1

The Economy in Perspective

Golden eggs, golden omelets... Productivity growth is the economist's term for situations in which an economy can obtain more output than before from the same amount of input. Productivity growth enables an economy to deliver rising standards of living to its participants, and the stronger the growth trend, the wealthier the society becomes. One of the most common estimates of productivity is real output produced per hour of labor input. By this measure, the U.S. economy has improved its ability to raise living standards over the course of this decade. When the expansion began in 1991, productivity seemed to be increasing at a trend rate just below 1% annually. As 1999 unfolds before us, productivity's growth trend appears to be roughly double that amount and possibly even more.

What is clear is that microprocessors and their derivative information technology products are profoundly affecting the way we live and conduct business around the globe. Once people perceive the advantages of deploying the new technologies, the rate of investment spending should pick up. Firms will want to acquire new plants and equipment—but especially equipment—embodying those technologies. Initially, investment spending should increase much more rapidly than overall spending in the economy, since the new technologies will boost the relative value of having a larger capital stock. After the adjustment is complete, of course, the rate of investment spending will moderate back toward the growth rate of the economy as a whole.

As investment spending surges, economywide employment should be temporarily weaker than normal because of the substitution of capital for labor occurring in many firms. Consequently, personal income growth and consumption expenditures should appear to respond more sluggishly to overall economic activity than is typical in an expansion. And if technological change initially makes investment goods cheaper to produce than consumption goods, relative price changes should reinforce these patterns, since any fall in the price of investment goods should further spur their production and sales.

After all the adjustments are complete, labor compensation rates will have risen in real terms to reflect labor's new, greater value when combined with the capital stock. However, this will take time, since labor rates adjust only sluggishly to market conditions. Initially, there will be some scope for nominal pay to rise, even if its pace falls short of labor's increased value. Under these conditions, labor demand will intensify, driving unemployment rates down without creating the typical symptoms of wage pressures. Eventually, however, these pressures should appear.

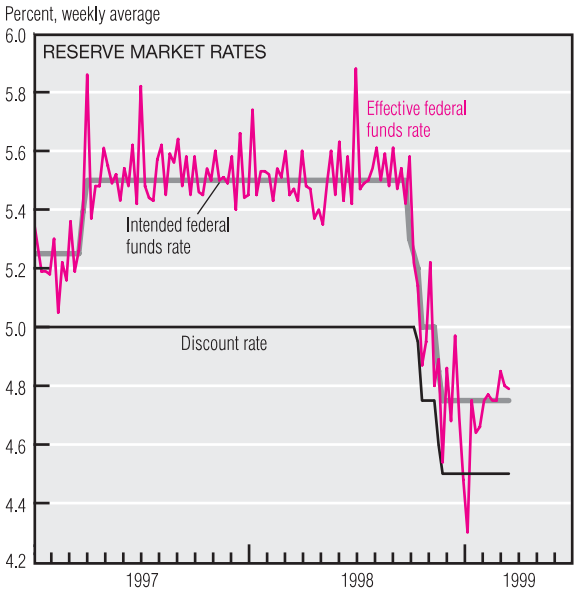
As households begin to recognize that they are wealthier, that is, that they can consume more and have more leisure over their lifetimes than before, they might rationally begin to step up their consumption plans right away. In a closed economy, consumption can increase only if saving diminishes, which is to say that investment must slow. But in an open economy, an inflow of foreign savings in the form of capital investments can permit domestic consumption and investment to continue at higher rates than would otherwise be possible. Such capital inflows are likely if they can finance new technologies that are expected to produce large real returns. As foreign residents seek to purchase dollar-denominated investments, the dollar's foreign exchange value should rise. Then the stronger dollar should make imports cheaper, exports more expensive, and the trade deficit larger.

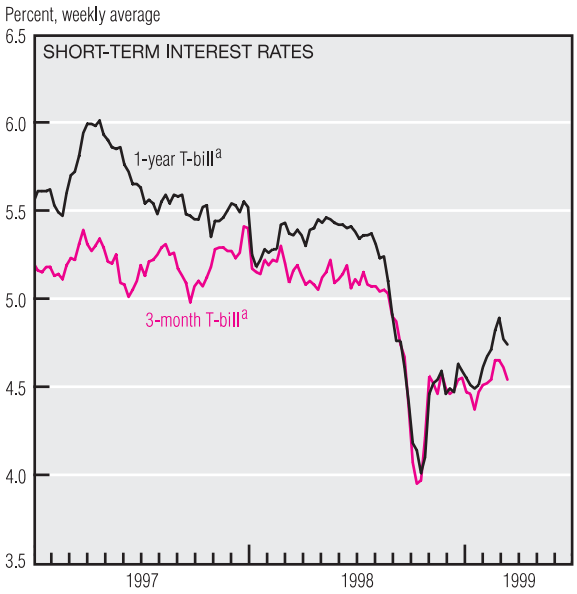
The picture that emerges is one of an economy adjusting to new technologies by simultaneously increasing its capital stock and its consumption spending. Foreign capital facilitates this process, but the cost is a burgeoning trade deficit. With real compensation increasing less rapidly than productivity growth, labor demand strengthens and unemployment falls.

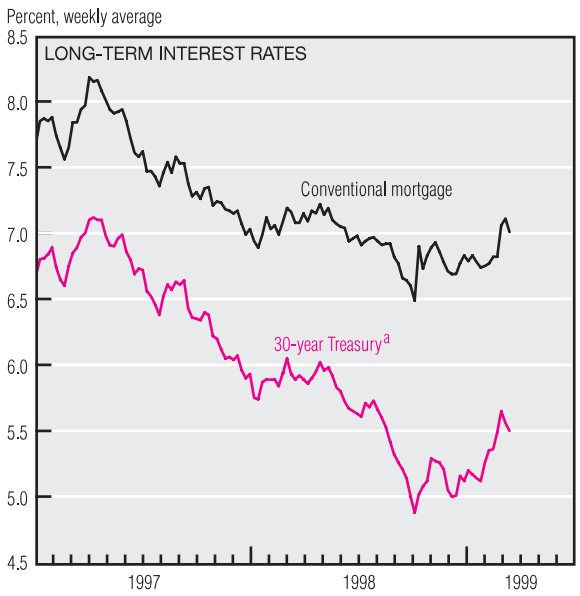
Somewhere along the path from the old economy to the new one, real interest rates must rise to support the capital formation process. Hence, if monetary policy is to be "neutral," it must engineer an increase in the nominal federal funds rate. Otherwise, policy could provide too much money growth in the new economy, which would support more inflation. Excessive money growth could also create sufficient liquidity to finance even more investment and consumption than should be occurring along the adjustment path.

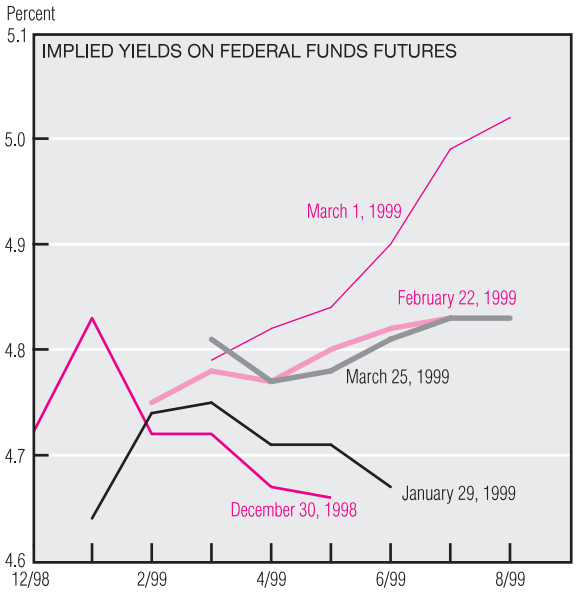
A problem for everyone on this journey is that we cannot know the full extent of the change in productivity growth that is under way. If the process is ending now, after nearly a decade of economic expansion, monetary policymakers may need to be especially vigilant about their instrument settings. But if we are still a long way from the journey's end, there may be less risk in preserving the status quo.

Monetary Policy









a. Constant maturity.
SOURCES: Board of Governors of the Federal Reserve System; and the Chicago Board of Trade.

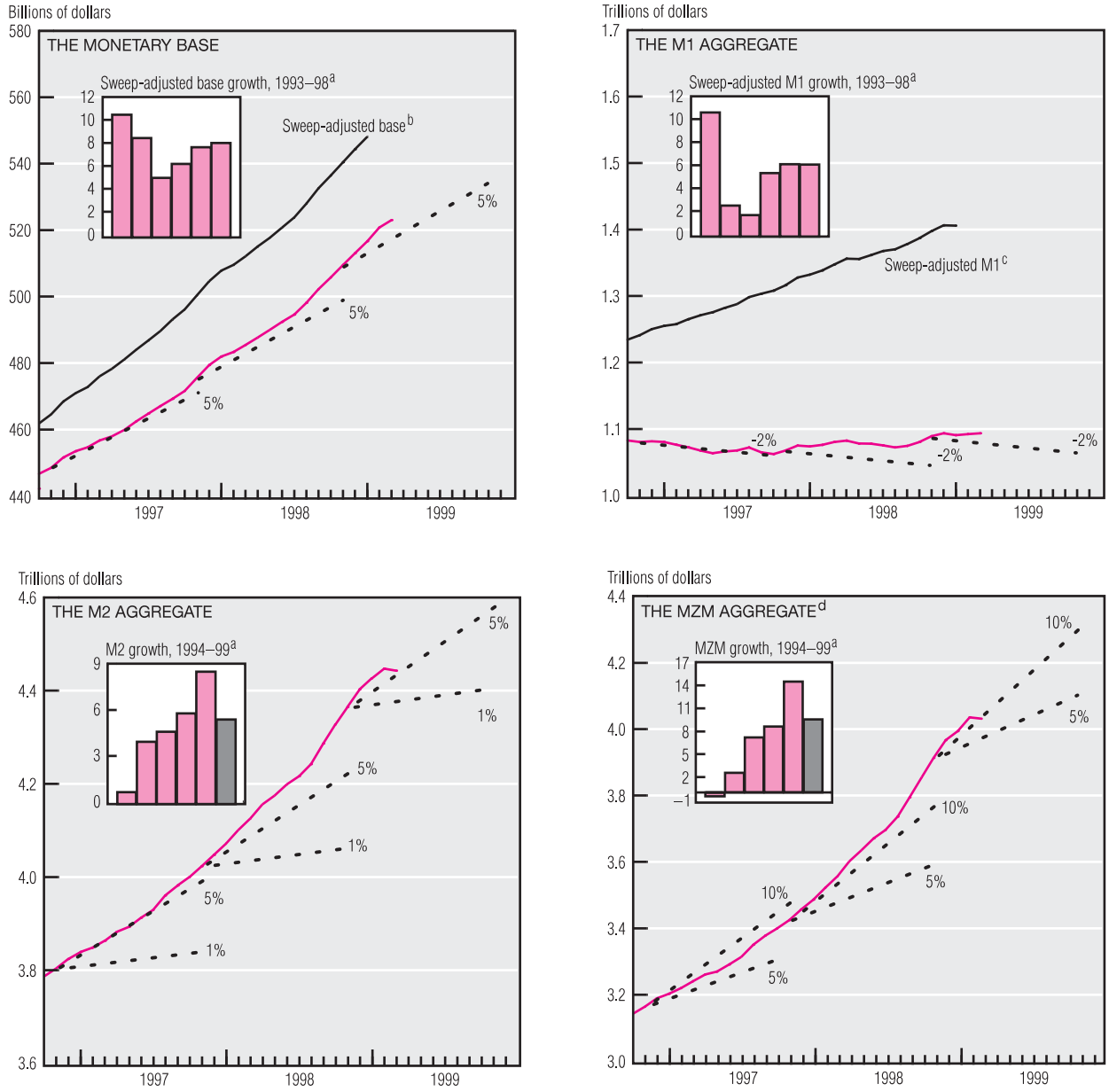
After two consecutive weeks of federal funds trading, on average, at the target rate of 4.75% in late February, the rate jumped 10 basis points during the first week of March. By the week of March 19, however, the average weekly rate fell to within four basis points of the target.

