

APPENDIX

FOMC NOTES - PRF  
JANUARY 30-31, 1996

Mr. Chairman:

Since your last meeting, the dollar has appreciated by about two and half percent against the German mark and by more than four and half percent against the Japanese yen. Although the general market view is that the U.S. economy is slowing somewhat, the dollar has benefitted from the perception that foreign economies are slowing more rapidly, with the exception of Japan.

In domestic interest-rate markets, expectations are that short-term rates will be coming down over the course of the year. Bill rates, Euro-dollar future rates, and the Fed Funds futures contracts all suggest that short-term rates will be lower this summer than they are today. However, the February Fed Funds futures contract suggests a 50-50 probability of a 25 basis point ease at this meeting. Thus, while the market clearly expects easing to come, the Committee is seen as having some flexibility at this time.

In contrast, foreign central banks are seen as having less flexibility. Since your last meeting, official or money market rates have been lowered by the Bank of Canada, the Bank of England, the Bank of France and the Bundesbank, as well as by other continental central banks. This principally reflects the markedly weaker outlook for European economies, compared to what market participants had been anticipating at the end of last year. As a result, the magnitude of the shift in expectations towards accommodative policies has been greater in Europe than it has here in the U.S., and the dollar has been the beneficiary.

The dollar has also appreciated against the Japanese yen, where the story is different. While the Bank of Japan is still maintaining an accommodative stance, holding the overnight call money rate below 50 basis points, short-term rates are seen as rising this year. This reflects the view that the economy may be reviving and that later this year the Bank of Japan could begin to raise rates.

Market sentiment toward the dollar clearly benefitted from the significant decline in our bilateral trade deficit with Japan. The dollar has also benefitted from the perception that a strengthening Japanese economy will -- at least initially -- lead to a weaker yen, through increased imports of goods and increased outflows of investment.

The upward movement in the price of gold and the bumpy behavior of our bond market have been a little more difficult to understand.

The general view of the gold market is that demand for gold, both industrial and for jewelry, has been growing more rapidly than supply from new production. Prices have been held steady for the last few years by central banks sales. But market participants now perceive these selling programs to be winding down. The spike in lease rates, at the end of last year, alerted investors to the basic demand-supply imbalance and contrasted with the exceptionally low yields now available in some countries, notably Japan and Switzerland.

With the backdrop, I am inclined to think of the recent, sudden uptick in prices as the result of something of a speculative push. Also, full disclosure requires me to add that I view the signal-to-noise ratio of gold price movements as a good bit worse than those of the fairly-noisy interest rate and exchange rate markets. Moreover, gold prices are off by two and half dollars today.

To understand the bumpiness in the bond market, I think it is helpful to take a step back and see that there are at least three distinct dances going on at the same time.

First, there is the normal back-and-forth shuffle of market participants looking at the economic data and trying to anticipate the Committee's actions. Since your last meeting, this has been complicated by the rescheduling of data collection and releases.

Second, in reaction to fiscal politics, the market has developed a three-step: two small steps forward, one big step back. In the first step, when prospects for a genuine seven-year plan to balance the budget seem most promising, then buy the long-end. Second, when the politics of a seven-year plan is at loggerheads and this looks likely to produce an impasse on current outlays, then buy the short-end -- on expectations for current fiscal tightness. Third, when it appears that the politicians are going to agree to a muddy compromise, with little real, fiscal discipline in the short- or long-run, then sell the long-end first.

Finally, the interaction of foreign and domestic investors as added another spin: something of a "do-si-do". Foreign investors, turned off by the histrionics here in Washington, have generally been unable to understand the nuances of our fiscal politics and have, therefore, never gotten the hang of the fiscal-three-step. However, since the start of the year, there

has been an increasing awareness among foreign investors that U.S. fiscal performance and prospects are better than they had thought and better than those of other industrial countries.

This has been particularly aided, first, by the announcement of worse-than-expected German fiscal performance -- outside of the Maastricht criteria in 1995 and officially forecast to be so again in 1996 -- and, second, by the realization of just how open-ended the Japanese government's liability for the banking system is likely to be, on top of what are already large Japanese fiscal deficits. So, while U.S. fiscal policy is not yet seen overseas as a positive for U.S. assets or the dollar, it is decreasingly seen as a negative.

Last week, in the data release shuffle, a number of market participants sold out their positions on the view that, on current evidence, the bond market had priced in their view of the economy and there was little to be gained by holding their positions any longer. At the same time, other domestically oriented market participants became less optimistic about the prospects for fiscal consolidation, compared to what they had been hoping for. However, foreign investors were becoming less pessimistic about the U.S. fiscal outlook, compared to what they now see elsewhere in the world. And so it goes -- back-and-forth price movements caused both within each of the three dances as well as from their interaction.

Turning to our operations, we had no foreign exchange intervention operations during the period. But, as Secretary Rubin announced on Friday, the ESF and the System were each repaid 650 million dollars by the Mexican authorities, completely repaying the outstanding amounts on the short-term swaps.

In the funds market, we have been both adding and draining reserves, consistent with the seasonal behavior of currency and required reserves. Demand for excess reserves has been elevated, first around year-end and again as a consequence of the severe winter weather. The storms both created liquidity strains for some institutions and high levels of float that other institutions were not able to take advantage of. With all this going on, the funds rate was a bit more volatile than normal.

In the maintenance period just now ending, we are facing the lowest level of required operating balances in five years, largely the consequence of the cumulative effect of sweep programs adopted over the last year. Banks appear to have wanted to hold somewhat higher levels of excess reserves, which we have been allowing for, and at least so far, we have not experienced the extreme intraday volatility that occurred when balances were last this low in 1991.

Mr. Chairman, I will need the Committee's votes to ratify our foreign and domestic operations. I would be happy to answer any questions.

Michael J. Prell  
January 30, 1996

FOMC Chart Show Presentation -- Introduction

We'll be devoting the bulk of our presentation to some major analytical issues involved in assessing the trends in the economy. But, before we get to that, I want to give you a brief update on recent developments.

As you know, we've been hampered in our work by the delays in data availability. In gauging the growth of activity in the fourth quarter, we had to rely even more than usual on the labor market statistics. Key in this regard was the 2 percent, annual rate, rise in production worker hours, the red line in the upper left panel. If we were to tack on a trend productivity increase, it would imply that GDP might have risen in the neighborhood of 3 percent last quarter. But, as you can see, there is considerable variability in this relationship, and in light of the other available evidence, we decided to put GDP growth at about the 2 percent mark.

Although this is a respectable number, we did sense that the economy exited 1995 on a weak note. Among other things, initial claims for unemployment insurance, shown at the right, have been rather high recently.

On the spending side, the most important statistics we had were for consumer purchases--and they were sketchy. This morning, a new piece of information was added--the Census advance estimates of retail sales in December. Non-auto sales, charted in the middle left panel, rose only two-tenths of a percent, in nominal terms, last month--and that was from a downward-revised level for November. In sum, it was a weak report. Taken at face value, even when combined with the reported year-end spurt in sales of light vehicles, shown at

the right, these new figures would lower our estimate of fourth-quarter growth in real consumer outlays from 1.8 percent to 1.4 percent. On top of that negative news, the Conference Board Consumer Confidence Index, released this morning, plummeted 12 points in January. This has been a lousy month in many ways, and the volatility of the Conference Board index suggests that a movement like the latest should be taken with a grain of salt; however, it does tend to reinforce the impression of an increased pessimism among consumers that might be damping demand.

There could be a more disturbing message in these numbers that will become apparent as additional data roll in, but at this point we see them mainly as reinforcing our conjecture about the current dynamics of the economy--and of the manufacturing sector in particular. The crux of our short-term forecast is that businesses in a variety of sectors encountered weaker sales trends in the past few months and decided that they had to take steps to curb the accumulation of inventories. As you can see at the bottom left, the aggregate ratio of inventories to sales rose in 1994 and early 1995, partly as firms tried to ensure that they had adequate materials or merchandise on hand in a tighter supply environment. But, as demand moderated and vendor performance improved, they began to trim orders--a tendency that, according to the survey results plotted at the right, became quite significant of late. Consequently, we are expecting that factory output will decline this month. But, unless the consumer demand has hit a sinkhole, rather than just a minor pothole, this inventory correction should be largely completed soon and production should pick up.

This brings me to the summary of our forecast, in chart 2. As you know, we expect that real GDP growth will dip below 1 percent in the current quarter but then run around 2 percent through 1997. Because this approximates the estimated long-run trend, the unemployment rate is projected to remain close to the 5.6 per cent level that has prevailed for a while now. We view this as implying some pressure on labor resources, and so we think that there will be some tendency for inflation to creep upward. This trend is so slight, though, that it may well be difficult to discern in the data, given normal statistical noise and various short-run economic factors that Dave will be discussing. However, as indicated in the bottom right panel, the overall CPI is expected to rise a bit faster in the next two years than it has in the past couple.

Our forecast is, as you know, based on the assumption that the federal funds rate will remain in the vicinity of 5-1/2 percent at least well into 1997. Because the markets currently are banking on further easing actions, we've projected that long-term rates will back up a few tenths of a percent.

We recognize that there is a considerable body of opinion that maintenance of the prevailing funds rate over the next couple of years would take a greater toll of activity. Chart 3 is intended to serve as the backdrop for a few observations about this issue. I've plotted in the top panel measures of real rates of interest, using lagged changes in the core CPI to proxy for inflation expectations. As you can see, the real bill rate has not changed greatly in the past year, but the real note rate has come down appreciably. Both of these rates are above their long-term averages, but there have been substantial periods in the 1980s and 1990s during which the economy

has done quite well with the real rates even higher than those now prevailing or in our forecast.

The middle panel looks at this point in another way, focusing specifically on the funds rate. It plots the real fed funds rate against the gap between the levels of potential and actual real GDP two years hence. I should emphasize that neither of these concepts is measurable with any precision, but--be that as it may--the curves have been placed so that the averages for the two series are aligned--about 1/4 percent for the gap and 2-1/4 percent for the funds rate. The real funds rate is estimated to have averaged about 2-3/4 percent last year, but with the trimming of the nominal rate to 5-1/2 percent last month, the real rate should run a bit lower over the forecast period. Based solely on these data, one might think that the economy should have been stronger in the past few years, given the low real funds rates that prevailed earlier in the 1990s. And scanning across the chart, at least as far back as the 1970s, one might also argue that the current funds rate implies a weaker economic outlook for 1997 than we have projected. But it is clear that, while the real rate and the GDP gap are correlated, there is more than a little play in the relationship between them. Many factors presumably can alter the natural, or equilibrium, real rate of interest from one period to another.

For example, in the early 1990s, the tightness of credit associated in part with the travails of financial institutions lowered the rate of interest needed to foster high levels of activity. As you can see in the bottom left panel, the circumstances have changed greatly since then. Whereas in 1990 almost a third of bank assets were in under-capitalized institutions, last year almost all the

assets were held by well-capitalized banks. The panel at the right shows that banks have made a major swing toward easier terms and standards in their business lending; although our latest survey shows that some banks are becoming a bit more cautious in qualifying borrowers, it is fair to say that bank credit is still readily available. In fact, access to bank loans is the last thing many bigger firms are concerned about today, given the attractiveness of the bond and stock markets and the still high level of internal cash flow. Moreover, small businesses surveyed by the NFIB recently reported the best credit supply conditions of this expansion.

Another factor that could affect the equilibrium real rate is fiscal policy. Chart 4 is designed to provide some idea of the range of possibilities that exists in this arena. The first pair of columns in the table outlines the assumptions we made in the last Greenbook, when it appeared there was a good chance of agreement on a multi-year balanced budget plan. In the ensuing weeks, the direction the budget talks were taking suggested that the plans being discussed were becoming ever more back-loaded and gimmicky. And, then, the talks were suspended. Under the circumstances, we thought it more realistic to assume there would be no comprehensive agreement but that discretionary spending would still be cut appreciably. As you can see in the January Greenbook columns, this reduced the amount of deficit reduction in both years, but especially in FY 97.

After the State of the Union, Speaker Gingrich announced the GOP leadership's intention to offer a so-called "downpayment" package of tax and spending actions. What kind of proposal will be made is far from clear, but the third pair of columns is our stab at describing one version. In it, the full \$29 billion tax cut that has

been mentioned is implemented for 1996 liabilities, but the actual revenue loss is scored as occurring largely after the end of the current fiscal year, so that PAYGO rules are not violated. The political problem with such a scheme is evident in the top line, though: How could something portrayed as a "downpayment" on a balanced budget involve an increase in the FY 97 budget deficit? So, where this idea is headed just isn't clear, and I've shown it mainly to suggest what might be the other extreme in the range of possible fiscal options.

The middle panel shows the budget outlook under all three alternatives. Our current assumption--the dashed line--results in only mild changes in the high employment budget deficit over the next two years. The balanced budget compromise of the December Greenbook would result in a small decline in the structural deficit, while the "downpayment" would result in a slight increase.

The bottom panel displays the staff's fiscal impetus measure, in which changes in various tax and outlay categories are weighted in accordance with their estimated effects on aggregate demand. As you can see, under all three alternatives, a marginal increase in restraint is imposed this year, but the amount of restraint next year could end up being rather mild. Looked at in these simple terms, the equilibrium real rate of interest might tend to rise in the period ahead, all other things equal.

Ted will now look at some of the impulses that may be coming from the external sector.

E.M.Truman  
January 30, 1996

FOMC Chart Show Presentation -- International Developments

As Mike noted, we constructed the Chart Show for this meeting with relatively less emphasis on the details of the forecast and relatively more emphasis on analytical and longer-run issues. In that spirit, the first international chart presents a brief summary of the staff's outlook for the external sector. Our outlook does not differ much from that presented in recent Greenbooks, taking account of the shift to chained (1992) dollars.

As can be seen by the black line in the top panel, net exports of goods and services in nominal terms are projected to be essentially unchanged over the next two years while the current account deficit, the red line, widens slightly because of rising net payments on our cumulating net external liabilities. Nevertheless, as shown in the box at the right, the annual current account deficit edges just below 2 percent of GDP this year and next.

In terms of chained (1992) dollars, the growth of real exports of goods and services, the black line in the middle panel, decelerated sharply in 1995 with the slowdown in growth abroad and the impact of the Mexican devaluation. This year, with our projection of somewhat faster growth abroad, export growth should pick up a bit, but is likely to be depressed later in 1996 and into 1997 by the recent appreciation of the dollar. On the import side, the red line, somewhat faster U.S. growth and the dollar's appreciation should lead to more growth this year with a slight slowing in 1997 as the effects of the appreciation wear off.

This pattern is recast in the bottom panel in terms of the contributions of the two components of net exports and their combined total to the growth of real GDP. As you can see from the blue bars, the net contribution over the next two years is essentially zero.

Your next chart looks at exchange rates. The top left panel depicts in the black line

movements in the price-adjusted dollar in terms of other G-10 currencies along with the differential in real long-term interest rates, the red line. The panel at the right presents changes in the G-18 as well as the G-10 price-adjusted dollar along with changes in the G-10 real interest differential over the past three years, measured from fourth quarter to fourth quarter. Two points: First, the link between changes in the dollar and changes in interest rates is present but weak. Second, movements in the G-18 dollar have been somewhat more muted than movements in the G-10 dollar not only in 1995, when the former was affected by the Mexican depreciation, but also in previous years.

Movements in the dollar in real terms are an obvious source of potential error in our forecast. The middle panel presents two estimates of the variation that can be introduced into our forecasts by movements in the price-adjusted G-10 dollar. The red bars are actual changes, Q4 to Q4, in the dollar. The black bars are errors in our four-quarter-ahead projections for the dollar made in December of the past eight years. In 1990, we shifted to a basic posture of projecting an unchanged nominal foreign exchange value of the dollar from recent levels; since then, the two estimates of the variation that can be introduced into our forecast have been very close. The average absolute change for the eight-year period in the G-10 dollar in real terms has been about 5-1/2 percent. The corresponding average absolute change in the real G-18 dollar has been about 4 percent.

The bottom panel illustrates the implications for our GDP forecast of a four-percent change in the price-adjusted G-18 dollar that occurs over the four quarters of 1996 and is sustained in nominal terms through 1998. Such a change can be viewed as a rough confidence band around a Greenbook baseline forecast where the dollar is normally projected to be unchanged. The black and red bars show the implications in terms of the contribution of exports and imports, respectively, to the growth of real GDP. The blue bars show the overall effect on real GDP incorporating feedback effects based on a simulation of the staff's econometric models. In the simulations, the federal funds rate is held unchanged, but monetary policies abroad respond endogenously. Two symmetric cases are presented:

dollar depreciation (the solid bars) and dollar appreciation (the open bars).

Taking the case of depreciation, the solid bars, the weaker dollar initially augments the positive contribution of expanding exports to real GDP growth and reduces the negative contribution of imports; thus, both effects appear above the line because both have positive signs. However, higher U.S. growth boosts imports and also raises inflation which offsets some of the dollar's real depreciation. Given unchanged nominal interest rates, higher inflation also lowers U.S. real short-term and long-term interest rates, along with multiplier-accelerator effects, adds further to the growth of domestic demand. In addition, inflation is somewhat lower abroad, further eroding the dollar's initial real depreciation. As a consequence, exports make a progressively smaller contribution to the increased growth of GDP, and the contribution of imports becomes negative in late 1997, as the solid red bars shift sign and are shown below the line. In 1998, the negative influence of increased imports substantially outweighs the positive contribution of exports. The bottom line is that, in each of the three years depicted, real GDP growth is boosted by one quarter of a percentage point by the G-18 dollar's initial real depreciation of 4 percent. Hold that thought: I will return to it in a few minutes.

Chart 7 presents recent trends in industrial production and consumer prices in the foreign G-7 countries. As can be seen in the red lines in the various panels, industrial production rose in 1994 in all of these countries. More recently, in the European countries and Canada, IP has leveled off or declined as overall economic activity has slowed or stagnated. In Japan, production has picked up a bit in recent months after about a year of stagnation. Meanwhile, inflation has been subdued in Germany and France, picked up somewhat in Italy in 1995 and less so in the United Kingdom, but declined in Canada. In Japan, 12-month changes in consumer prices have been negative since early 1995.

The next chart depicts our foreign outlook. As presented in the top panel, fiscal and monetary policies are pushing in opposite directions in the foreign industrial countries. Fiscal policy,

the left panel, calibrated by changes in structural budget balances, has been a restraining force over the past two years in all of the foreign G-7 countries except for Japan. (In France, the restraint did not start until 1995, and it is estimated to have roughly offset the ease in 1994.) For 1996 and 1997, we are assuming that fiscal policy restraint will continue and even increase in each of these countries. In Japan, the fiscal stimulus this year is assumed to be about offset in 1997.

On the other hand, with respect to monetary policy, the right panel, real short-term and long-term interest rates have been declining on average since early in 1995, and both currently are substantially below their longer-term trends. We are assuming that the decline in real short-term rates will continue through this year and only begin to reverse in 1997 once the resumption of growth is firmly established.

On balance, as you can see in the top three lines in the middle-left panel, we are projecting that the effects of monetary ease will help to more than offset the effects of fiscal restraint and that growth will pick up in the European G-7 countries, as well as in Japan and Canada. Meanwhile, we believe that growth has resumed in Mexico, although it will be two years before the effects of the 1995 recession are overcome. The slight dip in growth in the rest of Latin America is largely the consequence of stagnation in Venezuela and slower growth in Chile that are roughly offset by a projected recovery in Argentina. Growth in Asian countries other than Japan slows a bit under the influence of the weaker Japanese yen and less expansionary monetary policies.

The aggregate outlook for foreign growth is presented by the red bars in the right panel; growth this year and next is projected on average to be substantially more than in the United States. This factor helps to keep the expansion of our exports in line with that of our imports.

Meanwhile average inflation in the foreign G-7 countries, shown in the bottom panel, is projected to remain subdued. The left panel indicates that CPI inflation in these countries will average about 1-1/2 percentage points below projected U.S. CPI inflation. The right panel presents

projections for the individual countries; only in Italy is inflation expected to exceed inflation in the United States.

Foreign growth, of course, is another area of potential risk to our overall forecast. Chart 9 presents some analysis of the extent of that risk. The top panel presents two estimates of the variation that can be introduced into our forecast by fluctuations in foreign growth. The black bars are the annual deviations from average foreign growth (Q4 to Q4) over the past eight years. Growth averaged three percent per year, and the average absolute deviation was seven tenths of a percentage point. The red bars are our errors in forecasting foreign growth a year in advance (Q4 to Q4). The mean error was zero, but the average absolute error was one percentage point.

The middle panel illustrates the implications for our outlook for U.S. growth of an error equal to one percentage point in our forecast for average foreign growth. The error in foreign GDP is phased in over 1996 and sustained at that higher level (solid bars) or lower level (open bars) during 1997 and 1998. Again, the federal funds rate is held unchanged in the simulation, but monetary policies abroad respond endogenously.

