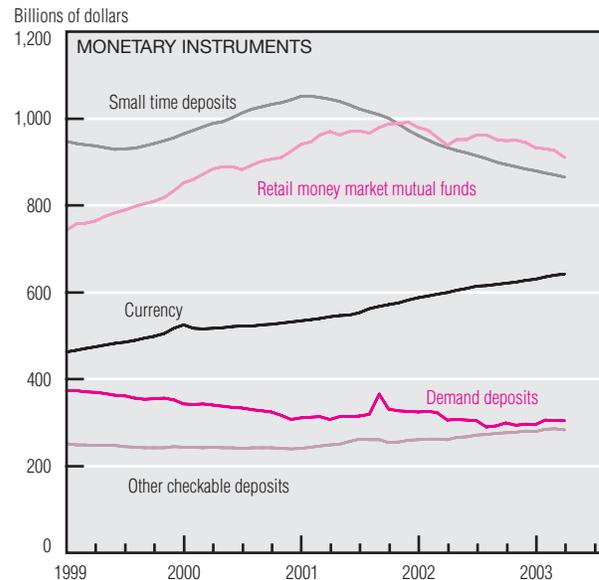
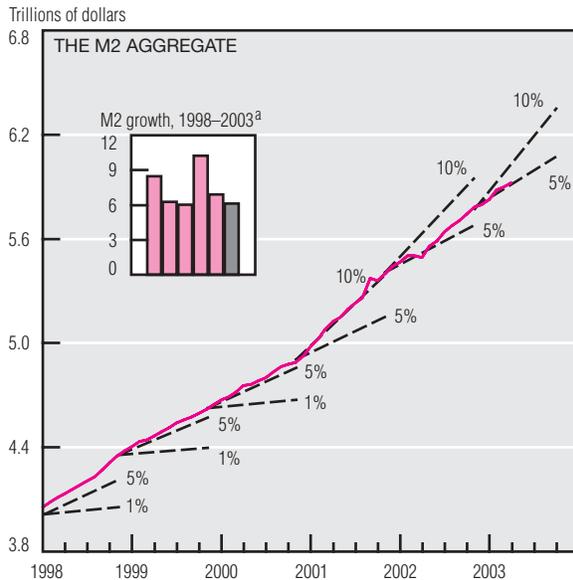
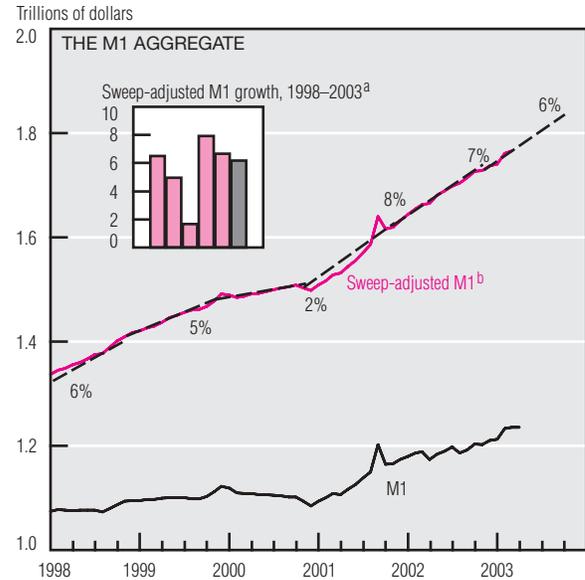
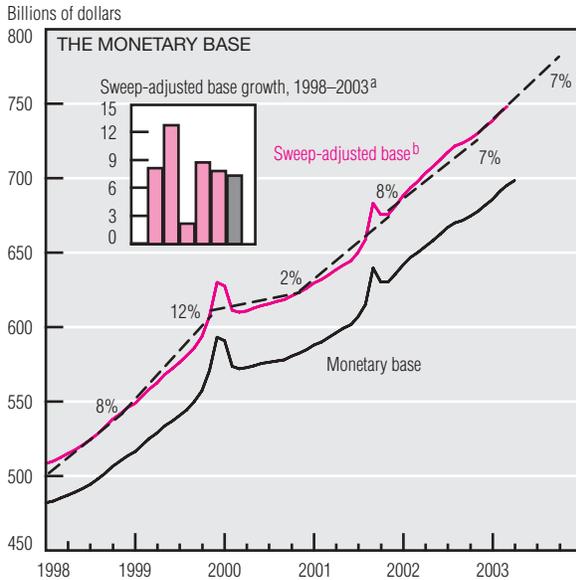


