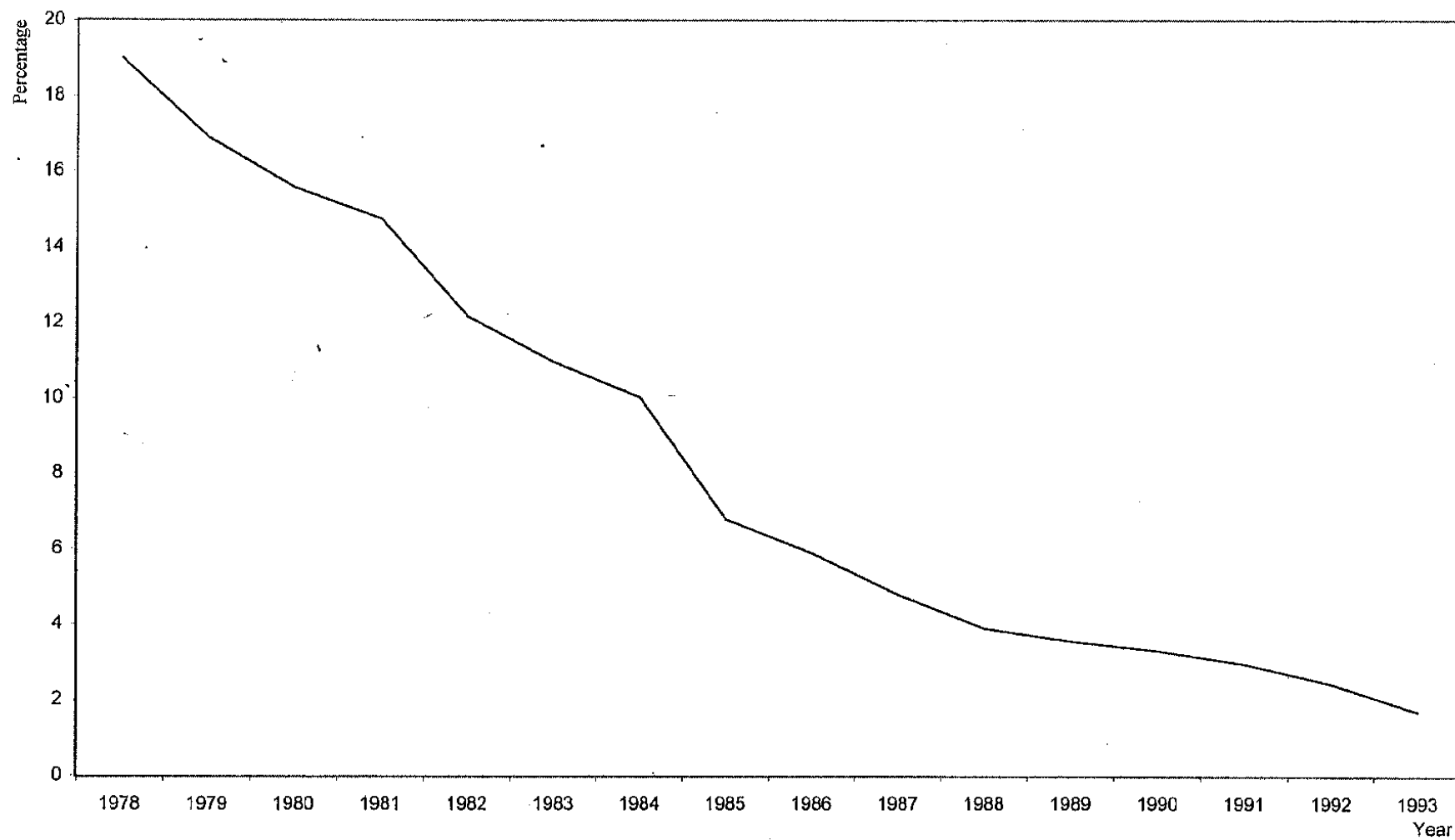
Source: IMF

Graph 5: Government Revenue and Expenditure as Share of GDP