A similar pattern can be seen in both long- and short-term interest rates. The weekly averages of the 3-month and 1-year T-bills, the 30-year Treasury, and conventional mortgages all peaked during the week of March 5. The 3-month rate subsided 11 basis points and the 1-year rate 15 basis points by the week of March 19. This leaves the 3-month T-bill rate very near its January 1 level, while the 1-year rate is about 15 basis points above its rate at the end of 1998. Conventional mortgage rates have risen near the level of mid-1998. This may affect the brisk pace of home sales seen in the first several months of 1999.

Implied yields on federal funds futures spiked on March 1, but have since returned to the levels of a week earlier. Why the temporary jump? One likely explanation is that it was a reaction to Chairman Greenspan's Humphrey–Hawkins testimony on February 23. His statements were widely interpreted as a harbinger of future policy tightening. He stated, for example, that "The Federal Reserve must continue to evaluate, among other issues, whether the full extent

(continued on next page)

Monetary Policy (cont.)



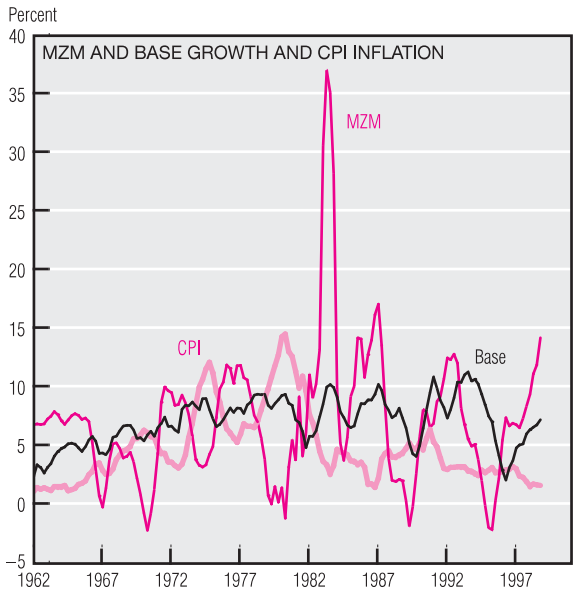
a. Growth rates are percentage rates calculated on a fourth-quarter over fourth-quarter basis. The 1999 growth rates for MZM and M2 are calculated on an estimated March over 1998:IVQ basis.
b. The sweep-adjusted base includes an estimate of required reserves saved when balances are temporarily shifted from reservable to nonreservable accounts.
c. Sweep-adjusted M1 includes an estimate of balances temporarily shifted from M1 to non-M1 accounts.
d. MZM is an alternative measure of money that is equal to M2 plus institutional money market mutual funds less small time deposits.
NOTE: Data are seasonally adjusted. Last plots for M1, M2, and MZM are estimated for March 1999. Dotted lines for M2 are FOMC-determined provisional ranges. All other dotted lines represent growth in levels and are for reference only.
SOURCE: Board of Governors of the Federal Reserve System.

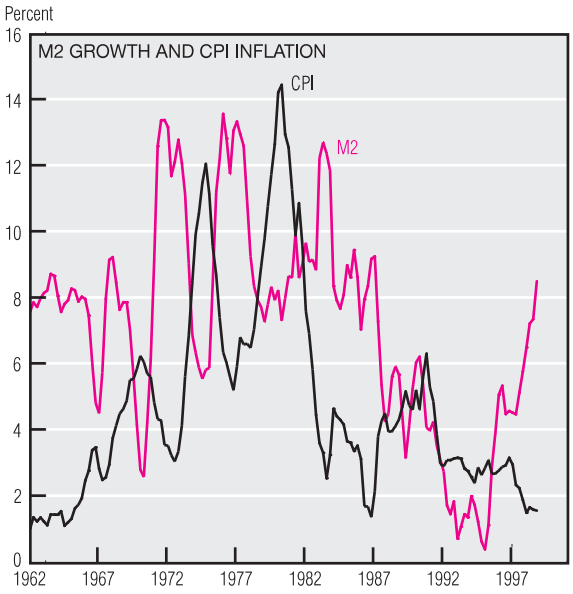
of the policy easings undertaken last fall to address the seizing-up of financial markets remains appropriate as those disturbances abate." The anticipation of rate increases that this statement may have spurred among fed funds futures traders has now largely abated, as futures yields have returned to levels only slightly above the current target for contracts as far out as August 1999.

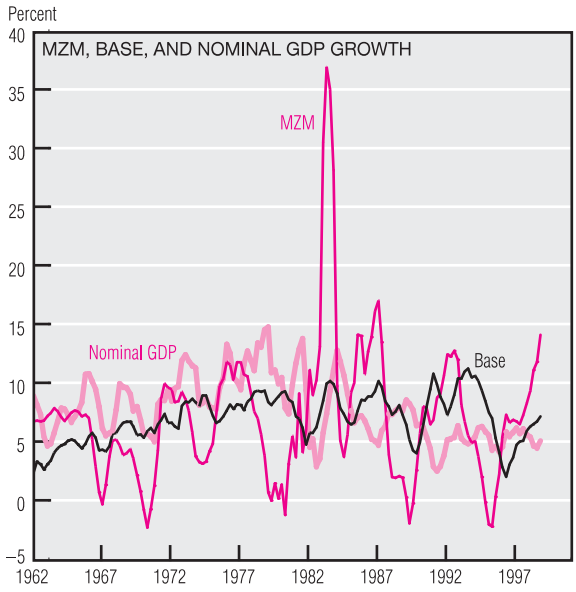
The monetary base leveled off somewhat in March, with preliminary estimates indicating an annualized monthly change of about 5%. Growth in unadjusted M1, however, accelerated slightly in March according to preliminary estimates. Sweep-adjusted M1 remained steady in January, but the effects of the recent movement in unadjusted M1 on the sweep-adjusted aggregate are not yet known.

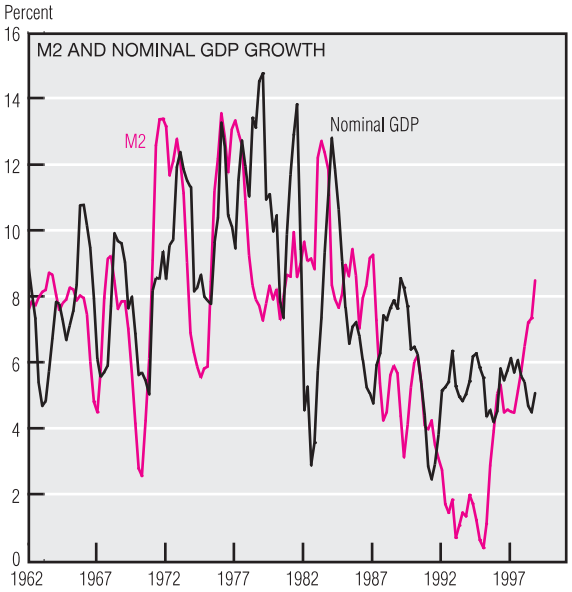
Two broader aggregates, M2 and MZM, both slowed their rapid pace. For the first time since 1997, M2 seems to be near its FOMC-determined provisional range, the upper limit of which is 5%. MZM growth seems to be moderating as well, though it is not reasonable to assume a change in trend based on preliminary estimates of only one month's data. On the other hand, this apparent moderation in money growth, if it continues, may ease the minds of those who anticipate imminent inflation as the by-product of the swift monetary growth of the last two years.

Interpreting the Money Numbers









NOTE: Data are quarterly and seasonally adjusted; all growth rates and proportional changes are calculated on a year-over-year basis.
SOURCES: Board of Governors of the Federal Reserve System; and U.S. Department of Labor, Bureau of Labor Statistics.

Some economists are concerned that higher inflation is just around the corner. One piece of evidence is high money growth. However, as the charts above show, there does not seem to be a tight relationship between money growth and inflation. Of course, some would argue that money growth translates into inflation with a lag, as it did in the 1970s. Yet, inflation dropped sharply in the early 1980s with no corresponding movement in any monetary aggregate.

Economic theory tells us that real money demand depends on real income and the nominal interest rate. Consider, first, the effect of real income growth. As real output grows, consumers hold more money to finance their purchases. To illustrate this effect fairly simply, compare money growth with that of nominal output (the sum of inflation and real output growth). This relationship appears to fit better than that between money growth and inflation. In particular, the long-term movements in M2 are mirrored by changes in nominal income.

Next, increases in the nominal interest rate tend to depress real money demand. That is, positive changes in the nominal interest rate should be associated with negative real money growth. In the charts on page 5, the scale for the change in the nominal interest rate (as measured by 3-month commercial paper) has been inverted, with numbers decreasing rather than

(continued on next page)

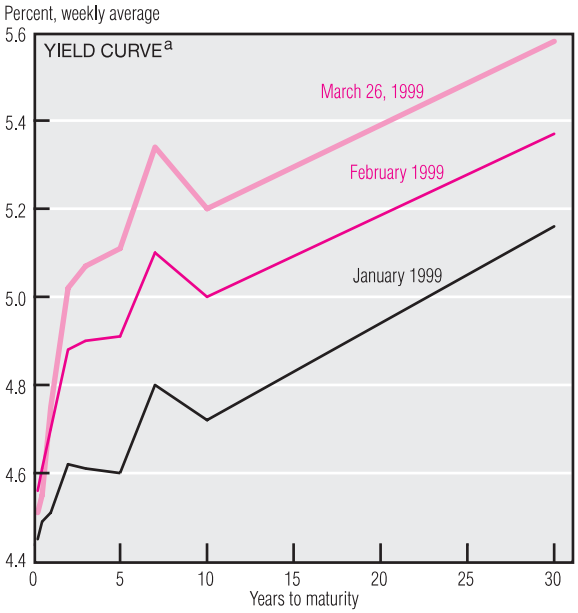
Interpreting the Money Numbers (cont.)

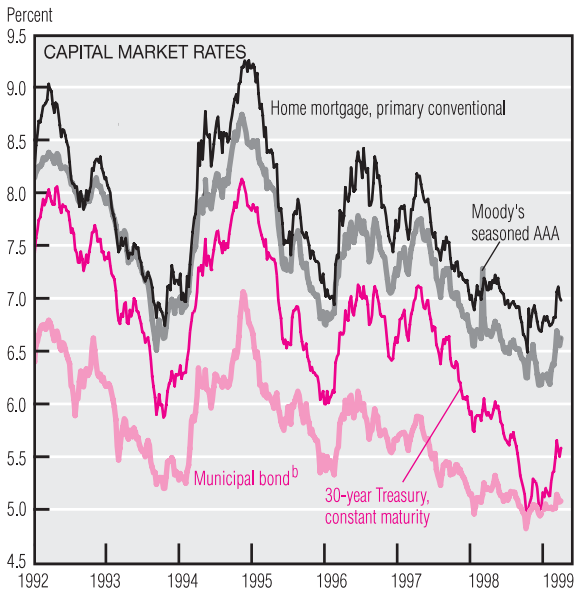
NOTE: Data are quarterly and seasonally adjusted; all growth rates and proportional changes are calculated on a year-over-year basis.
SOURCES: Board of Governors of the Federal Reserve System; and U.S. Department of Labor, Bureau of Labor Statistics.

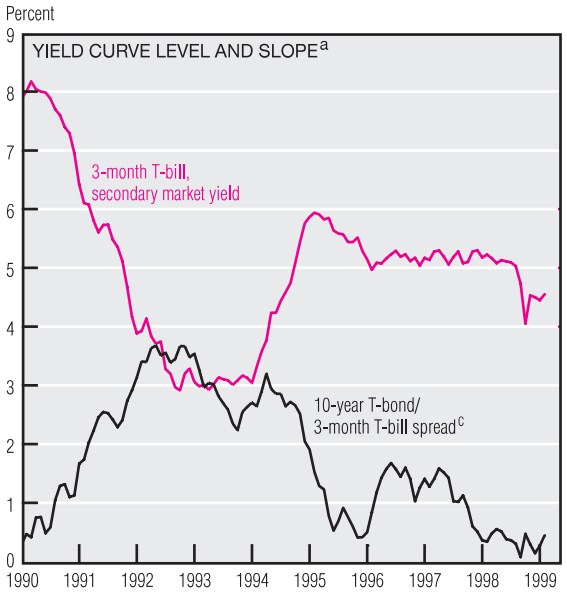
increasing, as is normal. While MZM and base growth do not benefit much from this exercise, M2 does, especially with respect to short-term movements in real M2 growth.