Taking the case of one-percentage point more growth abroad during 1996, as shown by the solid bars, the initial effect is to increase the contribution of exports to real GDP, and there are positive multiplier-accelerator effects as well. Thus, you can see in the chart that the overall boost to real GDP growth exceeds that coming from exports alone. More U.S. growth raises inflation. In the model simulation, U.S. nominal long-term as well as short-term interest rates are unchanged. Thus, higher inflation leads to lower real interest rates in the United States and further stimulates domestic demand. The permanently higher level of foreign economic activity in the simulation does cause responses in monetary policy in most of those countries, which leads to higher real interest rates abroad. Consequently, the dollar depreciates somewhat in real terms. The depreciation causes a further stimulus to the growth of U.S. real GDP from exports, but during 1998 the contribution of

those higher exports is essentially offset by the higher imports induced by the faster U.S. growth. As long as the nominal federal funds rate is unchanged, lower U.S. real interest rates continue to boost growth each year relative to the baseline.

The bottom panel provides a comparison of the effects on U.S. real GDP growth of errors in our outlook for foreign growth and fluctuations in the dollar. The specific comparison is between one percent more foreign economic activity, as just illustrated, and the effects of a four percent real depreciation of the G-18 dollar that were presented in Chart 6. ( I promise you that Chart 9 presents the results precisely as they came out of the computer!) The hypothesized increase in foreign growth initially has a slightly stronger initial influence on U.S. real growth than the dollar's hypothesized depreciation, but the effects on growth of the weaker dollar are larger in 1997. By 1998, the cumulative differential in the effects of the two sources of error on the level of U.S. real GDP is less than one tenth of a percentage point. However, as is suggested by the pair of bars for the second half of 1998, this equivalence breaks down if the simulations are extended with the policy ground rules unchanged; the effects on U.S. economic activity of the dollar's depreciation begin to wear off, while the effects of the higher level of economic activity abroad continue to cumulate because of ongoing decline in U.S. real interest rates.

My final chart presents the results of a longer-term scenario in which the dollar is assumed to depreciate steadily during 1996 to 2000, for example because of an increase in the risk premium on U.S. assets associated with a perceived need to reduce our current account deficit and slow the growth of our net international liabilities. The depreciation cumulates to an amount sufficient to narrow the U.S. current account deficit by 2 percent of GDP. The simulation employs the same Greenbook baseline extended to the year 2002 that was used for the simulations presented in the Bluebook. Two alternative assumptions are made about Federal Reserve monetary policy: either real GDP is held close to its baseline path or the price level is held close to its baseline.

The bottom panel shows that short-term real interest rates would have to rise considerably to contain the effects on the U.S. economy of the dollar's depreciation. In the case of GDP targeting, real short-term interest rates have to rise in order to prevent real GDP from rising faster than is assumed in the baseline. The increase peaks at four percentage points in the year 2000. In the case of price-level targeting, real short-term interest rates have to rise twice as much in order to counteract the direct and indirect effects on the price level of the dollar's depreciation. In presenting these last simulations, my point is not to suggest that the dollar is likely to be afflicted by a sustained bout of depreciation. Rather it is to illustrate the extent to which external factors should be included among those that can affect the so-called neutral, or equilibrium, real short-term rate of interest.

Having caused enough trouble and confusion, I will turn our presentation over to Larry Slifman.

Lawrence Slifman  
January 30, 1996

FOMC Chart Show Presentation -- Consumer Sector

A critical element in the forecast for domestic final demand is the consumer sector. In particular, Governor Lindsey and others have raised questions about the scope for growth of consumer spending in light of the level of household debt. The upper panel of chart 11 shows the upward march of the household debt-income ratio over the past decade. This increase has had a tempering influence on our thinking about the outlook for consumption. But, for a number of reasons, we still expect consumer demand to be well maintained during the projection period.

First, despite the extraordinary level of the debt-income ratio, debt service requirements--the middle left panel--remain below their previous highs. This is true when calculated either relative to the standard measure of disposable personal income or when measured relative to the staff's estimate of cash income--that is, DPI excluding the imputed income components (such as the flow of services from owner-occupied housing) and adjusted for pension sector flows. I should note that the cash income line is drawn using pre-revision national income accounts data, because the detailed revised data needed for this calculation are not yet available. In any event, the chart suggests that lower interest rates have allowed households to take on more debt in the past few years without a commensurate crimp in their budgets.

Moreover, though people have been using plastic in an unprecedented way, their overall borrowing has not been extraordinary. As shown in the middle right panel, the flow of consumer credit relative to spending has been in line with what typically has happened when purchases of durables were cyclically strong.

On the other side of the household balance sheet, we have often pointed to the huge run-up in the stock market over the past year as a supporting factor for PCE. As illustrated in the lower right panel, the associated rise in the value of household assets has more than offset the rise in indebtedness. Standard economic theory, and much empirical research, suggests that this rise in net worth relative to income should be a sustaining force on consumer spending during the projection period.

Nevertheless, it has been argued that the improvement in aggregate net worth masks important features of individual household balance sheets and consumer behavior that could have important implications for the outlook. This is the subject of the next chart

One argument against simply looking at aggregate net worth is the fact that individuals do not have direct or ready access to all of the corporate equities in the household sector account, and, accordingly, cannot use the capital gains on those less accessible assets to support their current consumption. However, as illustrated in the upper panel of chart 12, we estimate that individuals

directly own about two-thirds of the corporate equities in the household sector account, and roughly the same share of last year's capital gains. In addition, at least some portion of the capital gains on indirectly held equities could be liquified--for example, by taking out a loan against the assets in 401(k) plans. Indeed, a recent trade association survey showed that one-third of 401(k) plan participants had outstanding loans from their plans in 1994. Finally, even without access, households can spend more of their current income knowing that their retirement nest egg has grown. All in all, our view is that the recent rise in the stock market has created a sizable pool of capital gains for the household sector that could be used to support consumption.

It is also argued that the effects of changes in aggregate net worth on consumption may be muted if the assets are owned primarily by the rich and the liabilities held primarily by the poor, and if the rich and poor have different saving propensities or face different liquidity constraints. The middle panel presents data from the 1992 Survey of Consumer Finances that are intended to shed some light on this issue. There are a lot of numbers in this table that you can peruse at your leisure, but let me make three points: First, the poor do not hold a disproportionate amount of debt. As may be seen by comparing columns 2 and 3 with column 1, upper income families hold a disproportionate share of both assets and

liabilities. My second point: debt payment burdens--column 4--are highest, on average, not for the poor but for middle income households. Although it is not shown on this table, these households typically have assets that are two or three times larger than their incomes. Thus, it is likely that most of these households would be able to meet their monthly debt service requirements for some time should they face a disruption to their income. Indeed, as shown in column 5, a sizable share of these households have sufficient financial assets to completely pay off their debts if need be. My third point adds a cautionary note. Column 6 shows the percentage of households that reported in 1992 that they did no saving in the preceding year--that is, they spent all or more than all of their income. As you can see, the percentage not saving was extremely high for the lower income groups. These data suggest that a sizable portion of the population has little financial cushion or is subject to potential liquidity constraints and might face serious economic stress should their income flows be disrupted.

Normally, one might think of a recession as creating such a circumstance. But the much discussed flux in the job market may be creating an abnormal number of dislocations. Some observers have suggested that this is a factor behind the recent upturn in loan delinquency rates. Moreover, creditors have begun to suffer from the increased bankruptcies and charge-offs shown in the lower left panel.

Although it is often stated that the losses are not unexpected and quite manageable, given the gross margins on consumer loans, in our latest surveys lenders are becoming concerned. Fewer banks have expressed an increased willingness to make consumer loans. In addition, some lenders report they are tightening underwriting standards for such loans. Overall, we're not expecting a serious credit supply problem, but we do anticipate some further tightening.

In our forecast we have, in effect, let the negative influence of rising indebtedness offset the positive influence of the rise in wealth, leaving the average level of the saving rate over the next two years at about its 1995 level. But, while the latest signals from the consumer sector don't seem to support the view, we would still suggest that the run-up in the stock market and the new opportunities for mortgage refinancing do give an upside bias to the risks attending our forecast of spending propensities.

Another important element in our forecast is the growth of capital spending--chart 13. Here, the question is whether, after the run-up in business fixed investment in recent years, the capital stock has grown so large relative to output and labor that there simply is not much room left for further growth without creating redundant plant and equipment. The lack of revised capital stock data from BEA

and only limited detail on the components of business fixed investment, make it difficult to address this issue fully. But, using the data we do have, it does not appear unrealistic to anticipate at least some further moderate gains in spending.

As seen in the upper panel, the growth of real equipment outlays during the current investment boom, now estimated to have been 11.2 percent at an annual rate, far outpaced the rate of increase in the 1980s expansion. In our forecast, we see equipment gains slowing dramatically from the earlier rate--but, at 3-1/4 percent on average over the next two years, equipment spending growth still is an important driver of GDP expansion. The disaggregation shown on lines 2-4 indicates that we still expect solid advances in the computer sector, albeit slower than the torrid pace of earlier years, while spending for industrial equipment is likely to fall back.

Some less optimistic analysts point to the historical relationship between PDE and capacity utilization (the middle left panel), and note that the recent rate of investment is far out of line with the decline in utilization. The inference they draw from this chart is that the incentive to invest in new equipment during the next year or two will be greatly diminished, and that PDE will be a drag on growth.

We think this inference is too broad. As shown in the middle right panel, capacity utilization is more closely related to the narrower investment category of industrial equipment. The reason, of course, is that a large share of the spending for other types of equipment is made by nonmanufacturing firms. For example, more than three-fourths of business computer cutlays are by nonmanufacturing firms. As can be seen in the chart, our projection of the industrial equipment component of PDE matches closely our factory utilization forecast.

Turning to the computer sector, the lower left panel shows that we are forecasting a deceleration of spending that would return the level of investment to about its long-run trend. However, the recent decline in the semiconductor book-to-bill ratio and reports of lower-than-expected fourth-quarter profits in the computer industry raise the question of whether computer investment has played out, with future gains limited primarily to replacement demand rather than additional large-scale expansion of the net stock. In shaping our projection, we recognize this as a possible downside risk. Nonetheless, the staff, like the folks in the industry who are betting real money on the outcome (the lower right panel), expect 1996 to be another year of hefty gains for computers. Furthermore, recall that the quality

improvements that will occur in 1996--for example, more powerful Pentium chips in the typical unit--will be scored by BEA as a price decline. This implies that these industry forecasts of unit PC sales underestimate by perhaps 10 percentage points the growth of real computer investment as reported in the national income accounts.

Dave Stockton will continue our presentation.

David J. Stockton  
January 30, 1996

FOMC Chart Show Presentation -- Inflation Outlook

Your next chart highlights some key features of our inflation projection. As Mike noted earlier, we are projecting increases in total and core CPI to average just a shade below 3 percent over the next two years. In contrast to the pattern of the first half of the 1990s, we do not anticipate much, if any, help from food and energy prices this year or next.

Under our assumption of normal harvests, food prices--shown in the middle left panel--are projected to rise nearly 3 percent in 1996 and 1997. Stocks of major grains currently are very low and the risks to our projection probably are asymmetric. Another major crop failure could be quite damaging.

Energy prices--the middle right panel--were weak for most of the second half of last year, but have recently received a considerable boost from unseasonable weather and tight supplies. We are expecting a jump in retail energy prices early this year, followed by only small increases after that.

Materials prices--the lower left panel--surged from late 1993 into early last year, as capacity utilization rates rose steeply. With U.S. and global demand having slackened, these price increases ground to a halt in the second half of last year, and continued sluggishness in the industrial sector should further depress prices early this year. The benefits of this negative "speed" effect and the lower non-oil import prices projected to accompany the strengthened dollar are the principal factors behind the dip in core inflation that we have projected for this year.

As usual, the broader contours of our inflation outlook are shaped less by these largely transitory influences and more importantly by our assessment of the underlying trends of aggregate demand and supply. Turning to the supply side of our forecast--the subject of your next chart--the revised GDP accounts held few surprises relevant for our view of potential output growth. As we had anticipated, the shift to chain-type measures of real output knocked about 1/2 percentage point off our estimate of potential growth. We now calculate the growth in potential output to have been a little less than 2 percent per annum since the previous business cycle peak, and we do not foresee any major deviation from that pace over the next two years.

The component of potential growth that has shown the largest break from earlier trends has been labor input--line 2 of the table. Of the 0.6 percentage point deceleration in potential labor input between the 1980s and the 1990s, about 0.2 percentage point reflects slower growth of the working-age population. The remainder is accounted for by a virtual halt in the 1990s in the 25-year uptrend in labor force participation--displayed in the lower left panel. Although no single factor is capable of fully explaining this abrupt shift in trend, much of the flattening is attributable to the absence of further increases in participation among women aged 20 to 44, whose labor market behavior has been approaching that of men. With the participation rate having shown no trend over the past five years, despite a good supply of employment opportunities, we see little reason to anticipate any perceptible upward tilt over the next two years.

Productivity based on the revised chain-weight measure of output--the middle panel--looks to have been running at about a 1.1 percent annual rate since the previous business cycle peak, not much different from the underlying pace observed since the early 1970s.

A number of you have raised concerns about whether the BEA's measures of real output are capturing reality. And, there certainly are ample grounds for questioning the statistics. But, whether or not BEA's estimate of real GDP is accurate, Okun's Law--shown as a scatter diagram in the lower right panel--suggests that growth in measured GDP above 2 percent, on average, has been associated with declining margins of slack--consistent with our estimate of potential growth.

Turning to your next chart, with the unemployment rate having stabilized at 5.6 percent over the past year--at the low end of most estimates of the natural rate--some commentators have suggested that inflation has behaved surprisingly well. Indeed, the Blue Chip forecast of a year ago correctly predicted the average unemployment rate, but anticipated a rise in the CPI to 3.3 percent. That consensus forecast has now fallen to 2.8 percent. We, too, revised down a bit our forecast of CPI inflation, but we did so in the context of a slightly higher-than-expected unemployment rate.

While forecasts came down last year, underlying price inflation moved up. As may be seen in the upper right panel, the runup in the PPI for finished goods excluding food and energy was particularly pronounced. But even the core CPI accelerated 0.2 percentage point over the past year and roughly 0.3 percentage point taking into account the technical improvements in the CPI that went into effect last January.

Our price and wage models provide another vehicle for addressing the question of whether inflation was surprisingly low last year. The middle panel presents the recent behavior of a basic reduced-form price equation, which makes core CPI inflation a function of lagged price inflation, the relative prices of food and energy, the unemployment rate, and the change in the unemployment rate. As you can see, an out-of-sample dynamic simulation of this model--the red line--has described very well the behavior of core inflation over the past three years.

The same cannot be said for the behavior of private compensation per hour, as measured by the ECI. A standard Phillips curve type equation, which uses lagged price inflation, the unemployment rate, and the change in the unemployment rate to explain ECI compensation per hour, is shown in the lower panel. The equation, estimated through the third quarter of 1992 and simulated forward--the red line--initially underpredicted wage inflation, but began to consistently overpredict beginning in 1994.

One hypothesis about the subdued behavior of wage inflation is that the unemployment rate may be overstating the degree of tautness in labor markets relative to past experience. As shown by the red line in the upper panel of your next chart, the ECI accelerated in the late 1980s when the unemployment rate fell below 6 percent--the light shaded area--but has failed to do so recently.

The lower two panels present some alternative measures of labor market conditions. The middle panel presents the Conference Board's index of help-wanted advertising, a measure of job vacancies. Like the unemployment rate, help-wanted advertising--the black line--has been roughly stable over the past year, but at a level below that

observed in the 1988-90 period. However, the increasing use of personnel supply agencies to meet fluctuations in labor demand may be leading to a diminished reliance on help-wanted advertising to fill vacancies. We make an adjustment to the help-wanted series for the trend in employment at personnel supply agencies--an alternative technology for matching workers with vacancies. Our adjusted measure --the red line--is just a bit below the highs reached in the late 1980s.

The bottom panel plots the job situation as viewed by households. There are fewer households reporting that jobs are plentiful relative to those reporting that jobs are hard to get than was the case in the late 1980s. Although the difference is not large, it could be taken as some evidence in support of the view that negative perceptions of labor market conditions by workers are holding down wage demands and resulting in lower compensation gains than would be expected at a 5-1/2 percent unemployment rate.

Although both of these measures hint at the possibility of a somewhat softer labor market than portrayed by the unemployment rate, neither, when employed in a standard wage equation is capable of explaining the extent of the deceleration in compensation last year.

As we have noted previously, the slowing in compensation per hour last year was almost entirely in the benefits component--the black line in the upper panel of chart 18--with a notable fraction of that deceleration accounted for by the costs of health benefits. To be sure, in principle, workers and firms should be concerned about the total compensation package. If firms are simply shifting the costs of health care benefits to workers, then workers should be attempting to recoup these losses in the form of higher wages. However, many

stories suggest that firms are also extracting concessions from health care insurers and providers, and encouraging or forcing workers into managed care arrangements. To the extent that these efforts are creating efficiency gains or cost reductions without altering substantially the quantity or quality of health care available to workers, firms may, at least for a time, be able to capture the benefits in the form of lower compensation costs. Our forecast assumes that this process will be continuing over the next two years, but that the opportunities for significant cost savings will gradually diminish.

With increases in labor costs having remained subdued relative to prices, the implicit markup--shown in the middle panel for the nonfinancial corporate sector--has trended up over the past few years to a level nearly a percentage point above its longer-term average. The markup usually moves back down toward trend when productivity slows or compensation accelerates. Because these developments are not present in our current projection, we are forecasting the price markup to remain near its recent level.

The lower panel lays out schematically the risks to our price forecast posed by our compensation and markup projections, and attaches a rough order of magnitude to the inflation consequences of these risks. Of course, the possibilities highlighted in this table far from exhaust the myriad ways in which we could err in our inflation projection over the next two years. For this reason, rather than impart a false sense of precision, I have confined myself to integers. The upper left quadrant of the diagram depicts the assumptions underlying the staff forecast--growth in compensation per hour remains about one percentage point below historical

relationships, while the markup remains about one percentage point above its historical average. Obviously, we place the highest probability on this outcome.

But, another possible outcome would be for the growth of hourly compensation and the markup to return to "normal," implying about one percentage point faster growth in hourly compensation and a decline in the markup of a similar amount. These offsetting influences would leave core CPI around our projected pace of 3 percent, albeit with a different distribution of income.

A less favorable outcome--the 4 percent core CPI shown in the lower left quadrant--could result from an acceleration of hourly compensation back to the model's prediction, while the markup remains near current levels. And, a more favorable outcome than our projection--the core CPI of about 2 percent shown in the upper right quadrant--could occur if the markup is forced by competitive pressures back to its historical average, while hourly compensation growth remains subdued. Of course, the actual risks to the inflation projection lie along a continuum, but the plus or minus one percentage point range highlighted by this table probably is a good representation of a 95 percent confidence interval over the next two years.

Finally, for those of you who are still conscious after this mind numbing presentation, the last chart presents your forecasts for 1996. In brief, the central tendency of your projection for real GDP anticipates a small acceleration in activity this year. Although revised down a bit from your July projections, central tendencies for both inflation and the unemployment rate are projected to be at or above 1995 levels. At this stage, the Administration has not issued

an economic projection, but the current schedule calls for release of their forecast in February.