Source: IMF Recent Economic Development

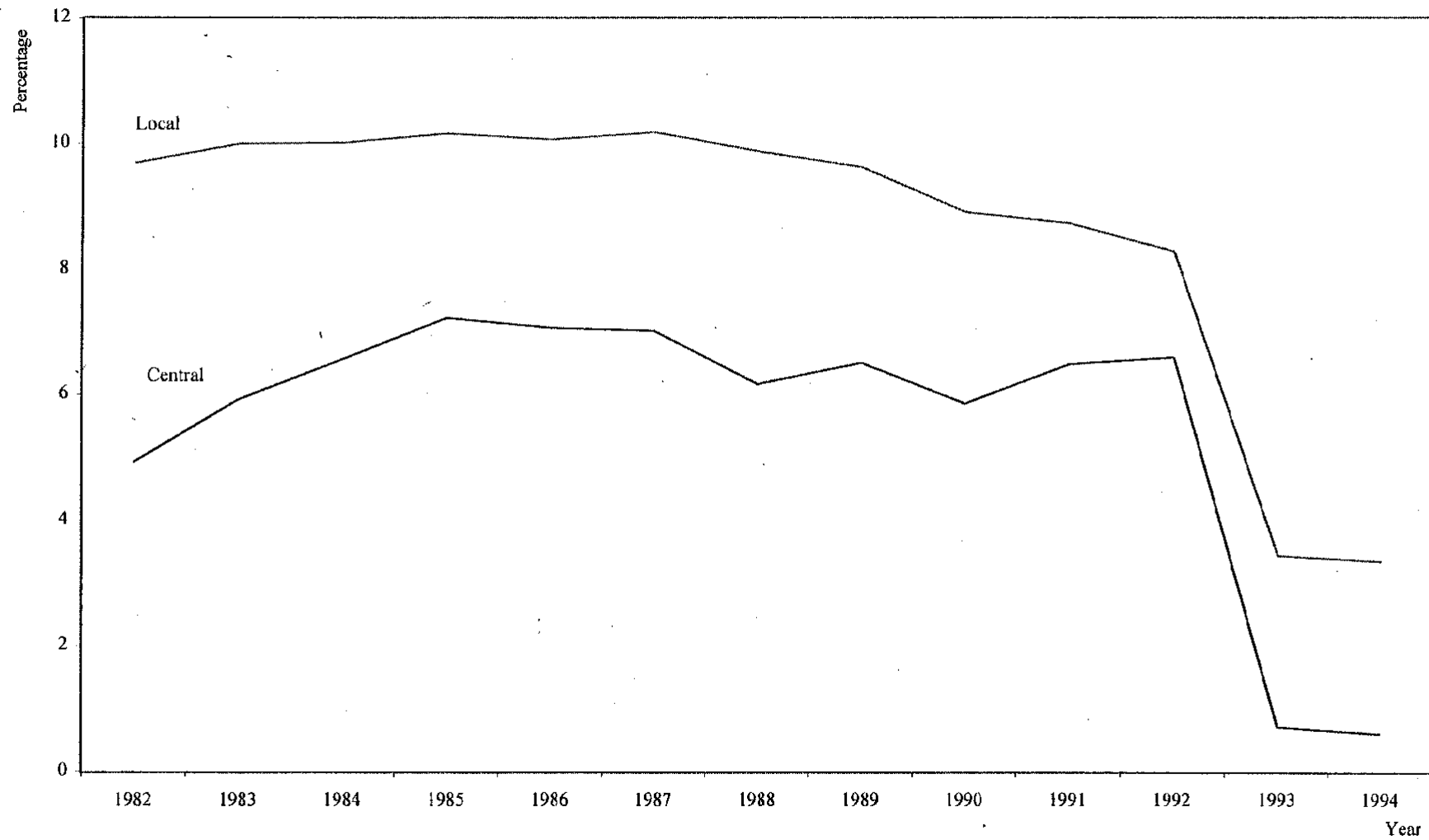
Graph 6: Tax Income From SOEs* as a Share of GDP