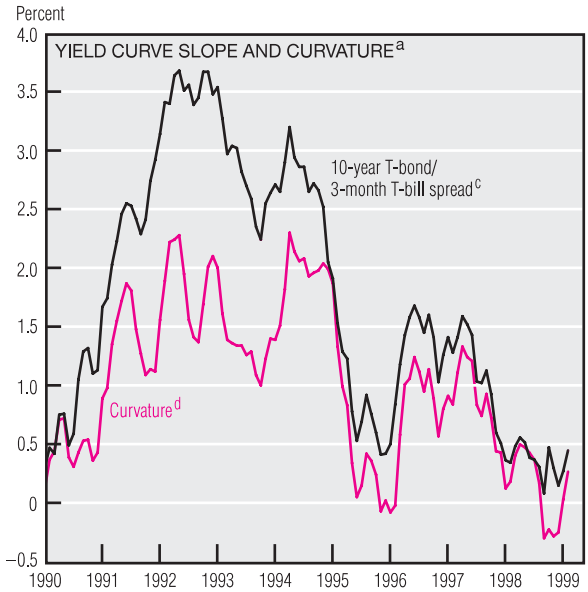
Finally, we put together the effects of real output growth and the nominal interest rate on real money demand. One way to proceed is to plot the change in the interest rate against the growth rate of velocity, where the latter is equal to the growth in nominal income less that of money. Over some periods, both MZM and M1 velocity have moved closely with the interest rate. For example, the fit using MZM velocity has been fairly close since the early 1980s, but was not so tight in the 1970s. Likewise, base velocity moved closely with changes in the interest rate from the late 1970s through the early 1990s, but not so closely since then or in the 1960s. The fit between M2 velocity growth and changes in the interest rate is even closer over virtually the entire sample period. Given the small changes in the nominal interest rate, the recent decline in M2 velocity is troubling because it suggests that money growth has exceeded that which can be accounted for by recent inflation, real growth, and the interest rate. Notice, however, that the same situation prevailed in 1962–64, when there was little movement in inflation.

Interest Rates









a. All instruments are Treasury constant-maturity series.
b. Bond Buyer Index, general obligation, 20 years to maturity, mixed quality.
c. 10-year Treasury bond yield minus secondary market 3-month Treasury bill yield.
d. Curvature equals the spread between the 5-year Treasury note yield and the secondary market 3-month Treasury bill yield, minus the spread between the 10-year Treasury bond yield and the 5-year Treasury note yield.
SOURCE: Board of Governors of the Federal Reserve System, "Selected Interest Rates," *Federal Reserve Statistical Release*, H.15.

The yield curve has steepened since last month, as 3- and 6-month rates fell and all others rose. The 3-year, 3-month spread increased from 34 to 56 basis points; the 10-year, 3-month spread grew from 44 to 69 basis points. Some have attributed the steepening to anticipation of a Federal Reserve hike in the federal funds rate. However, it is hard to see how such anticipation would accord with the drop in short rates, since Fed hikes usually flatten the curve. Long rates have risen in sync; the spread between 30-year and 10-year rates has barely nudged up, from 37 to 38 basis points.

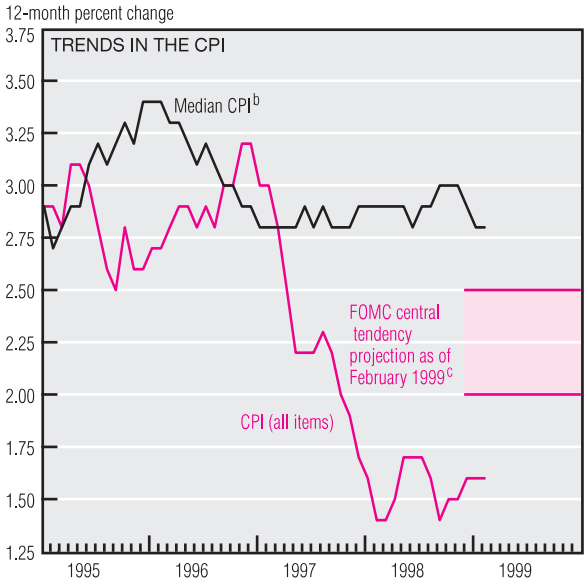
Since the beginning of the year, longer-term capital market rates have moved broadly upward. The exception seems to be municipals, which have changed very little. All have shown a gradual decrease in spread over 30-year Treasuries. This trend becomes even more pronounced if taken back to October, when spreads peaked during the flight-to-quality episode that followed the ruble's collapse. Spreads have not returned to their precrisis level, perhaps because of a rational market assessment that crises are still possible.

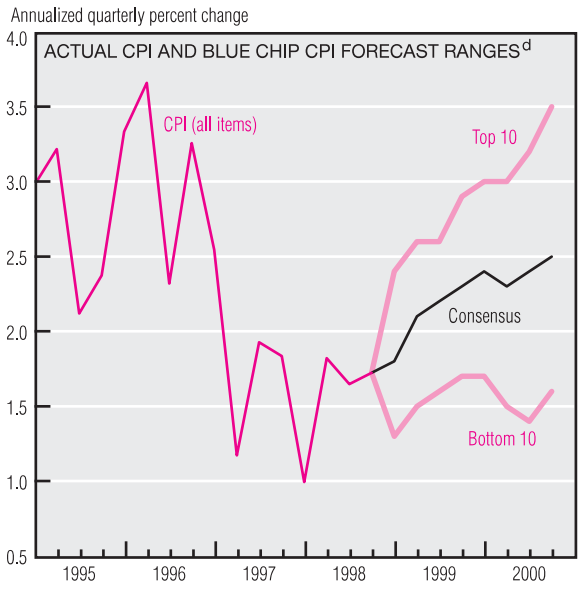
Three factors account for much of the movement in the yield curve: level, slope, and curvature. Compared with the past decade, the current level is high, though the slope and curvature are relatively low. Level and slope show an inverse relationship: Rates move together, but long rates move up and down less than short ones. Slope and curvature show a more positive relationship. A given decrease in short rates, for example, decreases 5-year rates, but not as far, and leads to an even smaller drop in 10- and 30-year rates.

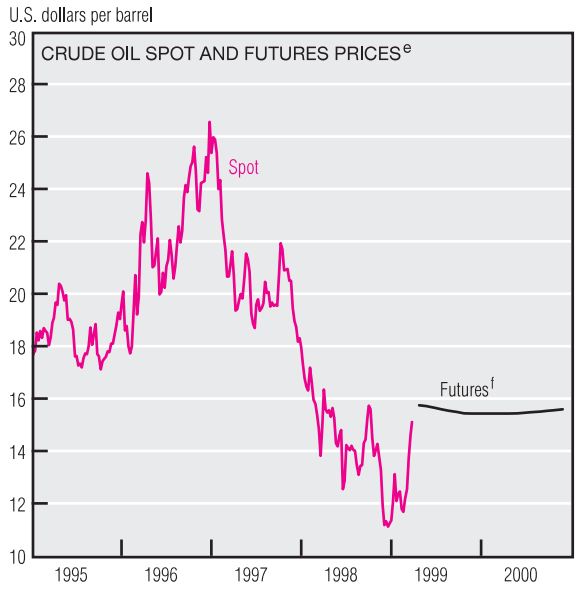
Inflation and Prices

February Price Statistics

	Percent change, last:				
	1 mo.[a]	3 mo.[a]	12 mo.	5 yr.[a]	1998 avg.
Consumer prices					
All items	0.7	1.2	1.6	2.3	1.6
Less food and energy	0.7	1.8	2.1	2.6	2.5
Median[b]	2.2	2.1	2.8	2.9	2.9
Producer prices					
Finished goods	–4.5	2.2	0.6	1.0	–0.2
Less food and energy	0	3.9	2.2	1.3	2.4







a. Annualized.
b. Calculated by the Federal Reserve Bank of Cleveland.
c. Upper and lower bounds for CPI inflation path as implied by the central tendency growth ranges issued by the FOMC and nonvoting Reserve Bank presidents.
d. Blue Chip panel of economists.
e. West Texas intermediate crude oil.
f. Closing price, March 22, 1999.
SOURCES: U.S. Department of Labor, Bureau of Labor Statistics; the Federal Reserve Bank of Cleveland; *Blue Chip Economic Indicators*, March 10, 1999; *Cushing Journal of Commerce;* and the New York Mercantile Exchange.

Prices followed a moderate growth trajectory in February. The Consumer Price Index (CPI) increased an annualized 0.7% during the month, less than its 1.6% average rise over the past 12 months. The Producer Price Index (PPI) fell an annualized 4.5% and is up a mere 0.6% from February 1998.

Most economists expect growth in retail prices to pick up over the course of 1999 and beyond; some even see retail price increases moving upward to a 3½% pace by the end of 2000. But a growing share expect the cost of living to remain on an unusually modest growth path for the foreseeable future.

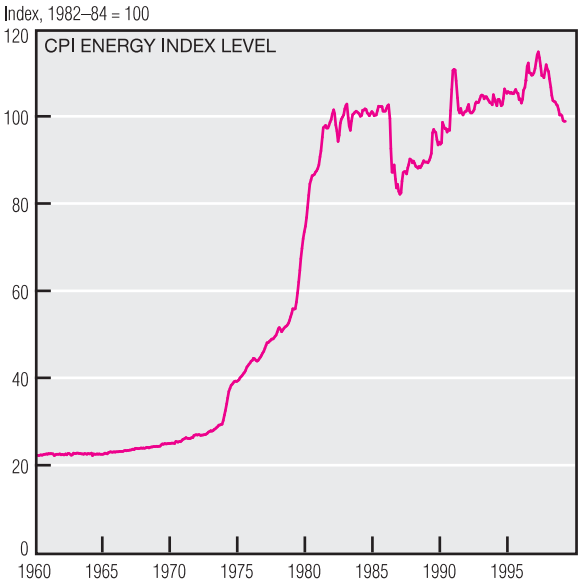
The precipitous drop in crude oil prices was one of the most important factors in containing the cost of living over the past few years. During the two-year span ending in 1998, oil prices fell more than half (from about $25 per barrel to just $11 a barrel). But prices rose early this year and are now back above $15 a barrel—a level that investors in futures believe will hold indefinitely.

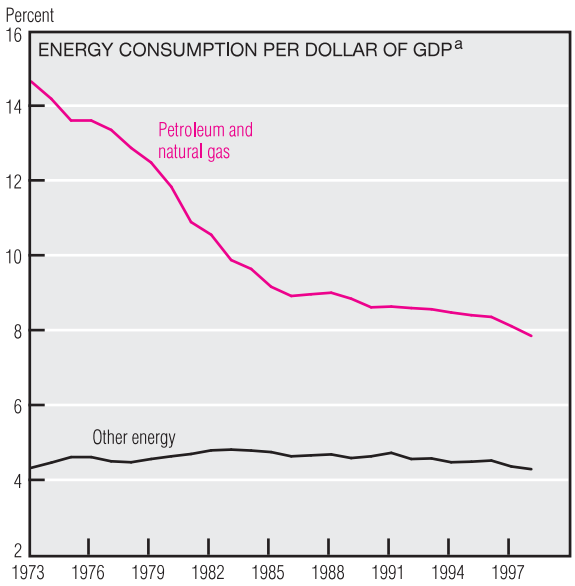
The recent upturn in oil prices results from OPEC's decision to cut production by 1.7 million barrels per day beginning April 1. Whether this move will have a lasting impact on oil prices is uncertain.

