

## APPENDIX

FOMC NOTES - PRF  
JULY 2-3, 1996

Mr. Chairman,

I will be referring to this package of charts distributed just now at the table.

In assessing the prospects for changes in monetary policy in Germany, Japan and the United States, in each case in recent weeks market participants appear to have come to the same conclusion: namely, that interest rate changes are expected: "not now, . . . later." In this setting, financial markets have recently traded with something of a happy calm.

As you can see in Charts 1A, B and C, near-term, forward interest rates in Germany, Japan and the United States, specifically, rates on 3-month deposits, 3, 6 and 9 months forward, all have two features in common: first, they all suggest an expected rising structure of future short-term interest rates and, second, the levels of expected rates had all been shifting higher over the period but have come down a bit in recent days.

German forward rates rose in June as the Bundesbank extended its fixed-rate, 3.3 percent repo operations in the face of continued above-target growth in M3. Market participants have for some time been expecting the Bundesbank to lower the repo rate if M3 growth moderates, to take advantage of the room provided by the reductions in the Lombard and Discount rates in April. With this background, five other European central banks lowered rates during June. However, the longer the Bundesbank goes without reducing the repo rate, the greater the odds seem that the next move will be an increase rather than a decrease -- though still sometime off in the future.

On balance, Japanese forward rates are now unchanged since your last meeting and below the levels reached in late April when market participants thought the Bank of Japan might raise rates in early summer. The weight of evidence released during the period indicated a strengthening Japanese economy but one not yet sufficiently strong to meet Japanese officials' criteria of a self-sustaining expansion. Thus, the prospect for a Bank of Japan rate increase appears to have been put off at least until the fall.

Forward interest rates on dollar deposits rose sharply following the release of the May non-farm payrolls report but have declined recently as market participants came to think the Committee was less likely to raise rates at this meeting.

With the widespread sense that interest rate increases in the U.S., Japan and Germany are a problem -- if at all -- for "mañana", the three bond markets have traded relatively uneventfully and to little net-consequence, as you can see in Charts 1D, E and F. German bond yields did back up from the time of the Committee's last meeting, but are now around levels reached in April and May. Ten-year Japanese yields are slightly lower and Treasury yields are slightly above their late-May levels.

Other bond markets have been more eventful and more attractive to investors, as reflected in Charts 2A, B and C. Italian, Spanish, Swedish and U.K. 10-year bond yields all declined by between 12 and 29 basis points as spreads between these "high yielders" and German bunds narrowed by between 24 and 41 basis points. Canadian 10-year bond yields declined early in the period to their narrowest spread against the 10-year Treasury since February 1994 before retracing much of these gains. As has been the case all year, Brady bonds continued to rally in the period, further narrowing their spreads against Treasuries.

Recently, it's true that Mexican interest rates have backed up and the peso has weakened. It is also true that the fundamentals in a number of these and other countries appear to be improving. But if one looks widely, both at industrial and emerging markets, there is a noticeable consistency not only of the countries' "improving fundamentals" but of what also appears to be a "reaching for yield" on the part of investors.

In foreign exchange markets, as shown in Chart 3, since your last meeting the dollar has traded within relatively narrow ranges against both the mark and the yen: slightly stronger against the yen and slightly weaker against the mark.

The greatest expressed concern in the exchange market has been that a prompt firming in rates by the Bank of Japan could strengthen the yen sharply. Near-term fundamentals are thought to favor the dollar, as Japanese imports increase with the economic expansion and the current account surplus tends to decline. However, it is widely thought that there could be a burst of yen strength when the Bank of Japan starts raising rates, as a result of the expected unwinding of -- what are thought to be -- large, leveraged short-yen-long-dollar positions. But for the time being, the dollar's movements have been slight.

Indeed, the exchange market has enjoyed such low volatility that traders have been complaining about a lack of volatility for some time, which can also be seen in the low level of implied volatility on currency options in the bottom panels of Chart 3.

While the stability of the dollar's exchange rate is certainly welcome, I do not take much comfort from the low level of implied volatility.

While low implied volatilities reflect, in part, the recent exchange rate stability, they also reflect a heavy supply of option writers. With low returns available in spot market trading, banks and other intermediaries are turning to the options market to capture premium income and, thereby, appear to be building up a large aggregate position speculating on the continued stability of exchange rates.

When spot rates break out of their ranges, the hedging activity of the option writers may give added momentum to exchange rate movements and implied volatilities could jump sharply -- reflecting increased actual volatility, a decline in the supply of eager option writers, and a squeeze on those who are short. While I am always happy to leave the challenge of forecasting the dollar's levels to Ted Truman, Charts 4 and 5 give me the confidence to stick my neck out and note that: recent experience suggests that exceptionally low implied volatilities on currency options have often been followed by exceptionally large upward spikes in implied volatilities and, frequently, the dollar has not performed very well during these episodes. February and March of 1995 were a particular case in point.

In domestic operations, to meet the large estimated reserve shortages the Desk executed both temporary operations and purchased outright 3.3 billion dollars of Treasury bills on June 10th. Large reserve needs continue into the maintenance period beginning at the end of this week but the needs then recede in the subsequent period, as both currency and required reserves are forecast to decline.

As you can see in Chart 6, we experienced some firmness in the funds rate on the last days of the first two maintenance periods following the Committee's last meeting. While demand for reserves still appears to be skewed to the end of the periods, on both June 5th and June 19th we were unable to inject the full amount of reserves we intended because of insufficient propositions by dealers. Thus, the firmness in the funds rate on these days principally reflected inadequate supply due to our smaller-than-intended operations. As an aside, you can also see, that we experienced a sharp spike and then a drop in the funds rate last night. However, there were plenty of reasons in the banking system yesterday, but some anomalous inefficiencies in their distribution led Banks first to think conditions were tight.

On June 5th, some banks were able to use the carryover provision to bring their deficiencies into the subsequent period, muting the impact of the low reserve levels on the funds rate. However, on June 19th, with a 3.5 billion dollar shortfall in our operations due to the lack of propositions, the funds rate briefly traded at 50 percent before a variety of banks borrowed 3.8 billion dollars from the discount window.

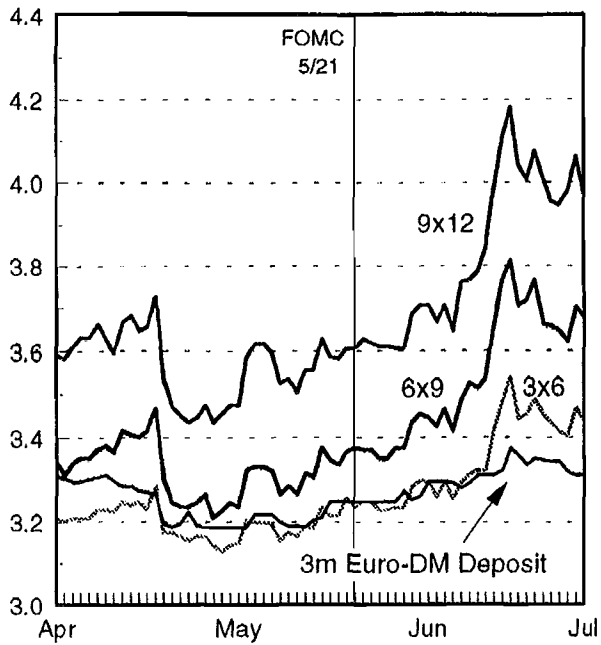
I have previously mentioned my concern about the timing of our daily operations, which fall after the hours when the financing markets tend to be deepest and most active. I believe it would be preferable if we could routinely operate earlier in the morning, when most dealers arrange their financings. But we do not now have adequate information on banks' reserve positions and on the Treasury's balances sufficiently early in the day to be able to operate confidently much earlier than the current 11:30 a.m.

To shift our normal operating time two hours earlier will require operational changes in the collection and dissemination of information on balances and reserves at both the Treasury and the Reserve Banks which may only be feasible in 1997 with changes in systems. However, in the next few months I will prepare an outline for the Committee of the steps that need to be taken in the hope that I can elicit your support in persuading both Federal Reserve and Treasury staffs to accelerate the flow of the reserves data on which we depend.

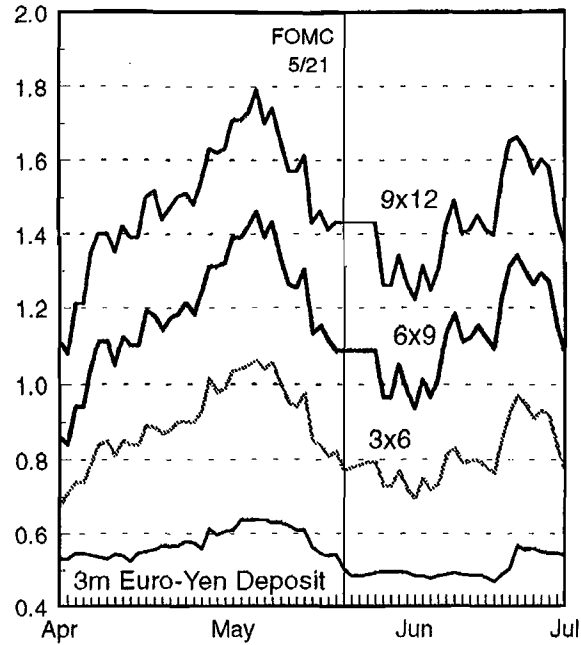
Mr. Chairman, we had no foreign exchange intervention operations during the period. I will need the Committee's ratification of our domestic operations. I will be happy to answer any questions.