Including Profit Remittances before 1984

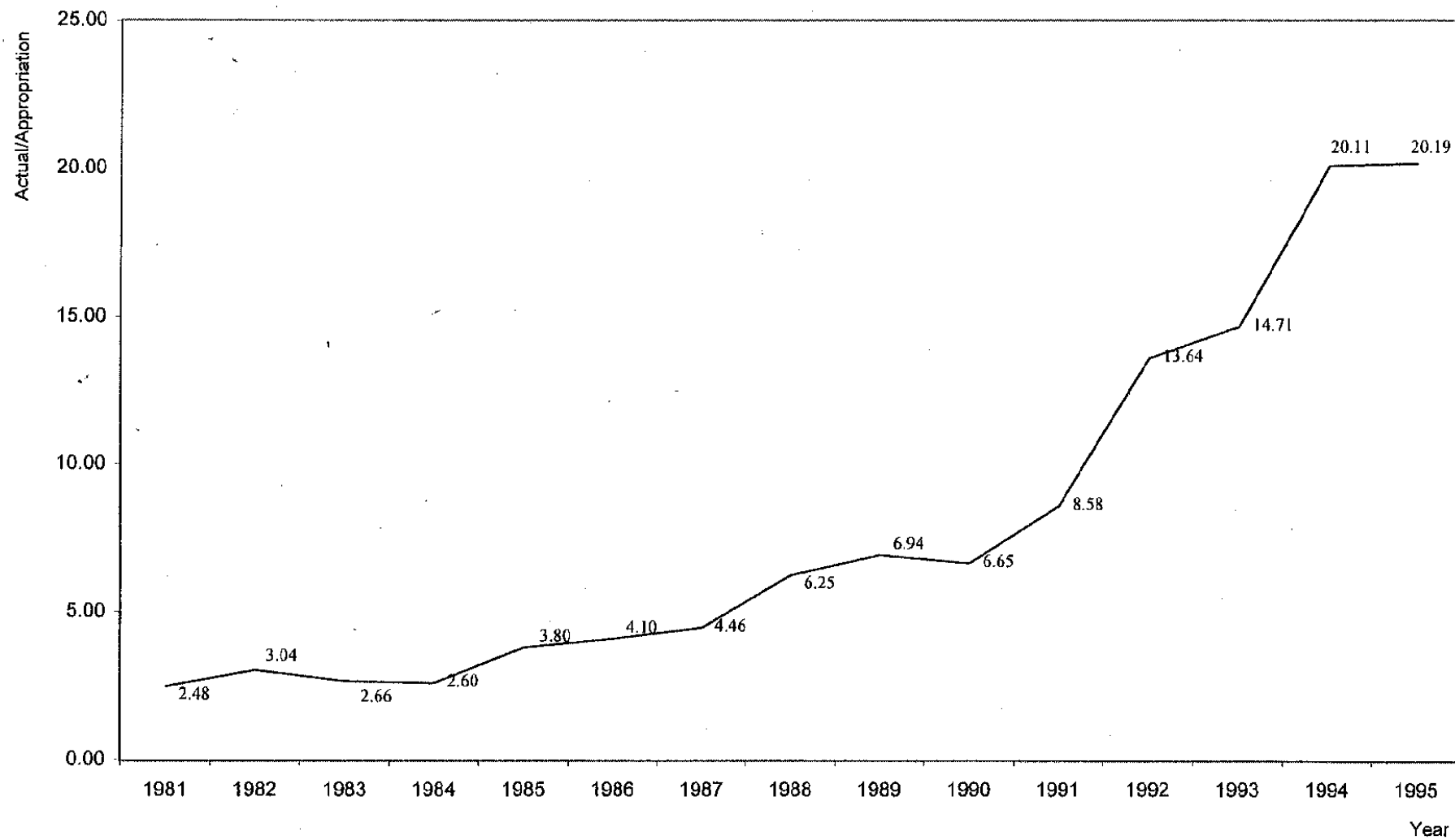
Source: IMF Recent Economic Developments, various issues