\*\*\*\*\*

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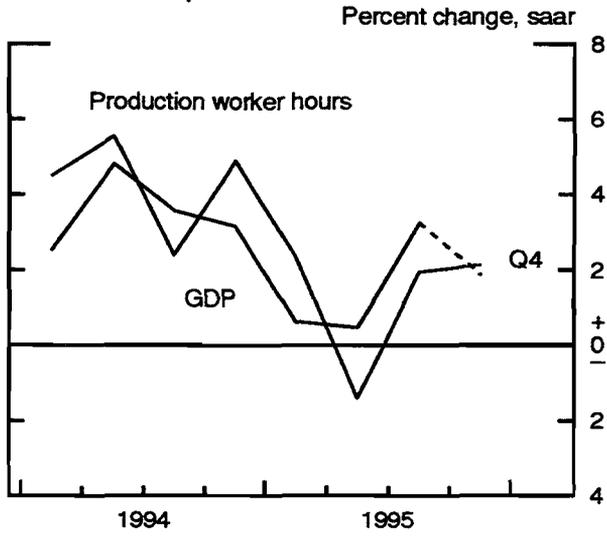
*Material for  
Staff Presentation to the  
Federal Open Market Committee*

*January 30, 1996*

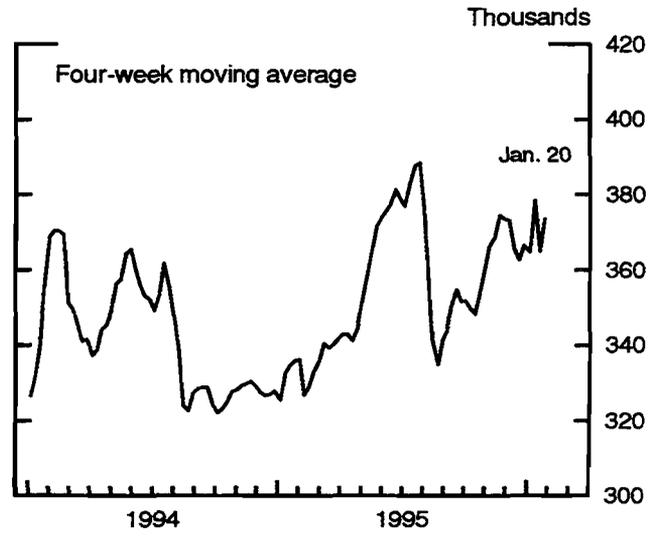
Chart 1

# Recent Indicators

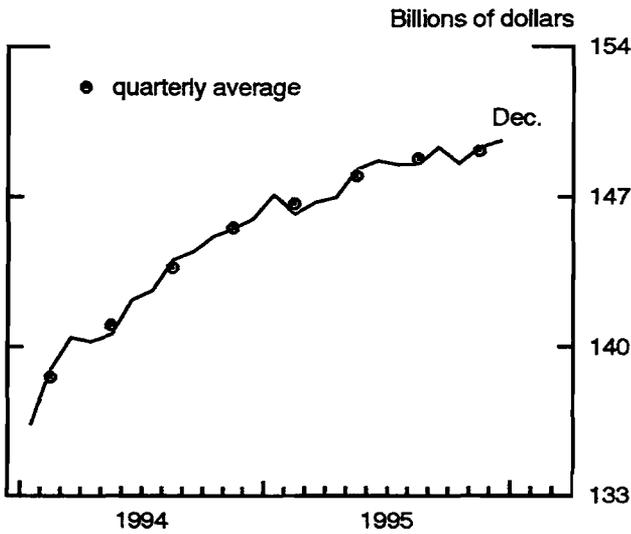
### Hours and Output Growth



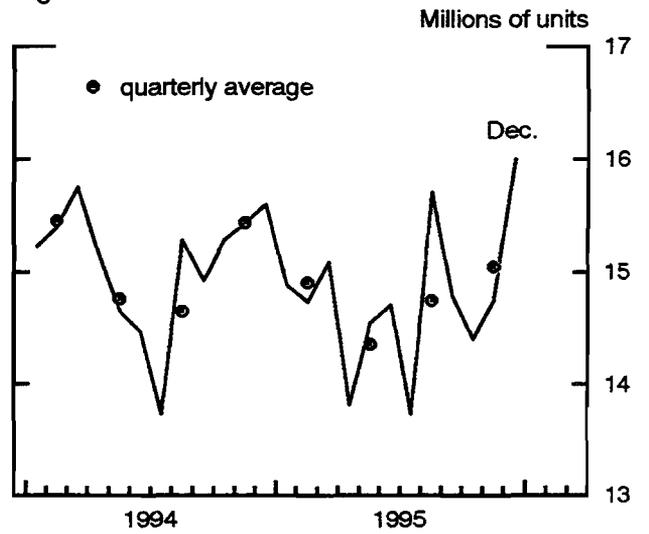
### Initial Claims



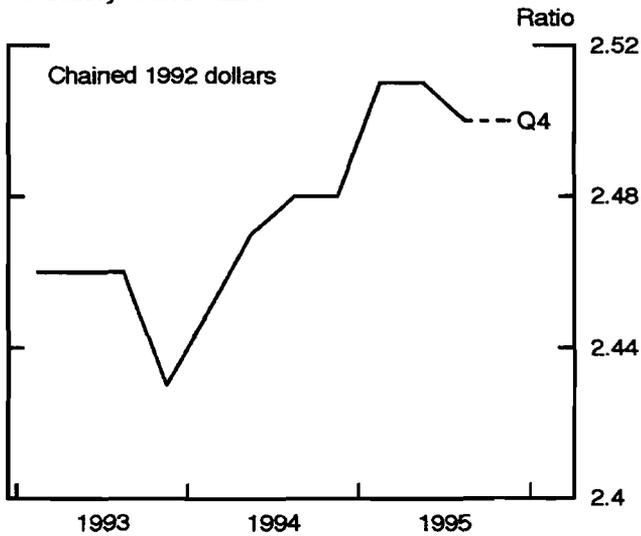
### Retail Sales Ex. Autos



### Light Vehicle Sales



### Inventory-Sales Ratio



### Manufacturing Orders

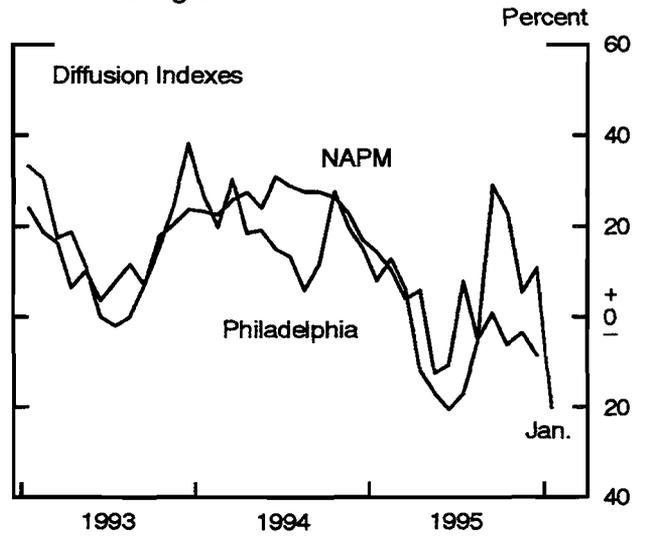
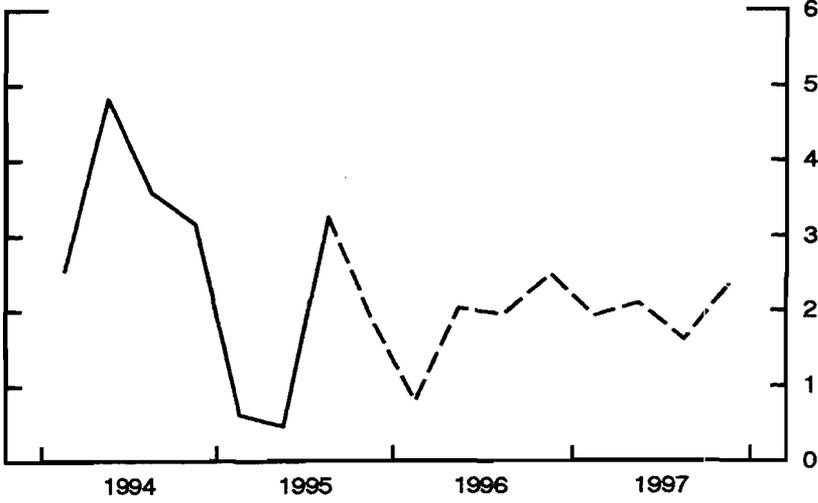


Chart 2

# Forecast Summary

## Real GDP

Percent change, annual rate

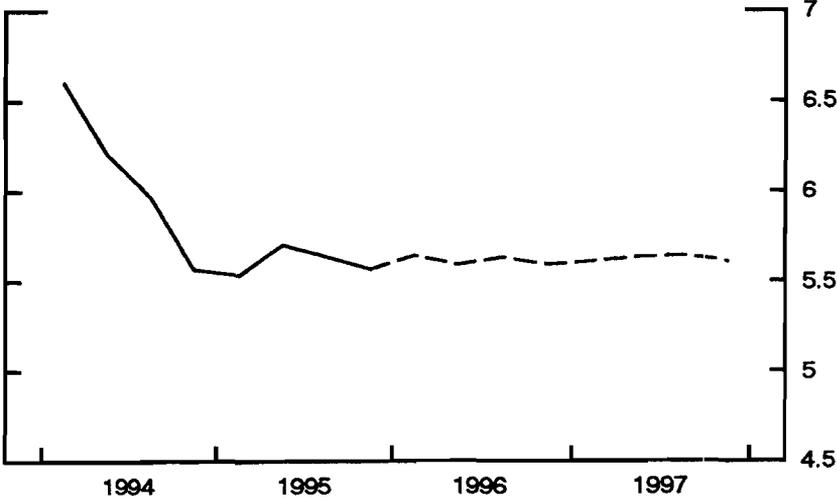


### Q4/Q4 Percent Change

1994	3.5
1995	1.5
1996	1.8
1997	2.0

## Unemployment Rate

Percent

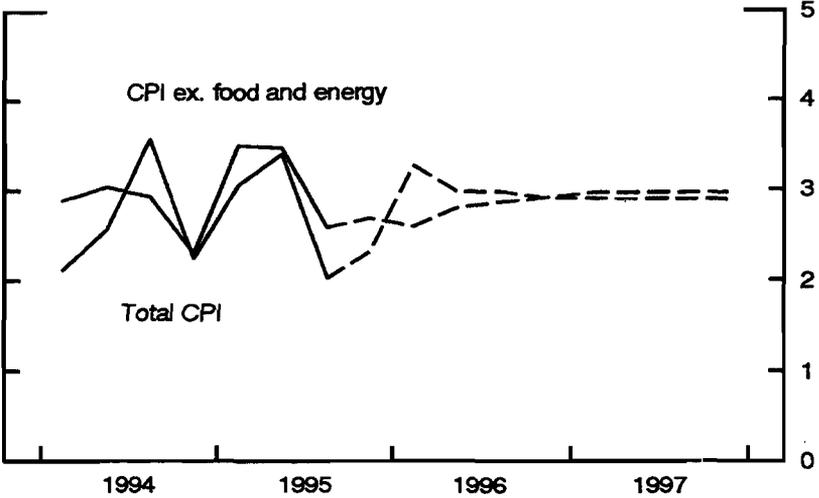


### Q4 Average

1994	5.6
1995	5.6
1996	5.6
1997	5.6

## Consumer Price Indexes

Percent change, annual rate



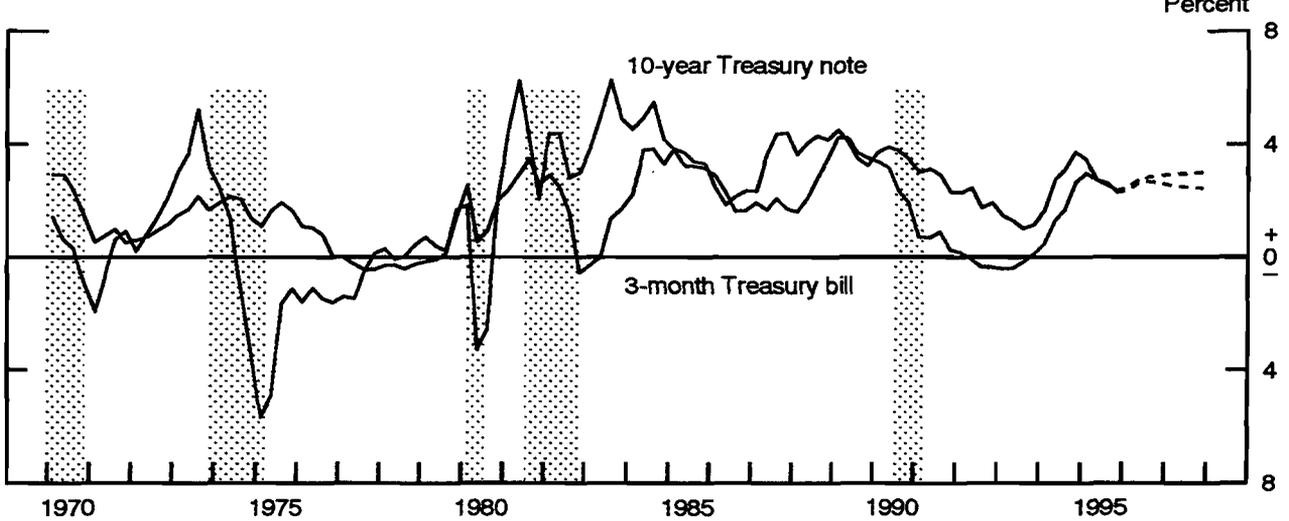
### Q4/Q4 Percent Change

	CPI	CPIX
1994	2.6	2.8
1995	2.7	3.1
1996	3.0	2.8
1997	2.9	3.0

Chart 3

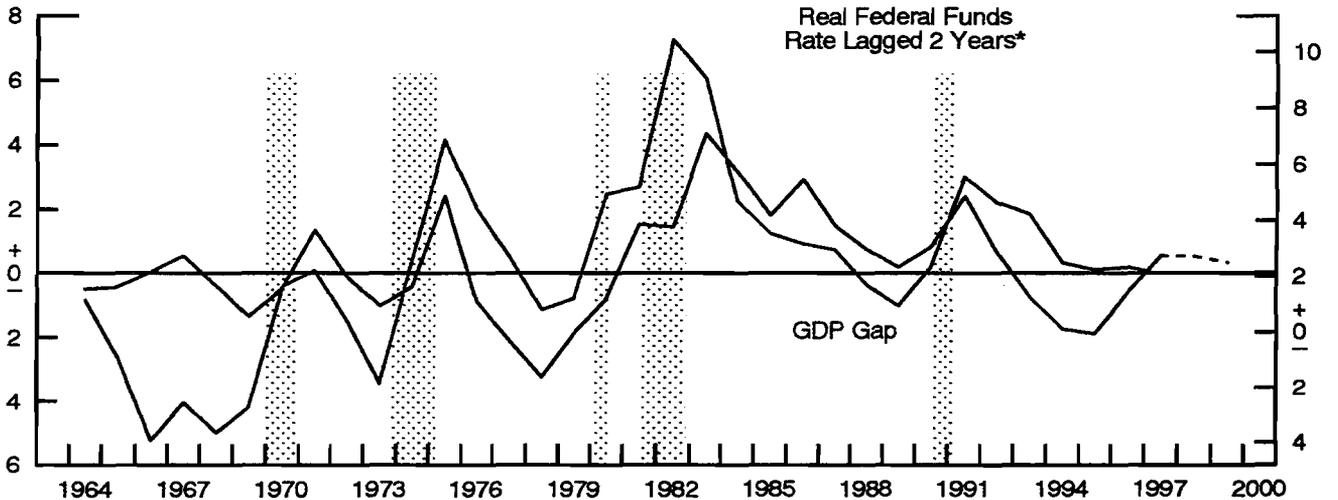
### Financial Market Conditions

Real Interest Rates\*



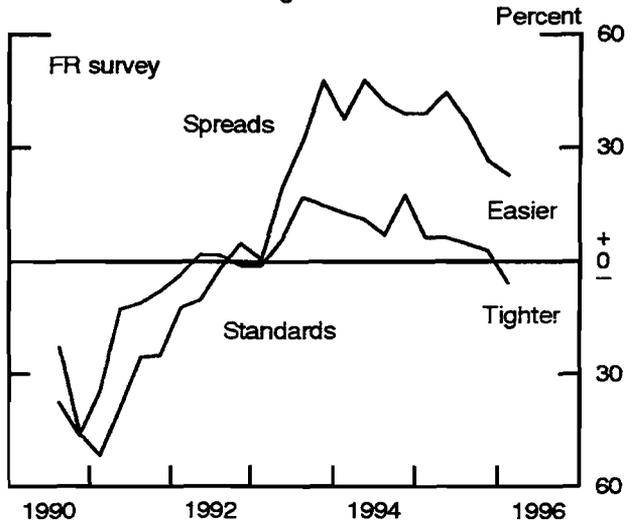
\* Inflation expectation based on prior 1-year and 5-year core CPI changes for 3-month and 10-year Treasury rates, respectively.

GDP Gap and 2-Year Lag of Real Funds Rate  
Percent



\* The nominal funds rate is deflated by Q4-to-Q4 core CPI inflation, using (before 1982) the experimental series that treats owner's equivalent rent consistently throughout history.

Bank Business Lending Policies



Distribution of Bank Assets By Capital Status*		
(Percent of industry assets)		
	1990:Q4	1995:Q3
Under Capitalized	31.3	0.5
Adequately Capitalized	38.6	2.9
Well Capitalized	30.1	96.6

\*Adjusted for examiner ratings.

Chart 4

## Fiscal Policy Outlook

Fiscal Assumptions - Billions of Dollars of Deficit Reduction, Relative to OBRA-93 Path

	December Greenbook		January Greenbook		"Downpayment"??	
	FY 1996	FY 1997	FY 1996	FY 1997	FY 1996	FY 1997
Total*	-25	-31	-21	-19	-18	+2
Discretionary	-17	-28	-21	-19	-21	-19
Mandatory	-7	-22	0	0	-1	-4
Taxes	-1	+19	0	0	+4	+25

\* Excluding interest savings.

High Employment Budget Deficit



Fiscal Impetus

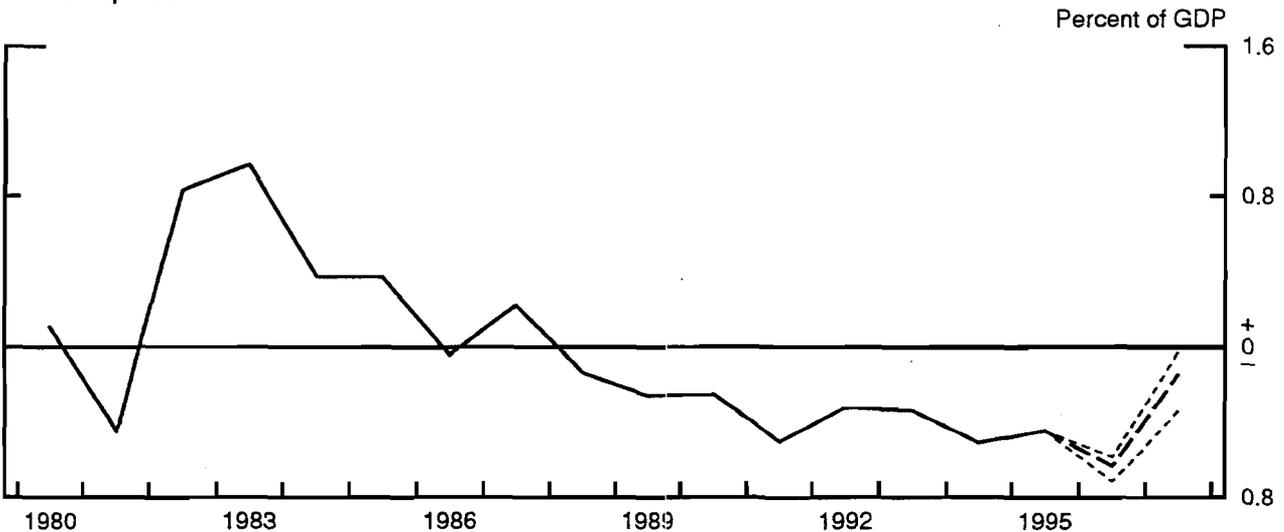
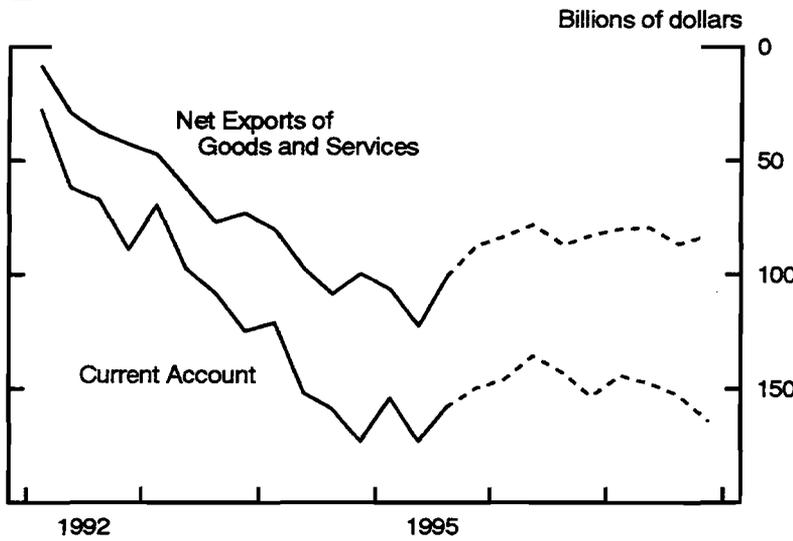


Chart 5

## Summary of the Outlook: External Sector

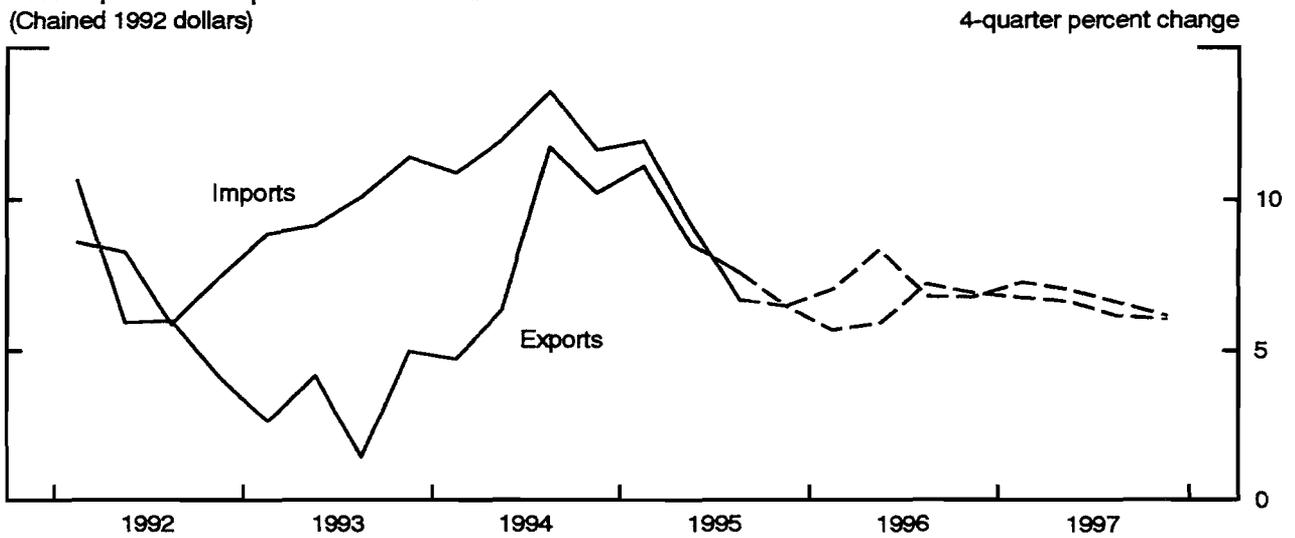
External Balance



Current Account

	Percent of GDP
1985	-3.0
1986	-3.4
1987	-3.5
1992	-1.0
1993	-1.5
1994	-2.2
1995	-2.2
1996	-1.9
1997	-1.9