# Chart 1

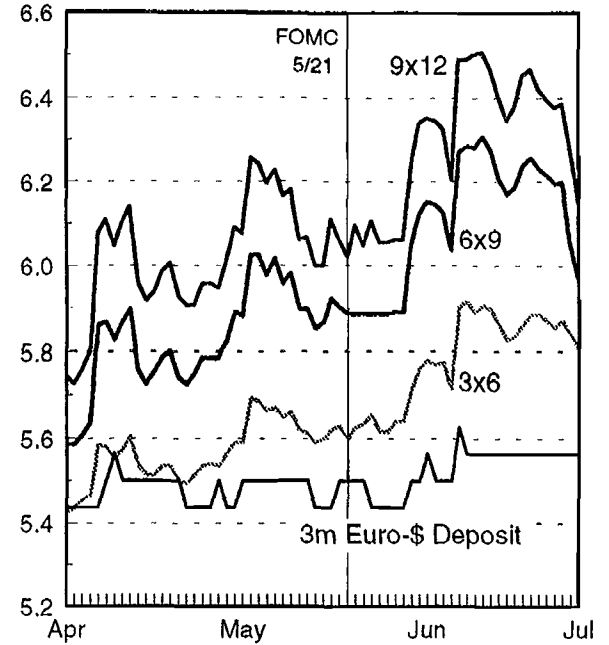
1A: German Forward Rate Agreements



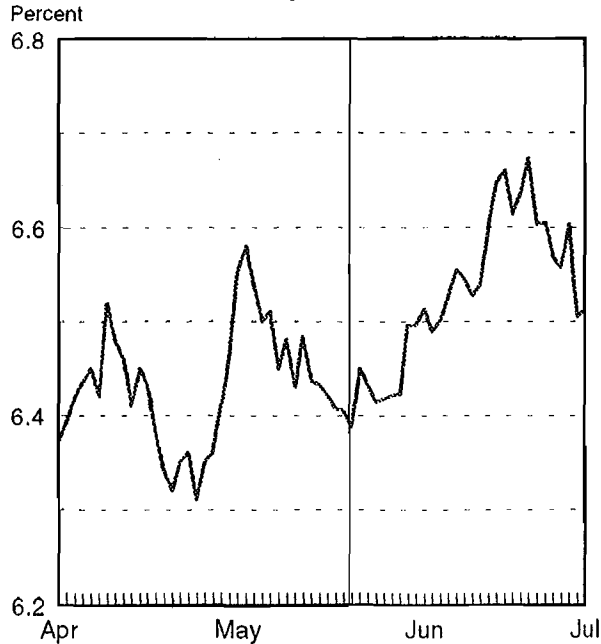
1B: Japanese Forward Rate Agreements



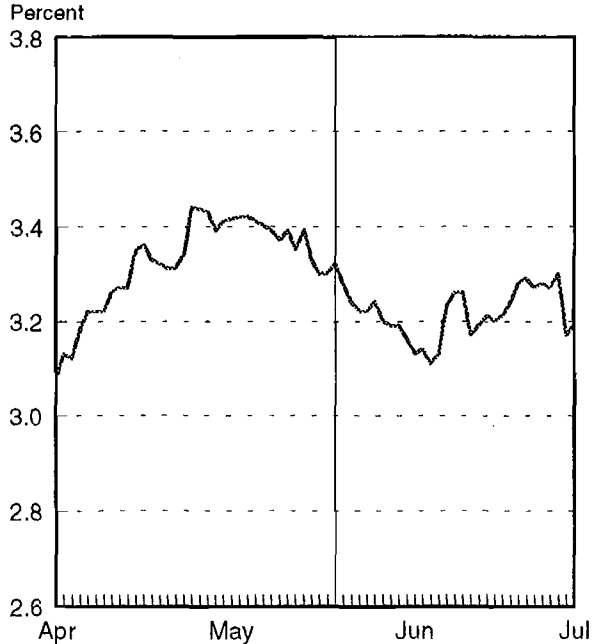
1C: U.S. Forward Rate Agreements



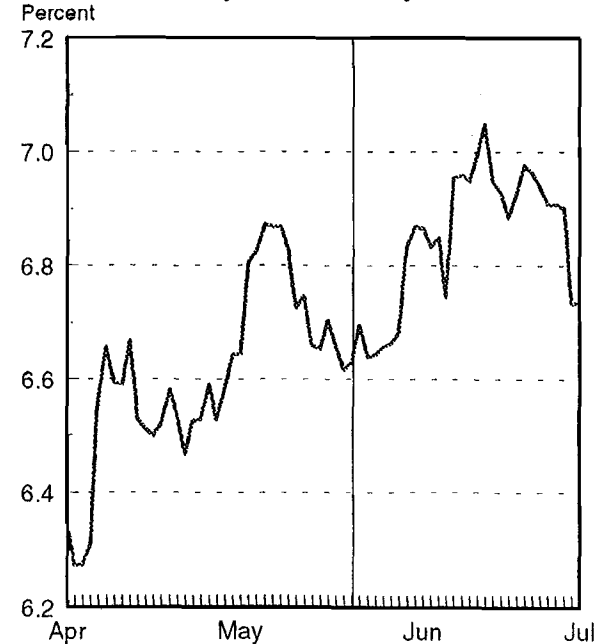
1D: German 10-year Gvt. Bond Yield



1E: Japanese 10-year Gvt. Bond Yield

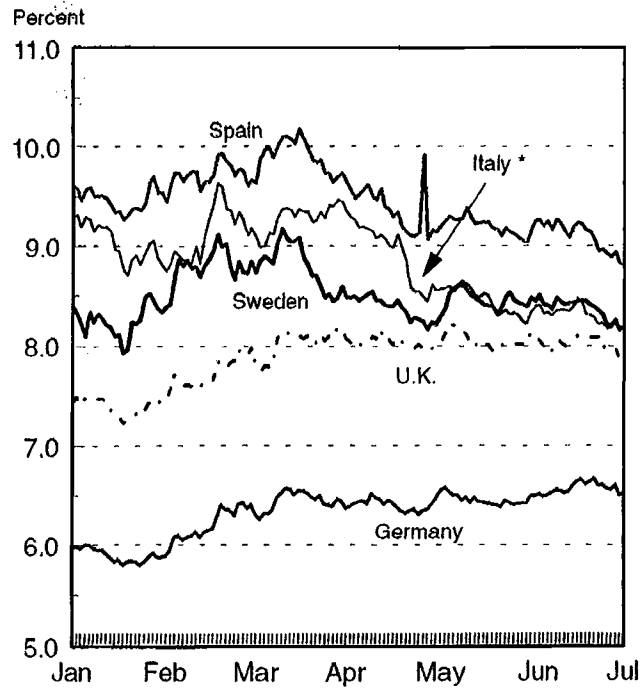


1F: U.S. 10-year Treasury Bond Yield



## Chart 2

### 2A: 10-year Government Yields

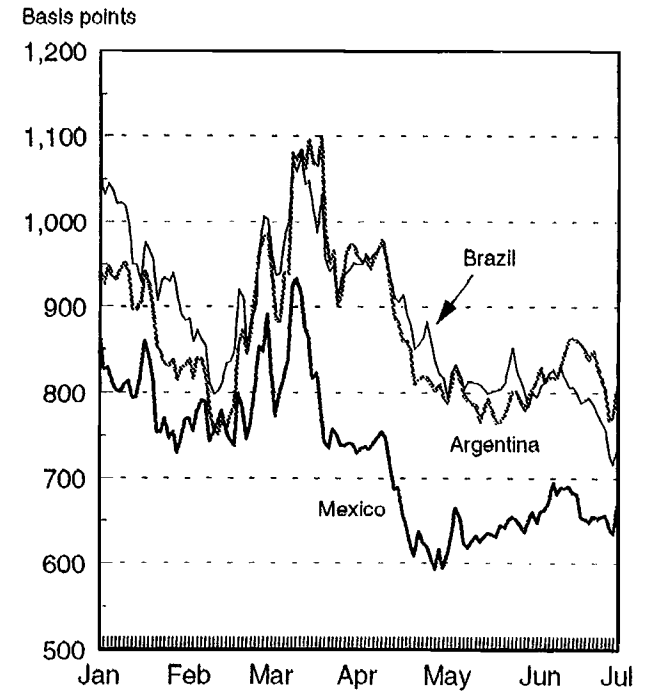


\* net of withholding tax

### 2B: U.S. & Canadian 10-year Yields



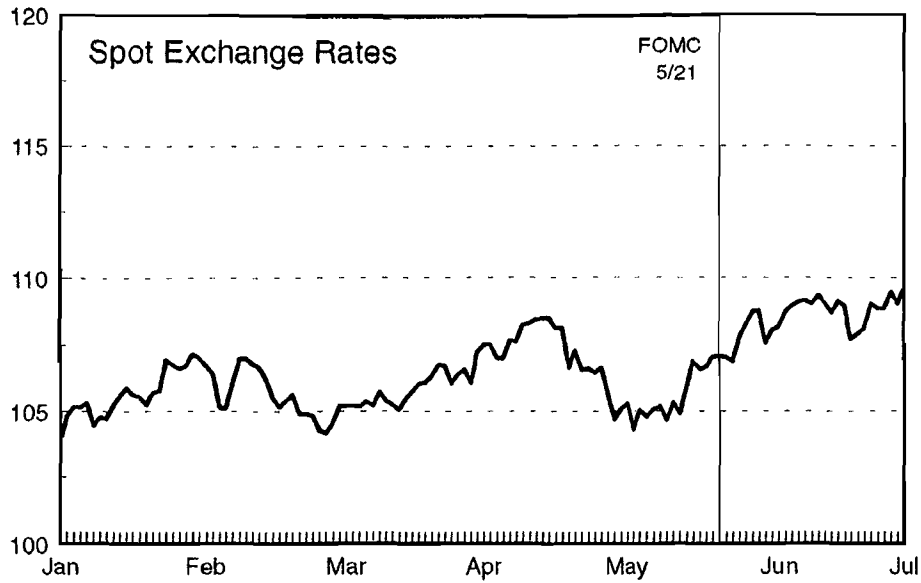
### 2C: Brady Par Bond Spreads



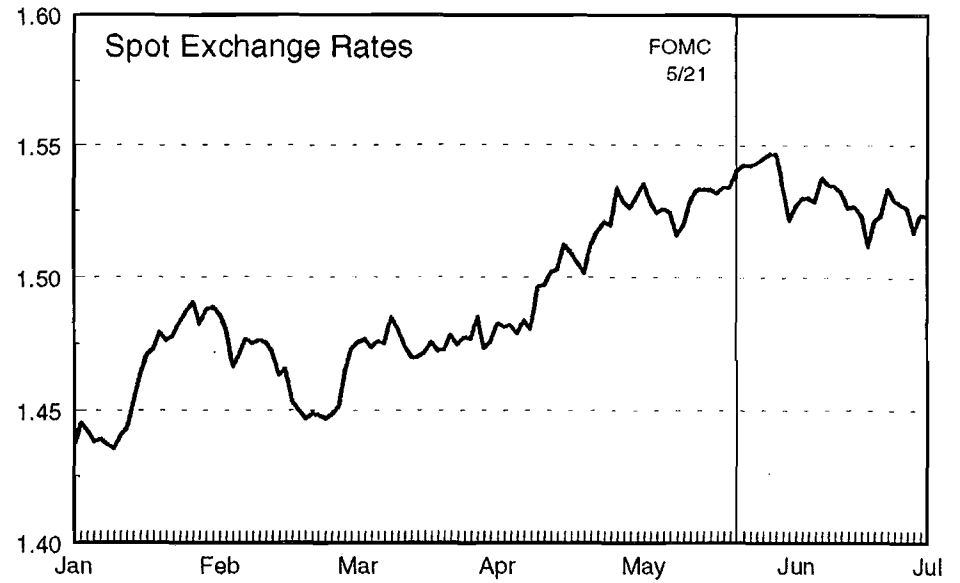
Par Brady Bond (stripped of U.S. guarantees) cash yield spread over comparable U.S. Treasury, as a measure of country risk premia. Source: Salomon Brothers.