Graph 7: Local and Central Extra-Budgetary Revenues as Share of GDP



Source: China Statistical Yearbook

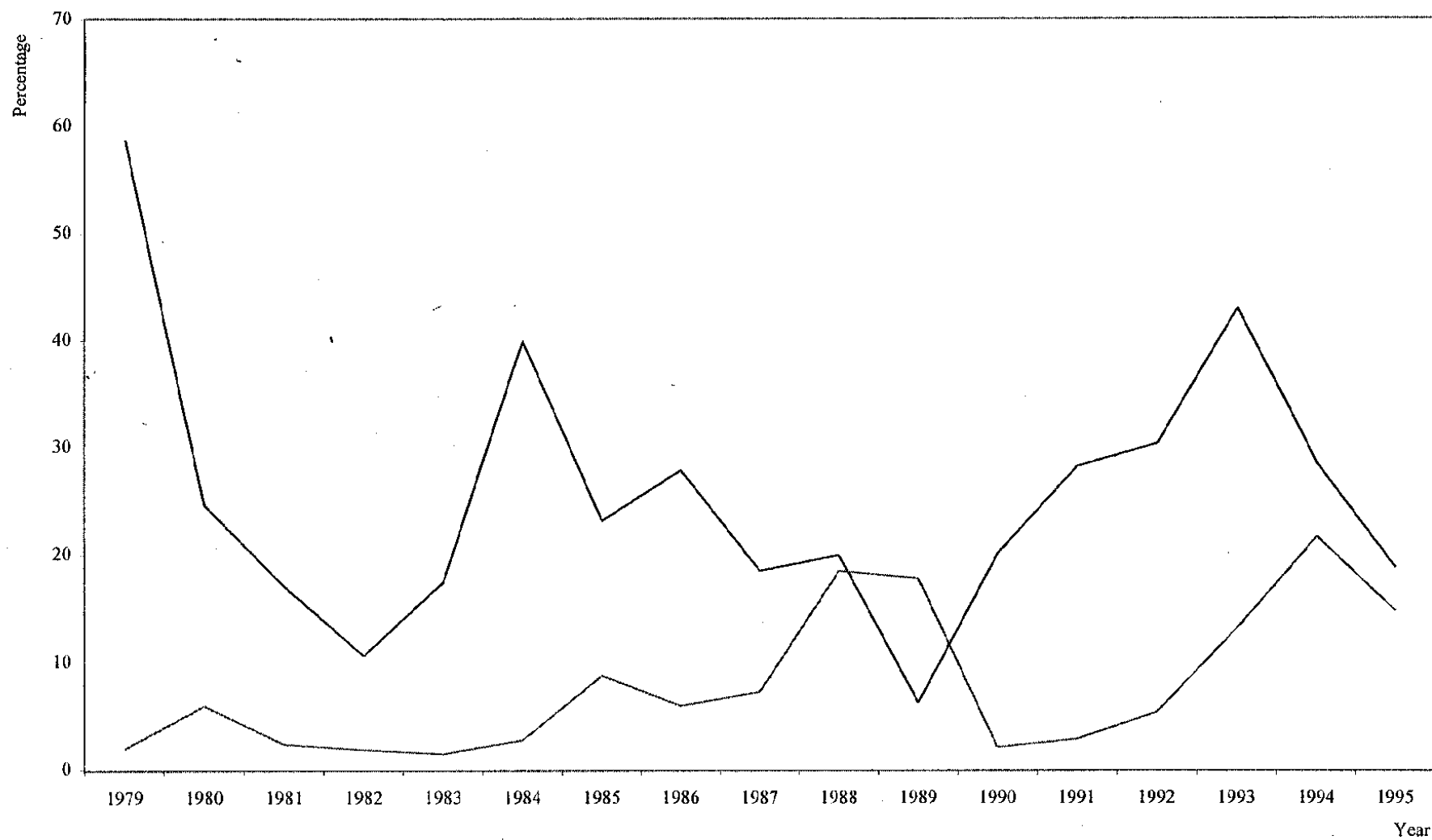
Graph 8: Actual Investment* As a Ratio of State Appropriation



* Capital Construction, Technology Updates and Transformation

Source: China Statistical Yearbook, 1996

Graph 9: M1 Growth Rate and Inflation



Source: IMF, China Statistical Yearbook (1996)

Table 1: Seignorage in China, 1985-92
(as Percentage of GDP)

	1985	1986	1987	1988	1989	1990	1991	1992
Seignorage from currency	2.3	2.4	2.1	4.8	1.3	1.7	2.7	4.8
Inflation tax over currency	0.8	0.5	0.5	1.2	1.2	0.8	0.6	1.0
Real currency expansion	1.5	1.9	1.6	3.6	0.1	0.9	2.1	3.8
Seignorage from reserve money	-	5.6	3.5	5.9	6.0	8.8	8.5	6.1
Inflation tax over reserve money	-	1.1	1.3	2.7	2.3	1.8	1.4	2.5
Real reserve money expansion	-	4.5	2.2	3.2	3.7	7.0	7.1	3.6

Note: Seignorage is estimated as the expansion of money as a percentage of GDP; end of year figures are used for money. The inflation tax is estimated as the money stock of the previous year times inflation in the current year. The real money expansion is calculated as residual of seignorage and inflation tax. Inflation is the percentage change in GDP deflator. All estimates should be considered as preliminary.