U.S. Exports and Imports of Goods and Services  
(Chained 1992 dollars)



Contribution of Net Exports to U.S. Growth  
(Chained 1992 dollars)

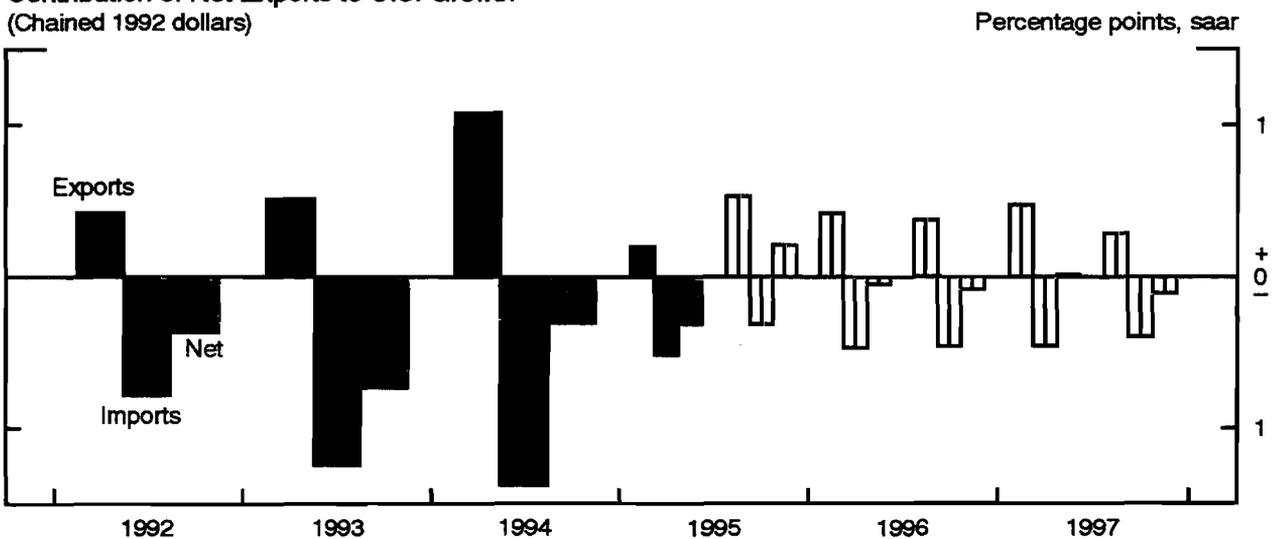
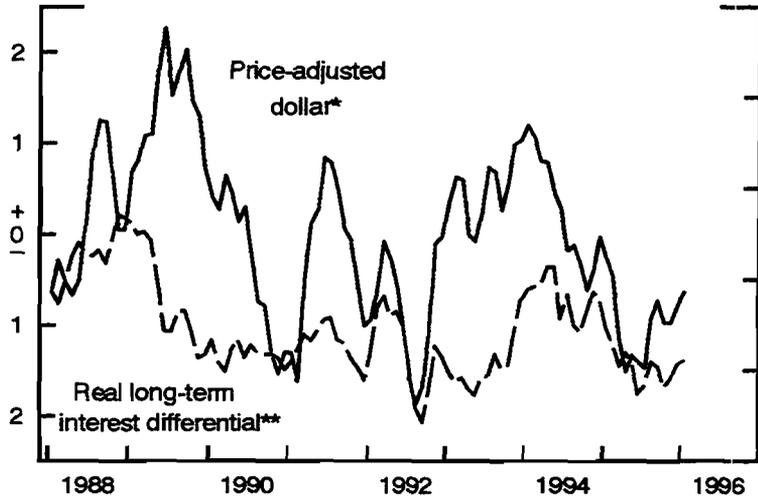


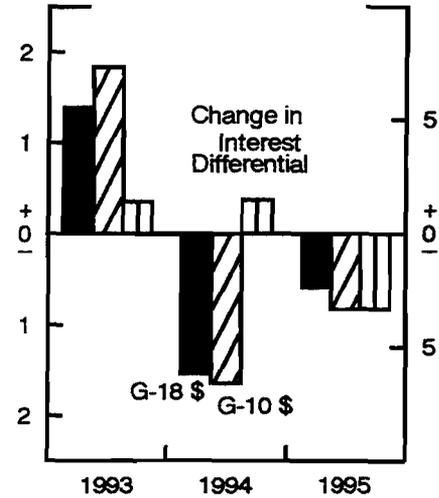
Chart 6

# Exchange Rates

Dollar and Interest Differential  
Percentage points



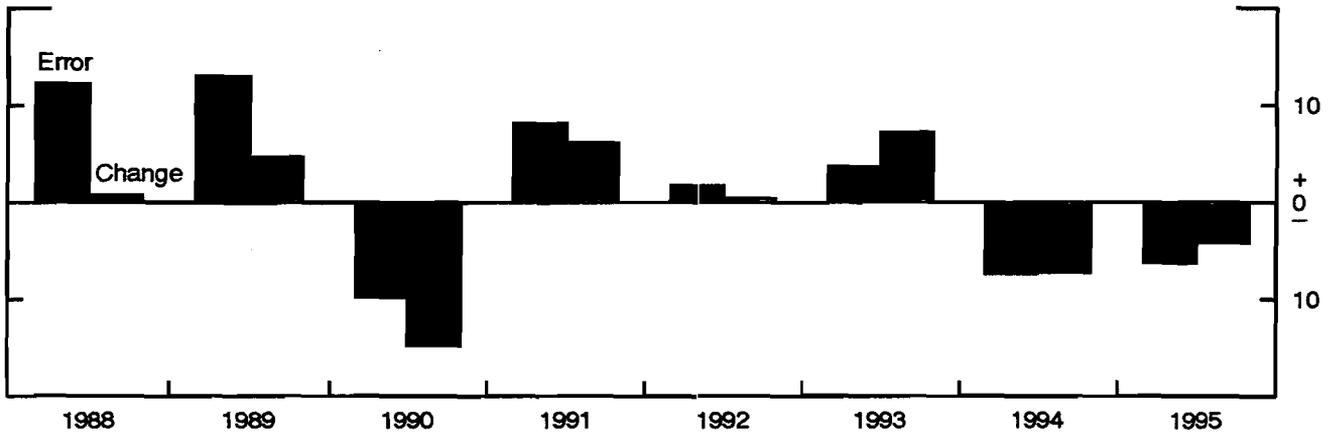
Percent change, Q4 to Q4



\* Weighted average against foreign G-10 countries, adjusted by relative consumer prices.  
 \*\* Difference between rates on long-term U.S. 10-year government bond and a weighted average of foreign G-10 benchmark government bonds, adjusted for expected inflation.

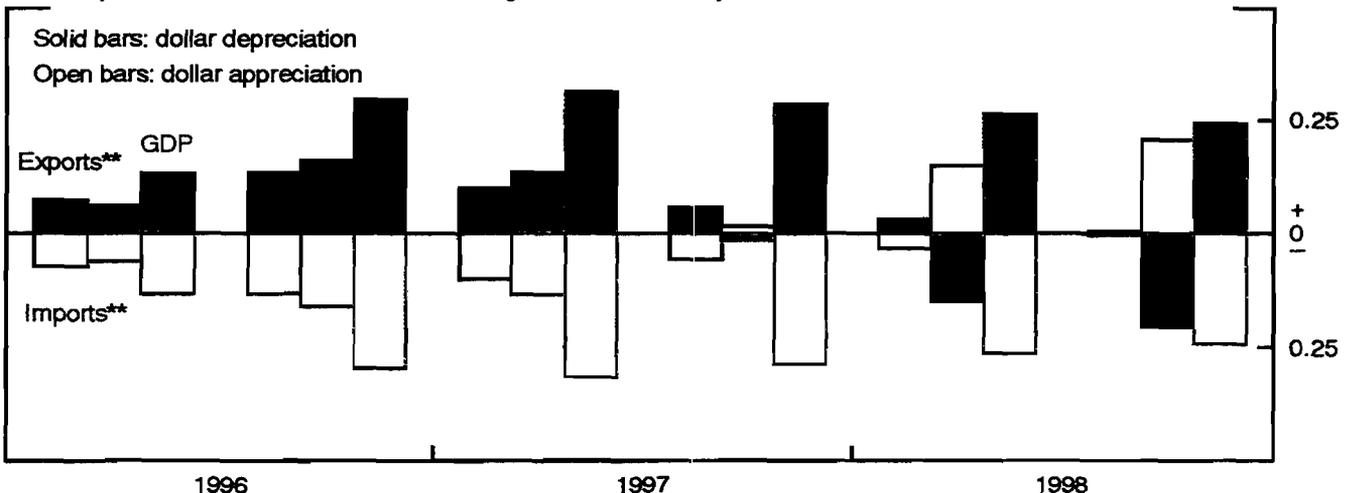
Projection Error and Actual Change in the Price-Adjusted G-10 Dollar\*

Percent change, Q4 to Q4



\*Error is difference between actual change and forecast made one year earlier.

U.S. Implications of a Four Percent Change in the Price-Adjusted Dollar\* Percent change from baseline GDP

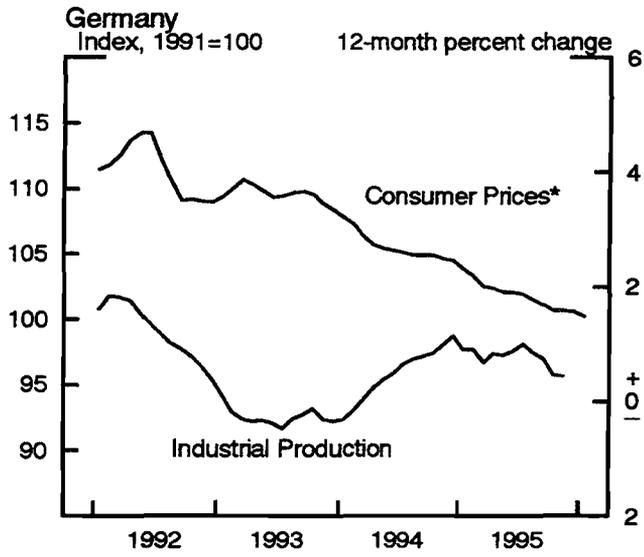


\* Change is phased in over four quarters of 1996 and held at new level for 1997 and 1998.

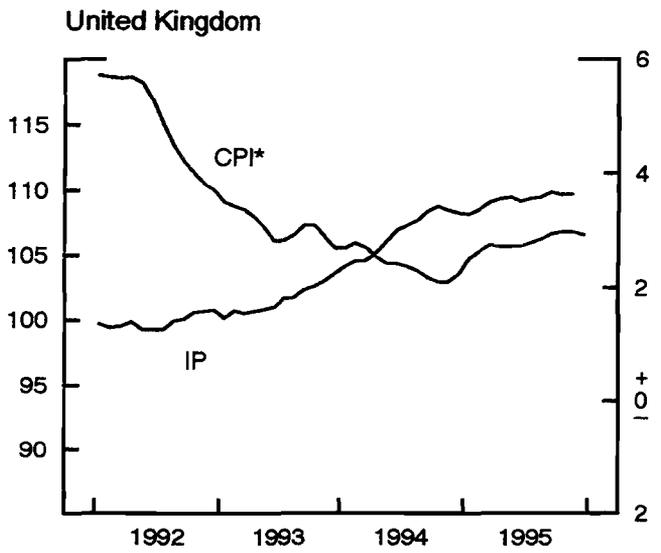
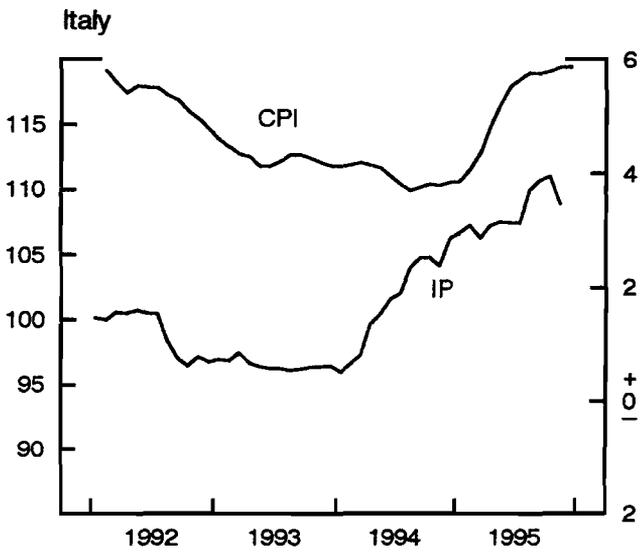
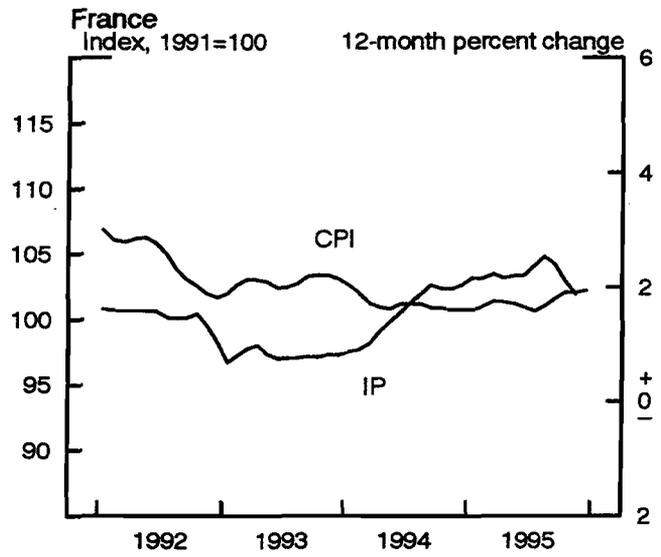
\*\* Change in percent contribution to GDP

Chart 7

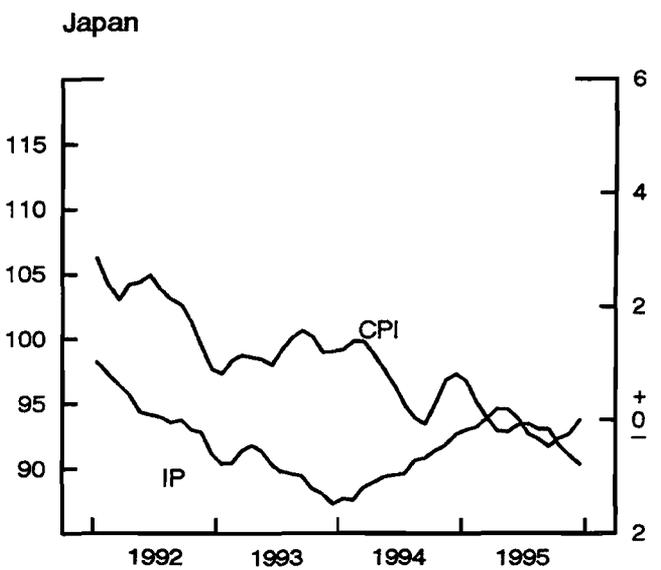
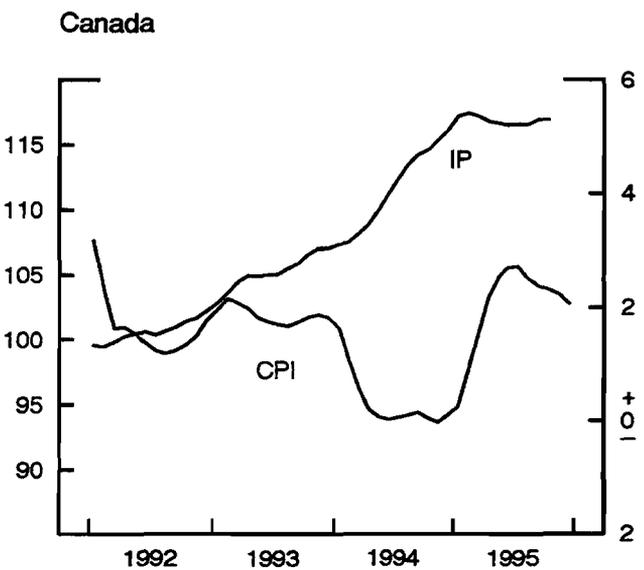
# Foreign Industrial Production and Consumer Prices (3-month moving averages)



\* West Germany



\*Excludes mortgage interest payments.



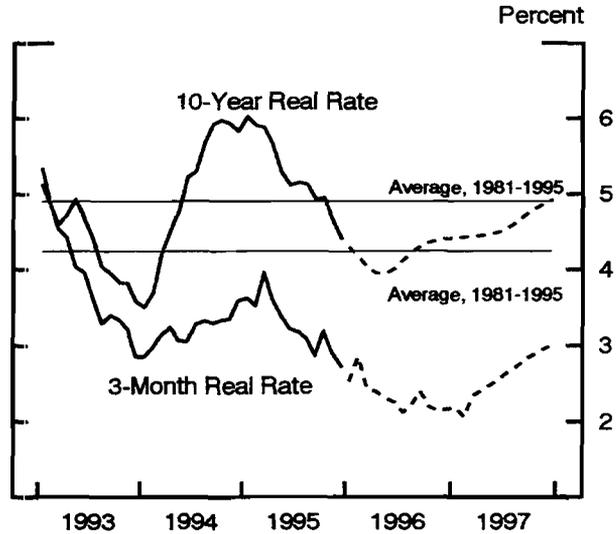
# Foreign Outlook

## Fiscal Policy\*

	Change 1994 & 1995	Change 1996 & 1997
Germany	½	1
France	0	1¼
Italy	1½	2½
United Kingdom	1½	2¼
Canada	1½	2¾
Japan	-1¼	¼

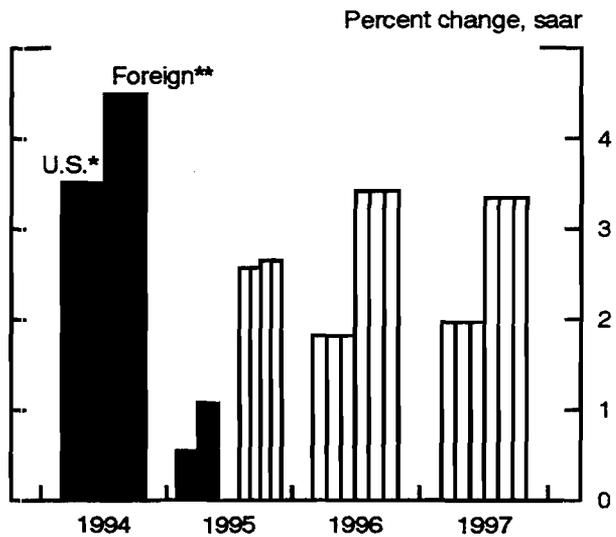
\* Change in structural government budget balances percent of GDP calendar year basis

## G-10 Interest Rates



## Real GDP

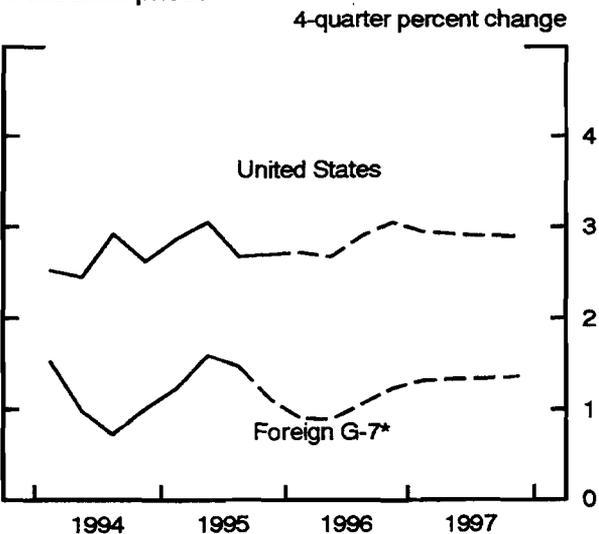
	Percent change, Q4 to Q4		
	1995	1996	1997
Europe (G-7)	1.5	2.3	2.5
Japan	1.4	3.1	2.3
Canada	0.9	2.4	2.3
Mexico	-9.5	4.3	5.5
Other Latin Am.	2.9	2.5	3.0
Other Asia	7.5	6.7	6.7



\* Chained 1992 dollars

\*\* U.S. nonagricultural merchandise export weights.