Money and Financial Markets



a. Growth rates are calculated on a fourth-quarter over fourth-quarter basis. The 2003 growth rates for the sweep-adjusted monetary base and sweep-adjusted M1 are calculated on a March over 2002:IVQ basis. The 2003 growth rate for M2 is calculated on an April over 2002:IVQ basis. Data are seasonally adjusted.

b. The sweep-adjusted base contains an estimate of required reserves saved when balances are shifted from reservable to nonreservable accounts. Sweep-adjusted M1 contains an estimate of balances temporarily moved from M1 to non-M1 accounts.

SOURCES: Board of Governors of the Federal Reserve System, "Money Stock Measures," H.6, *Federal Reserve Statistical Releases*.

Although financial headlines announce changes in the target federal funds rate, the nature of those changes cannot be appreciated without understanding their effect on the money supply. This can be observed in the narrowly defined, more liquid monetary aggregates, such as the sweep-adjusted monetary base and sweep-adjusted M1. During periods in which the FOMC lowered (raised) rates, both the sweep-adjusted monetary base and M1 tended to accelerate (decelerate). Their growth rates accelerated from an anemic 2% for

both aggregates in 2000 to 7.3% for the monetary base and 6.2% for M1 since January 2003. Both of these increases roughly coincide with the current round of easing, which began in January 2001.

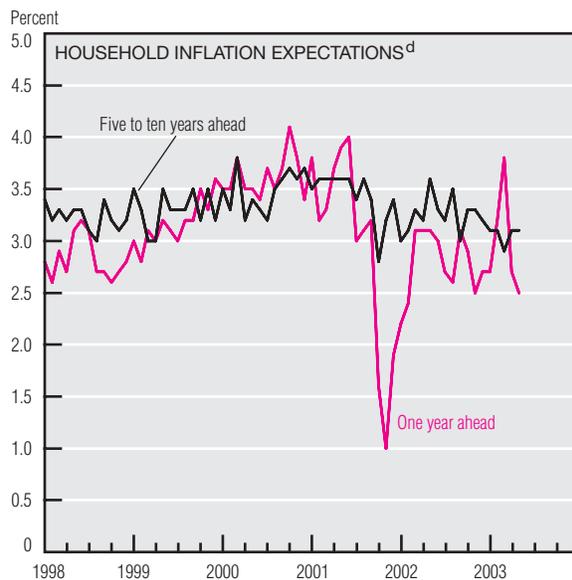
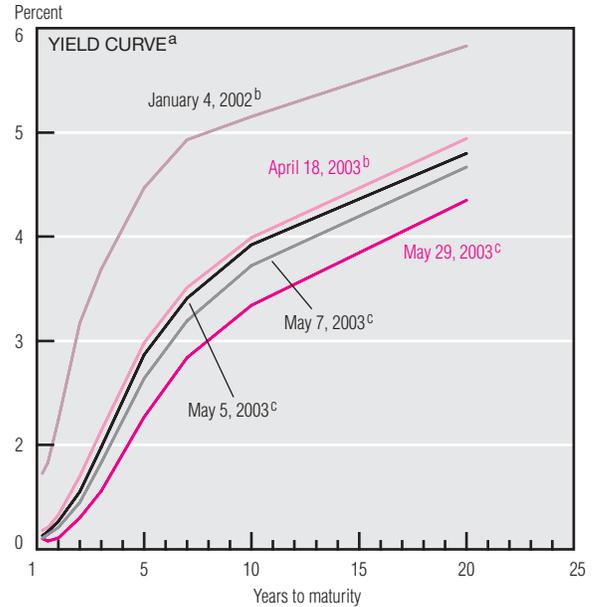
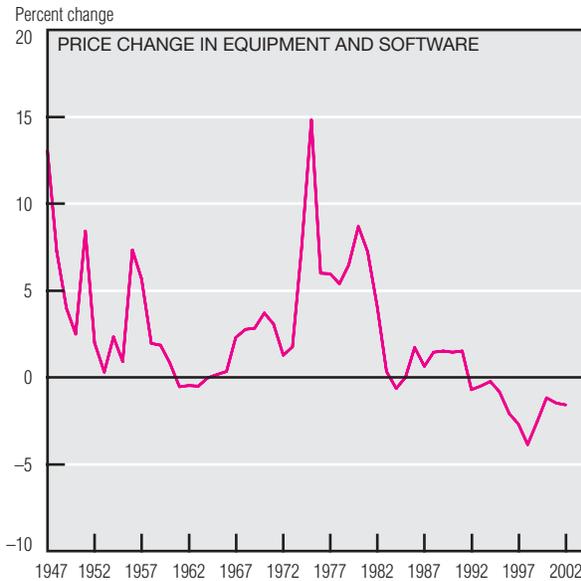
Much of this year's M1 growth can be attributed to moderate increases in currency. Demand deposits and other checkable deposits have been fairly stable since the year began. The broader, less liquid monetary aggregate, M2, has grown at a year-to-date annualized rate of 6.2%, more slowly than in either 2000 or 2001. While the