### Chart 3

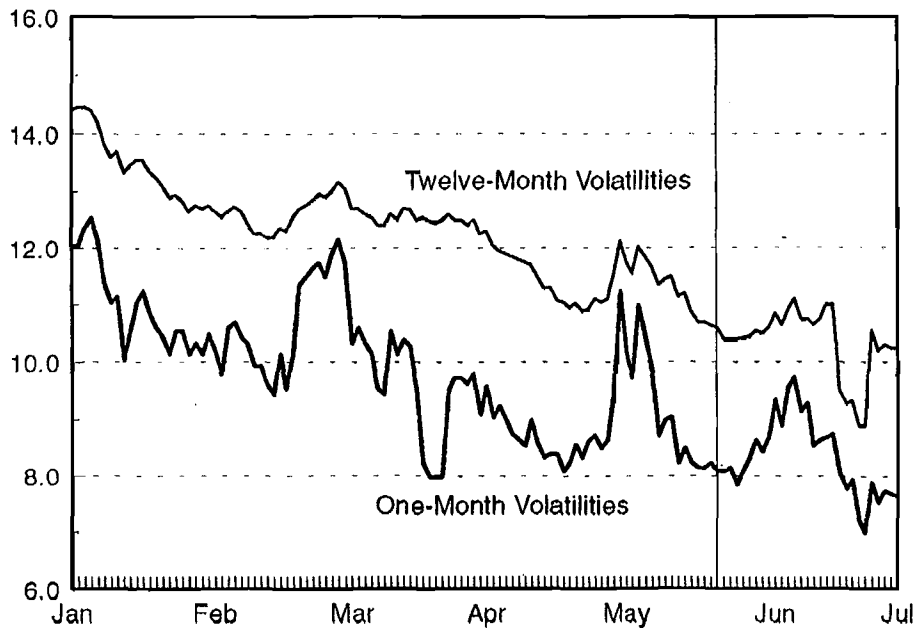
#### 3A: Japanese Yen per U.S. Dollar



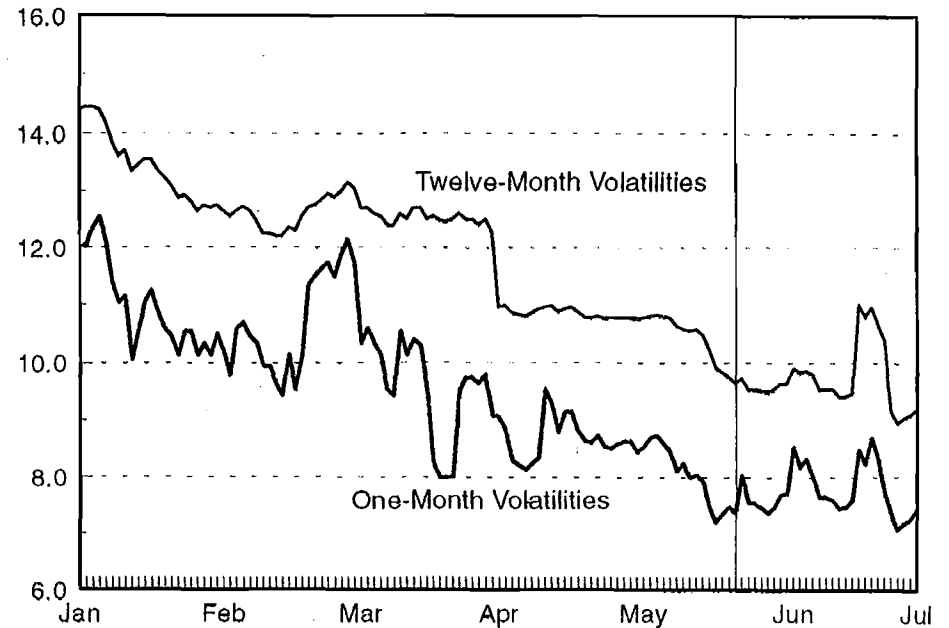
#### 3B: German Marks per U.S. Dollar



#### 3C: Implied Option Volatilities for \$/Yen



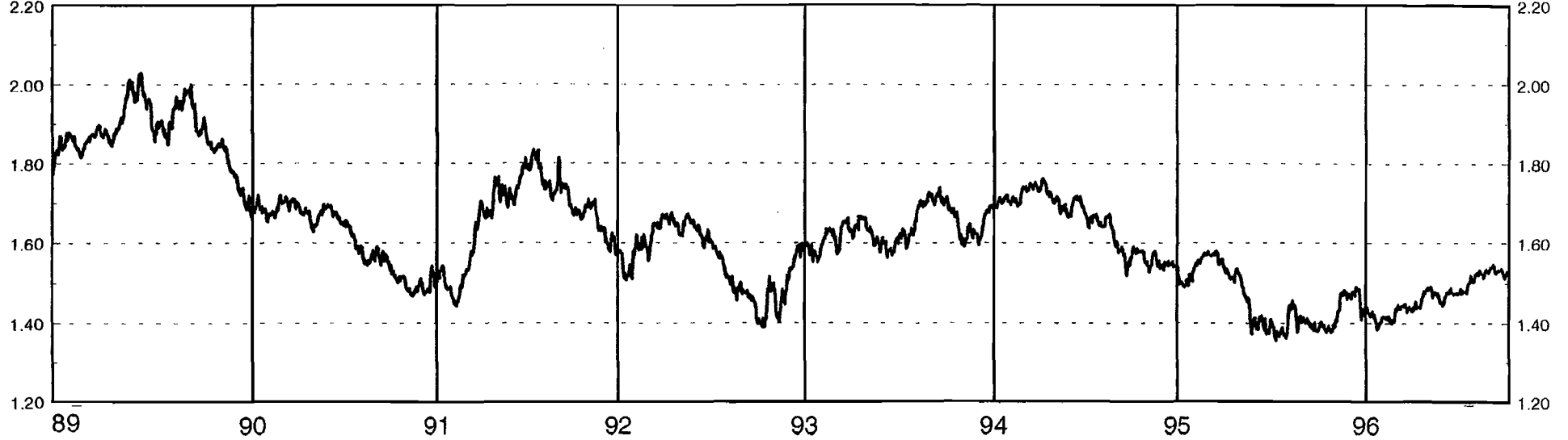
#### 3D: Implied Option Volatilities for \$/DM





# Chart 4 German Marks per U.S. Dollar

4A



4B

## Implied Options Volatilities for Dollar-Mark

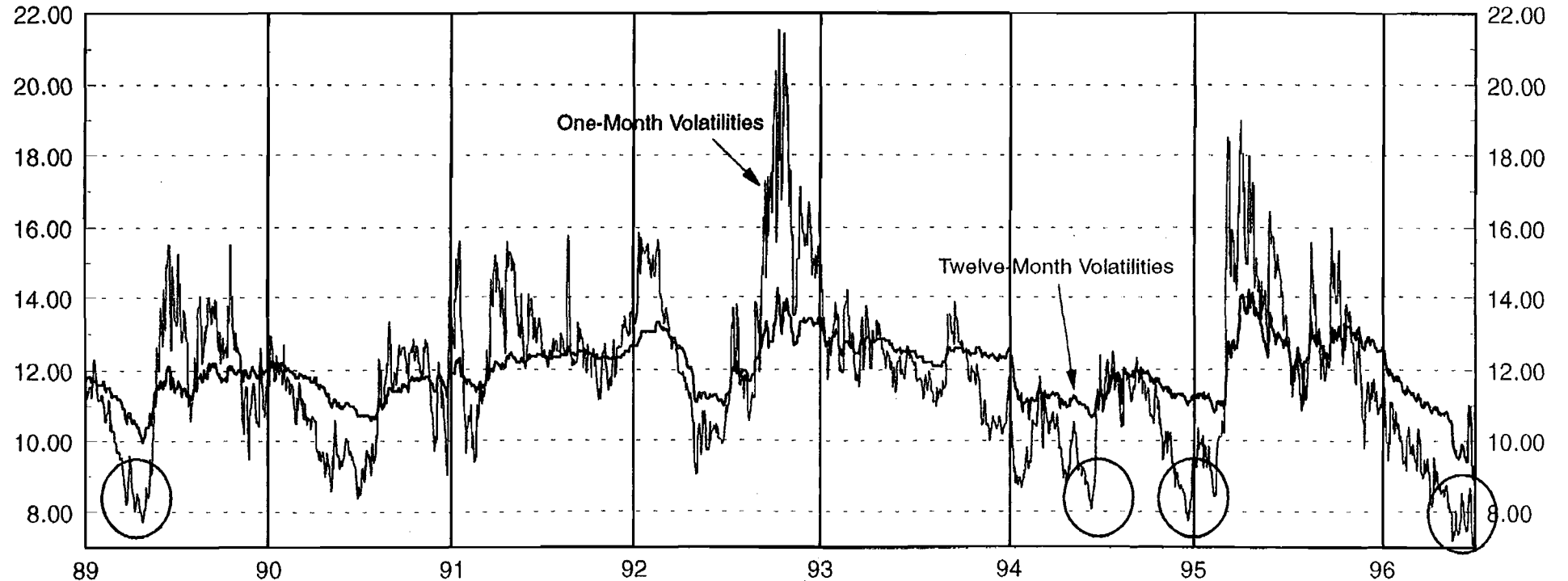
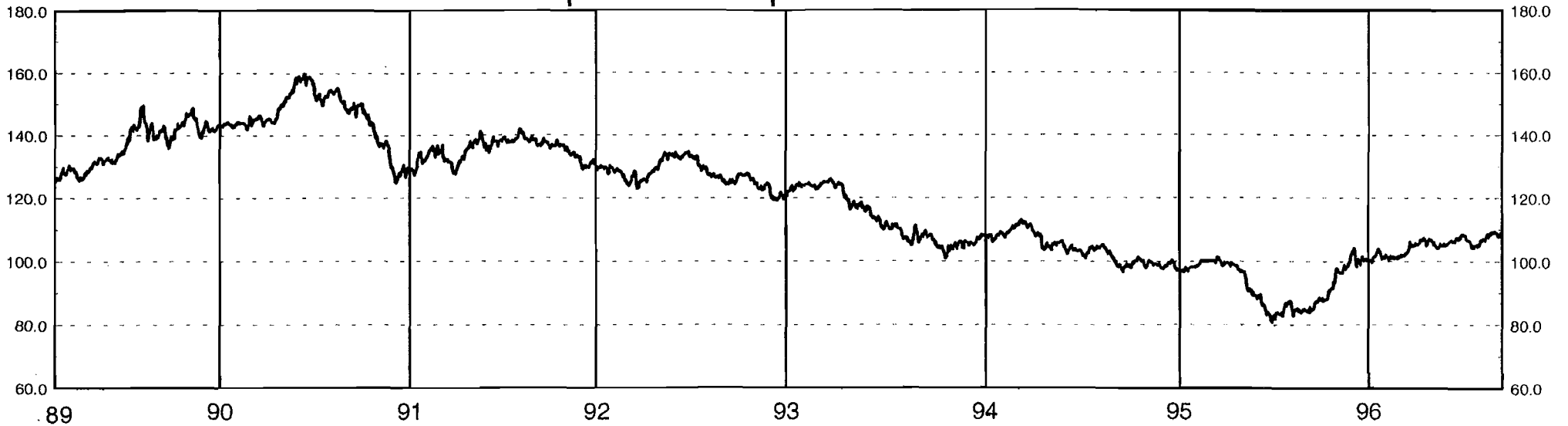