## Consumer prices



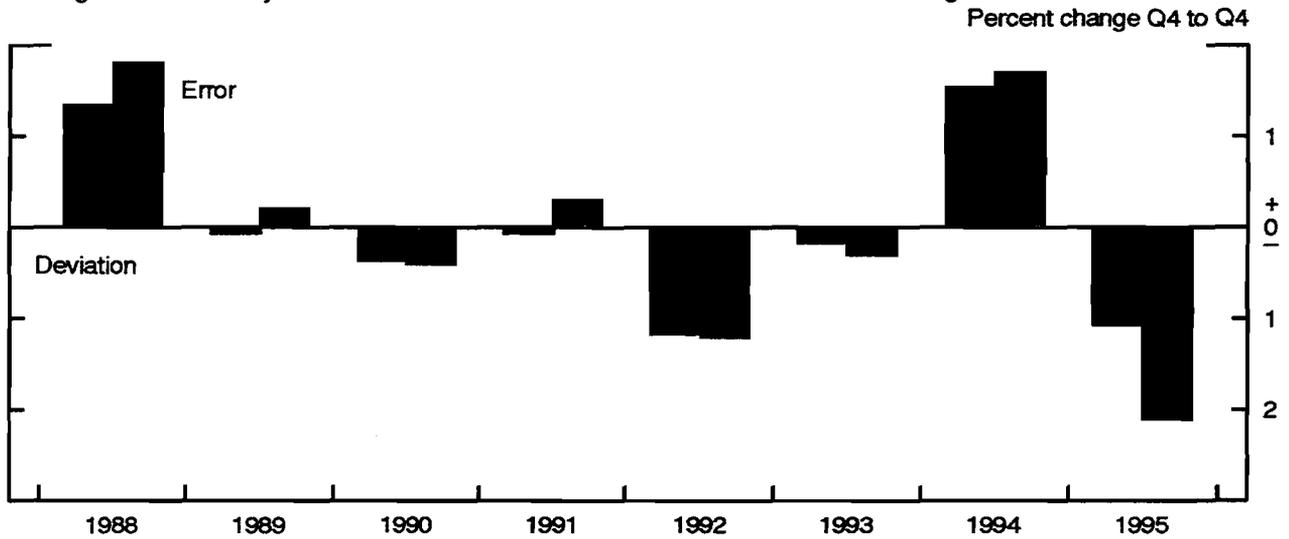
\*U.S. non-oil import weights.

	Percent change, Q4 to Q4		
	1995	1996	1997
W. Germany	1.5	1.9	2.0
France	1.9	1.8	1.8
Italy	5.9	4.4	4.0
U.K.*	2.9	2.8	3.0
Canada	2.1	1.6	2.0
Japan	-0.8	0.0	0.0
<b>Average</b>	<b>1.1</b>	<b>1.2</b>	<b>1.4</b>

\* Excludes mortgage interest payments.

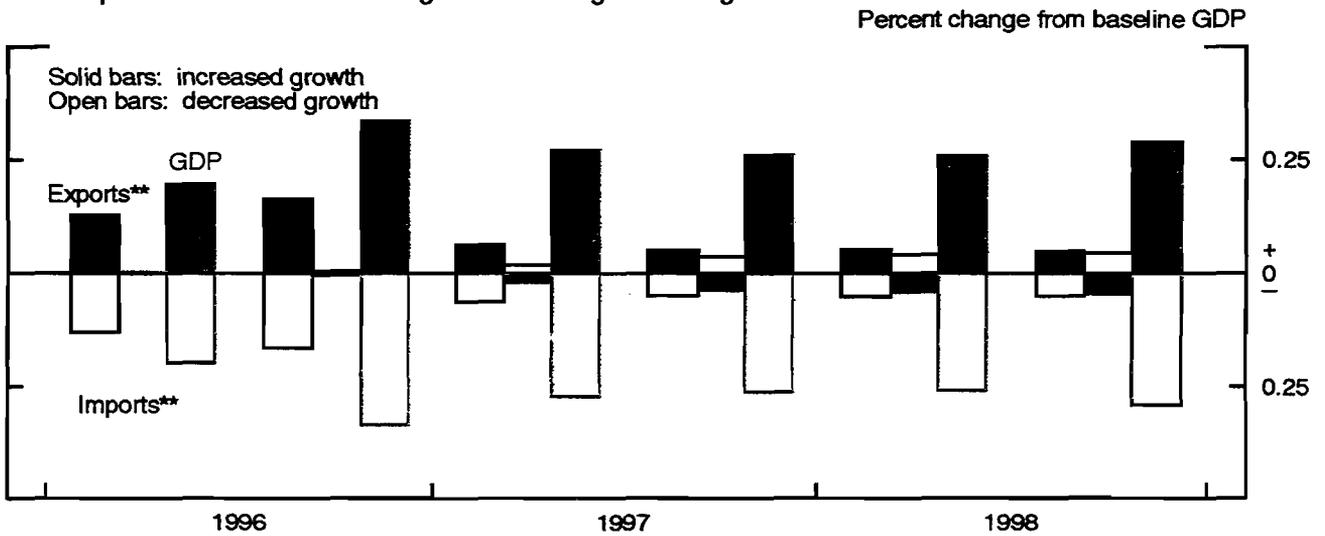
## Risks to the Forecast

Foreign Growth: Projection Error and Actual Deviation from 1988-1995 Average\*



\* Error is difference between actual growth and forecast made one year earlier.

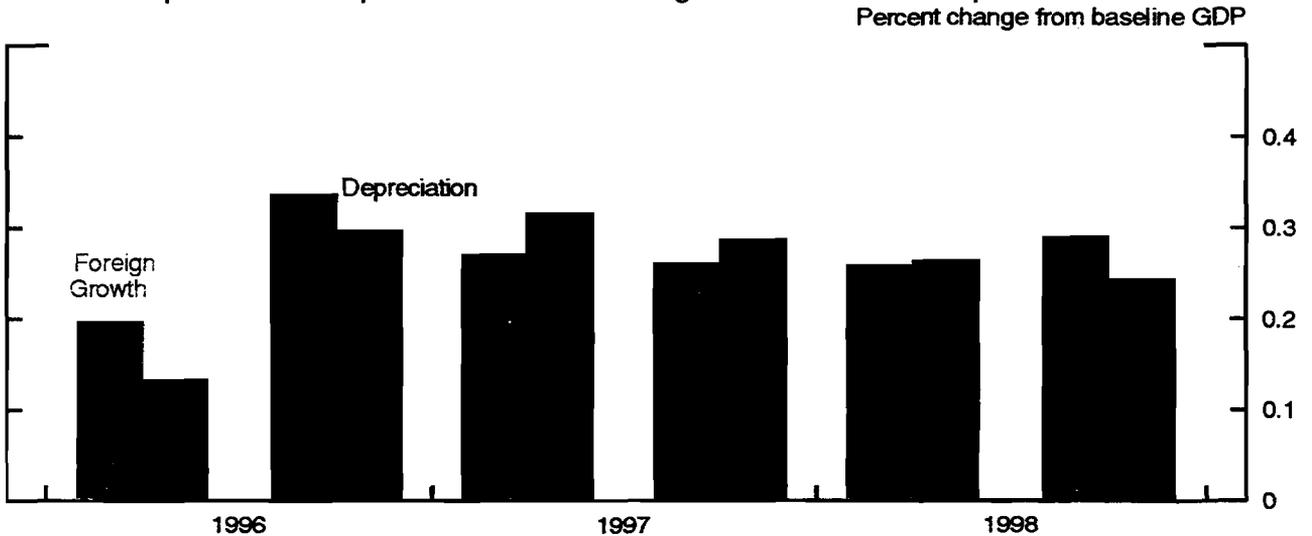
U.S. Implications of One Percentage Point Change in Foreign Growth\*



\* Change phased in over 1996; foreign GDP held at higher (lower) level for 1997 and 1998.

\*\* Change in percent contribution to GDP

U.S. GDP Implications: Comparison of Increased Foreign Growth and Dollar Depreciation



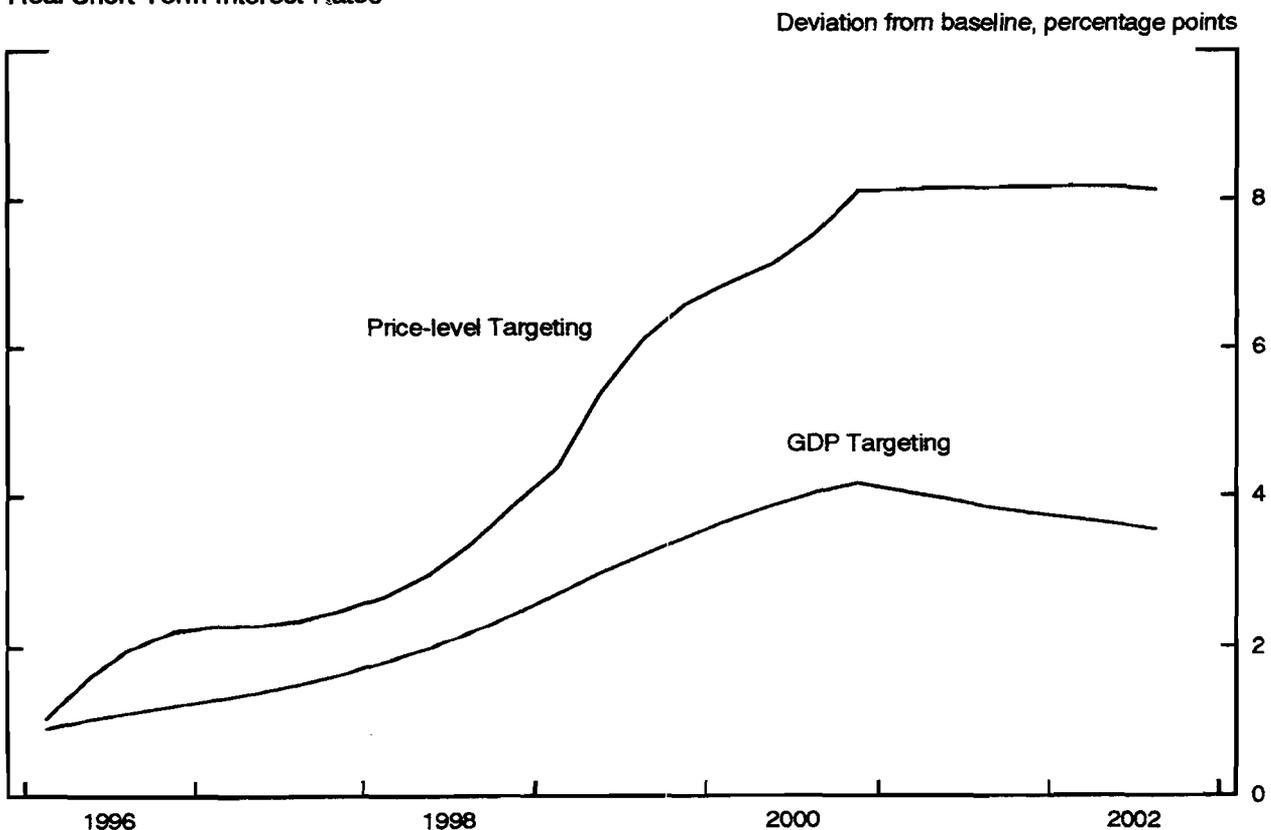
## External Pressures on Short-Term Interest Rates

Baseline: Greenbook forecast extended to 2002

Monetary Policy Assumptions: (a) Real GDP held close to baseline  
(b) Price level held close to baseline

Alternative Scenario: Dollar depreciates during 1996-2000 by an amount sufficient to narrow the U.S. current account deficit by 2 percent of GDP

Real Short-Term Interest Rates\*

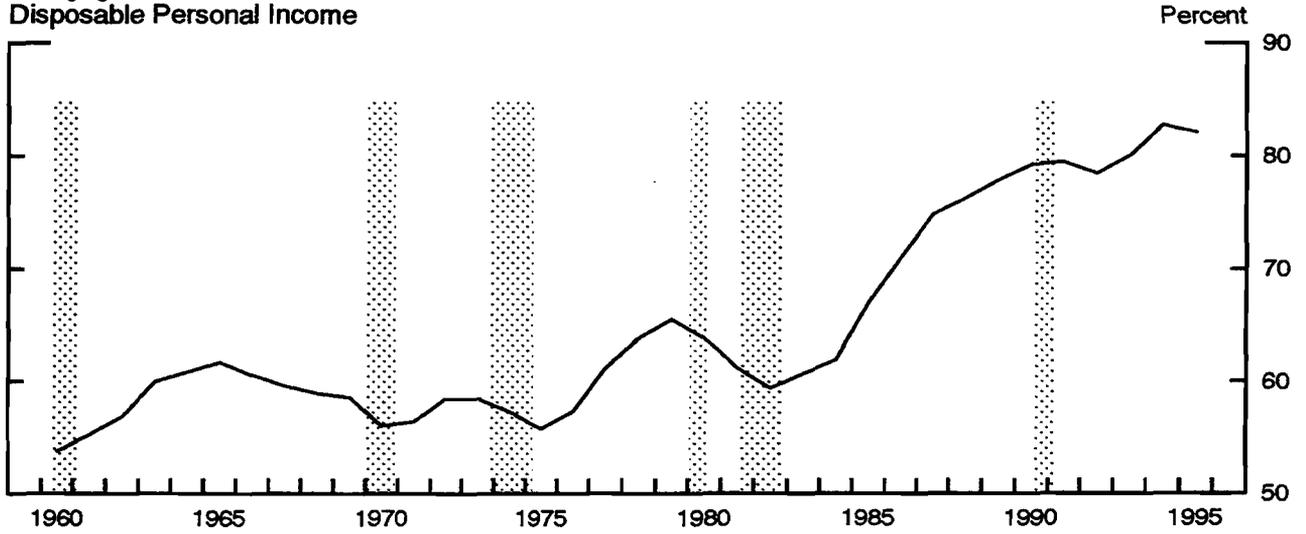


\* Federal funds rate less inflation over previous four quarters.

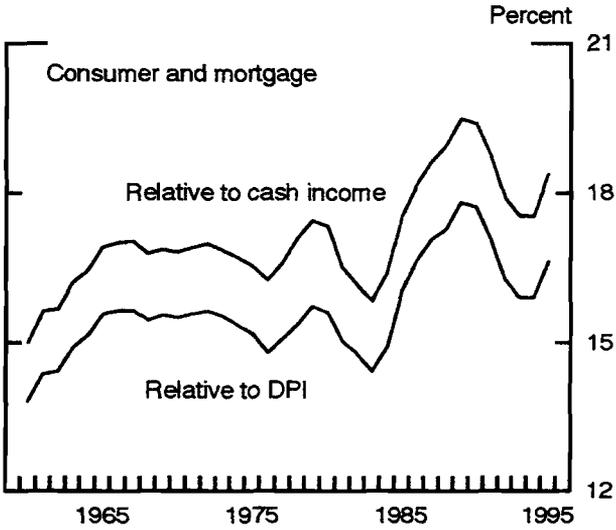
Chart 11

# Household Financial Condition

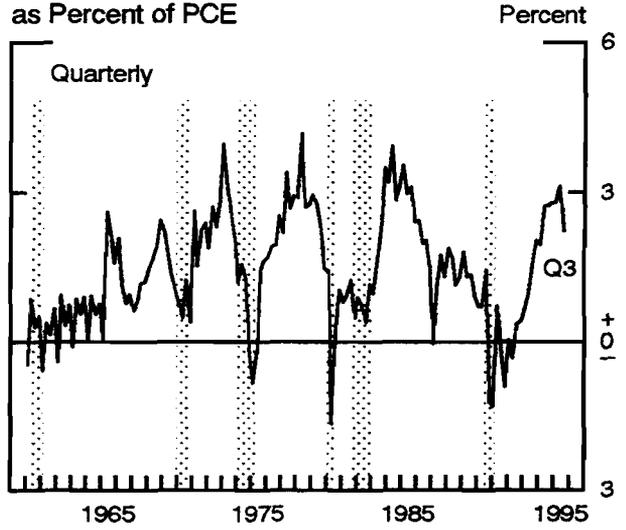
### Mortgage and Consumer Debt Relative to Disposable Personal Income



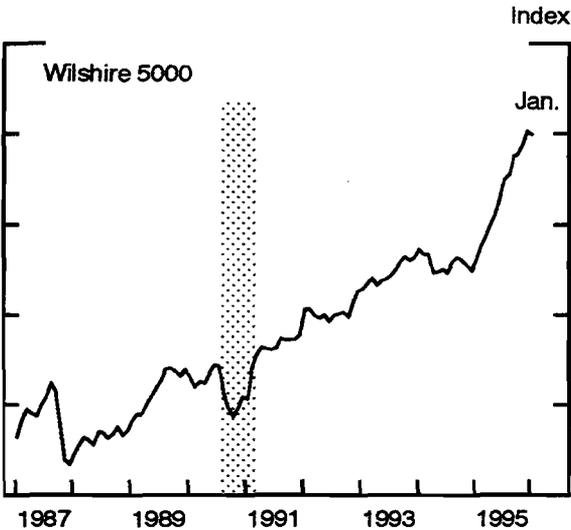
### Debt Service



### Consumer Credit Flow as Percent of PCE



### Stock Market



### Net Worth as a Share of Disposable Personal Income

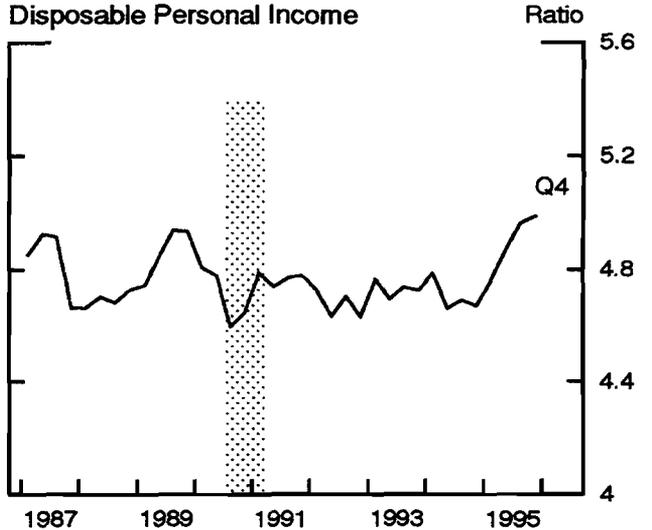
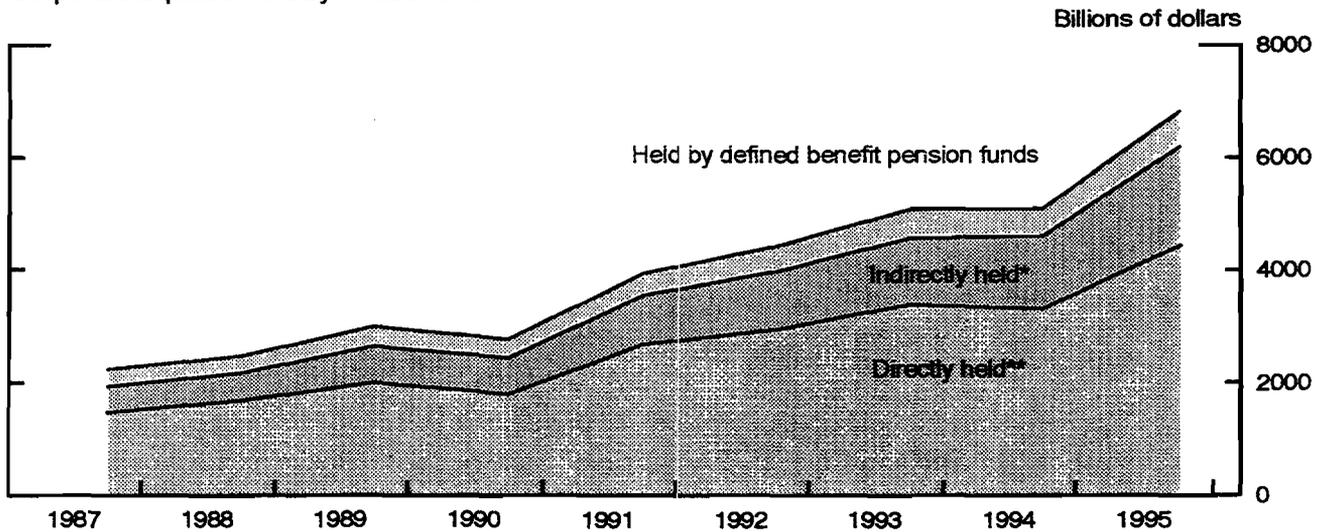


Chart 12

Corporate Equities Held by Households



\* Corporate equities held through defined contribution pension plans, variable annuities, IRA/Keoghs, and personal trusts.  
 \*\* Includes corporate equity held by direct household ownership of mutual fund shares.