In the 1970s, OPEC drove up prices by orchestrating supply cuts in 1973–74 and 1978–79. But oil prices halted their upward climb in 1980 and struggled to hold level between 1980 and 1985. The oil cartel is problematic because there are huge

(continued on next page)

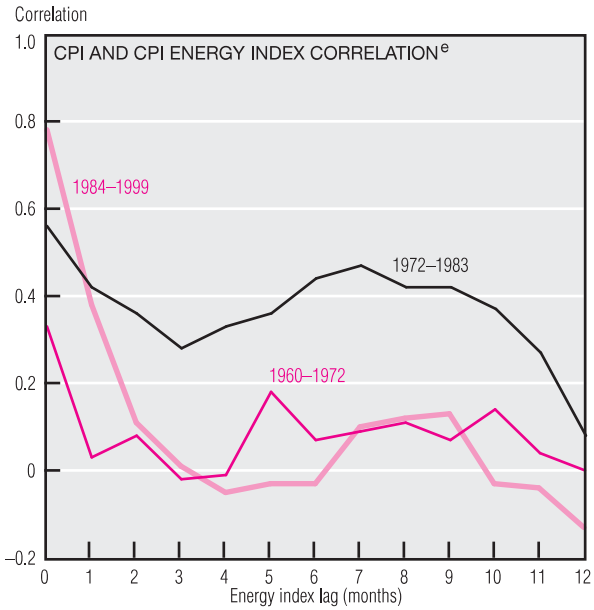
Inflation and Prices (cont.)





World Oil Production

	1998[a,b]	Percent of capacity[c]
OPEC	28,811	93
Saudi Arabia	8,415	85
Iran	3,638	60
Venezuela	3,179	94
United Arab Emirates	2,350	98
Iraq	2,136	61
Remaining OPEC	9,092	88
Non-OPEC	38,162	99
North America	11,395	86
United States	6,338	69
Russia[d]	5,931	78
China	3,197	100
Norway	3,025	96
United Kingdom	2,596	100
Remaining non-OPEC	12,018	100



a. 1998 data are estimated.
b. Thousands of barrels per day.
c. Estimate based on percent of highest annual production.
d. Production data start in 1992.
e. Correlation between CPI 1-month percent change and CPI energy index 1-month percent change, lagged from zero to 12 months.
SOURCES: U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review,* February 1999; and U.S. Department of Labor, Bureau of Labor Statistics.

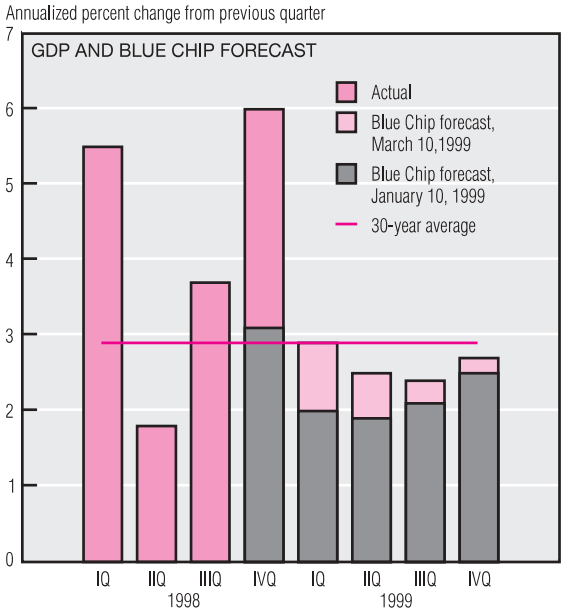
incentives for producers to take advantage of inflated prices with higher production, and for consumers to reduce their consumption. In a failed effort to maintain high oil prices, OPEC (particularly Saudi Arabia) sharply cut production throughout the early 1980s. By 1985, energy conservation efforts in the U.S. and elsewhere had drastically reduced dependence on petroleum; between 1973 and 1983, for instance, petroleum and gas consumption as a share of U.S. GDP was reduced about one-third.

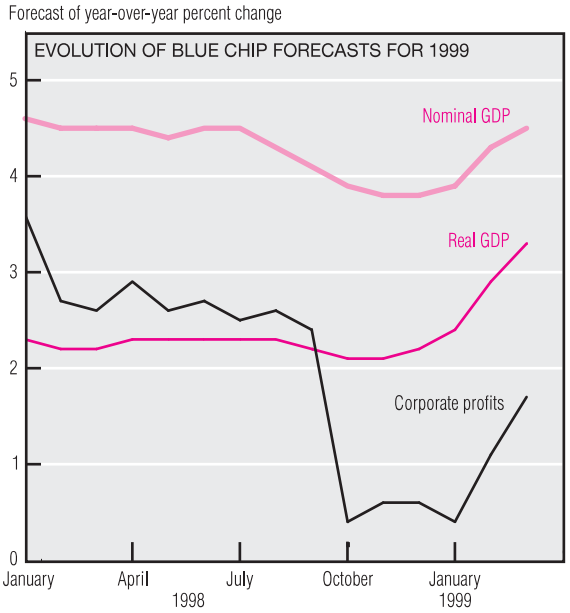
Several times in the past 15 years OPEC has tried—and failed—to prop up sagging oil prices. The recent agreement is no more certain to succeed. Indeed, most nations are already producing at levels below their capacity (as evidenced by current production relative to their previous production peaks).

The inflationary consequences of this uptick in oil prices will largely depend on the Federal Reserve's behavior. Higher oil prices will cause retail prices to spike higher. But this is a one-time price level adjustment: It need not become a generalized, ongoing inflationary process unless the Federal Reserve "accommodates" oil price increases with an expansionary money stock. Simple statistical analysis suggests that in the 1970s, energy price spikes tended to be accommodated (the correlation between CPI changes and energy price changes persisted for at least a year). Prior to 1972 and since 1983, energy price increases have tended to cause a spike in the CPI for a month or two, but their effect generally has been short-lived.

Real GDP and Components, 1998:IVQ[a,b]
(Final estimate)

	Change, billions of 1992 $	Percent change, last: Quarter	Percent change, last: Four quarters
Real GDP	111.2	6.0	4.3
Consumer spending	64.2	5.0	5.3
Durables	41.3	24.5	13.2
Nondurables	16.0	4.2	4.7
Services	12.4	1.7	4.0
Business fixed investment	33.2	14.6	11.9
Equipment	32.2	17.8	16.8
Structures	3.0	6.1	−0.3
Residential investment	7.6	10.0	12.6
Government spending	10.7	3.3	1.6
National defense	1.1	1.5	−1.3
Net exports	9.0	—	—
Exports	44.3	19.7	1.1
Imports	35.3	12.0	9.7
Change in business inventories	−11.5	—	—





a. Chain-weighted data in billions of 1992 dollars.
b. Components of real GDP need not add to totals because current dollar values are deflated at the most detailed level for which all required data are available.
NOTE: All data are seasonally adjusted.
SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis; and *Blue Chip Economic Indicators*, January 10 and March 10, 1999.

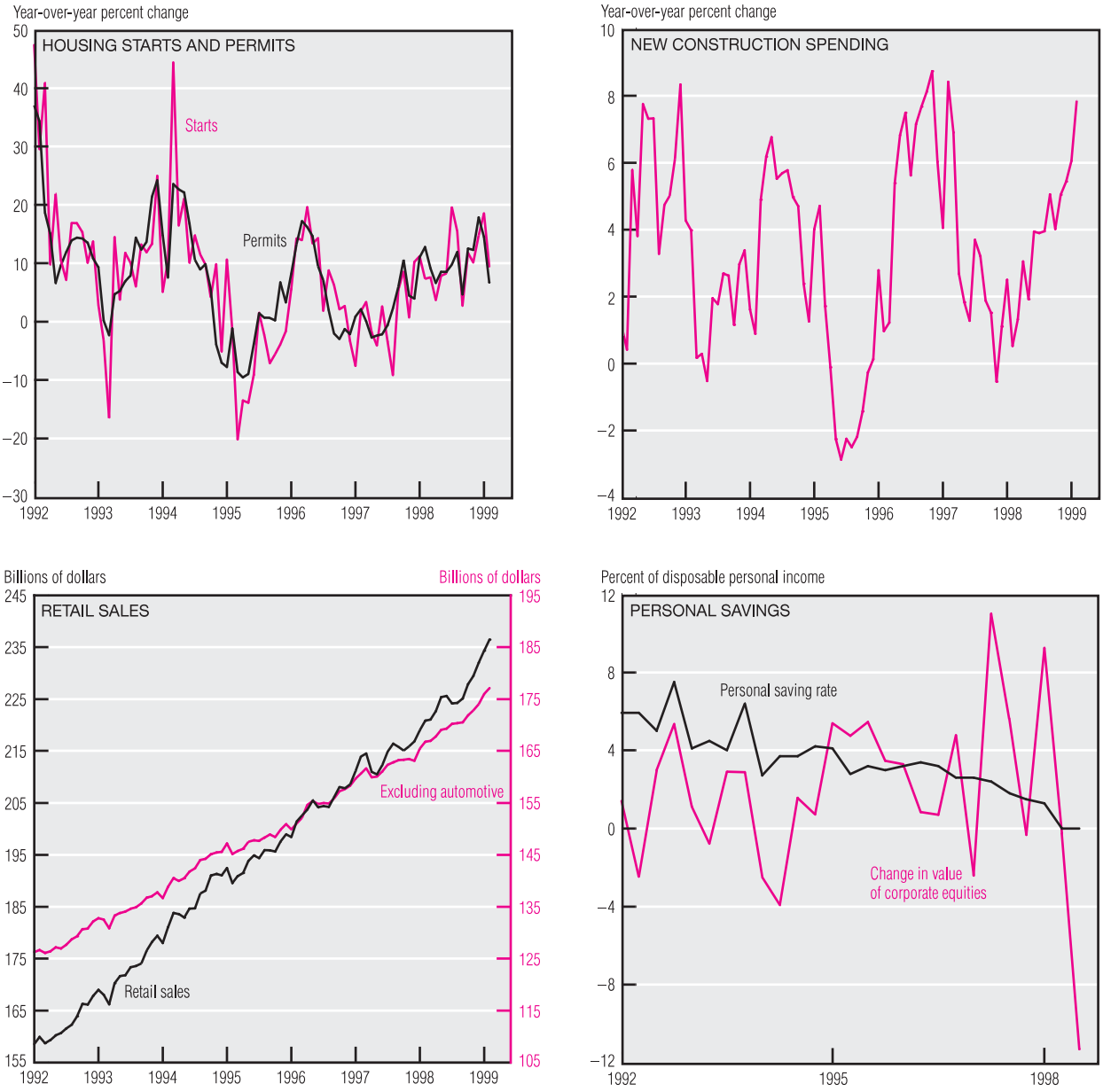
Final GDP estimates for 1998:IVQ are little changed from the preliminary estimates of a month earlier. Personal consumption expenditures, particularly on motor vehicles and parts, are a bit stronger; nonresidential fixed investment and inventories are a bit weaker. Both consumption and business and residential investment were about as strong in 1998:IVQ as in the year as a whole. Exports provided the extra force, adding about two percentage points to fourth-quarter GDP growth relative to preceding quarters. Clearly, the strong fourth-quarter growth was unexpected as recently as January. Successive GDP releases have confirmed that strength, prompting upward revisions for all four quarters of 1999.

Corporate profits (before tax with inventory valuation and capital consumption adjustment) declined at a 0.6% annual rate in 1998:IVQ, bringing them to a level 0.1% above that of a year earlier. For 1998, profits were only 0.8% higher than in 1997 and, after tax, 2.2% lower. Forecasts of 1999 corporate profits have been declining for over a year. They fell sharply after the financial market disruptions of 1998:IIIQ, but most of that effect was erased when profits forecasts were revised upward, in parallel with GDP forecasts, to a level about 1.7% above 1998's.

The desire to anticipate forthcoming GDP estimates provides employment (and enjoyment) to many analysts who track incoming data about parts of the economy. Rarely, however, do the accumulated data yield an unambiguous view of economic activity, and now is no exception. January's trade deficit showed the largest monthly increase on record. Both housing starts and housing permits fell sharply in February. Weak exports

(continued on next page)

Economic Activity (cont.)