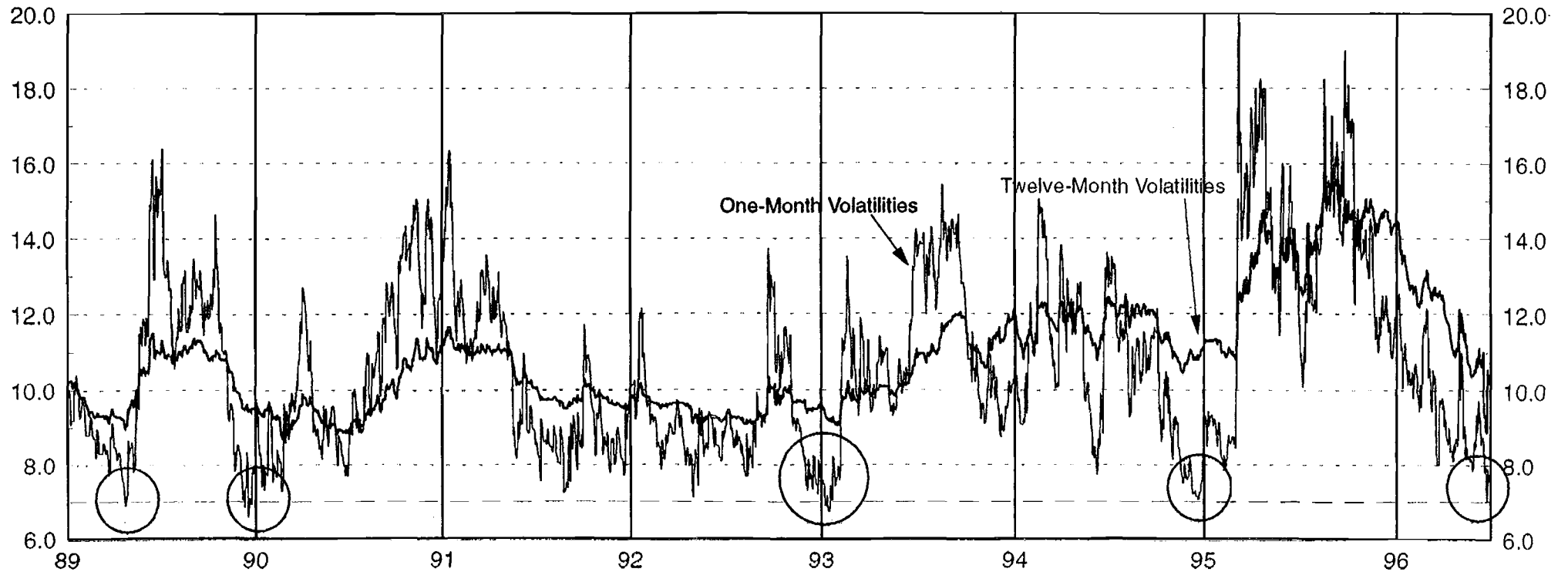
Chart 5  
Japanese Yen per U.S. Dollar

5A



5B

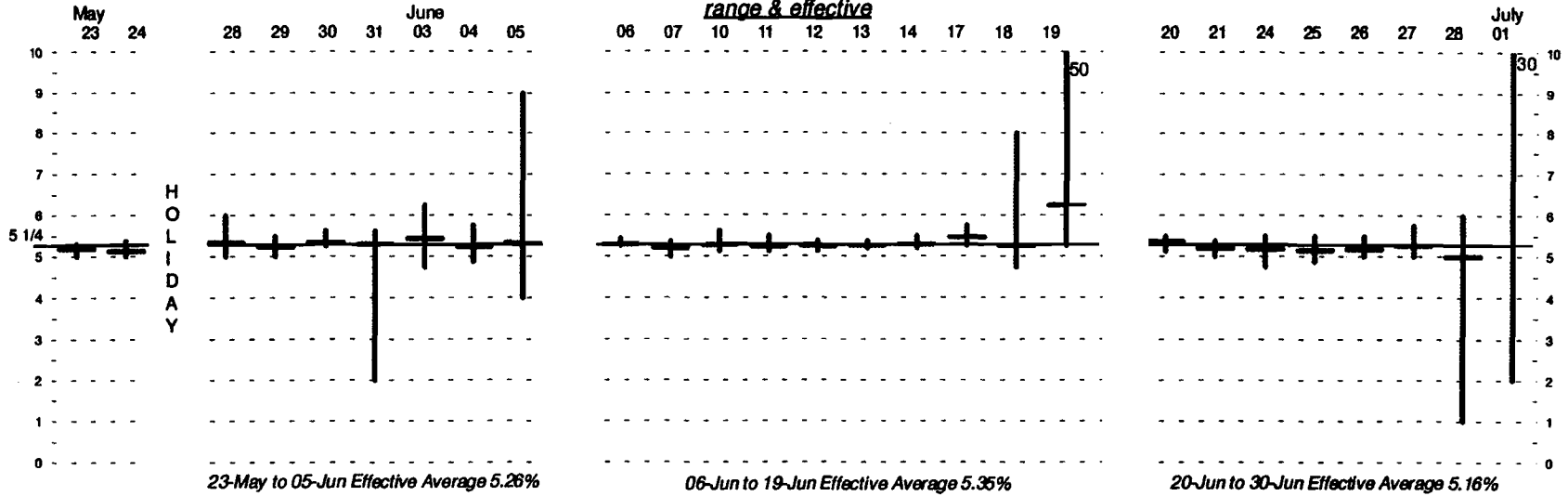
Implied Options Volatilities for Dollar-Yen



# Chart 6

## Federal Funds Rate

*range & effective*



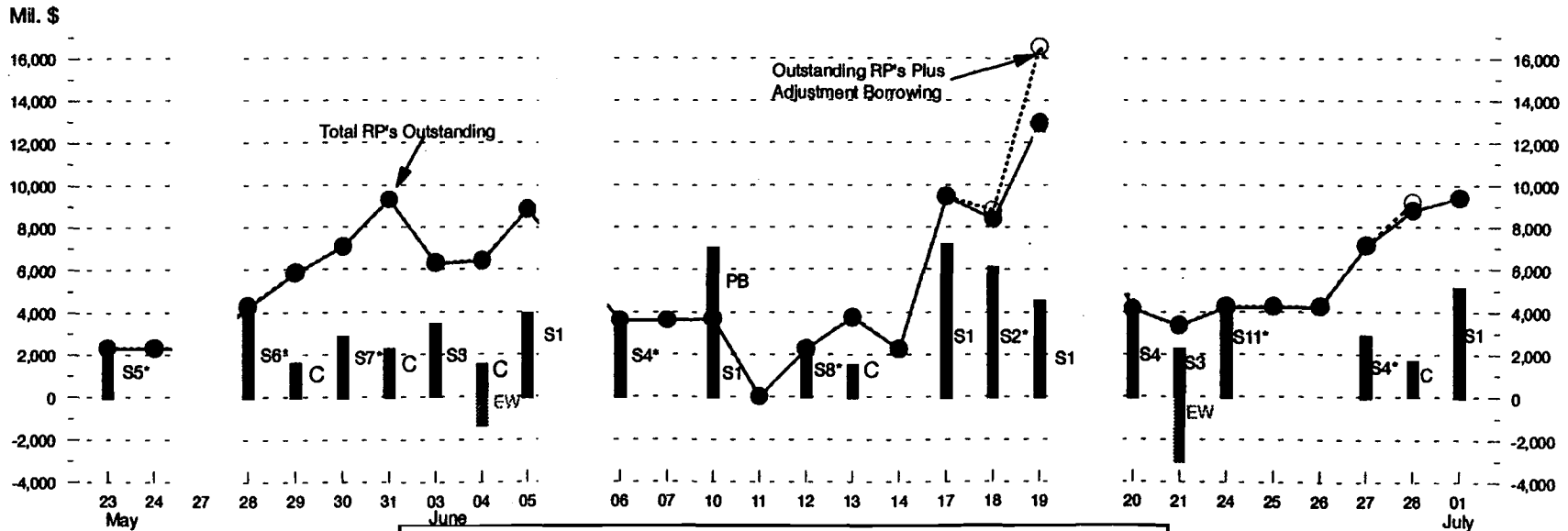
**Mil. \$**

To Date	-339	-1621	-1735	-1420	-1132	476	617	539	750
Daily Level	-339	-2048	-2020	470	888	4763	2164	-888	3495
	23	24	28	29	30	31	3	4	5
	May		June						

**Excess Reserves**

	-1387	-1610	-1312	-1558	-1505	-1173	-617	-341	86	1045	1745	614	319	162	55	110	792	
	-1387	-1684	-122	-2786	-1189	1150	865	2705	5205	13511	1745	237	-863	-623	-583	491	2611	
	6	7	10	11	12	13	14	17	18	19	20	21	24	25	26	27	28	1
	June										July							

## Open Market Operations



PB - Purchase of Treasury Bills S# - System RP's (with maturity) C - Customer RP EW - Early Withdrawals

\* Indicates fixed-term

Michael J. Prell  
July 2, 1996

FOMC Chart Show Presentation -- Domestic Economic Developments

Chart 1 highlights some of the monthly data that led us to think that activity had spurred enough this spring to bring GDP growth over the first half of the year to the 3 percent rate indicated in the Greenbook. The rapid increase in payrolls, documented in the upper left panel of the first chart, certainly was a key element in that assessment; moreover, the low level of initial claims for jobless benefits in recent weeks suggests that employment continued to grow at a good clip last month. To be sure, aggregate hours, plotted at the right, have been flat of late, owing to slippage in the length of the average workweek. But aggregate hours in May still were 1-1/2 percent at an annual rate above the fourth-quarter average. Merely tacking on a trend increase in productivity would put GDP growth in the first half at 2-1/2 percent or so. Given the likelihood of some snapback from the weak productivity performance of late 1995, it seems entirely reasonable to expect an outcome somewhat above that rate.

The incoming spending data have been consistent with this assessment. As may be seen at the middle left panel, yesterday's release showed real consumption expenditure up another 0.7 percent in May; pending a full report on June auto sales, it looks like the second-quarter gain in consumer spending may exceed somewhat the 3 percent cited in the Greenbook. At the right, I've plotted the data on new home sales released this morning. Not only was there no meaningful downward revision of the high numbers for the prior few months, but sales jumped another 7-1/2 percent in May to a remarkable 828,000 annual rate. Even if one does not believe that figure--and I'm reluctant to, only partly on the basis of less rosy reports from some of the major builders--a further sizable gain in residential

investment last quarter already was pretty much clinched by the lagged effects on construction of the rise in starts through April.

Shipments and orders for nondefense capital goods, at the lower left, were consistent through May with our expectations of a moderating uptrend in this sector; but, with computer deliveries holding up fairly well in nominal terms, a substantial increase in real equipment outlays appears in the cards for the second quarter. I should note, however, that yesterday's report on May nonresidential construction was decidedly on the soft side, and suggests that overall BFI may well have increased less than we predicted.

Finally, the April pace of inventory accumulation outside the auto sector, shown at the right, and the stabilization of auto stocks --not shown--suggests that there will be a sizable positive inventory swing in the second quarter. Indeed, our quarterly estimate leaves room for only modest increases in May and June.

As you know, our estimate of strong growth thus far this year isn't controversial. The primary question at this point is where the economy is headed from here. That is the subject of Chart 2, which summarizes our forecast through the end of next year. We foresee a marked drop-off in the pace of expansion this quarter and generally moderate growth afterwards. Given the noise in the quarterly data, it's perhaps useful to focus on the four-quarter moving average line in characterizing the movements in activity. That line shows a slippage in growth last year as firms cut back their rate of inventory accumulation and a pickup this year with the completion of that correction. The four-quarter change rose to 1-3/4 percent as of the first quarter, and is projected to reach 2-1/2 percent by the fourth, before tailing off next year.

We see GDP growth over the next six quarters as running in line with potential, holding the unemployment rate at 5-1/2 percent. To date, this level of resource utilization hasn't resulted in an acceleration of core inflation. However, we do think that wages probably have begun to reflect the tension in labor markets, and that a continuation of that trend will put some upward pressure on prices. Those pressures are exacerbated by a stepup in food and energy inflation, so that core CPI inflation moves up to 3 percent and overall CPI inflation to a bit more than that. The acceleration would have been somewhat more noticeable were it not for the assumed effects of technical changes in the price index.

Chart 3 shows the interest rate backdrop for this projection. We've assumed that the fed funds rate will remain near 5-1/4 percent. And we've projected that long-term interest rates will come down a little--perhaps I should say "a little further," in light of the net decline in yields since last Wednesday.

Given our inflation projection, these nominal rates might imply a slight decline in real rates, as depicted in the middle panel. But that observation doesn't take us very far in judging the degree of restraint implied by the recent rise in long rates or by the prevailing level of rates. The middle panel shows that real rates are neither exceptionally high nor exceptionally low by the standards of the 1980s and '90s, and the uptick in long rates this year has been of moderate proportions historically. The slope of the yield curve, represented by the red line in the bottom panel, has been far from an infallible leading indicator of economic growth; for what it's worth, though, that slope doesn't seem to be signaling great strength or weakness at this time. Looking elsewhere, we would note that the

stock market is scarcely indicating a shortage of liquidity in the economy, and that credit seems to be readily available even to many marginal borrowers. Overall, financial conditions don't strike us as incompatible with at least moderate growth in spending.

Meanwhile, fiscal policy appears to be on only a mildly restrictive course. As you can see in the top panels of the next chart, the federal deficit seems headed for a fourth straight decline in the current fiscal year. What I thought might warrant some explanation is the \$35 billion increase in the deficit we've projected for fiscal '97.

The bullet points, below, summarize the reasons for this bounceback. First, although we're assuming some cuts in discretionary programs, those cuts are not large enough to produce another absolute decline in spending. Second, we aren't anticipating a continuation of this year's relatively slow growth of entitlement outlays, especially for health programs. Third, there won't be any further installment payments next year on the retroactive tax liabilities imposed on upper-income folks by OBRA-93. And finally, we think individual tax withholding may be running high enough this year that there'll be no need next April for the heavy final payments that occurred this year. Admittedly, there is considerable conjecture involved here, but we aren't alone in our thinking. The CBO forecast depicted by the blue lines in the top panel has not been updated for this spring's tax surprise, but it has a similar contour.

Ted will now talk about the international picture and its potential influence on the U.S. economy.

E. M. Truman  
July 2, 1996

FOMC Chart Show Presentation -- International Developments

The first international chart addresses exchange rates and interest rates. As is shown in the top panel, the U.S. dollar on a weighted-average basis has appreciated substantially against the other G-10 currencies in nominal terms and on a price-adjusted basis since about a year ago, a rise that was welcomed by the Group of Seven at their recent meeting in Lyon. It has been associated with a relative rise in U.S. long-term interest rates.

As is shown in the box at the right, in price-adjusted terms the dollar is about back to where it was in December 1994 with respect to both the G-10 currencies and the currencies of eight of our large non-G-10 trading partners, on average. Over the past six months, the dollar has continued the rise in real terms against the G-10 currencies that began about 12 months ago while declining somewhat against the non-G-10 currencies. These price-adjusted measures of the dollar's value are based on relative consumer price indexes. As can be seen by comparing the red and the blue lines, the G-10 dollar has been appreciating more rapidly in price-adjusted terms than in nominal terms because of the more rapid rise in U.S. consumer prices.