narrower aggregates have surged, M2 has slowed because the broader aggregates are affected primarily by economic activity, which has been sluggish for the past couple of years.

There is some concern that further disinflation could lead to deflation. At first glance, this fear seems unfounded. After all, CPI inflation averaged 2.2% in 2002. Yet some observers fear that the U.S. may be slipping into a deflationary period because some prices are already declining; equipment and software prices have declined over the past few years. But

(continued on next page)

Money and Financial Markets (cont.)



- a. All yields are from constant-maturity series.
 b. Average for the week ending on the date shown.
 c. Daily observations.
 d. Mean expected change in consumer prices.
 e. Treasury inflation-indexed securities.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis; Board of Governors of the Federal Reserve System, "Selected Interest Rates," *Federal Reserve Statistical Releases*, H.15; University of Michigan; and Bloomberg Financial Information Services.

lower prices in a few sectors do not constitute deflation, which is characterized by a persistent decline in the average overall price level—not just a few relative prices. Thus, even April's CPI decline of nearly 4.0% (annualized) is not deflation because it represents a short-term fall in energy prices. Are markets worried that deflation could be a real possibility over the coming years?

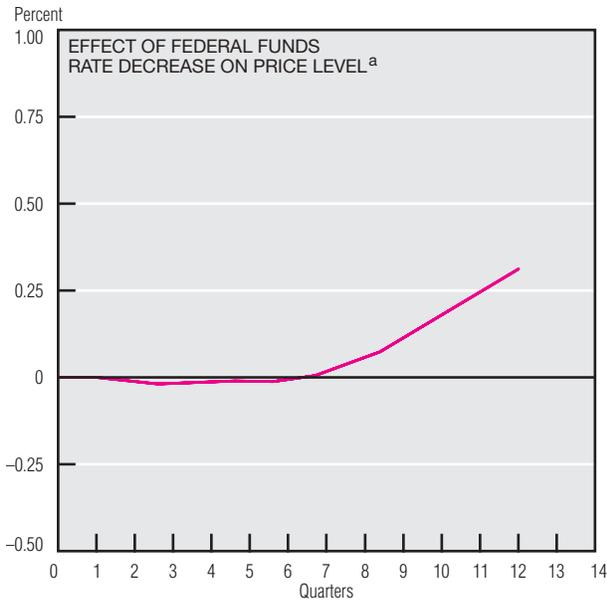
The yield curve is one indicator of where inflation is expected to head. Market interest rates consist of a real return to investors as well as expected

inflation. The latter component arises to compensate investors for the likelihood that a dollar will purchase less goods and services in the future than it does today. Average interest rates for all maturities have shifted down over the past 17 months, but does this reflect lower real rates or lower expected inflation? It undoubtedly reflects both. But some observers believe that movements in 10- and 30-year interest rates are largely caused by changes in expected inflation. If so, longer-term inflation expectations have indeed been declining.