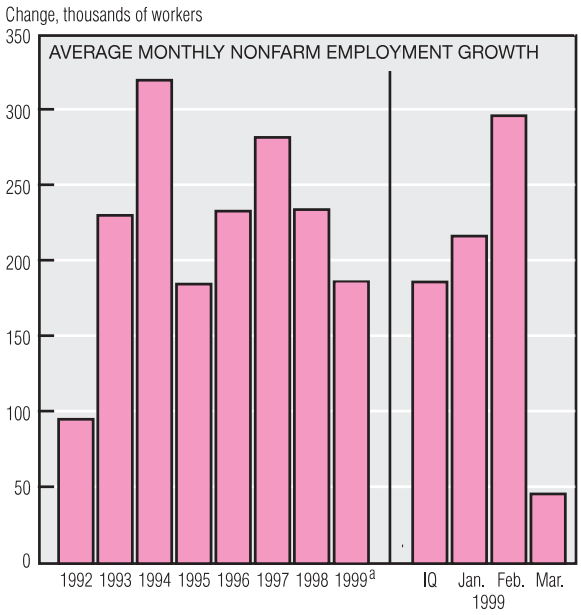
NOTE: All data are seasonally adjusted.
SOURCES: U.S. Department of Commerce, Bureau the Census and Bureau of Economic Analysis; and Board of Governors of the Federal Reserve System, "Flow of Funds Accounts of the United States," *Federal Reserve Statistical Release*, Z.1.

and housing demand might cast doubt on the strength of continued economic expansion, except that both series are notably volatile on a monthly basis. Moreover, orders for all manufactured goods, durable goods, and nondefense capital goods declined sharply in February, after several months of healthy growth.

Other recent data carry a different implication about 1999:IQ. Despite weakness in housing starts, the value of all construction spending rose 3% in February, 7.8% above a year earlier. Retail sales have grown very fast so far this year, consistent with continued growth in consumption spending, a key factor in the current economic expansion. In March, estimated January sales growth was revised up from 0.2% to 1.0%, and February sales were estimated to be up 0.9% from that higher level.

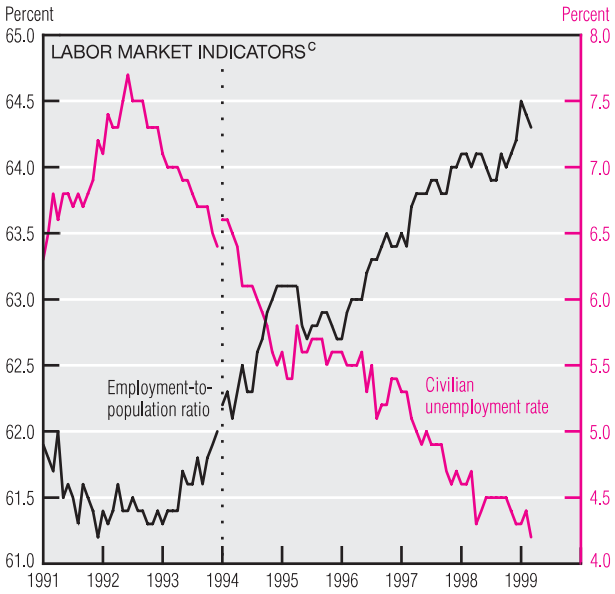
One result of strong consumption spending has been a personal saving rate of about zero. This seeming improvidence is thought to be offset by additions to household wealth through appreciation in the value of corporate stock holdings. The Federal Reserve's "Flow of Funds Accounts" release chronicles how changing stock prices affect savings through the appreciation and depreciation of personal equities holdings. An erratic upward drift in appreciation as a percent of disposable personal income has offset some of the downward drift of the personal saving rate. The effect of collapsing stock prices in 1998:IIIQ is plainly visible in a negative saving rate through appreciation, just as the stock market's more recent recovery will probably be reflected in another large positive rate of saving through appreciation.

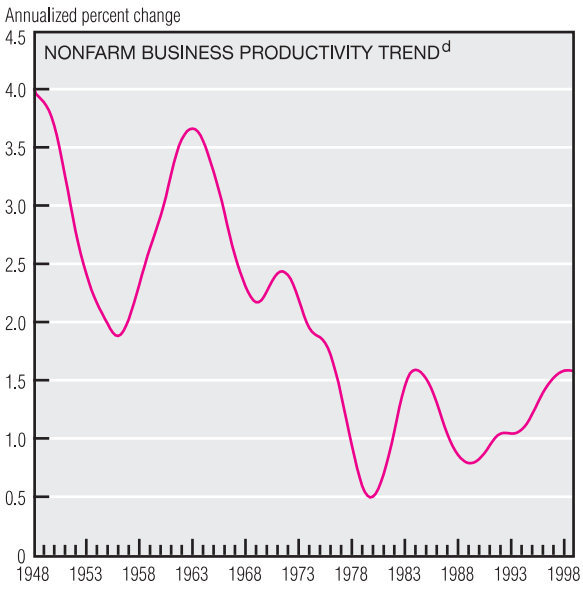
Labor Markets



Labor Market Conditions

	Average monthly change (thousands of employees)				
				1999	
	1996	1997	1998	YTD[a]	Mar.
Payroll employment	233	282	234	187	46
Goods-producing	31	42	6	−29	−89
Mining	1	1	−3	−8	−7
Construction	28	20	29	16	−47
Manufacturing	3	21	−19	−37	−35
Durable goods	10	22	−10	−22	−22
Nondurable goods	−7	−1	−9	−15	−13
Service-producing	202	240	229	216	135
Retail trade	42	34	39	38	−11
FIRE[b]	14	17	22	16	14
Services	117	142	113	105	95
Household employment	228	235	157	169	−111
	Average for period (percent)				
Civilian unemployment	5.4	4.9	4.5	4.3	4.2





a. Year to date.
b. Finance, insurance, and real estate.
c. Vertical line indicates break in data series due to survey redesign.
d. The cyclical component of the data series was removed using the Hodrick–Prescott filter.
NOTE: All data are seasonally adjusted.
SOURCE: U.S. Department of Labor, Bureau of Labor Statistics.

Labor market indicators in March were mixed, with the Bureau of Labor Statistics reporting slow employment growth and reductions in both labor force participation and the unemployment rate. Only 46,000 jobs were added to the economy for the month, the slowest increase since January 1996. Although diminished by March's paltry gain, average employment growth for the year to date remains solid (187,000).

Employment losses were prominent in goods-producing industries. In construction, jobs declined 47,000 on a seasonally adjusted basis, but without such adjustment, construction employment actually increased by 76,000. The discrepancy may be explained by the odd seasonal patterns of recent months: Large employment gains in construction through the fall and winter, combined with a colder-than-average March, led to less hiring in the month than is typical for this time of year.

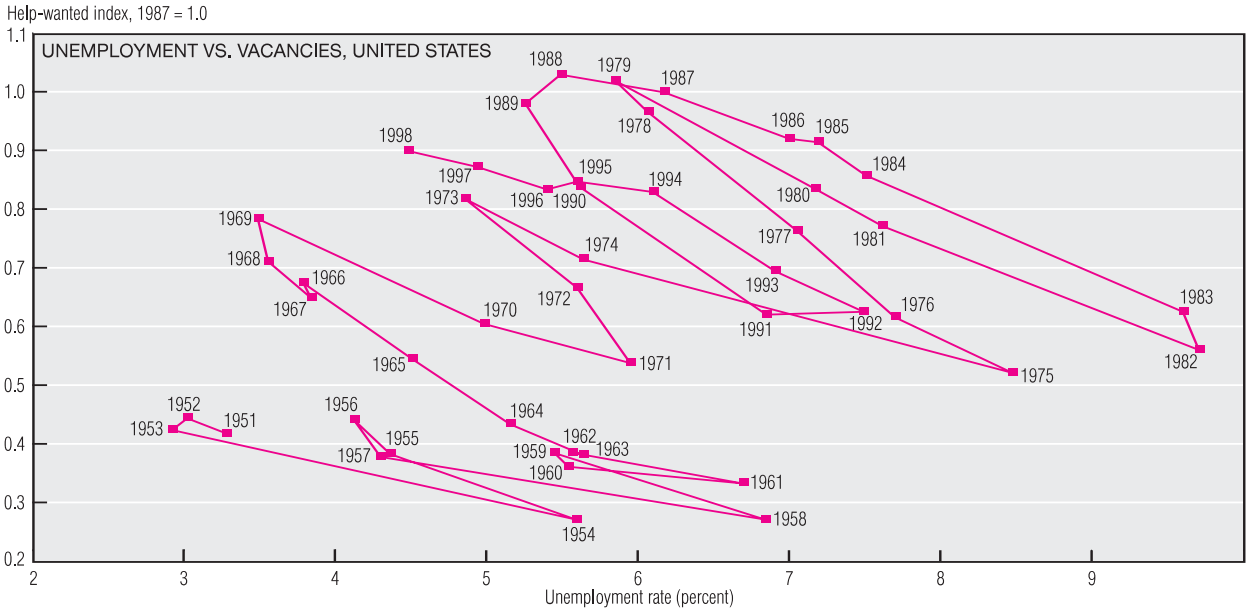
The service-producing sector experienced only modest employment gains. The finance and services components grew at a rate that was slightly below their recent trend. While retail trade as a whole posted small jobs losses, the decline in restaurant employment was substantial.

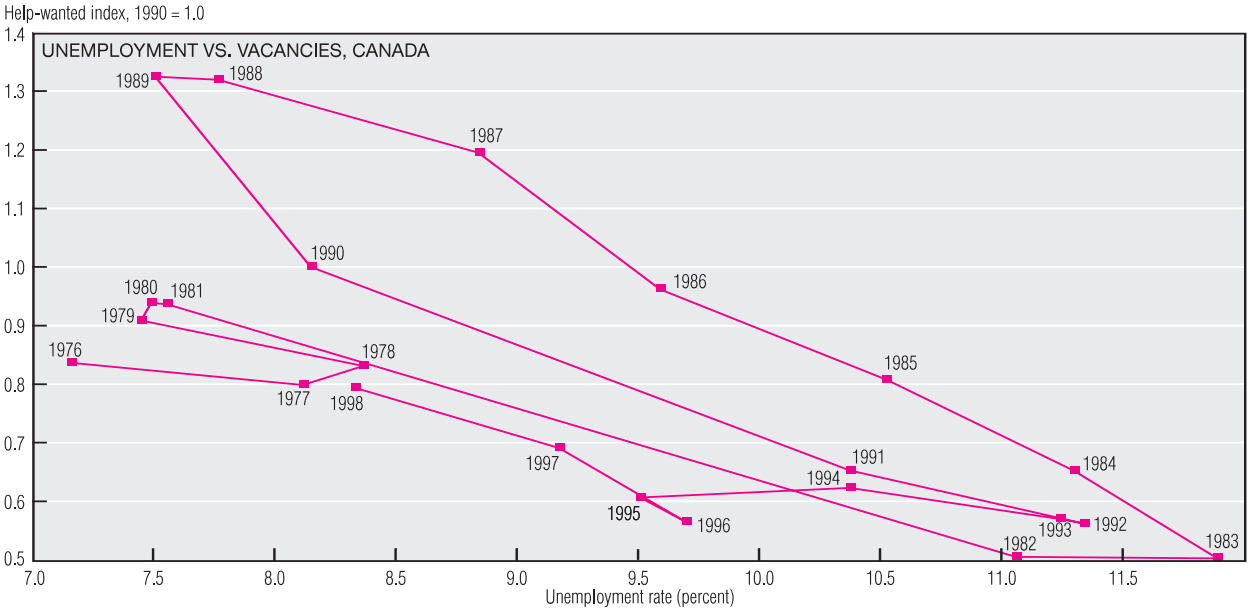
The unemployment rate hit a 29-year low of 4.2% in March. The number of unemployed fell 344,000, while the labor force (employed and unemployed) decreased 455,000. The employment-to-population ratio also dropped to 64.3%.

Nonfarm business productivity grew a strong 4.6% in 1998:IVQ. Recent increases have boosted the trend of productivity growth, but it is still far from the levels recorded before the productivity slowdown began in 1973.

(continued on next page)

Labor Markets (cont.)