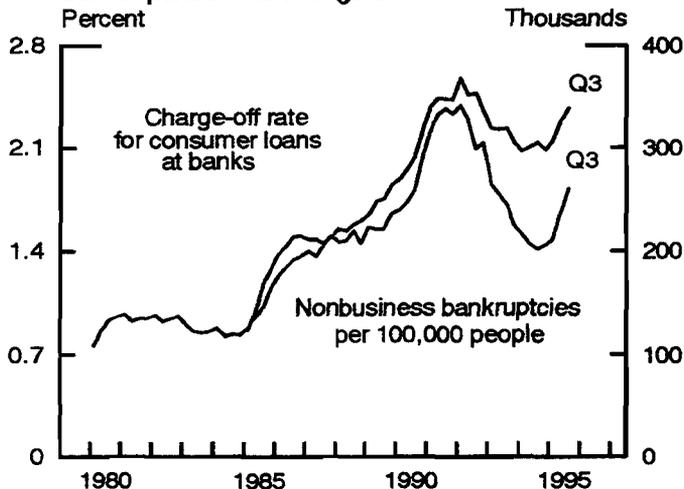
Distributions of Assets and Debt, by Income in 1992  
 (Percent of all households)

Income (1992 dollars)	Percentage of households (1)	Assets (2)	Debt (3)	Median debt payment ratio <sup>1</sup> (4)	Financial assets greater than debt <sup>2</sup> (5)	Percent of families who did <u>not</u> save (6)
<b>All households</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>15.4</b>	<b>37.6</b>	<b>42.7</b>
Less than 10,000	17.6	3.3	2.2	11.6	15.9	68.3
10,000-19,999	19.6	6.1	4.7	14.7	27.9	51.1
20,000-29,999	15.3	7.2	7.7	15.3	35.0	44.3
30,000-49,999	20.8	14.7	14.3	17.1	45.2	33.6
50,000-99,999	19.3	26.1	32.6	16.2	56.3	28.8
100,000-249,999	6.1	23.2	22.9	14.9	51.1	20.2
250,000 or more	1.3	19.5	10.6	6.2	46.8	10.9

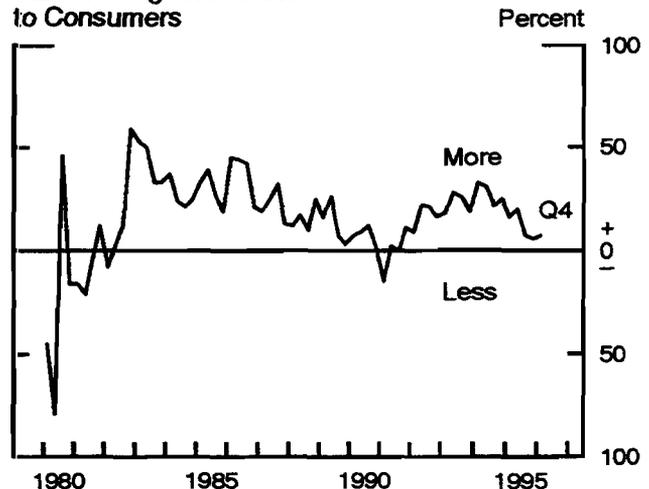
1. Ratio of debt payments to income for households with debt.

2. Percent of families with debt in each income group whose financial assets are greater than or equal to their non-mortgage debt.

Bankruptcies and Charge-offs



Bank Willingness to Lend to Consumers



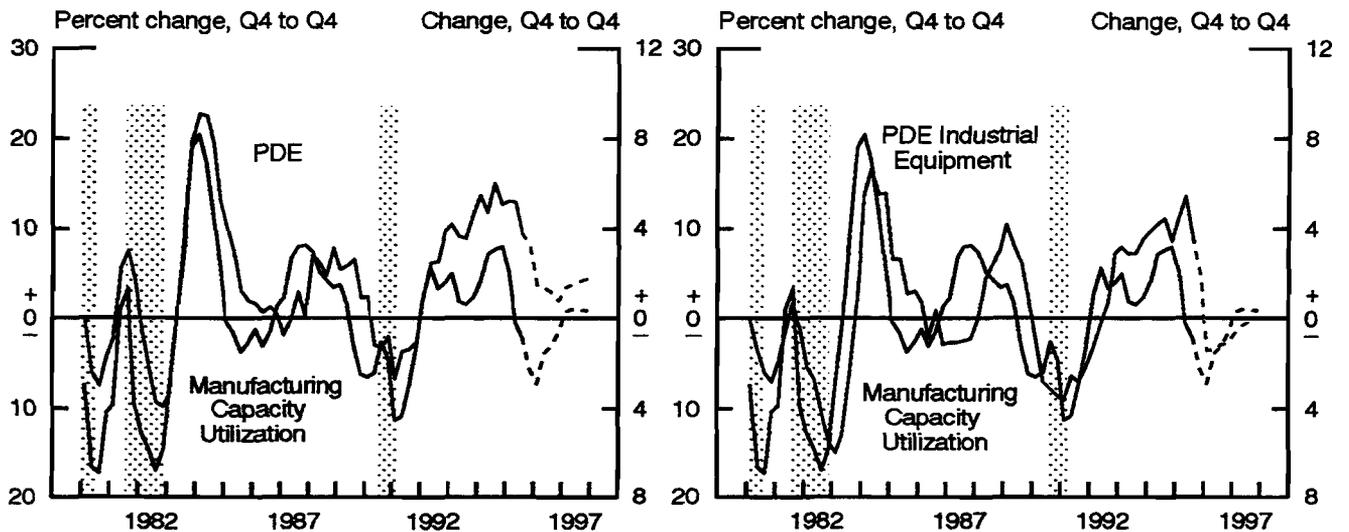
Source: Senior Loan Officer Survey

Chart 13

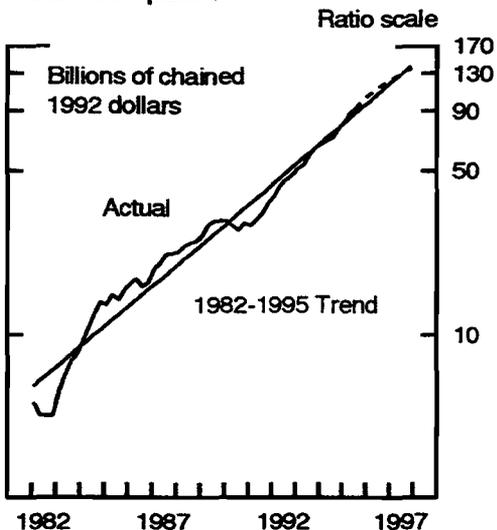
**Producers' Durable Equipment**  
(Chained 1992 dollars, percent change, annual rate)

	Average growth in expansion		Projection		
	1980s <sup>1</sup>	Current <sup>2</sup>	1995	1996	1997
1. PDE	7.0	11.2	8.2	2.0	4.4
2. Computers	32.8	27.6	30.4	18.8	14.9
3. Other	6.0	8.8	4.3	-1.7	1.6
4. Industrial equipment	3.8	8.8	4.6	-2.7	.3

1. Average growth rate from cyclical trough in PDE (1982:Q4) to cyclical peak (1989:Q3).
2. Average growth rate from cyclical trough in PDE (1992:Q1) to 1995:Q3.



**PDE - Computers**



**Selected Forecasts of U.S. Unit PC Sales Growth, 1996**

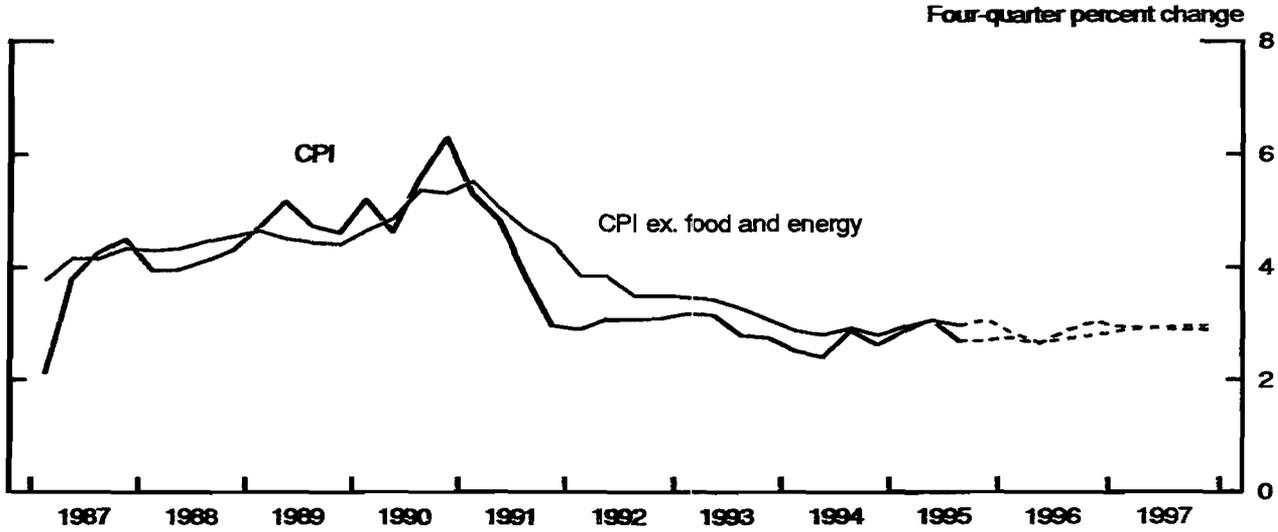
Source	Forecast*	Comments
IBM	28	Some uptick in 1996; still filling the small business market
DEC	low 20's	About the same as 1995
Intel	17-20	Some upside risks
Texas Instruments	15-20	Growth a bit slower than in 1995; but still healthy

\* Growth for the entire industry, not individual company.

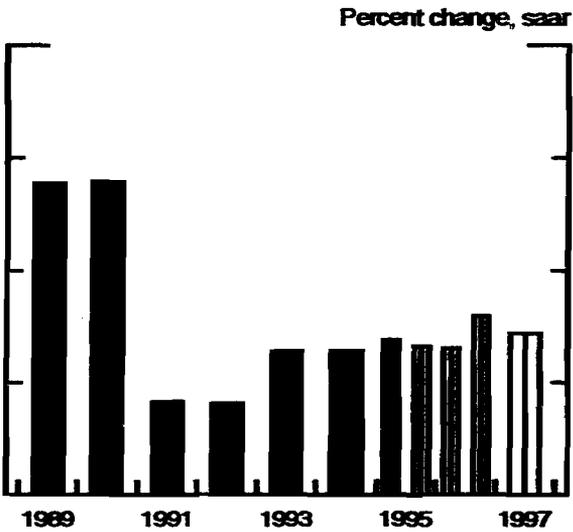
Chart 14

# Staff Inflation Outlook

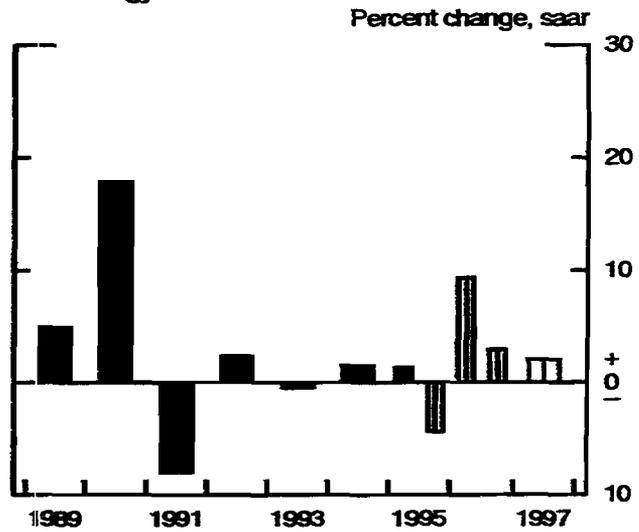
### Consumer Price Index



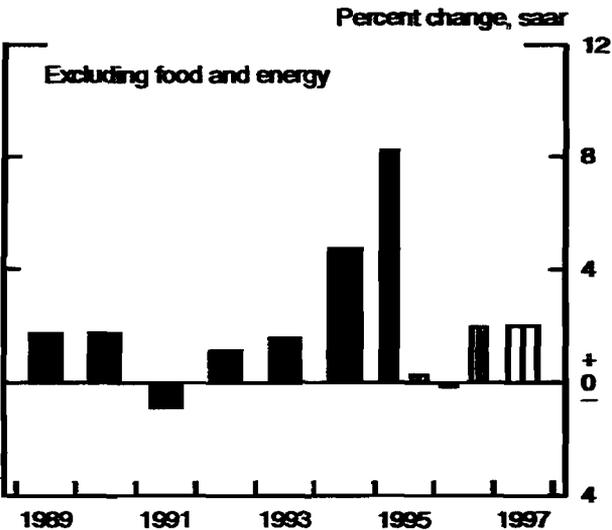
### CPI Food



### CPI Energy



### PPI Intermediate Materials



### Manufacturing Capacity Utilization

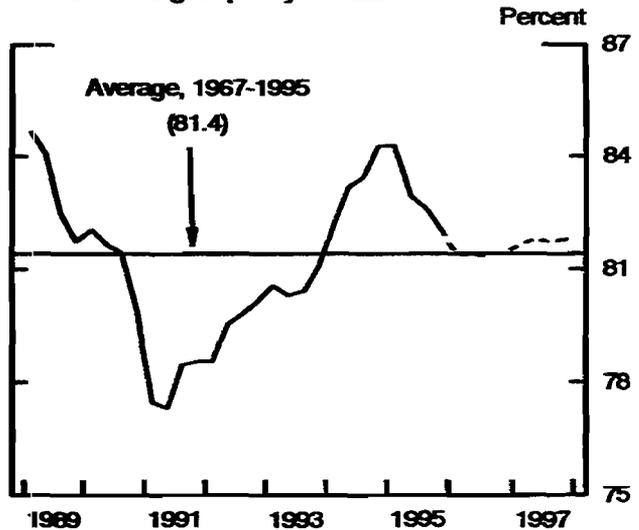


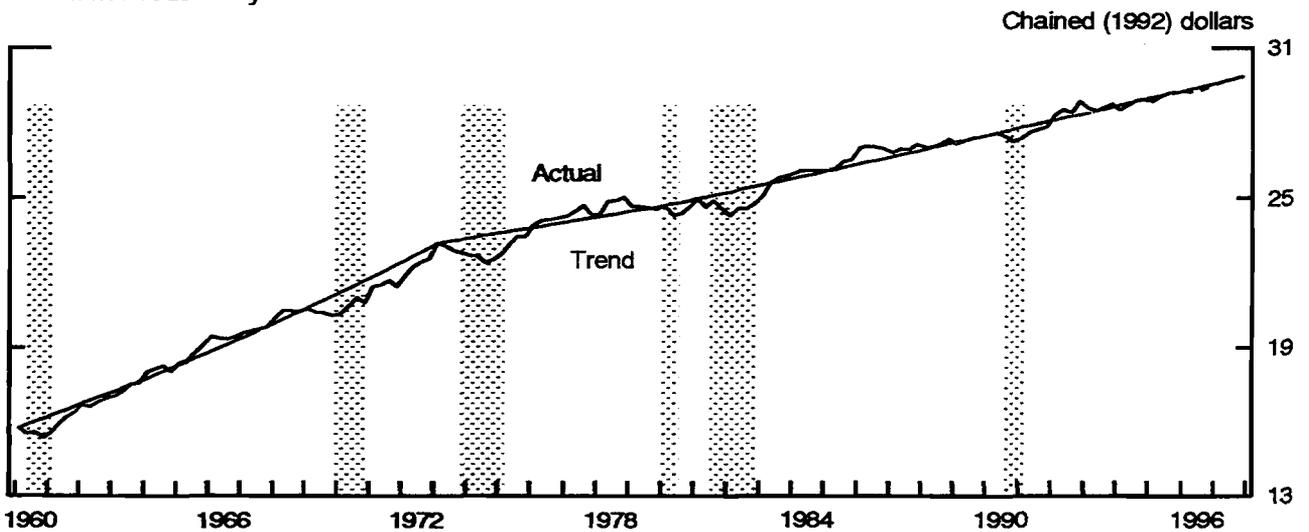
Chart 15

# Potential Output

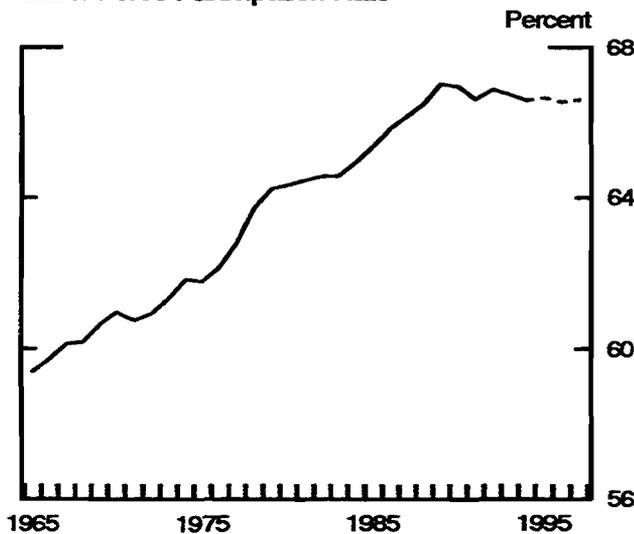
	Supply-side Components of Potential GDP (Average annual growth rate)			
	Long-term trends			Projection
	1960-73	1973-79	1979-90	1990-97
1. Potential GDP	4.1	3.3	2.7	1.9
2. Labor input	1.2	2.0	1.6	1.0
3. Labor productivity <sup>1</sup>	3.0	.9	1.1	1.1
4. Technical factors <sup>2</sup>	-.1	.4	.0	-.2

1. Nonfarm business sector.  
2. Technical factors include: the ratio of GDP to the output of the nonfarm business sector; the ratio of nonfarm business employment to household employment; and rounding error.

Nonfarm Productivity

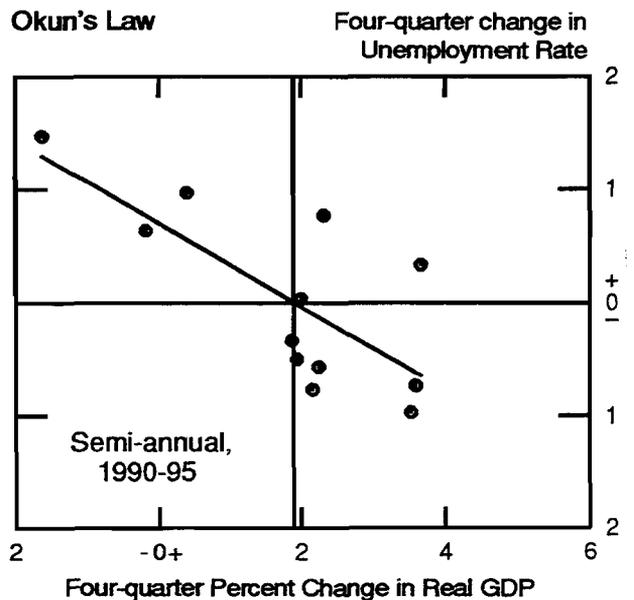


Labor Force Participation Rate\*



\* Adjusted for CPS revision.

Okun's Law



## Has Inflation Been Surprisingly Low?

Revisions to Forecast for 1995

	CPI <sup>1</sup>	Unemploy. Rate <sup>2</sup>
<b>Blue Chip:</b>		
Jan. 95	3.3	5.6
Jan. 96	2.8	5.6
<b>Staff:</b>		
Jan. 95	2.9	5.4
Jan. 96	2.7	5.6

1. Q4 to Q4 percent change.  
2. Annual average.

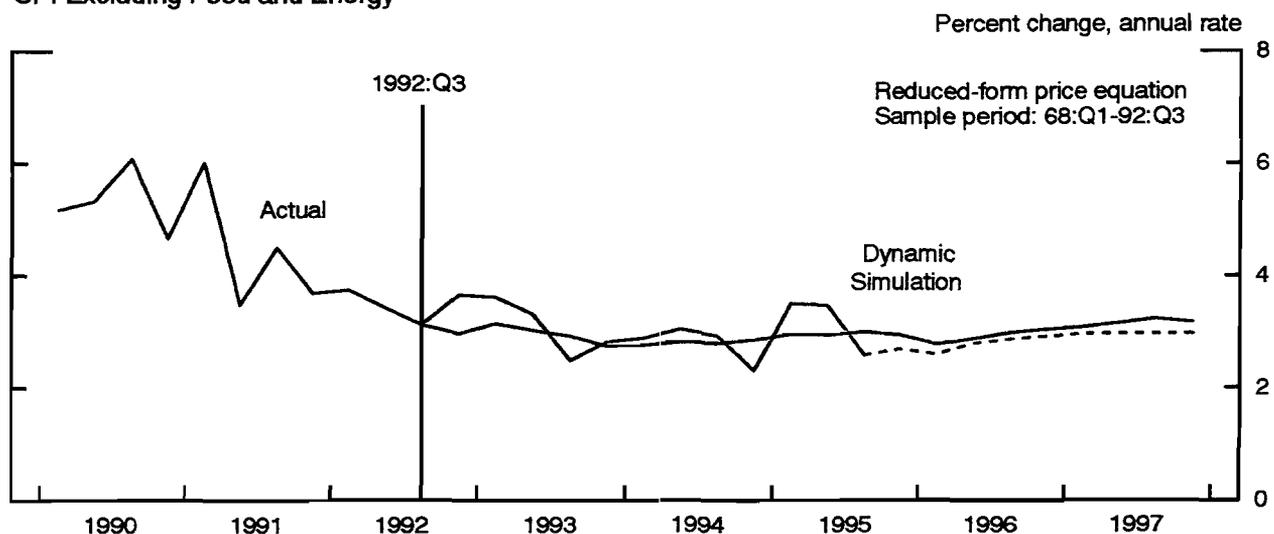
Prices Excluding Food and Energy

12-month percent change\*

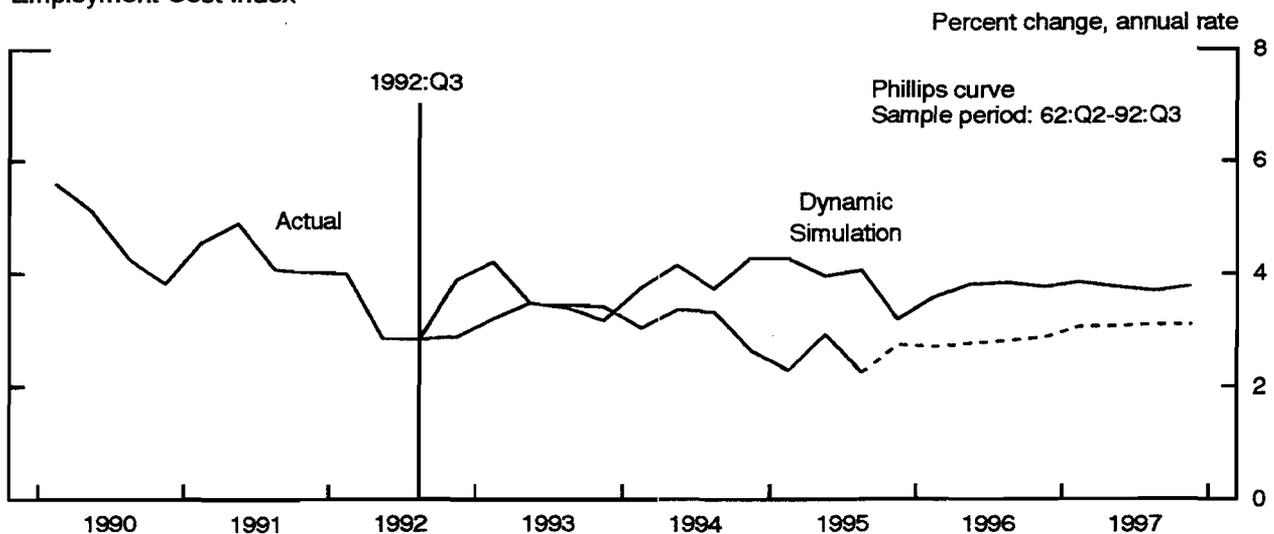
	PPI	CPI
1993	.3	3.1
1994	1.6	2.8
1995	2.7	3.0

\* November to November.