However, the real interest rate can fluctuate significantly over both the long and the short term, so it is instructive to examine other, more direct measures of expected inflation. Households do not seem excessively worried that deflation will emerge in the next year; they said they expected prices to rise 2.5% on average. Households also indicated that over the next five to 10 years they expect inflation to hover around 3%. Furthermore, the latter number has been fairly constant and has even increased slightly over the past few months.

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Money and Financial Markets (cont.)



Output, Prices, and Wages during the Great Depression^b

	1929	1930	1931	1932	1933
Real GDP	100	86.9	77.6	64.0	60.9
GDP deflator	100	97.5	88.5	79.5	77.5
Nominal wage, manufacturing	100	99.1	94.1	83.5	79.9
Real wage, manufacturing	100	102.1	106.8	106.5	104.2
Real wage, nonmanufacturing and nonmining	100	98.6	96.9	92.4	85.6

Output and Prices in China, 1990–2002 (percent change)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Real GNP	4.2	9.1	14.1	13.1	12.6	9.0	9.8	8.6	7.8	7.2	8.4	7.0	N/A
General retail price index	2.1	3.0	5.3	13.0	21.7	14.8	6.1	0.7	-2.5	-3.0	-1.5	-0.8	-1.3

Output and Prices in Japan, 1990–2002 (percent change)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Real GDP	5.2	3.3	0.9	0.4	1.0	1.9	3.6	1.8	-1.2	0.2	2.1	0.8	0.6
Consumer price index	3.1	3.3	1.7	1.3	0.7	-0.1	0.1	1.7	0.7	-0.3	-0.7	-0.8	-0.9

a. Effective 50 basis point federal funds rate decrease.

b. Data are indexed to 1929 values.

SOURCES: National Bureau of Statistics of China; Japan Cabinet Office; Japan Ministry of Public Management, Home Affairs, Posts, and Telecommunications; Lawrence J. Christiano, Martin Eichenbaum, and Charles Evans, "The Effects of Monetary Policy Shocks: Evidence from the Flow of Funds," *Review of Economics and Statistics*, vol. 78, no. 1 (February 1996); Harold L. Cole and Lee E. Ohanian, "Re-Examining the Contributions of Money and Banking Shocks to the U.S. Great Depression," in *NBER Macroeconomics Annual 2000*, edited by Ben Bernanke and Kenneth Rogoff (Cambridge, Mass.: MIT Press, 2001); and Haver Analytics.

What is probably a better measure of what expected inflation will average over the next five, 10, and 30 years can be computed by comparing the interest rates on Treasury securities to those on Treasury inflation-indexed securities of identical maturity. Although these measures of expected inflation have declined slightly since the beginning of the year, all are safely above zero. Expectations of inflation five and 10 years out are both running around 1.7%.

Markets do not expect imminent deflation, but there is still a remote possibility that it may arise. Why act now instead of lowering the funds rate if and when deflation appears? The reason for a possible pre-emptive move is that econometric evidence suggests that funds rate decreases do not show up in prices until $1\frac{1}{2}$ to 2 years out.

How worrisome is deflation for our economy? Concerns about deflation are largely a legacy of the Great Depression, a particularly bleak time in our economic history when real

GDP fell almost 40% and prices dropped more than 20%. Of course, correlation does not imply causality. In fact, deflations are not necessarily bad for growth. The mild deflation in the U.S. during the 1880s and 1890s was accompanied by unusually strong growth. A similar phenomenon is occurring in modern-day China. However, the sluggishness of Japan's economy over the past decade reaffirms many economists' belief that prolonged deflationary periods are potentially dangerous.