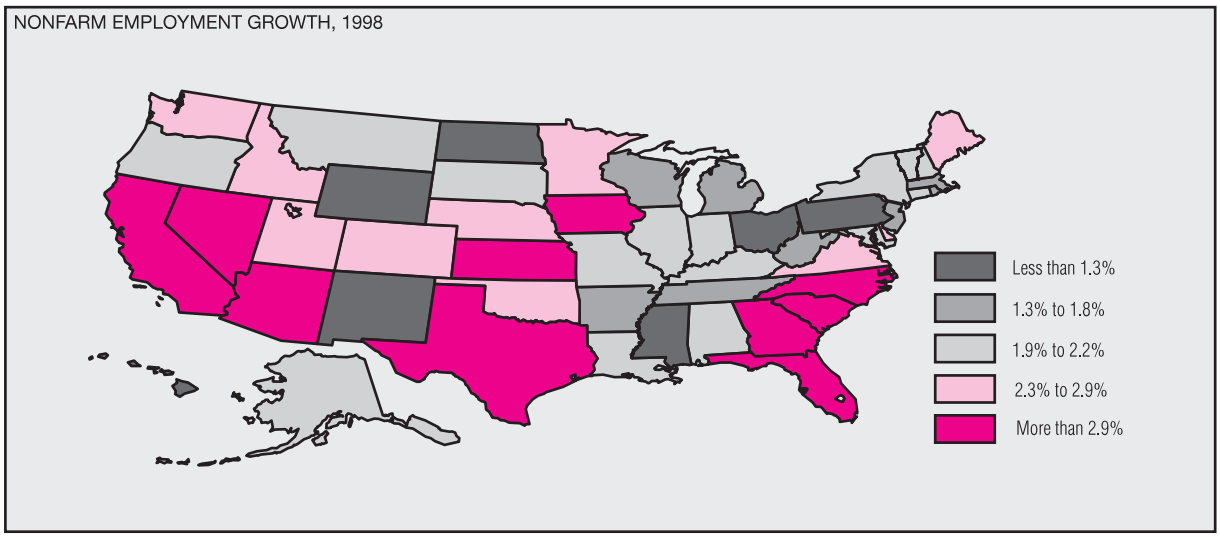
SOURCES: U.S. Department of Labor, Bureau of Labor Statistics; Statistics Canada; The Conference Board, Inc.; and Organisation for Economic Co-operation and Development.

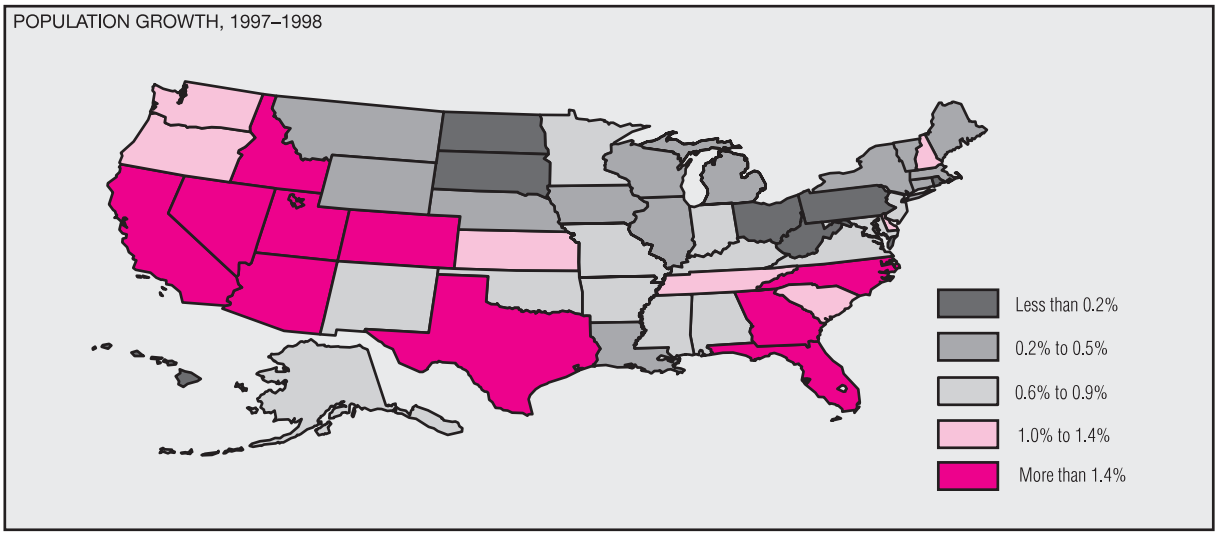
In many economic models, unemployment is generated by individuals searching for jobs but not finding them—much like what happens in the actual labor market. Obviously, the rate at which jobs are found depends on how many individuals are searching and how many vacancies are available: The more vacancies there are (holding other factors constant), the lower the unemployment rate.

The "Beveridge curve" plots unemployment rates against job vacancies. As the charts above show, this relationship has been unstable in the U.S. economy, as it has been elsewhere. Over short time spans, the Beveridge curve appears as a downward-sloping line. In the 1950s, for example, both unemployment and vacancies were low; nevertheless, as vacancies decreased, the unemployment rate rose. Compare this to the 1980s, when both vacancies and the unemployment rate were much higher. Again, as vacancies declined, unemployment rose. The Beveridge curve shifted out significantly.

There are many explanations for a shifting Beveridge curve. For instance, changes in the generosity of the unemployment insurance system might affect the tolerance of workers for unemployment at a given level of vacancies. In the U.S., the labor market tends to undergo substantial changes over relatively short periods of time. Compare 1969 to 1981: With roughly the same number of vacancies, the unemployment rate in 1981 was more than double that in 1969. Since the 1980s, however, the curve has shifted back toward the origin. One implication of this shift is that the natural rate of unemployment (loosely speaking, the unemployment rate we expect in the long run) is much lower today than it was during the late 1980s.

Regional Conditions





SOURCES: U.S. Department of Labor, Bureau of Labor Statistics; and U.S. Department of Commerce, Bureau of the Census.

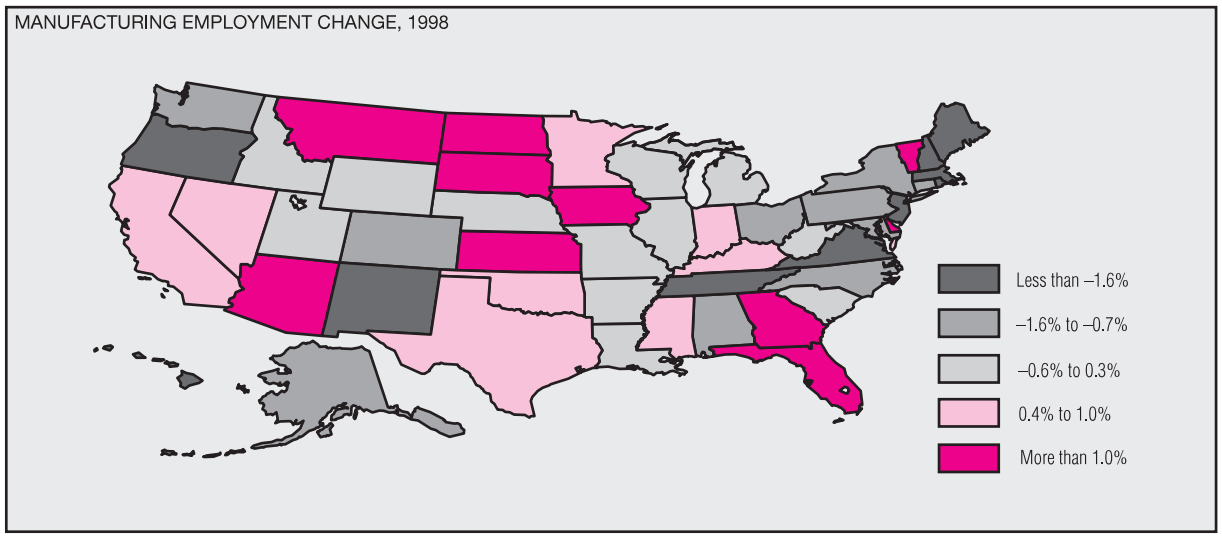
In 1998, U.S. nonfarm employment grew 2.3%, though this growth was not spread evenly throughout the country. The District of Columbia and Hawaii, for example, actually experienced declining employment in 1998; Hawaii's economy, being closely tied to Japan's, was adversely affected by its woes. Regionally, the West and the South showed the strongest rates of employment gain, led by Florida (4.2% annually) and Nevada (4.1%).

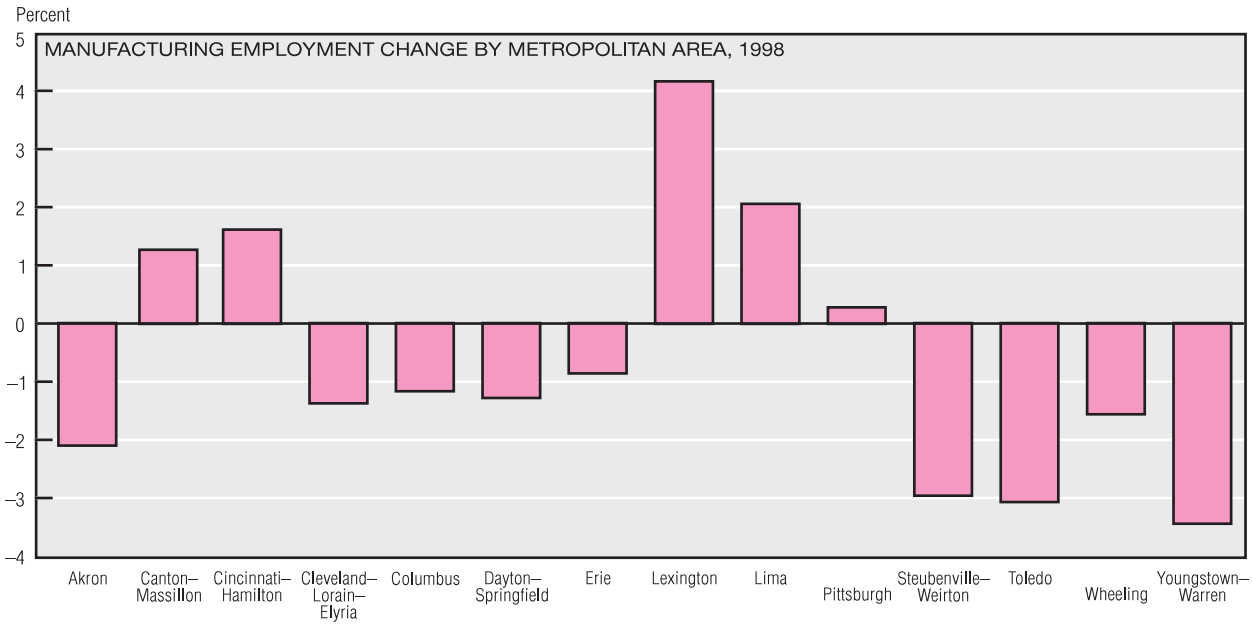
The Fourth District's employment growth was slightly weaker than that of the U.S. as a whole. Employment increased 2.1% in Kentucky, close to the national average of 2.3%; however, it grew only 1.4% in West Virginia, 1.2% in Pennsylvania, and 1.1% in Ohio.

Some of this difference relates to changes in population: In 1998, patterns of population growth and employment growth were strikingly similar. States with faster-growing populations tended to have higher levels of employment growth. Recently, the West and the South have experienced both the highest population growth and the highest employment growth. Nevada, which had the nation's second-highest rate of employment growth in 1998, also had the highest population growth (4.1% between 1997 and 1998). A notable exception to this pattern is Iowa, which had one of the highest rates of employment growth (3.0%), but relatively weak population growth (0.3%).

(continued on next page)

Regional Conditions (cont.)





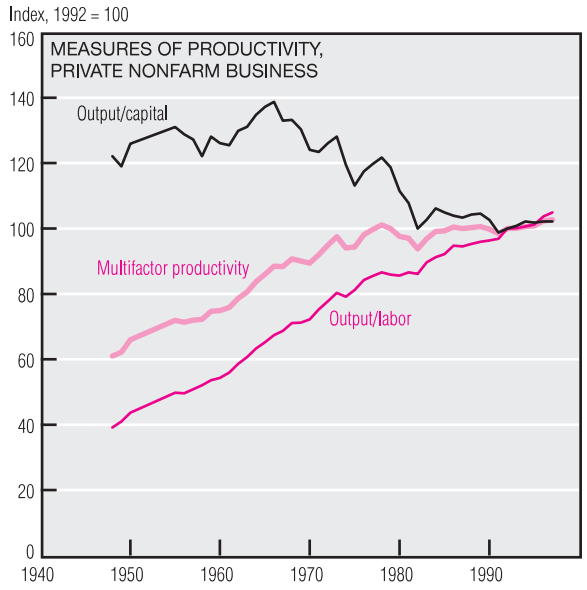
SOURCE: U.S. Department of Labor, Bureau of Labor Statistics.