As indicated in the middle left, the dollar's movements on average over the past six months reflect differential changes against individual currencies, ranging from a rise of about 7-1/2 percent against the yen and the Swiss franc to a decline of almost 4 percent against the Italian lira.

The box at the right summarizes developments in interest rates in the G-3 countries over the first half of the year. Three-month rates declined in Germany, but changed little in Japan and the United States. Ten-year rates rose substantially in the United States, with a rise of less than half as much in Germany and Japan. Moreover, as shown at the lower left, the average rise in G-10 ten-year interest rates has been relatively modest so far this year, reflecting substantial declines in rates in



some countries such as France and, especially, Italy.

The box at the right presents data on actual Euro-market interest-rate differentials among the G-3 countries and on differentials in futures rates over the next 18 months. Making the strong assumption that differentials in risk premia are constant over time, these data suggest that on balance, interest rate differentials favoring dollar assets are expected to narrow next year. Such a development might be expected to put some downward pressure on the dollar late in the forecast period. While the trends in Euro-market futures rates are decidedly more upward than in the staff's interest rate assumptions, the implied changes in differentials do not differ by much -- the staff has a bit less of a relative rise in German rates and somewhat more of a relative rise in Japanese rates. From this perspective, we are reasonably comfortable with our projection that the nominal value of the dollar will remain roughly unchanged around its recent level in terms of the G-10 currencies while continuing to appreciate modestly on a price-adjusted basis.

Turning to economic developments in the foreign industrial economies, the top panel in Chart 6 depicts recent trends in industrial production in the G-7 countries. Following the sharp acceleration in 1994, production moved more-or-less sideways in most countries last year with a pronounced deterioration in Japan (the black line) through much of the year. In late 1995 and early 1996, production in Japan picked up markedly. Real GDP was reported to have surged in the first quarter; however, we are expecting that a small negative will be recorded for the second quarter, and that growth will level off at around 2-3/4 percent at an average annual rate for the remainder of the forecast period.

In Europe (the red line), recent indicators continue to be mixed. Economic activity rebounded in France in the first quarter, reflecting the unwinding of strike effects and statistical factors, but growth in the second quarter most likely was close to zero. In Germany, construction activity was depressed early in the year by unusually harsh weather, but appears to have recovered somewhat in

the second quarter. Economic conditions in the United Kingdom were not as subdued in recent quarters as in France and Germany; indicators such as business confidence and rising house prices point to a modest pickup in demand. Growth has begun to increase again in Italy; confidence appears to have risen with the installation of the new government, and long-term interest rates have declined significantly so far this year.

In Canada (the blue line), employment and residential construction have strengthened, and aggregate demand appears to be on a more favorable trend than last year.

Meanwhile, as shown in the lower-left panel, consumer price inflation remains generally low in the foreign G-10 countries, averaging one and a half percentage points less than in the United States. This pattern is what produces the dollar's real appreciation in terms of these countries' currencies. It might be expected that, if our more rapid inflation were to continue, nominal dollar exchange rates eventually would come under downward pressure. However, measurement of price competitiveness is far from an exact science. For example, as is shown by the black line at the right, on the basis of national consumer price indexes, since the beginning of 1995, U.S. consumer price inflation has been about three-tenths higher on average than inflation in the EU members of the Group of Ten on average. However, as is shown by the red line, the picture is somewhat favorable to the United States when adjustments are made to the national CPI to place them on the roughly comparable basis that is being used preliminarily to assess European performance relative to the Maastricht inflation standard. The reason is more rapid price increases in the service categories that would be excluded from a comparable U.S. index -- owner-equivalent rent, health and education, and certain other public and private services -- relative to the service categories excluded from the various European indexes. Thus, this comparison is somewhat closer to one involving, at the consumer level, only prices of traded goods.

The next chart looks at foreign growth in a broader group of countries and at U.S. exports to

those countries. As shown in the top panel, over the 1990s the share of U.S. exports going to developing countries has been rising, but the rise has only taken their share to the upper end of the range that has prevailed over the period since the end of World War II. The box at the left in the middle panel provides more detail on increases in U.S. exports over the past 15 years and on the contribution of industrial and developing countries to those increases. In the early 1990s, developing countries accounted for a disproportionate share of increases in our exports.

The scatter plot at the middle investigates the relationship between growth in developing countries and growth in industrial countries. It is generally thought that faster growth in the developing world is dependent on faster growth in the industrial world. The correlation of growth rates is borne out by the plot; however, the causality is not always unidirectional, and, as can be seen by the red dots indicating the past five years and from the regression results presented at the right, the intensity of the relationship appears to have changed, if it has not disappeared entirely, in recent years.

Turning to our outlook for foreign growth in the bottom panel, growth in the developing countries (the blue bars in the left panel), rebounded in the second half of 1995 with the passing of the Mexican contraction; it is projected to remain in the range of 5 to 6 percent over the forecast period. Meanwhile, we are projecting a continuing pickup in growth in our industrial trading partners, reaching about 2-1/2 percent in the second half of this year. More detail is available in the box at the right.

Developments in oil markets are always a risk to our forecast. Chart 8 summarizes our thinking on this subject. As is illustrated in the top panel, nominal oil prices have remained in a rather narrow range since the end of the Gulf War five years ago. They spiked by about \$4 per barrel earlier this year in the context of temporary supply disruptions and weather-related increases in demand that produced a shock of about 1.2 mb/d, but since then price pressures have generally eased.

As shown in the middle-left panel, global demand for oil has been rising between 1 and 1-3/4 mb/d in recent years. It is expected to continue to rise in that range for the rest of the decade fueled principally by rising demand from developing countries. Recently much of the increase in demand has been met out of non-OPEC production, but in the short run there remains essentially no excess capacity outside of OPEC, as is shown in the upper part of the box at the right. Over the longer term, the former Soviet Union, Latin America, and West Africa are, geologically, the best potential sources of increased non-OPEC supply, but OPEC's share almost certainly is likely to be on the rise. We are assuming that Iraq will be gradually permitted to return to something like full capacity production after 1997. On this basis, our best guess is that nominal oil prices will not depart significantly from their recent range for some years to come.

In the near term, as shown by the black line in the lower left, we expect a dip in the price of oil imported into the United States, followed by a recovery to reach \$17 per barrel in the first half of next year. This is a somewhat different pattern than is implied by futures prices. The differences are attributable to two factors: First, we have assumed an increased flow of Iraqi oil of 800,000 barrels per day starting with certainty on August 16 while the market is appropriately more uncertain. Such uncertainty is fully justified as was demonstrated yesterday when the United States trashed the Iraqi plan for the acquisition and distribution of so-called humanitarian goods with the proceeds from their increased oil exports. Second, to the extent that futures prices as far out as next year are meaningful, the market may be anticipating a faster stepup in Iraqi production than we are.

As for the quantity of U.S. imports, declining domestic production (the red bars at the right) and rising consumption (the black bars) are expected to combine to produce rising imports (the blue bars). The spurt in the second half of this year reflects the rebuilding of inventories that were drawn down in the first half to a larger extent than is the seasonal norm plus an allowance to compensate for the start of exports from Alaska.

The next chart summarizes our outlook for exports and imports. With respect to exports, the left side of the chart, export orders as reported in the NAPM survey (the red line) have picked up recently, which is consistent with the healthy rise in exports that we think occurred in the second quarter.

Prices of exports of core goods (non-ag exports excluding computers and semiconductors), shown in the middle panel, appear to be in a temporary decline following a surge in early 1995 that was led by industrial supplies. We project that prices of core goods will resume increasing at a moderate two-percent rate. The rise in the aggregate price index for exports of goods and services has been held up by the surge in agricultural prices which offsets declines in prices of computers and semiconductors.

As is illustrated in the bottom panel, exports of goods and services in chained (1992) dollars should continue to expand at a moderate rate this year. The pace of expansion over the four quarters of 1997 should pick up a bit to around 9 percent, due in part to faster growth abroad and to a recovery of agricultural exports. However, the driving force behind the aggregate figures is the continued rapid expansion of exports of computers and semiconductors.

On the import side, the right side of the chart, developments in retail inventories have been a factor explaining in part quarter-to-quarter increases in non-oil imports. However, inventories are not the entire story behind the smaller increases in imports last year; slower growth of real GDP and the weaker dollar through the middle of the year also contributed, factors that are now being reversed.

With the appreciation of the dollar since the middle of last year and the greater stability of international commodity prices generally, increases in prices of core imports (non-oil imports excluding computers and semiconductors) (the middle panel) have also declined. In this case, the rise in the aggregate price index for imports of goods and services also has been subdued, despite the rise in the price of oil.

As depicted in the lower panel, imports in all categories have picked up this year with the rise in U.S. growth. Their pace of increase should moderate only slightly next year as U.S. growth slows in part because of the influence of the somewhat stronger dollar. Again on the import side, however, much of the movement in the aggregate of goods and services also comes from imports of computers and semiconductors.

Chart 10 provides a summary of our outlook for the external sector. After a brief period of improvement in our external balances in the second half of last year, the various deficits are again widening gradually, with most of the impetus coming from goods trade. The negative contribution of net exports to real GDP, shown in the box at the right, should be a couple of tenths at an annual rate in the second half of this year and negligible next year.

The bottom panel of the chart presents two alternative scenarios employing simulations with one of the staff's two large econometric models, the Mutli-Country Model. This model, like the FRB-US model, has been revised and partially reestimated to enable us to incorporate a richer range of alternatives with respect to the formation of expectations by economic agents, in particular forward-looking and model-consistent expectations as well as a more refined approach to backward-looking expectations. In the future, we would hope to be able to present once again simulations with the combined models, but this did not prove to be technically possible for this meeting. As in the first set of simulations with the new FRB-US model that was reported in the Bluebook, the FRB-MCM simulations reported in the chart involve only simulations incorporating adaptive expectations.

The baseline for the simulations was the Greenbook forecast extended as in the simulations reported in the Bluebook. Two alternatives are considered involving faster growth abroad; if you think that slower growth abroad is more likely, just reverse the implied signs in the table. In the first alternative, we assumed a growth spurt in the industrial countries equal to 1-1/2 percent of GDP phased in gradually over 1996 and 1997, roughly equivalent to one standard deviation in the annual

growth rates of the individual countries over the past 15 years. In the second alternative, we assumed a growth spurt in the developing countries equal to 2-1/2 percent of GDP phased in over the same two-year period, again roughly equivalent to one standard deviation in annual growth rates in their recent experience. As you are well aware, the results of simulations with this type of model depend on the nature of the policy assumptions imbedded in them. We chose to assume that U.S. and foreign monetary authorities target baseline nominal GDP; in other words, in response to a positive shock, the authorities raise short-term interest rates in order eventually to return the level of nominal GDP to the baseline path.

As shown in the lower portion of the panel, the effects of the two types of growth spurts on U.S. real GDP and U.S. consumer prices are similar. The initial stimulus to U.S. exports and aggregate demand is a bit stronger in the case of the spurt in growth by the industrial countries. The impetus to U.S. inflation is also larger for two reasons: first is the faster growth itself, and second is the fact that the dollar depreciates in connection with the spurt in growth in industrial countries but appreciates in the case of the growth spurt in the developing countries. By the end of 1999, in the former case, the policy assumption acts to push the U.S. growth rate a bit below the baseline. The differential movement of the dollar in the two cases explains why the favorable impact on the U.S. current account deficit is somewhat smaller in the case of the spurt of growth in the developing countries.

Mike Prell will now conclude our presentation.

Michael J. Prell  
July 2, 1996

FOMC Chart Show Presentation -- Conclusion

The next three charts deal with major components of private domestic demand. The top left panel of Chart 11 depicts our forecast for consumer spending, showing the relative strength of durables in recent years. Owing to favorable price trends and product innovation, we expect that durables will continue to lead the way. But growth in total spending--shown in the first column of the right panel--is expected to moderate to a 2-1/2 percent annual rate over coming quarters. This is in line with projected income gains; thus, the personal saving rate--plotted as the red line, on an inverted scale, in the middle-left panel--is expected to remain around 4-1/2 percent. That panel also shows the ratio of household net worth to income. The relationship between these two variables clearly is a loose one. But, even with the weakening in net worth implied by our forecast of a mild stock market correction, the increase in wealth over the past year and a half might in itself suggest an upside risk to our near-term spending forecast.