Source: PBC data; World Bank, *China Country Economic Memorandum 1993*.

Table 2: Components of the Consolidated Government Deficit, 1987-93
(as Percentage of GDP)

	1987	1988	1989	1990	1991	1992	1993	7-year average
I. <u>Components of the Deficit</u>								
1. Budget deficit	2.2	2.4	2.3	2.1	2.4	2.5	2.1	2.3
2. PBC lending to financial system	1.6	5.0	5.2	5.3	4.2	4.1	8.5	4.8
of which: Policy Loans:								
(a) Lower bound /a	0.9	3.0	3.1	3.2	2.5	2.5	5.1	2.9
(b) Upper bound /b	1.3	4.0	4.2	4.3	3.3	3.3	6.8	3.9
3. Consolidated government deficit								
(a) Lower bound (1+2a)	3.1	5.4	5.5	5.3	4.9	5.0	7.2	5.2
(b) Upper bound (1+2b)	3.5	6.4	6.5	6.3	5.7	5.8	8.9	6.2

Memo Items:

Budgetary revenues	22.8	19.9	20.4	20.1	18.1	16.3	15.4
Budgetary expenditures	25.4	22.3	22.7	22.1	20.5	18.9	17.5
Budgetary deficit (Chinese definition)	0.7	0.6	0.6	0.8	1.0	1.0	-

/a 60 percent of PBC lending to financial system

/b 80 percent of PBC lending to financial system

Source: Ministry of Finance, PBC, IMF

Table 3: The Consolidated Government Deficit Financing, 1987-93
(as Percentage of GDP)

	1987	1988	1989	1990	1991	1992	1993	7-year average
I. <u>Financing</u>								
1. Foreign borrowing (net)	0.6	0.8	0.7	0.7	0.5	0.6	0.7	0.7
2. Domestic borrowing / <u>a</u>	0.4	0.9	2.0	0.4	1.1	0.1	1.3	0.9
3. Direct borrowing from PBC / <u>b</u>	1.3	0.7	-0.4	1.0	0.8	1.8	0.7	0.8
4. Indirect borrowing from PBC / <u>c</u>								
(a) Lower bound	0.9	3.0	3.1	3.2	2.5	2.5	4.6	2.8
(b) Upper bound	1.3	4.0	4.2	4.3	3.3	3.3	6.3	3.8

/a Including bonds sold to the state banks, other identified domestic financing other than from PBC, and residual that may include some extrabudgetary funds.

/b From PBC balance sheet, it is given by change in stock of PBC budgetary lending net of change in treasury deposits with PBC.

/c This is the below-the-line equivalent of PBC policy lending which is regarded as an above-the-line government expenditure item.

Source: IMF, PBC, and staff estimates

Table 4: The Components of Reserve Money Growth, 1989-93

	1989	1990	1991	1992	1993
Percentage annual growth in reserve money / <u>a</u>	23.7	31.0	25.6	17.7	29.3
of which:					
share of / <u>b</u> PBC lending to financial institutions	85%	61%	50%	68%	85%
Budgetary borrowing from PBC (net)	-6%	11%	10%	29%	13%
Net foreign assets	13%	23%	38%	-8%	-4%
Other	8%	5%	2%	11%	6%

/a Percentage change in stock of reserve money from December to December

/b As a percentage of growth in reserve money

Source: IMF

Table 5: Structure of the People's Bank of China, 1995

Total Institutions	2438
National Headquarters	2
Branches at Provincial Level	30
Branches in Separate Planning Cities	14
Branches in Prefectures and Cities at Province Level	317
Branches in Counties	1958
City Offices	29
Personnel	188,304

Source: China Statistical Yearbook, 1996

Table 6: Inflation and Growth Rate: Comparison Between Asia and Latin American

	Latin American			Asia		
	1965-73	73-80	80-90	1965-73	73-80	80-90
Inflation Rate (% per year)	10	80	250	12	9	8
Economic Growth (% per year)	3	2	-1	3	3.5	5

Source: Hall and Taylor, Macroeconomics