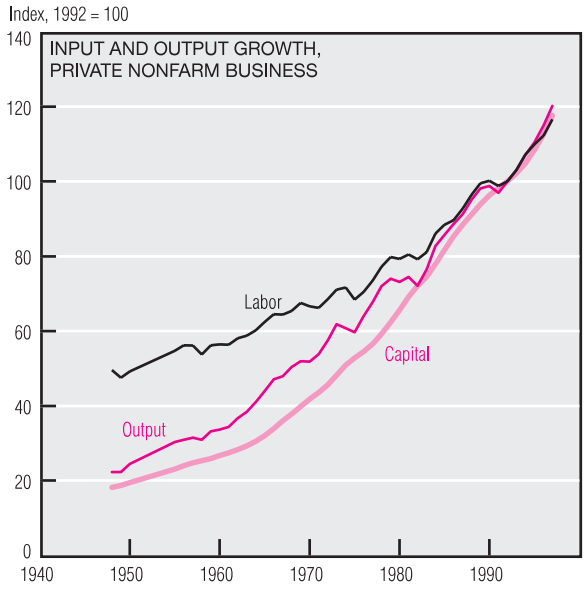
The Fourth District's performance was similar to the nation's in both employment growth and population growth. With the exception of Kentucky, population growth in Fourth District states was stagnant. Kentucky's population grew 0.7% between 1997 and 1998, slightly below the national average of 1.0%. Pennsylvania and West Virginia declined slightly at rates of 0.1% and 0.2%, while Ohio rose only 0.1%.

Manufacturing employment continued to drop across the U.S., declining 1.2% in 1998. Despite the overall decline, almost half the states actually experienced increases in manufacturing employment, with four states posting growth rates higher than 2%. Manufacturing employment rose fastest in Iowa (at an annual rate of 2.9%) and fell most precipitously in New Mexico (at an annual rate of 5.0%). Fourth District states fared somewhat better than the national average: Manufacturing employment grew 0.5% in Kentucky, while it fell 0.5% in West Virginia and 0.7% in both Pennsylvania and Ohio.

The growth rates of manufacturing employment varied greatly across the Fourth District in 1998, though most metropolitan statistical areas (MSAs) showed declines. However, five MSAs did see increases in manufacturing employment in 1998; the largest gains were in Lexington, which posted a growth rate of 4.2%.

Multifactor Productivity Growth





Multifactor Productivity, Private Nonfarm Business[a]
(Average annual growth rate, percent)

	1948–1997	1948–1973	1973–1979	1979–1990	1990–1997
Output per hour, all persons	2.0	2.9	1.1	1.0	1.2
Contribution of capital intensity[b]	0.7	0.8	0.6	0.7	0.4
Contribution of labor composition[c]	0.2	0.1	0	0.3	0.4
Multifactor productivity[d]	1.1	1.9	0.4	0	0.4
Contribution of R&D to multifactor productivity	0.2	0.2	0.1	0.2	0.2

a. Excludes government enterprises. The sum of multifactor productivity and the contributions may not equal output per hour due to independent rounding.
b. Growth rate of capital services per hour times capital's share of current dollar costs.
c. Growth rate of labor composition (the growth rate of labor input less the growth rate of hours of all persons) times labor's share of current dollar costs.
d. Output per unit of combined labor and capital inputs.
SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Multifactor Productivity Trends,* 1997.

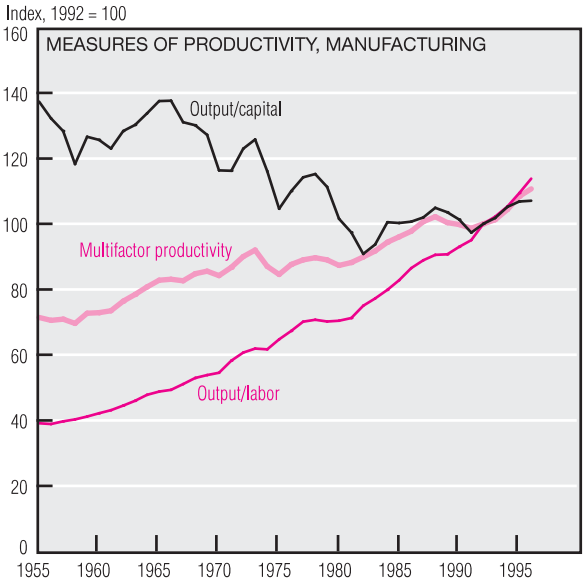
With the unemployment rate near its historic low and the labor force expected to grow only about 1% in the near future, increased productivity could be the key to preserving the U.S. economy's robust, noninflationary GDP growth. Labor productivity (output per hour) is the statistic most often cited because it is easily calculated and is available quarterly. It is also the best measure of the potential reward to labor and average living standards. However, labor productivity is not the best measure of technical change because it can grow for other reasons, such as increases in the ratio of capital to labor (called capital deepening) or improvements in labor quality.

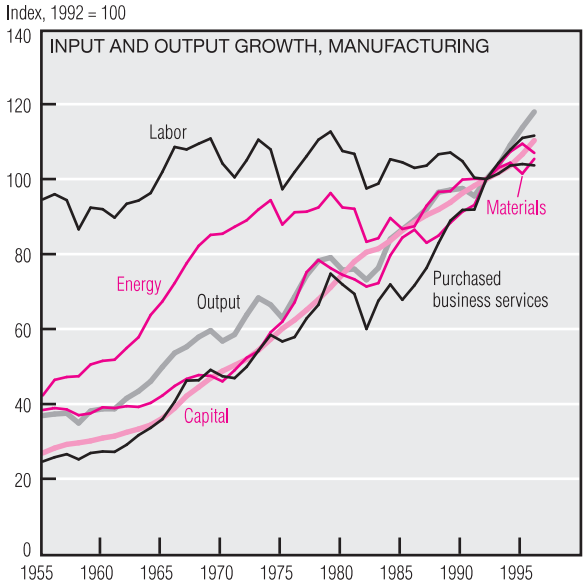
Technical change is the ability to increase the output produced from a given bundle of inputs; it results from improvements in the knowledge available to firms. The most widely reported measures of technical change are derived from the Bureau of Labor Statistics' multifactor productivity (MFP) indexes. In other contexts, MFP is termed total factor productivity or the Solow residual. It is less widely known and reported than labor productivity because it is only available annually and is released biennially. The reason for the relative infrequency and the delay in reporting MFP is that its data needs are high. Labor productivity requires only estimates of output and labor input, both of which are calculated quarterly. In addition to these, MFP requires estimates of capital and, for more detailed manufacturing indexes, usage estimates for energy, materials, and business services.

With these higher data acquisition costs comes a measure of technological change that offers strong theoretical advantages. Under some common macroeconomic assumptions (mainly constant returns to scale, profit-maximizing firms, and competitive input markets), MFP

(continued on next page)

Multifactor Productivity Growth (cont.)





Multifactor Productivity, Manufacturing
(Average annual growth rate, percent)

	1949–1996	1949–1973	1973–1979	1979–1990	1990–1996	1994–1995	1995–1996
Multifactor productivity[a]	1.2	1.5	–0.5	1.0	1.7	3.9	2.1
Output per hour, all persons	2.6	2.6	2.1	2.6	3.4	3.9	4.1
Output per unit, capital services	–0.4	–0.1	–2.0	–0.9	0.9	1.5	0.2
Sectoral output	3.2	4.0	2.5	1.9	3.2	4.3	3.7

a. Output per unit of combined hours, capital, energy, materials.
SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Multifactor Productivity Trends,* 1997.

provides an extremely close approximation of the actual shifts that technological change causes in the production function over time. This is a neat trick, accomplished without the even more laborious process of estimating production functions for the two time periods being compared.

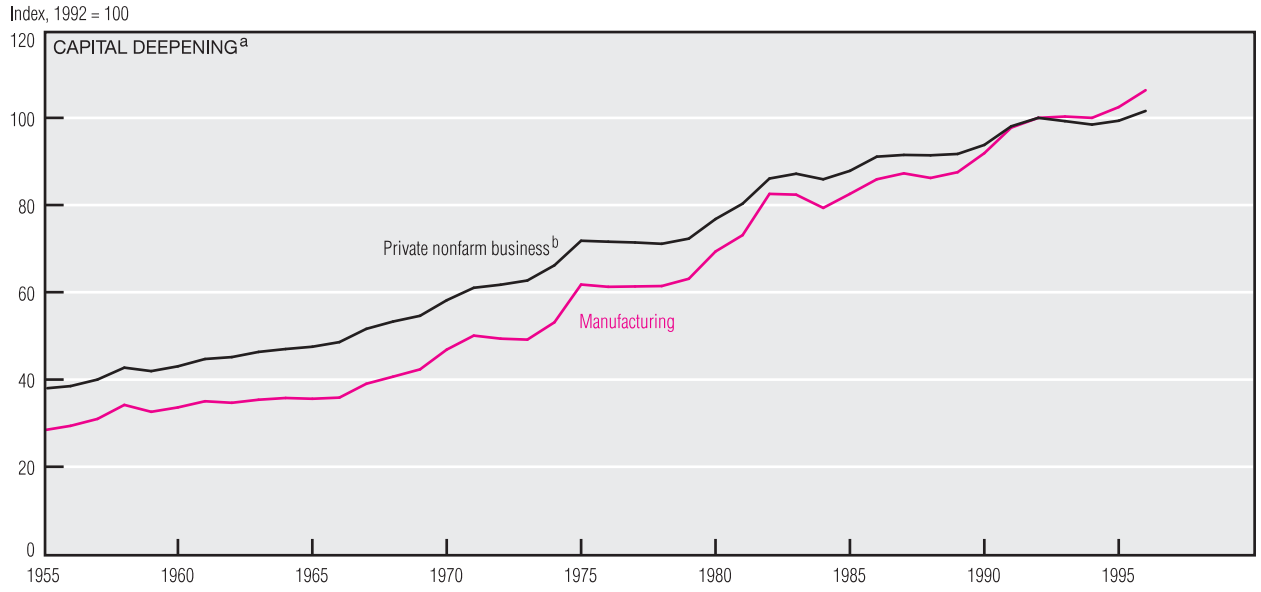
Output per hour in the private nonfarm business sector can be apportioned according to the contributions of capital deepening, labor composition, and MFP ("all other"). Both labor productivity and MFP have risen sharply over the last 50 years. Capital deepening accounts for about one-third of labor productivity growth in the 1990s and has allowed labor productivity to outpace MFP significantly. Labor quality improvements (in the form of increased educational attainment and work experience) account for another third, and MFP accounts for the remaining third.

While MFP for this sector grew at an average annual rate of 0.4% during the 1990s, after experiencing no net growth from 1979 to 1990, it has yet to approach the 1.9% growth of the golden age of productivity (1949–73). R&D spending's direct effect on MFP has averaged about 0.2% annually since 1948, only dropping to 0.1% during the 1973–79 period.

A similar pattern emerges in the narrower manufacturing sector, where the Bureau of Labor Statistics uses a finer set of inputs (energy, nonenergy materials, and purchased business services, in addition to labor and capital) to construct MFP. Although manufacturing repeats the same basic story, there are important quantitative differences. First, unlike private nonfarm business, growth in manufacturing MFP and labor productivity in the 1990s have actually surpassed their levels of 1949–73. Better still, capital productivity has been growing at a robust 0.9% annually, easily improving on the 0.1%

(continued on next page)

Multifactor Productivity Growth (cont.)