Offsetting that consideration, however, is the fact--reflected in the right panel--that debt-service burdens have been rising rapidly and likely will move still higher. This is not to say that the link between debt burdens and potential spending is clear. Many well-to-do people probably have been using debt instead of liquidating assets to pay for their purchases; among lower income households that was not an option, but it is impossible to say whether their spending now is damped by their enlarged debt burdens or by their having already purchased, on credit, some of the big-ticket



durable goods they couldn't--or wouldn't--afford during the recession and weak early recovery.

The fact that consumer loan delinquency rates have risen, documented at the lower left, is often cited as evidence of financial stress, but that analysis is not entirely clear-cut. To at least some extent, the rise in delinquencies reflects the predictable lagged effect of fast loan growth in the past few years and the extension of credit to lower-quality borrowers. But lenders evidently have been surprised by the sharpness of the upturn in payment problems, particularly on credit cards, and are taking steps to tighten up their programs. As shown at the right, the willingness of banks to make consumer loans, as reported in our loan officer survey, has stabilized; however, we don't foresee a tightening of terms or standards that will greatly constrain consumer credit use in the aggregate.

There also has been a broadening of mortgage credit availability in recent years and some concern about deteriorating payment performance. But serious delinquencies remain low overall and there are CRA pressures to keep lending, so we don't anticipate that underwriting practices will be shifting into reverse in a dramatic way. We do expect housing demand to respond, however, to the rise in mortgage rates that has occurred.

As you can see in the top panel of the next chart, we are looking for a significant decline in starts over the next few months. with a little upturn in the latter part of 1997 in response to the projected easing of long-term rates. Right now, we can point to only limited evidence that housing demand is weakening in the way we are forecasting. Certainly, the May sales figures didn't reveal it. And the middle left panel shows how applications for home purchase loans

held at a high level through June. Last month's Michigan survey--at the right--showed only a small drop-off in perceived homebuying conditions, which remain at a fairly high level as well. We expect some further decline in this index. Whether interest rates are seen as high or low is the major driver of this index, and the perceived unattractiveness of interest rates has yet to catch up with the rise in rates, as may be seen in the bottom panel. Incidentally, in the plot here, I've shown the prevailing rate on fixed-rate mortgages as a ratio to the average of the past four years--a measure that is much more highly correlated with the index of rate attractiveness than is the actual rate itself; this may get at the question of what people see as normal. In any event, you can also see that--if past patterns hold--our rate forecast implies that, after a considerable near-term drop, perceptions of rate attractiveness should recover somewhat.

Chart 13 summarizes the outlook for business investment. We expect to see a general slowing in growth of outlays for both equipment and structures. You can see this in the top two panels. In fact, by next year, growth in both non-computer PDE and structures spending is projected to have come to a virtual halt. Accelerator effects, depicted in the middle left panel are central to this forecast. Financial factors play little role in the slowing. As you can see at the right, corporate cash flow is expected to cover the bulk of capital outlays, and for firms that need to borrow, credit availability is expected to remain good.

Inventory investment is projected to have risen in the second quarter and to rise further in the third, driven mainly by developments in the auto industry. After that, it is expected to be relatively flat, causing the stock-to-sales ratio, shown at the right, to drift downward.

To sum up, we foresee a moderation in the growth of domestic demand. But the result is still growth in aggregate spending that we perceive to parallel that of the trend of potential output. Chart 14 provides a reminder of the key elements of our assessment of potential GDP growth. The rise in labor productivity in recent years has fit quite well with the trend of just over 1 percent per annum that has been in place since 1973. Meanwhile, labor force participation has been sluggish in the current expansion, and given the underlying demographic patterns, we have not anticipated any upturn. All told, with other necessary assumptions, these factors put potential GDP growth at a shade under 2 percent on a true chain-weight basis. As you can see at the lower left, that's just what the Okun's law regression for the 1990s indicates--although the chart also illustrates clearly the great short-run looseness of this relationship between changes in unemployment and GDP growth.

On the assumption that the Okun's law norm holds over the coming quarters, unemployment will remain in the recent range. There seem to have been an increasing number of reports of labor market tightness and a few more anecdotes of wage increase. There also is some statistical evidence of wage acceleration, although we are discounting considerably the surges in the most recent readings from the average hourly earnings and ECI wage and salary series. As may be seen at the right, we are projecting that overall ECI compensation growth will drift up discernibly over the forecast period, as employers compete for scarce workers. About the time we were wrapping up the Greenbook, an agreement was reached in the Senate on how the minimum wage legislation would be handled. As a result, while enactment remains uncertain, the odds on it look greater. The red line illustrates the effects of the two-stage, 90 cent increase that

is contemplated. Our guess is that the pass-through effect on price inflation would build to about a quarter percentage point next year.

Whether one approaches the issue by working through the labor cost side or otherwise, our basic point about the inflation outlook is highlighted in the top panel of the next chart. Plotted here is the demographically weighted unemployment rate, on the horizontal axis, and the change in the GDP inflation rate on the vertical. Again, the scatter suggests that there's more to the inflation process than is captured by this bivariate relationship, but the pattern exhibited does sound a distinct cautionary note about the risks when the jobless rate is below 6 percent.

As you can see, we are a little optimistic in our forecast, in the sense that our forecast lies below the regression line. We have in effect assumed that the NAIRU is now somewhat below 6 percent --more like 5-3/4 percent. Could the NAIRU be still lower currently? Certainly. But even the widely noted research by Staiger, Stock and Watson, asserting that there are very wide confidence intervals surrounding NAIRU estimates, concludes that there is relatively low probability that the NAIRU currently is below 5.6 percent.

The bottom two panels touch upon a couple of other considerations in the inflation outlook. First, at the left, while we expect energy prices (the red line) to have a constructive influence in the near term, they are expected to increase a little more than core inflation next year. And food prices are also expected to rise faster than the core over the next year and a half. Obviously, the uncertainties attending the outlook for supply in these sectors--perhaps especially in agriculture--are very large, but we don't see the assumptions we've made as at all extreme in comparison with what the commodity markets are anticipating. Finally, at the right, if

history is any guide, the latest purchasing manager report on vendor performance suggests that we shouldn't anticipate much good news in the near term with respect to the prices of intermediate materials and supplies--although I'd like to see another month's data before I believe that supply conditions have tightened to the degree indicated here.

By all appearances, you folks have a more sanguine view of the prospects for inflation. The final chart summarizes the forecasts you have submitted. The central tendency of forecasts for output growth in 1996 is 2-1/2 to 2-3/4 percent, CPI inflation is predicted to be in the 3 to 3-1/4 percent range. This is broadly in line with the staff forecast. But in 1997, while the central tendency of your GDP forecasts is skewed to the low side of ours--with unemployment to the high side--the 2-1/2 to 3 percent CPI inflation forecast is lower than ours to a greater degree than one would expect on the basis of the other variables. Of course, I have no way of knowing to what extent your forecasts reflect a difference of opinion on the core inflation process or on the conjectures regarding the exogenous factors in outlook.

Mr. Chairman, that final confession of ignorance concludes our presentation.

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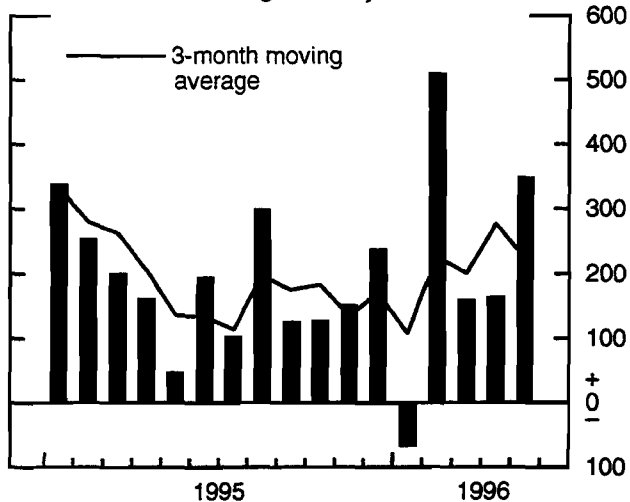
*Material for*  
*Staff Presentation to the*  
*Federal Open Market Committee*

*July 2, 1996*

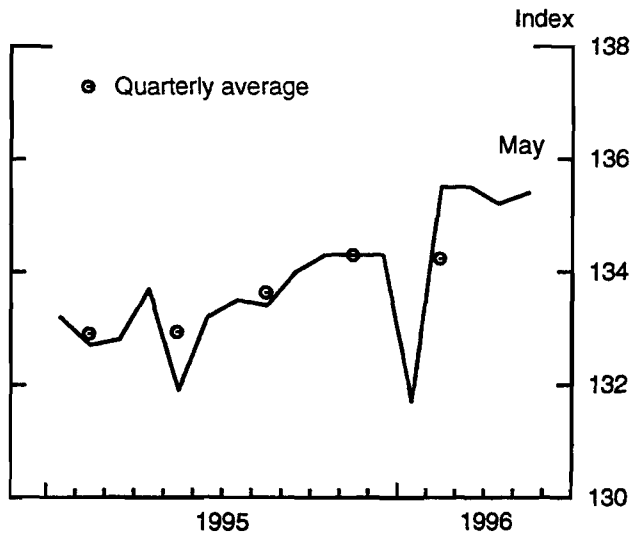
Chart 1

### Recent Indicators

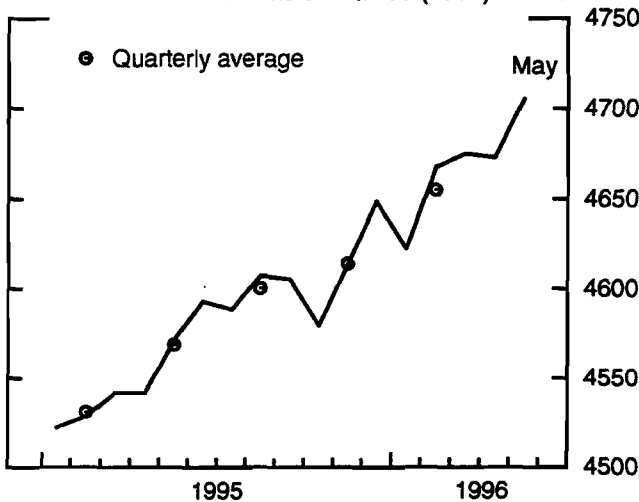
**Payroll Employment Growth**  
Average monthly rate in thousands



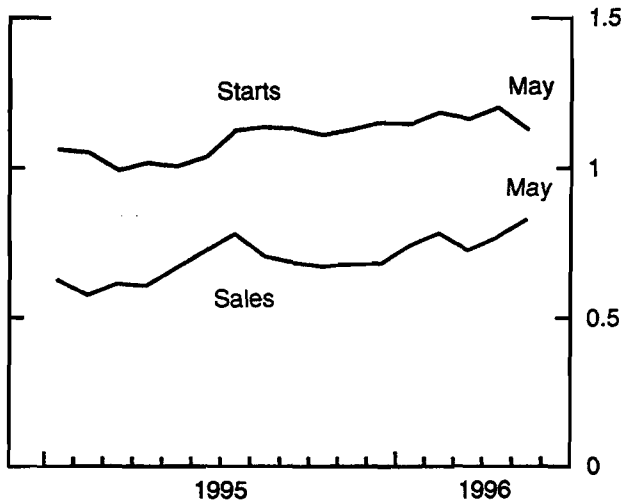
**Production Worker Hours**



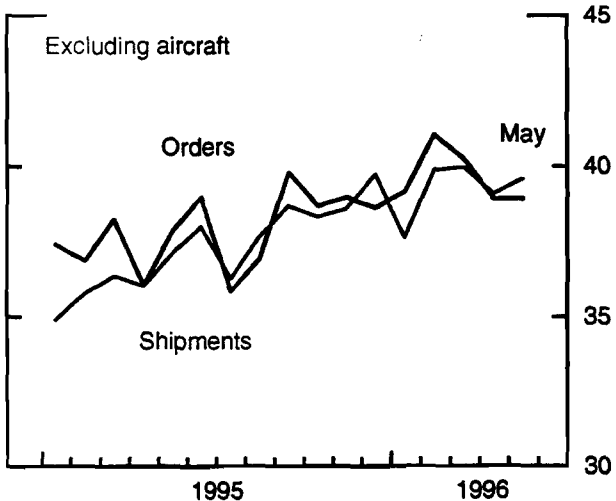
**Personal Consumption Expenditures**  
Billions of chained (1992) dollars