CPI Excluding Food and Energy



Employment Cost Index\*

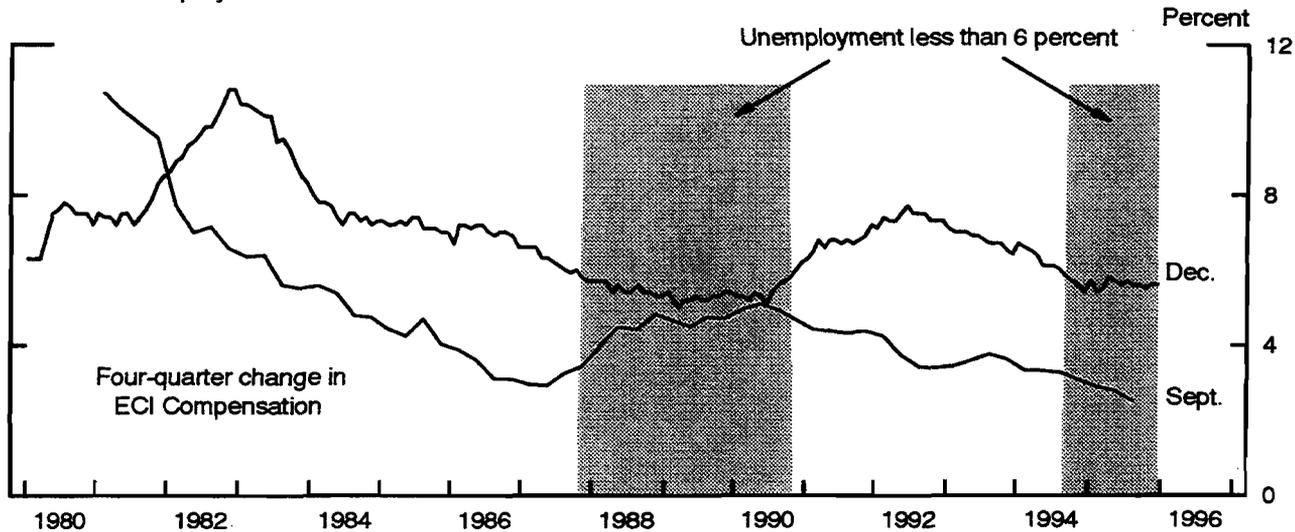


\* Spliced with hourly nonfarm business compensation prior to 1960:Q2.

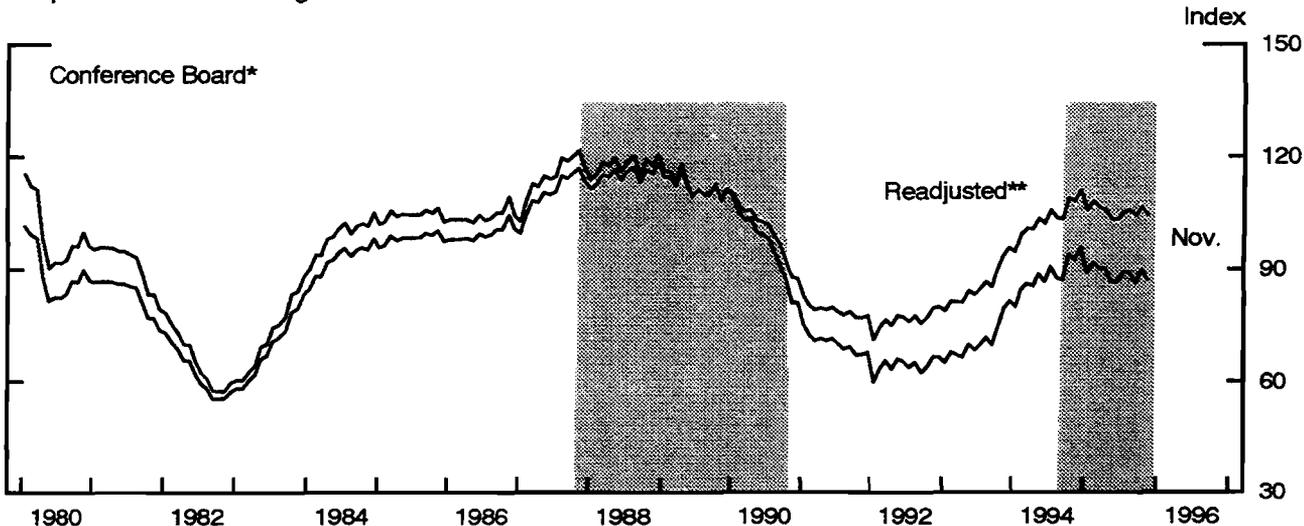
Chart 17

# Labor Market Conditions

### Civilian Unemployment Rate



### Help Wanted Advertising



\* Includes Abraham(1987) adjustments.

\*\* Adjusted additionally for trend in employment at personnel supply agencies.

### Job Availability

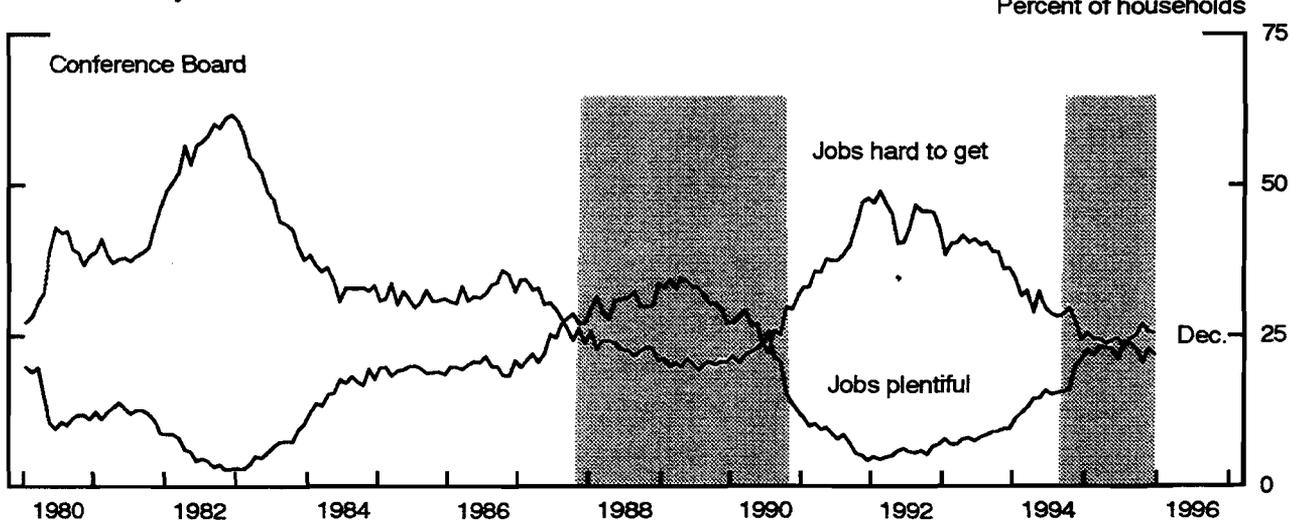
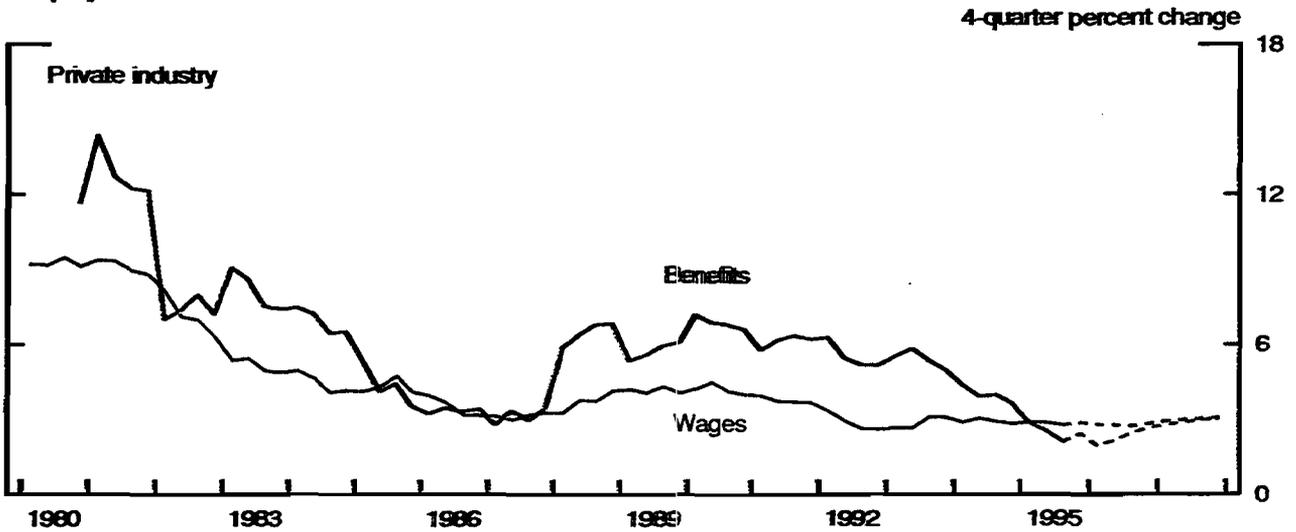


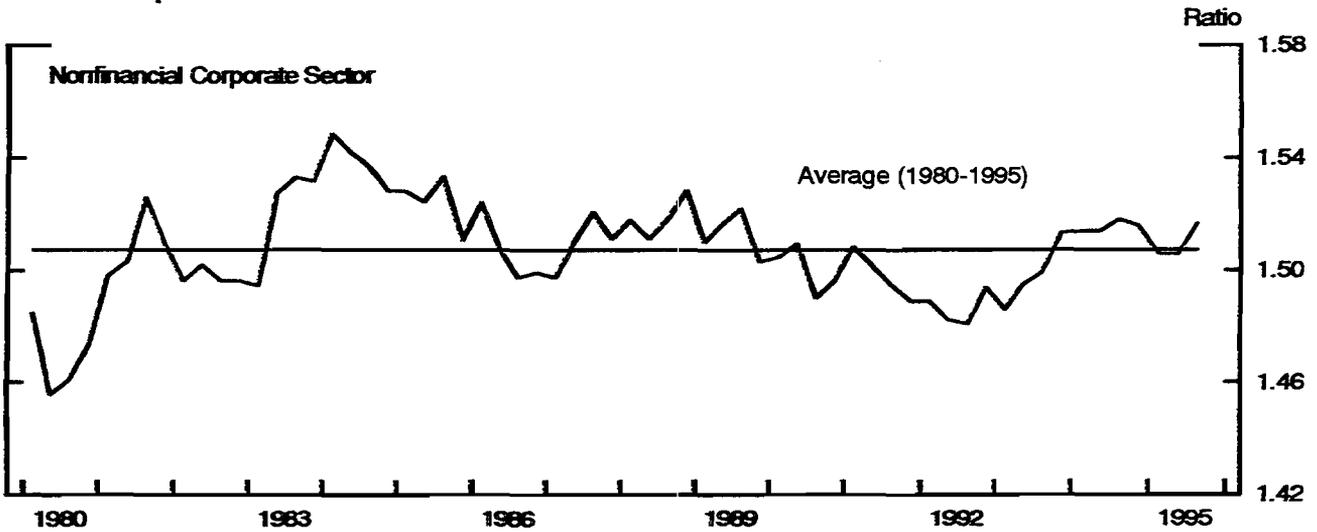
Chart 18

## Labor Compensation and the Price Markup

Employment Cost Indexes



Price Markup Over Unit Labor Costs



Forecast Risks: Core CPI for 1996-1997

	Markup Remains High	Markup Returns to "Normal"
Growth of Compensation per Hour Remains Low	"Staff Forecast" 3 percent	2 percent
Growth of Compensation per Hour Returns to "Normal"	4 percent	3 percent

Chart 19

**ECONOMIC PROJECTIONS FOR 1996**

	<b>FOMC</b>		
	Range	Central Tendency	Staff
	—————Percent change, Q4 to Q4—————		
Nominal GDP	3.9 to 5.0	4.3 to 4.8	4.5
previous estimate	$4\frac{5}{8}$ to $5\frac{1}{2}$	$4\frac{3}{4}$ to $5\frac{3}{8}$	
Real GDP	1.6 to 2.5	2.0 to 2.2	1.8
previous estimate	n.a.	n.a.	
CPI	2.5 to 3.0	2.7 to 2.9	3.0
previous estimate	$2\frac{1}{2}$ to $3\frac{1}{2}$	$2\frac{7}{8}$ to $3\frac{1}{4}$	
	—————Average level, Q4, percent—————		
Unemployment rate	5.5 to 6.1	5.6 to 5.8	5.6
previous estimate	$5\frac{1}{2}$ to $6\frac{1}{4}$	$5\frac{3}{4}$ to $6\frac{1}{8}$	

n.a. Not applicable.

NOTE: Central tendencies constructed by dropping top and bottom three from distribution.

January 31, 1996

Long-run Ranges  
David E. Lindsey

The basic issue facing the Committee today regarding the monetary ranges would seem to be whether or not to raise them to better align them with the probable outcome. The table on page 11 of the bluebook shows staff projections of money, debt, and nominal GDP. The Greenbook sees nominal GDP growing at 4-1/2 percent this year on the baseline assumption of an unchanged federal funds rate. Regarding M2, even with short-term opportunity costs little changed, we think that growth of this aggregate will be boosted some relative to GDP expansion by a slightly flatter yield curve this year than last. With liquid balances thus more attractive relative to longer-term investments, we're projecting a speedup of M2 growth in 1996 to 5-1/4 percent, from its 4-1/4 percent pace last year. The implied decline in the velocity of M2 we're projecting, about 1/2 percentage point, follows no change in V2 last year.

For M3, we foresee a slight moderation from last year's 6 percent pace to 5-3/4 percent this year. While depository credit growth is expected to slow somewhat more quickly, the elimination last December of FDIC insurance premiums for well-capitalized banks should heighten their willingness to issue wholesale deposits, providing some support to M3 growth.

The slowdown in depository credit mirrors the deceleration we foresee in domestic nonfinancial debt. We think consumer credit growth will be moderated by restrained consumer durable spending. Business borrowing also should ease off this year as inventory investment slows.

Growth of debt of 4-1/2 percent is projected to match that of nominal GDP.

As shown at the top of page 14 in the bluebook, debt growth also matches that of nominal GDP in the projections that assume an easier or tighter policy stance. Under all three projections for this year, the growth of debt runs in the middle portion of the 3-to-7 percent provisional debt range chosen by the Committee last July, shown in the column labeled alternative I. Accordingly, in the next two columns, which give alternative ranges, we have retained the 3-to-7 percent debt range.

The staff projections shown for M2 and M3 are less well aligned with the Committee's provisional ranges. Under the baseline projection of a 5-1/2 percent funds rate, M2 would run a bit above the 5 percent upper bound, while projected M3 growth nearly reaches its 6 percent upper bound. Easier policy, by reducing opportunity costs and raising nominal income, would be even more likely to produce M2 and M3 outside the provisional ranges.

To clearly encompass the staff baseline projections, an upward adjustment to the provisional ranges for M2 and M3 of 1 percentage point would be needed, as in alternative II. To center approximately the staff baseline projections around their midpoints, the upper and lower bounds of the provisional ranges need to be raised by 2 percentage points, as in alternative III.

In presenting the rationales for each of the three alternative ranges, the bluebook did not counsel reemphasizing M2 and M3 as intermediate targets or even as information variables helping to guide the policy stance. To be sure, major and persistent deviations of money growth from expectations would need to be examined for whatever light

they might shed on the credit intermediation process and the economic outlook, as was done during the credit-crunch episode in the early 1990s. And, in the past couple of years, M2 and M3 have behaved, on average, more in line with historical patterns. Even so, we believe that much more experience would be needed regarding the behavior of the broad aggregates in a variety of circumstances before seriously contemplating an upgrading of their policy role.

Indeed, uncertainty about intermediate-term M2 behavior is the main reason the Committee established its provisional 1-to-5 percent range for this year last July. Rather than bracketing the most likely growth of M2 this year, this range was intended to serve as a benchmark for secular M2 growth under conditions of price stability with the resumption of a stable long-run average V2. That range, centered on 3 percent, then would accommodate 2 percent growth in real potential output along with a 1 percent trend in measured inflation. The Committee in choosing this range indicated in its report that M2 growth near the upper bound this year could prove consistent with the Committee's expectations for nominal GDP. If the FOMC instead wished to use the announced ranges to communicate to the public the likely growth of broad money in the current year associated with its expectations for macroeconomic outcomes, then alternative I would seem to be too low.

Your expectations for the economy are not indicative of intentions to hold down growth in nominal GDP to rates that would produce money growth in the alternative I ranges. Rather, they are similar to the Greenbook baseline forecast. The 1 percent higher ranges of alternative II, at a minimum, hence would be required to clearly encompass the growth of broad money likely to be consistent with your economic outlook. Money would be in the upper portion of

their alternative II ranges, but this may be an attractive attribute, if the Committee wishes to communicate its intention to resist surprises to nominal GDP and inflation more vigorously if they are on the upside than on the downside. In such circumstances, as consistent with an "opportunistic" approach to price shocks, the aggregates would be likely to deviate from expectations by more in a negative direction than in a positive direction. Hence, the point expectation for money growth absent surprises could legitimately run above the midpoint of the annual range.

Alternative III better centers the staff baseline projections for M2 and M3 around the midpoints of the ranges. This alternative thus might be preferred if the Committee wished the ranges to be oriented toward conveying expectations of the money growth in the current year consistent with economic projections. Such reasoning in favor of this alternative would be strengthened to the extent you thought that significant further policy easings this year would be needed to achieve the Committee's projected economic outcome, in contrast to the Greenbook analysis. Such easings would additionally bolster anticipated money growth relative to the staff baseline projections.

January 31, 1996

Policy Alternatives Briefing  
Donald L. Kohn

As background for your decision today, I thought it might be useful to say a few words about policymaking in the face of economic uncertainty. Policymakers always complain about "unusual uncertainties", but those complaints might have particular merit at the current moment: In addition to the usual questions about the factors affecting spending, key data have been delayed, both the short- and long-run fiscal prospects are particularly murky, and the behavior of costs and prices has raised the possibility that the inflation process has changed in a fundamental manner.

Much of this can be translated--albeit very loosely--into uncertainty about the equilibrium real interest rate. In practice, the odds are pretty high that any particular estimate of the equilibrium funds rate will be off the mark significantly, partly because changing economic conditions imply a continually shifting equilibrium. The exercise in chart 3 of the bluebook, which is reproduced as the first exhibit in the package labelled "Monetary Policy Briefing", was intended to address the consequences of misjudging the equilibrium real rate. The upper panel shows what happens to inflation if the Committee holds the nominal funds rate along a predetermined path--the baseline--when the underlying real rate has in fact shifted.