Multifactor Productivity, Manufacturing Industries[c]
(Average annual growth rate, percent)

	1949–1996	1949–1973	1973–1979	1979–1996	1990–1996
Total	1.2	1.5	–0.5	1.0	1.7
Nondurable	0.7	1.4	–0.5	0.3	0.3
Durable	1.5	1.5	–0.5	1.6	3.0
Primary metals	0.2	0.4	–2.1	0.2	1.6
Fabricated metal products	0.4	0.5	–0.9	0.5	1.0
Industrial and commercial machinery	1.6	0.7	–0.2	2.9	4.6
Electrical and electronic machinery	2.9	2.0	1.1	2.6	8.9
Transportation equipment	0.7	1.5	–0.5	0.1	0

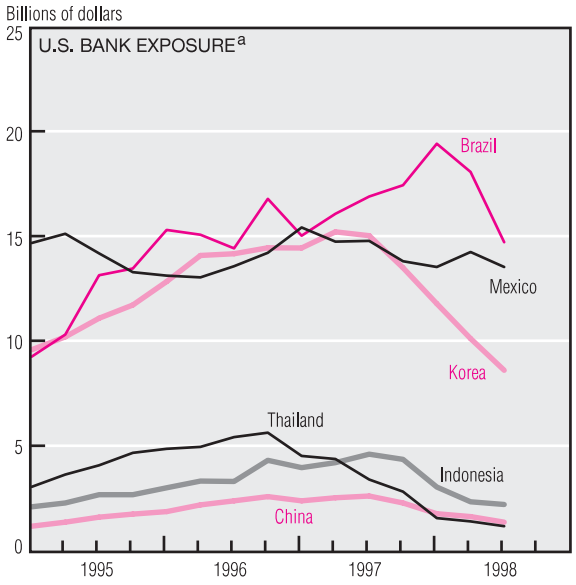
a. Capital per worker.
b. Excludes government enterprises.
c. Industry measures of multifactor productivity are not directly comparable to measures for aggregate manufacturing because industry measures exclude transactions only within the specific industry, while aggregate manufacturing measures also exclude transactions among all manufacturing industries.
SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Multifactor Productivity Trends,* 1997.

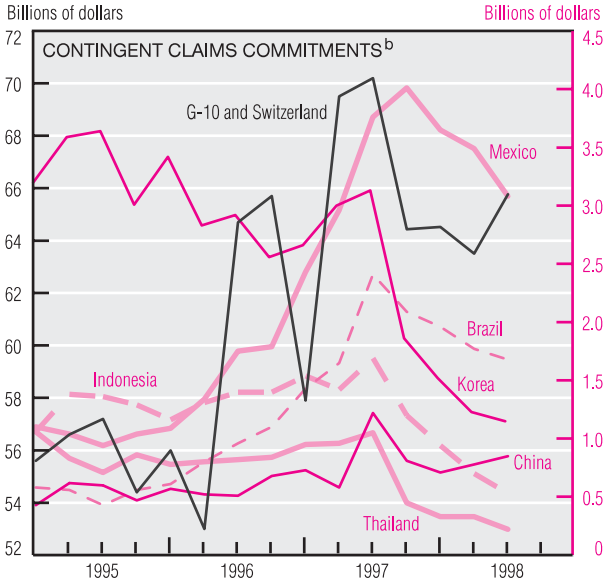
decline that manufacturing experienced in the golden age of productivity. Finally, unlike the 1949–73 period, when labor measured in hours increased 1.4%, the 1990s have seen a 0.2% decline in workhours.

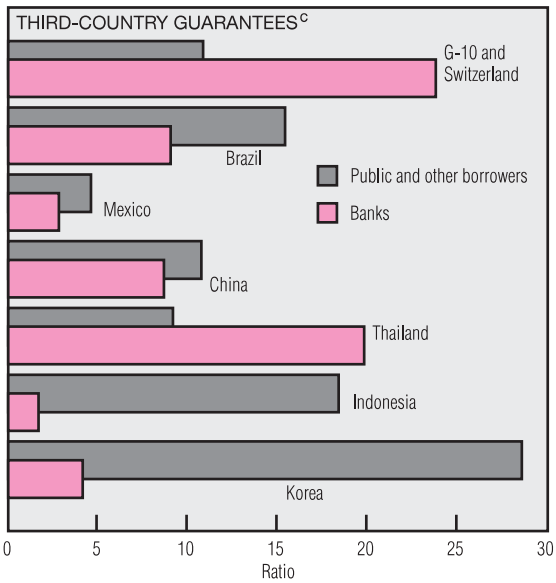
The Bureau of Labor Statistics' MFP estimates for specific industries show that performance varies significantly across manufacturing subgroups. Durable manufacturing's recent 3.0% annual growth rate is double the rate recorded in the golden age of productivity, but corresponding figures for nondurable manufacturing are only 0.3% and 1.4%, respectively. Most nondurable manufacturing industries have underperformed the MFP growth rates achieved in the 1949–73 period, but for a few sectors of durable manufacturing (especially commercial machinery and electrical and electronic machinery) the MFP growth of the 1990s far exceeds that of the golden age.

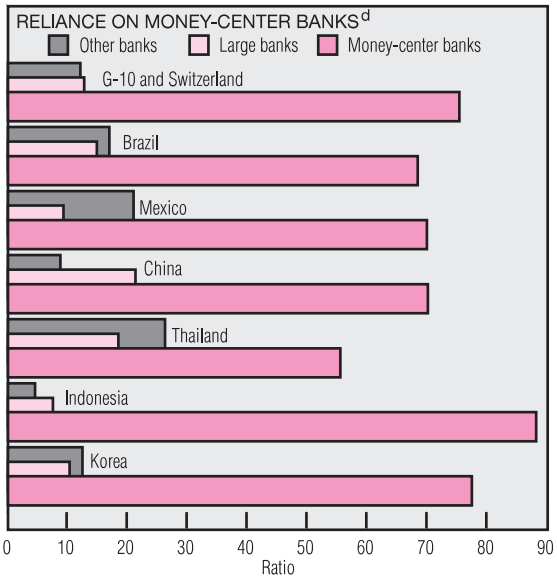
Looking ahead, it is useful to interpret MFP as a cost-share weighted geometric average of individual factor productivities. Given that labor generally accounts for around 65%–70% of costs (depending on the sector) and labor productivity has remained robust for the last couple of years, MFP growth should remain strong as well. Of course, one should remember that the U.S. economy has lately found itself in the midst of a capital investment boom, with the growth rate of capital services accelerating to 4.4%, its highest since 1984. Thus, capital deepening could conceivably be driving a slightly larger share of labor productivity, cutting into the share that MFP would otherwise be providing.

International Developments









a. Total amount owed by borrower country after adjustment for guarantees and external borrowing (except derivative products).
b. Commitments of cross-border and nonlocal-currency contingent claims after adjustment for guarantees.
c. Ratio of guarantees for third-country borrowing from U.S. banks to the total amount owed to U.S. banks.
d. Share of the total amount owed to U.S. banks after adjustment for guarantees and external borrowing (except derivative products).
SOURCE: Federal Financial Institutions Examination Council, *Country Exposure Lending Survey,* various issues.

Data for 1998:IIIQ reveal a continuing decline in U.S. banks' exposure to countries that have recently experienced significant economic and financial turmoil. Pullbacks from Thailand and South Korea began in 1997, before the worst of the Asian crises. The pullback from Mexico is surprising, given that country's strong economic growth, but is consistent with the depreciation of the peso. These declines are troublesome in light of prescriptions for recovery that emphasize the need for increased foreign-bank involvement to enhance overseas banks' risk management.

Use of contingent claims commitments (derivatives) also declined for all but the industrial countries and China. Derivatives, which include swaps, options, and futures contracts, are usually viewed as tools for managing risk associated with both currency and interest-rate volatility. With less exposure to manage, lenders might suppose that such tools would become less useful, but alterations in exchange-rate regimes could have complex effects on the need for derivatives: Abandoning an exchange-rate peg, for example, could increase currency risk while removing the central bank's obligation to increase interest rates in order to defend the peg.

Indirect exposure through third-country credits continues to be dominated by nonbank guarantees for all countries except Thailand and the industrial nations.

Global reliance on money-center banks has increased over the past few years. This may reflect either the heavy losses suffered by other large banks or economies of scale in the provision of international banking services.

The Exchange Stabilization Fund

Exchange Stabilization Fund
(Millions of dollars as of September 30, 1998)

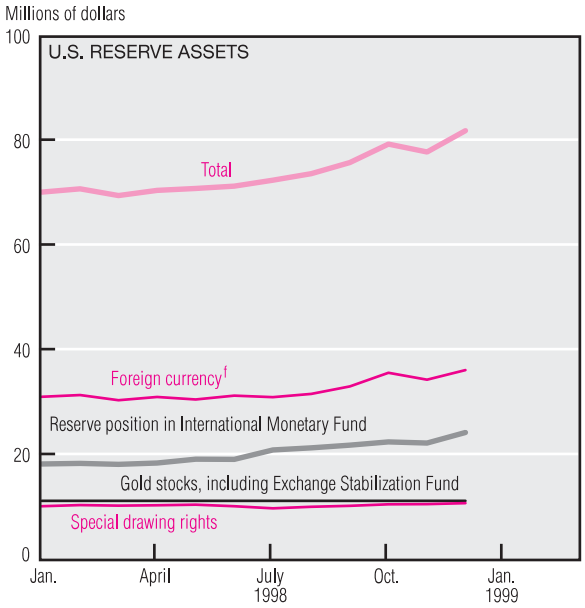
Assets		Liabilities	
U.S. Treasury securities	15,981	Accounts payable	48
Special drawing rights[a]	10,106	Special drawing rights certificate	9,200
Foreign exchange[b]	—	Special drawing rights allocations	6,719
Deutschmarks	6,423	Total liabilities	15,967
Japanese yen	8,106		
Accounts receivable	122	Total capital	24,771
Total assets	40,738	Total liabilities and capital	40,738

U.S. Monetary Authorities' Foreign Currency Holdings
(Millions of dollars, based on exchange rates for 1998:IVQ)

	Balance as of December 31, 1998[a]
Federal Reserve	
Deutschmarks	12,824
Japanese yen	6,847
Total	19,671
Exchange Stabilization Fund	
Deutschmarks	6,494
Japanese yen	9,799
Total	16,294

Reciprocal Currency Arrangements
(Millions of dollars)

	September 30, 1998	December 31, 1998
Federal Reserve		
European Central Bank members[c]	12,750	—
Other banks[d]	12,800	—
Bank of Canada	2,000	2,000
Bank of Mexico	3,000	3,000
Bank for International Settlements[e]	1,850	—
Total	32,400	5,000
Exchange Stabilization Fund		
Deutsche Bundesbank	1,000	—
Bank of Mexico	3,000	3,000
Total	4,000	3,000



a. Based on a weighted average of exchange rates for selected member countries. U.S. SDR holdings and allocations are valued on this basis beginning July 1974.
b. Excludes foreign exchange transactions for future and spot delivery.
c. Includes Austrian National Bank, National Bank of Belgium, Bank of France, Deutsche Bundesbank, Bank of Italy, and Netherlands Bank.
d. Includes National Bank of Denmark, Bank of England, Bank of Japan, Bank of Norway, Bank of Sweden, and Swiss National Bank.
e. Includes dollars against Swiss francs and dollars against other authorized European currencies.
f. Valued at current market exchange rate.
SOURCES: *Treasury Bulletin,* December 1998; and *Federal Reserve Bulletin,* March 1999.

The Exchange Stabilization Fund, operated by the U.S. Secretary of the Treasury with the President's approval, is a major means of giving financial assistance to foreign countries. As of September 30, 1998, the ESF's total assets were $40 billion. However, of its $10 billion special drawing rights (SDRs), $9.2 billion have already been monetized (converted into dollars) by the Federal Reserve. Moreover, the ESF's balance sheet does not reflect commitments to provide future funding.

The ESF is also used to intervene in foreign exchange markets, with the Fed almost always intervening in the same amount and direction. Like the Fed, the ESF maintains a portfolio of foreign-currency-denominated assets, usually government securities, which can be sold to purchase dollars for supporting a currency's international value. U.S. authorities can obtain additional foreign currencies through reciprocal currency arrangements (swap lines) maintained with some countries.

The size of these swap lines has recently decreased, partly due to the creation of the European Central Bank and the euro's introduction. It is unclear how these developments will affect demand for official U.S. holdings of foreign currencies.

With the establishment of the International Monetary Fund (IMF), U.S. reserve assets came to include SDRs and the nation's reserve position in the IMF. That reserve position reflects payment of our IMF subscription in reserve assets, the IMF's use of our currency, and our position under various IMF-sponsored borrowing arrangements.