**Single-family Starts and New Home Sales**  
Millions of units



**Nondefense Capital Goods**  
Billions of dollars



**Manufacturing and Trade Inventories**  
Change, billions of dollars, annual rate

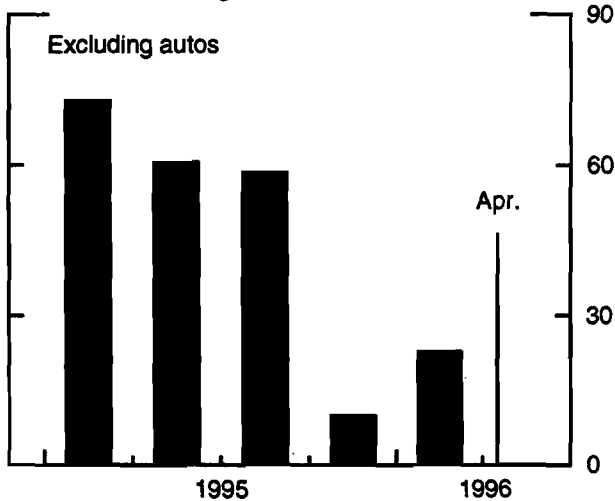
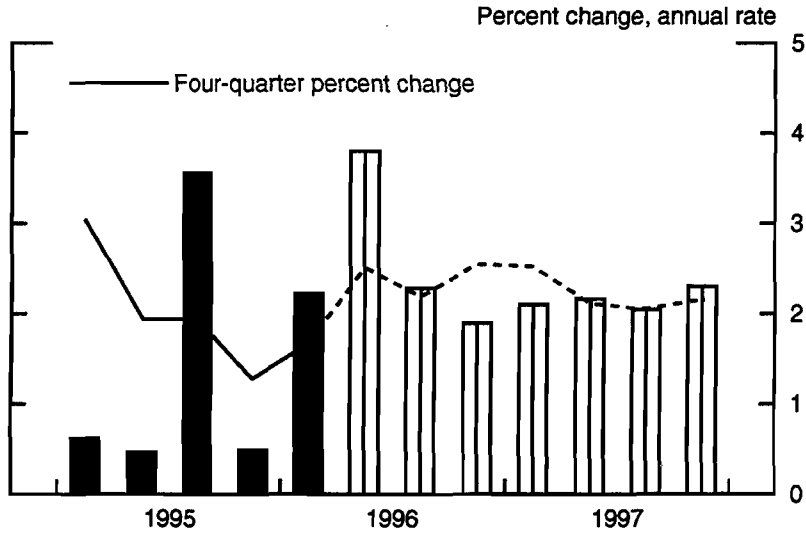


Chart 2

## Forecast Summary

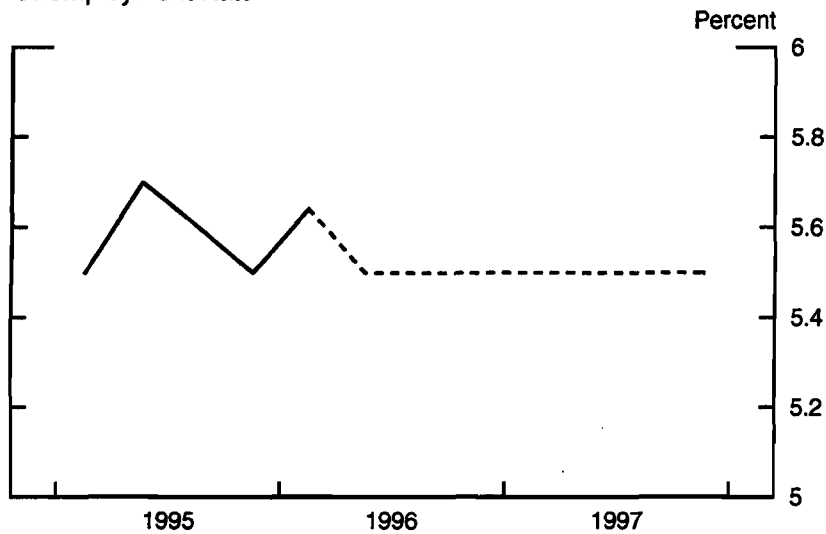
### Real GDP Growth



#### Q4/Q4 Percent Change

1993	2.2
1994	3.5
1995	1.3
1996	2.5
1997	2.2

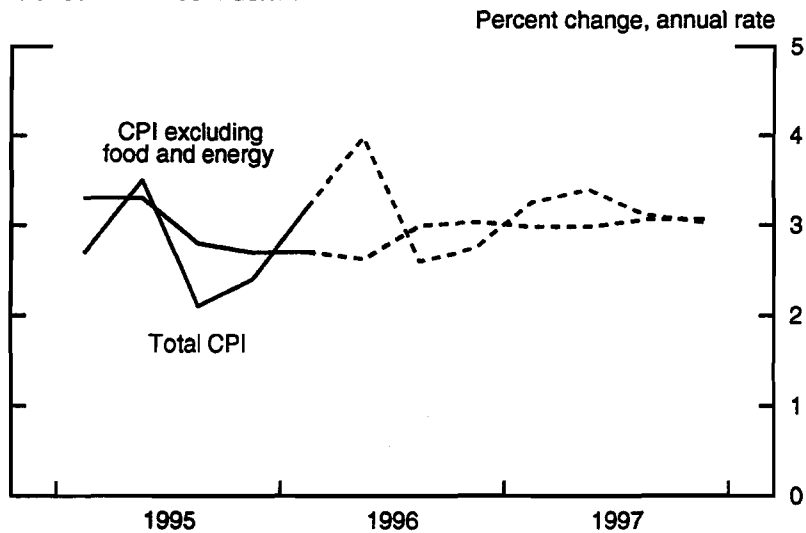
### Unemployment Rate



#### Q4 Average

1993	6.6
1994	5.6
1995	5.5
1996	5.5
1997	5.5

### Consumer Price Indexes



#### Q4/Q4 Percent Change

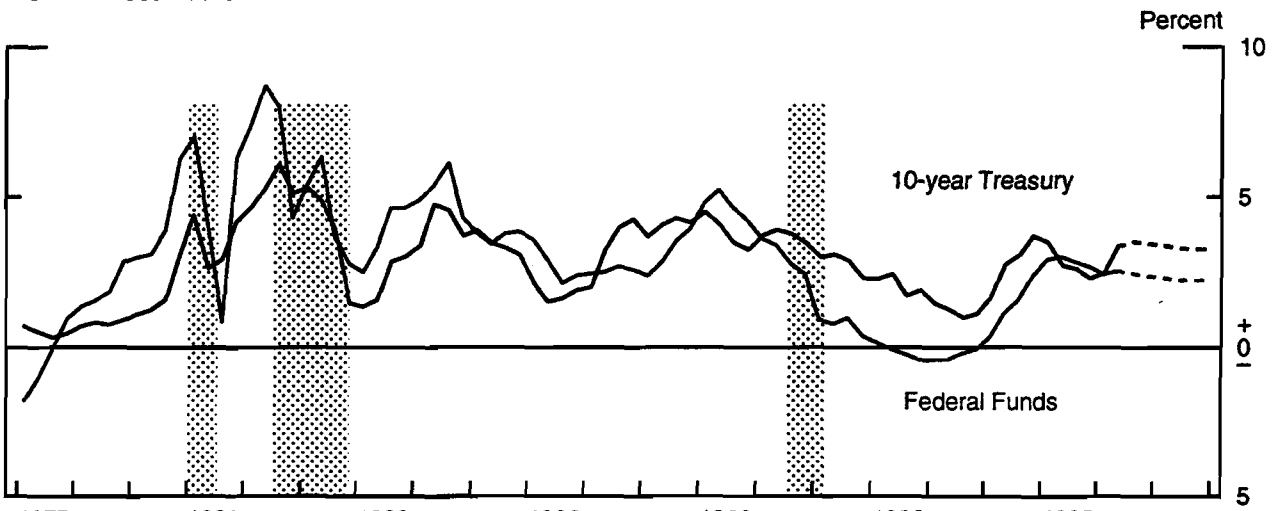
	CPI	CPIX
1993	2.7	3.1
1994	2.6	2.8
1995	2.7	3.0
1996	3.1	2.9
1997	3.2	3.0



Chart 3  
**Interest Rates**

- Federal funds rate remains near 5 1/4 percent through 1997.
- Long-term interest rates decline just a little from current levels.

Real Interest Rates\*



\*Nominal rate minus rate of increase in core CPI over prior year for funds rate and over prior 5 years for 10-year Treasury.

Yield Curve and GDP Growth

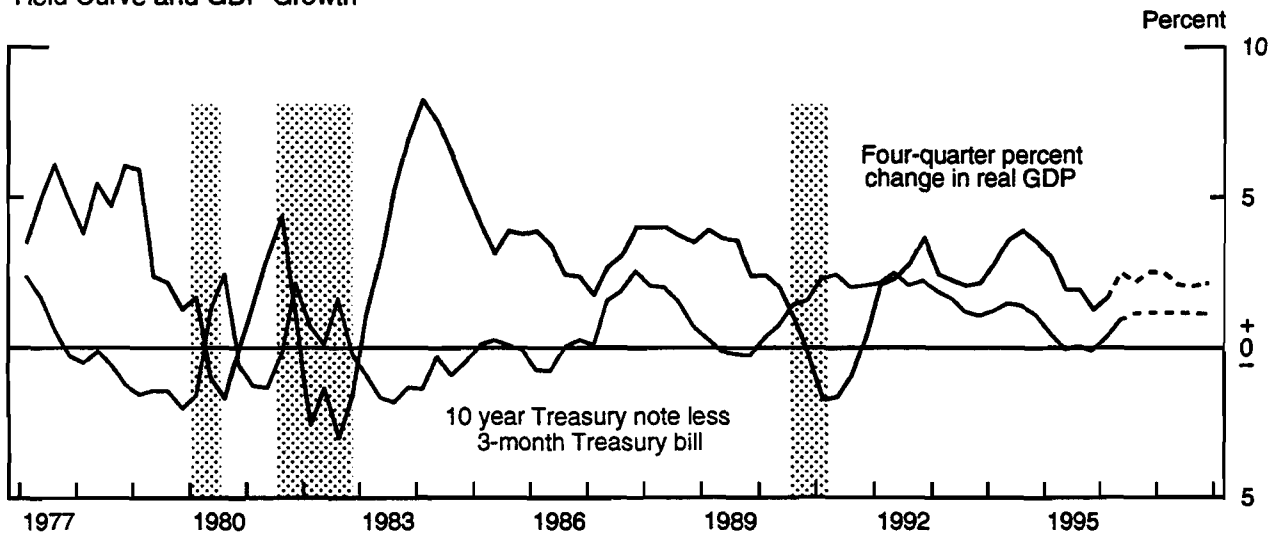
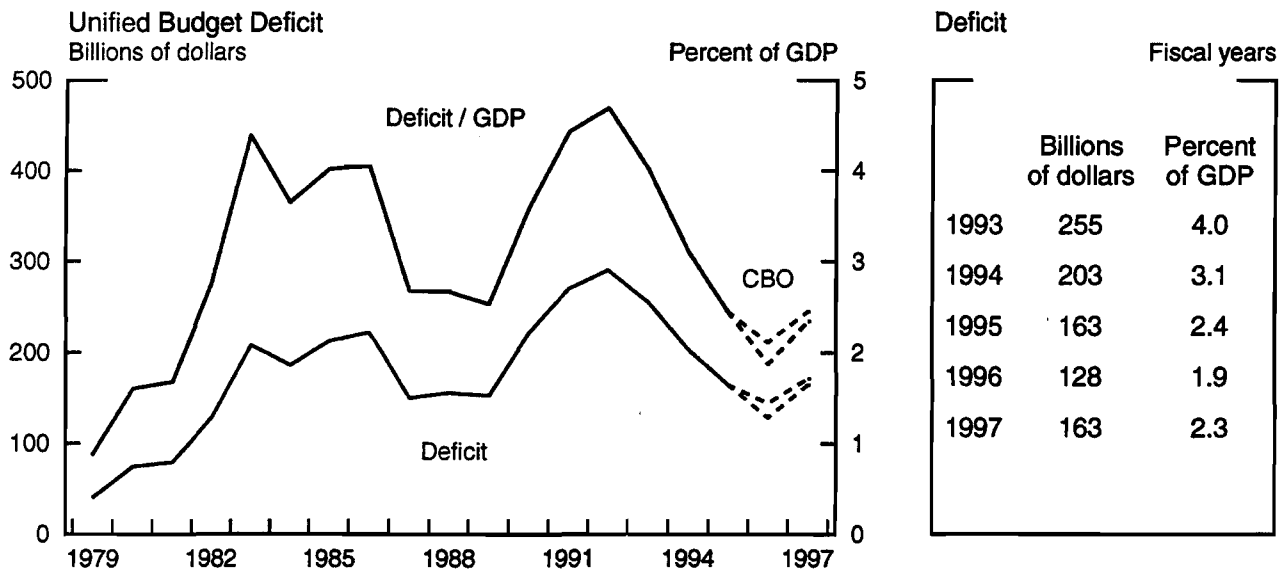