Two inferences can be drawn from this panel. One is that evidence of movements in equilibrium rates or errors in judgment may be very slow to emerge. We have posited a large shift in the equilibrium rate, but in the fourth quarter after the change, inflation rates diverge from baseline by only .2 percent. To be sure, there is likely to be collateral evidence that underlying conditions are diverging from expectations. For example, an unexpected shift in demand that changed the equilibrium rate would be reflected in the unemployment rate as well as in inflation; but even for our sizable shock, deviations in the unemployment rate are small enough after a year to be within a reasonable range of uncertainty about the true value of the NAIRU. Moreover, changes in supply, rather than demand, that shifted equilibrium rates would be detectable primarily through the behavior of inflation itself. The second inference is that, after a while, the costs of holding the nominal funds rate at the wrong level escalate rapidly, as unanticipated inflation outcomes push the real rate further from its new equilibrium.

In the lower two panels, we assumed that the Committee recognizes the problem after a year and responds to bring the inflation rate back to its baseline by the end of the simulation period. To do that, the nominal funds rate must be increased or decreased quite substantially to take account of the change in the equilibrium rate, the effects

of the temporary increase or decrease in inflation on the realized real rate, and the effects of the recognition lag. That lag has meant that there was a period of inadvertent stimulus or restraint; if inflation is to be returned to its original path, policy actions must compensate by overshooting equilibrium for a while.

We recognize that the illustrated reaction to a downward shock doesn't make much sense in the context of the Committee's price stability objective. If instead, the Committee were following an "opportunistic" disinflation strategy, policy ease would be less pronounced, so that the Committee could lock in the unanticipated, but nonetheless welcome, disinflation in train. In preparing the bluebook, we had problems simulating this response in the full staff model. We tried it with more success in the MPS model, which has a less complex and complete foreign sector, and the results are shown in the upper panel of your next exhibit. After the initial lag, the funds rate under opportunism, shown by the long dashed line, is taken down to about its new equilibrium value to put the economy back at its potential. As you can see from the lower panel, under this strategy, inflation levels out at a new, lower rate.

When starting with some inflation, the asymmetrical response to shocks inherent in an opportunistic strategy will produce higher average real interest rates over time as the economy is hit by both positive and negative shocks. It

is these higher real rates that eventually produce price stability. Compared to a deliberate disinflation strategy, under most circumstances, opportunism would produce lower real rates and a longer path to price stability. The average level of rates and the time to price stability under opportunism depends on the nature of the shocks hitting the economy. Larger and more frequent shocks imply a faster track to price stability, because the Committee has more opportunities to respond asymmetrically.

Another shortcoming of the simulations shown in the bluebook is the lack of a forward-looking bond market in the model. The single panel in Exhibit 3 illustrates--once again using the MPS model--the effects of different assumptions about the bond market on the policy response to an upward shock to aggregate demand. Because the bond market anticipates your actions, long-term rates rise to the levels needed to counter the inflation impulse with much less movement in the federal funds rate. Your responses can be more measured, though ultimately of course you must raise rates to offset the inadvertent stimulus and take account of the higher equilibrium. I haven't shown the simulation, but the effects of forward-looking markets are especially striking when those markets are adjusting now to a future change in the equilibrium funds rate--say because of a legislated, but delayed, fiscal policy initiative. In these circumstances, models will frequently give seemingly perverse

policy prescriptions--for example to ease in the face of a tax cut when such a cut scheduled several years in the future raises bond rates. While one wouldn't want to take such a result too seriously, it does highlight the difficulty in determining the current equilibrium funds rate when markets are reacting to prospective developments.

It is difficult to draw clearcut lessons from these stylized exercises for the conduct of monetary policy. One reason, as noted in the first point on the next page, is that there are several types of uncertainties complicating the conduct of monetary policy. The simulations dealt with just one, the level of the real equilibrium rate, because that seems to encapsulate the sorts of "unusual uncertainties" now facing the Committee. But a second broad type of uncertainty concerns the transmission of policy--that is, the response of the economy to a change in interest rates. Vice Chairman Blinder often cited this in discussing the case for cautious monetary policy actions. Although in concept, and in very simple models, the two types of uncertainties might be separable, in fact they probably interact in complex ways; it wouldn't be surprising if an increase in uncertainty about the level of the right rate was accompanied by greater uncertainty about how the economy would react to an actual rate adjustment.

Nonetheless, I think the simulations did leave a few tentative lessons behind, which may be applicable to the

current situation of uncertainty about the level of the equilibrium rate. One is that slow reactions to changed circumstances risk policy errors that can be difficult and costly to reverse--in the parlance of the FOMC, sluggish policy risks "getting behind the curve". Even when uncertainty about the equilibrium real rate has increased, policymakers need to form a judgment about whether the equilibrium has shifted, and then, if necessary, make at least some adjustment. The simulations showed that it may take a while for definitive evidence to emerge, and that waiting until one is quite confident that an action is called for can too easily result in accumulated inflation pressures or economic weakness that would ultimately require much stronger policy action to correct.

In making its judgment about the equilibrium real rate, the Committee would need to consider whether changes in uncertainty haven't affected the equilibrium rate itself. Bond markets that are more uncertain tend to build in higher liquidity premiums--and we may have seen a bit of this in recent weeks as expected volatility rose. Spenders facing greater uncertainty about jobs or about government support might tend to cut back a bit on purchases if they are risk averse, saving more for the heightened possibility of a rainy day.

Another lesson of the simulations is that a bond market that correctly anticipates the Committee's actions

can play a helpful stabilizing role, allowing the Committee to move cautiously, at least for a time. But, for the "bond market vigilantes" to be helpful, they need to understand the Committee's ultimate intentions so they can take a reasonable guess at its actions under various circumstances. To the extent the Committee can clarify its objectives, it will at least raise the odds that financial markets will reinforce rather than undercut achieving those objectives.

Moreover, greater uncertainty implies the need for flexibility in policy making. The difficulties of gauging the appropriate rate at any point in time and the likelihood that circumstances will change suggest that policy adjustments may need to be frequent. And those adjustments might involve shifting course without necessarily having eased or tightened a great deal. To be sure, frequent small adjustments in policy, including course reversals, may be difficult to explain to the public and could confuse markets about Federal Reserve objectives and strategies. But those costs would have to be weighed against the benefits of reducing the odds on persistent policy misalignments.

Finally, an opportunistic strategy entails a particular kind of flexibility--stronger reactions to possible increases in inflation than to possible decreases. In effect, this is what the Committee has been doing for the last 10 or more years--responding promptly and forcefully to possibilities that inflation could rise and more cautiously

and by less to the possibility that inflation might fall short of expectations. This pattern is what has produced further disinflation since the economy emerged from the recession of the early 1980s.

**STRICTLY CONFIDENTIAL (FR) CLASS I-FOMC**

*Material for*

*FOMC Monetary Policy Briefing*

*January 31, 1996*

Exhibit 1  
**SHOCKS TO THE EQUILIBRIUM REAL FUNDS RATE  
(FIFTY BASIS POINTS)**

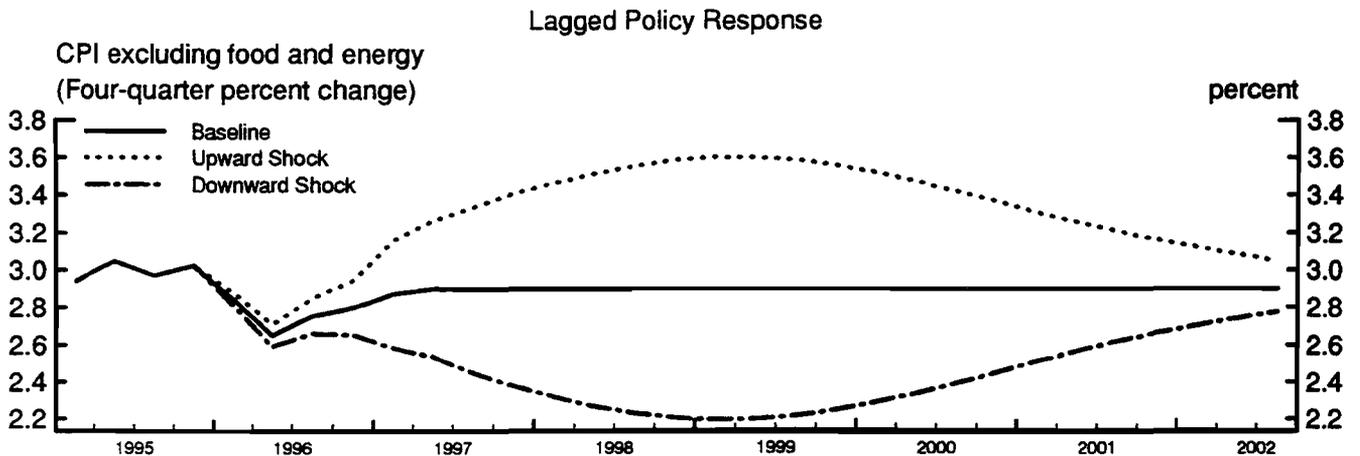
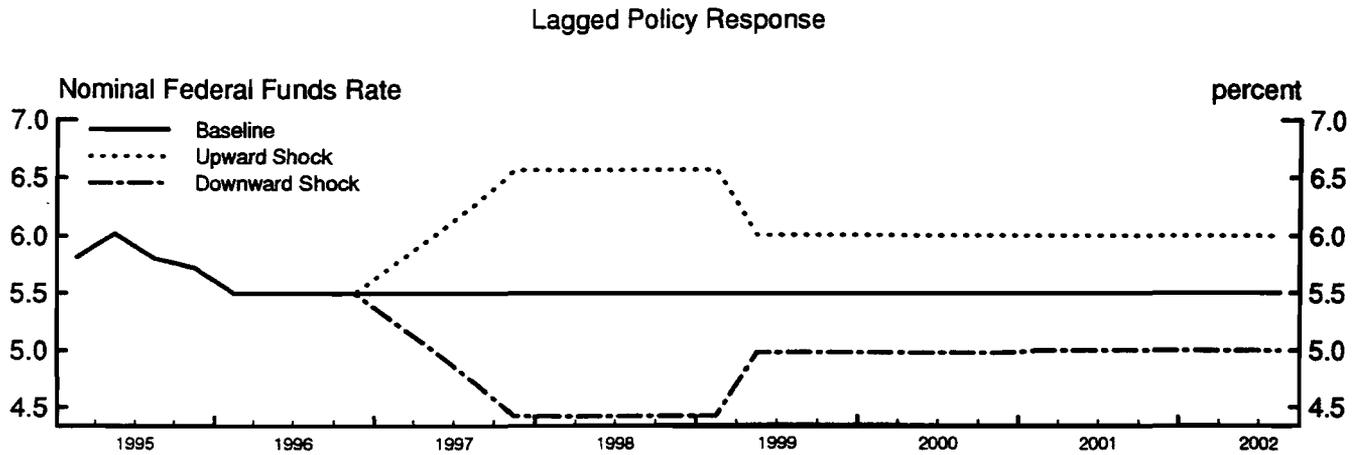
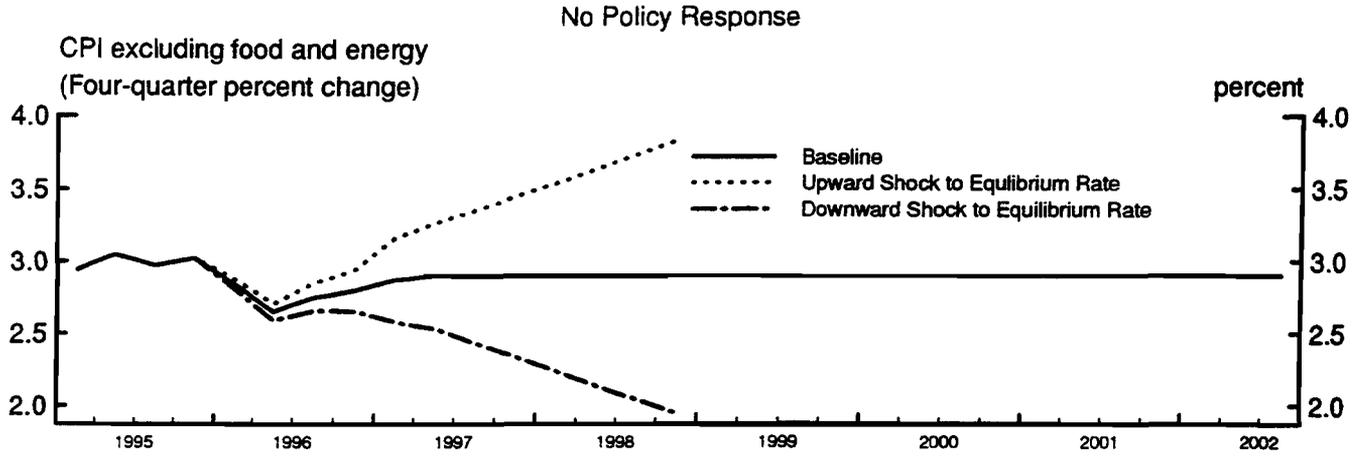


Exhibit 2

Alternative Monetary Responses  
To a Permanent 50 Basis Point Shock  
To the Equilibrium Real Interest Rate

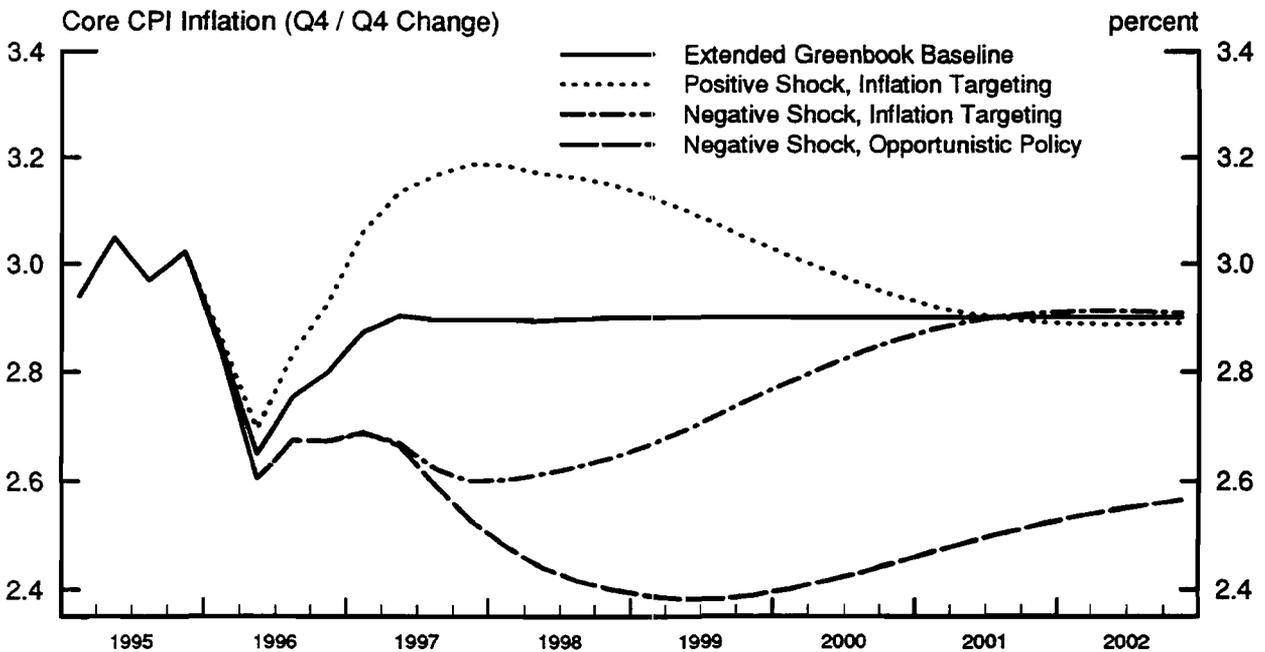
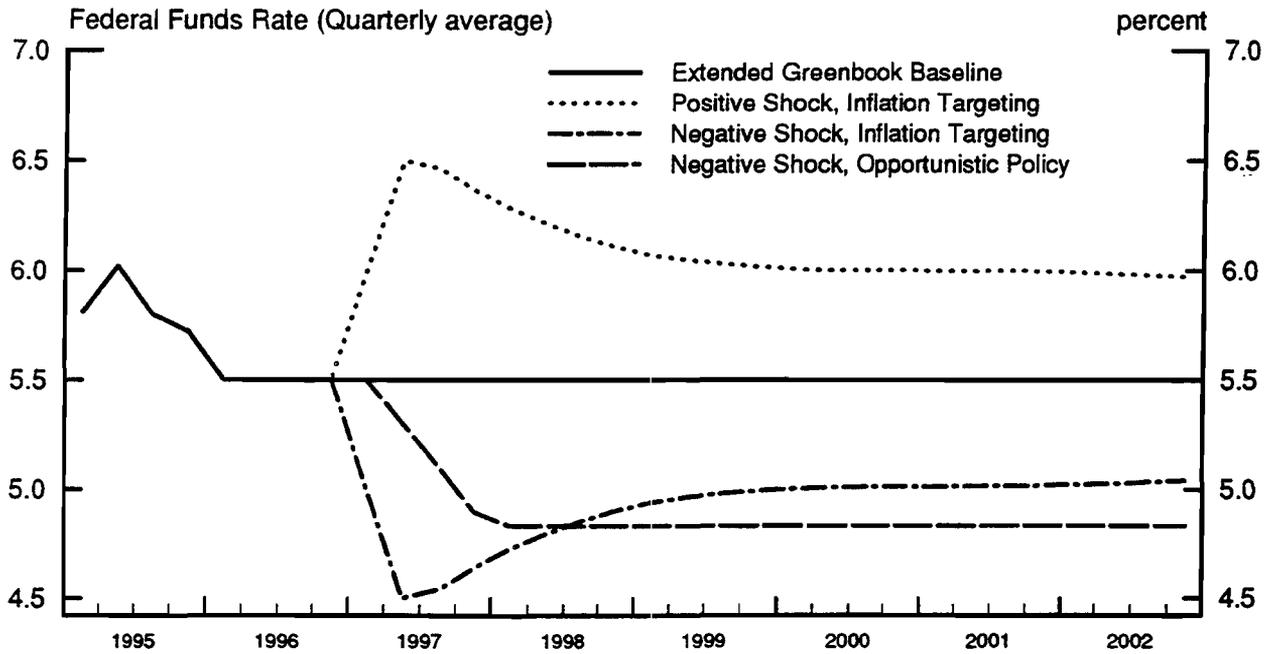
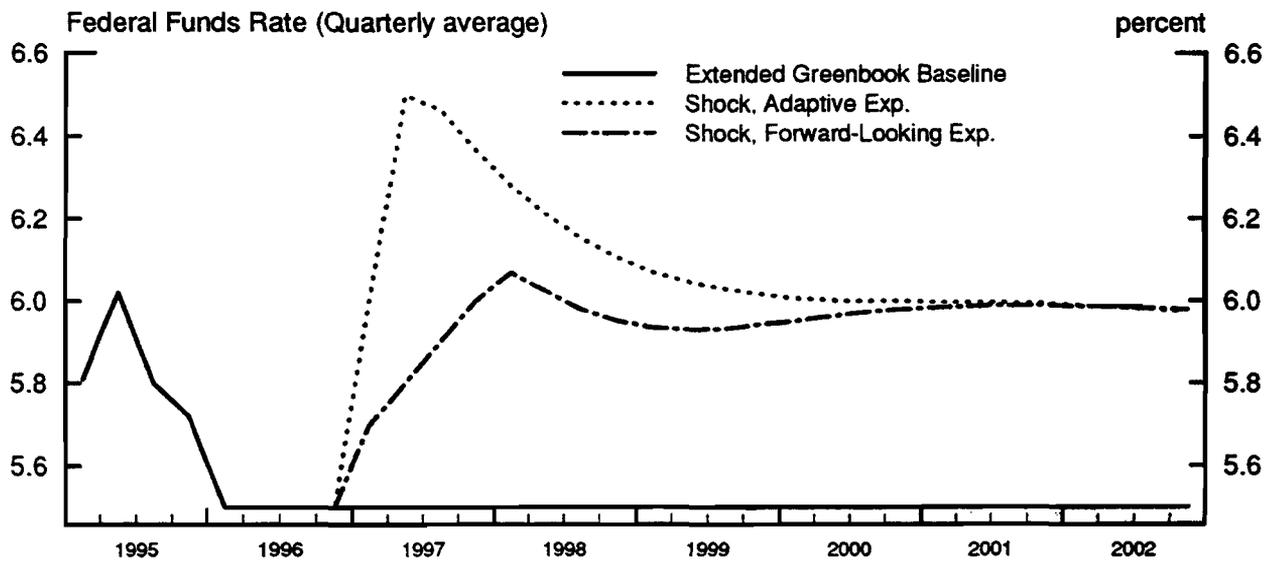


Exhibit 3

Monetary Policy and the Role of Bond-Market Expectations:  
Effect of a Permanent 50 Basis Point Rise  
In the Equilibrium Real Interest Rate



## Exhibit 4

### **Some lessons**

1. Monetary policy faces uncertainties:
  - About the level of equilibrium rates
  - About the transmission mechanism of policy
2. Slow reactions to changed circumstances risk policy errors that can be difficult and costly to reverse.
3. A bond market that correctly anticipates the Committee's actions can play a helpful stabilizing role, allowing the Committee to move cautiously for a time.
4. Greater uncertainty implies the need for flexibility in policymaking.
5. An opportunistic strategy entails stronger reactions to possible increases in inflation than to possible decreases.