Chart 4  
**Fiscal Policy**

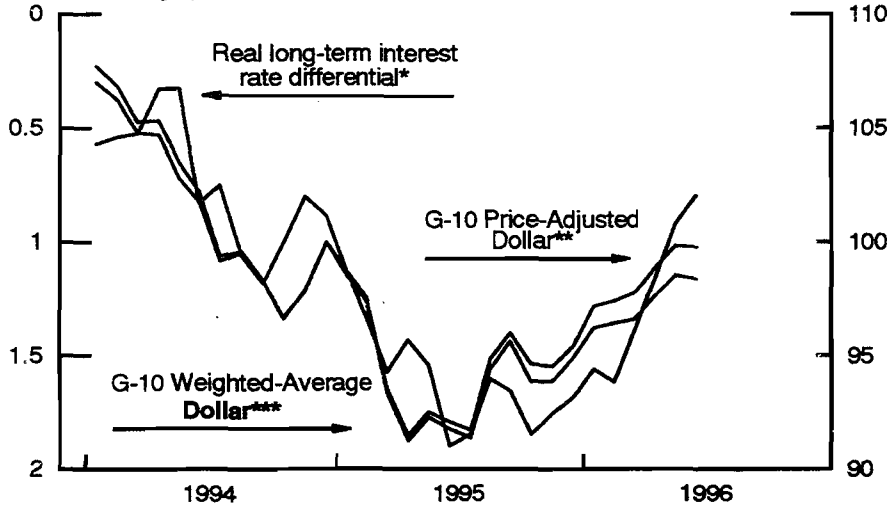


**Why does the deficit bounce back in FY 1997?**

- We are assuming some cuts from baseline in discretionary programs, but not large enough to reduce the absolute level of spending.
- We are not anticipating a continuation of the slow FY 1996 growth in entitlement (especially health) outlays.
- No more OBRA retroactive tax installment payments.
- Individual withholding apparently is up in FY 1996, implies less of a final-payments bulge next year.

## Exchange Rates and Interest Rates

The Dollar and Real Interest Differential  
Percentage points



\*Real U.S. interest rate less weighted average foreign G-10 real interest rate.  
\*\*Weighted average against foreign G-10 countries, adjusted by relative prices, 36-month centered moving average CPI.  
\*\*\*Weighted average against foreign G-10 countries.

Price-Adjusted Dollar

Percent Change 12/94 to 6/96	
G-10	-0.2
8 Non-G-10*	-1.1
G-18	-0.5
12/95 to 6/96	
G-10	4.6
8 Non-G-10*	-2.3
G-18	3.0

\*Chile, Hong Kong, Korea, Malaysia, Mexico, the Philippines, Singapore, and Taiwan.

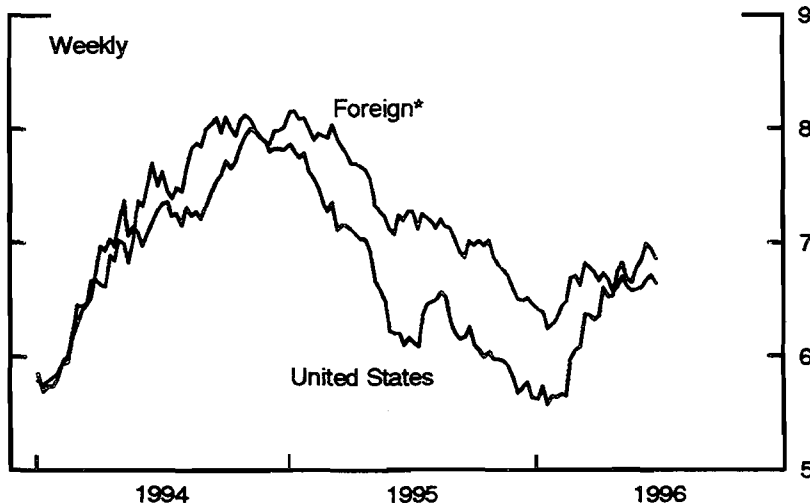
Dollar Exchange Rates

	Percent change 12/95 to 7/1/96
Yen	7.6
Swiss franc	7.4
Deutschemark	5.8
Korean won	5.0
<b>G-10 Average</b>	<b>3.3</b>
Mexican peso	-1.0
Italian lira	-3.8

Interest Rates

	Level 7/1/96	Change 12/95 to 7/1/96
Three-month		
Germany	3.30	-0.52
Japan	0.61	0.09
United States	5.45	-0.17
Ten-year		
Germany	6.52	0.44
Japan	3.17	0.31
United States	6.75	1.04

Ten-Year Interest Rates



\* Multilateral trade-weighted average for foreign G-10 countries.

Three-Month Interest Differentials\*

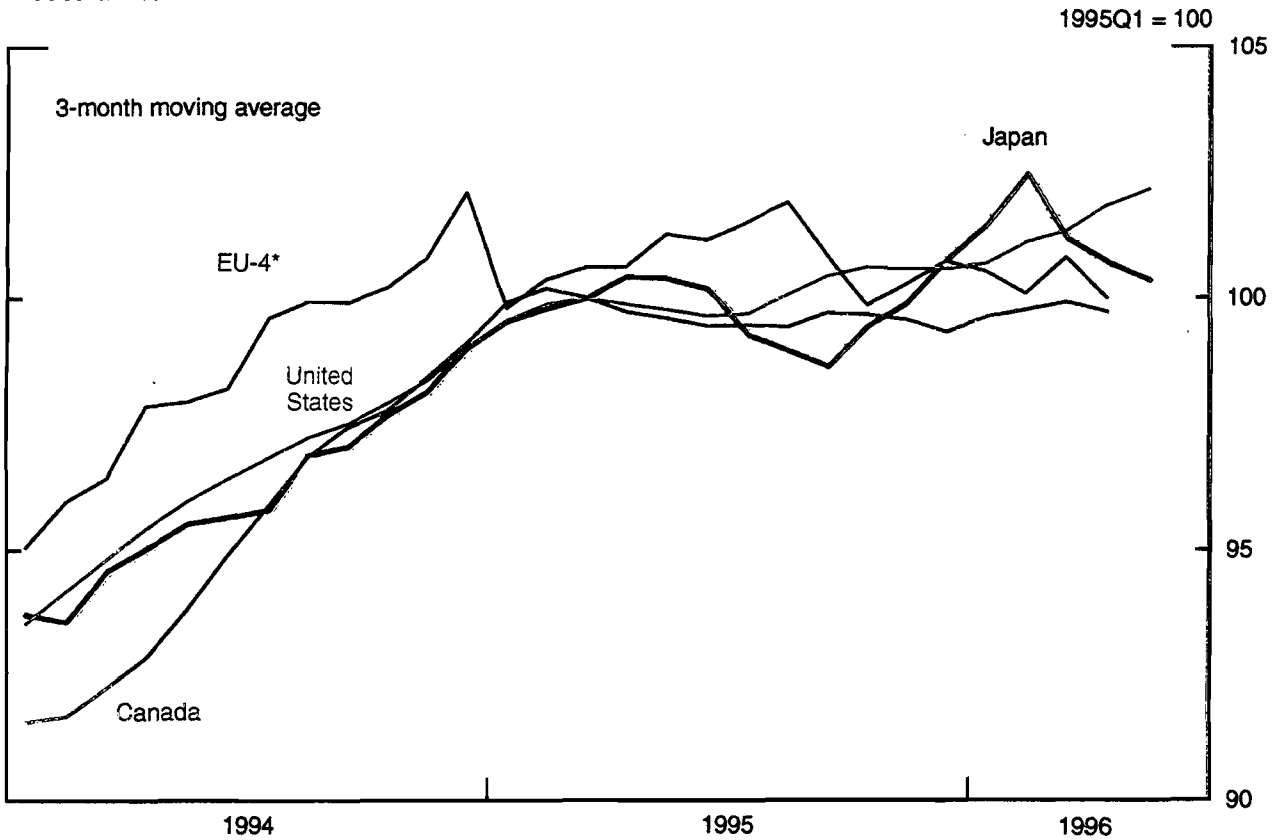
	U.S.- Germany	U.S.- Japan
Actual 7/1/96	2.30	4.89
Futures 12/96	2.40	4.91
Futures 12/97	1.63	4.44

\*Euro-Market Rates

Chart 6

# Foreign Industrial Countries

## Industrial Production



\*Germany, Italy, France and the United Kingdom, weighted by U.S. exports.

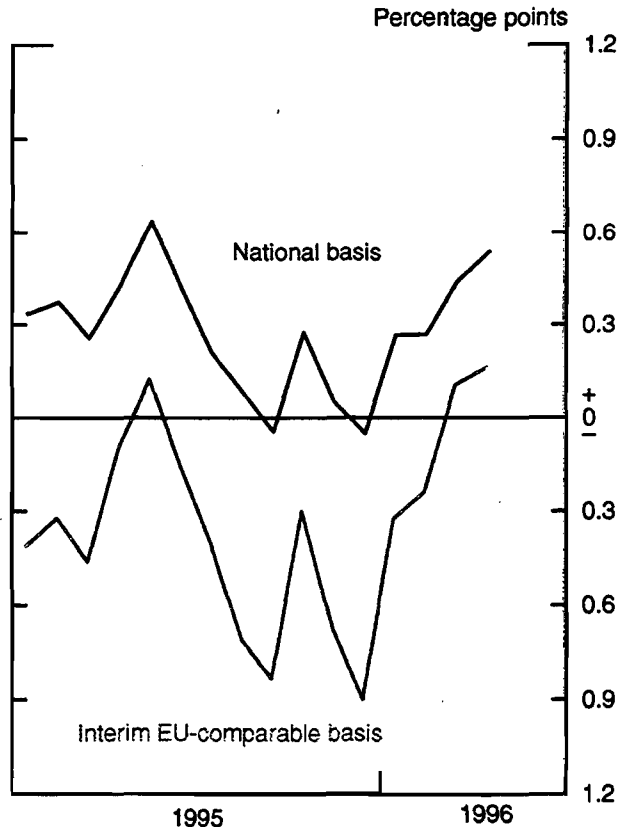
## Consumer Prices

	Percent change, Q4/Q4		
	1995	1996	1997
1. W. Germany	1.6	1.5	1.8
2. France	1.9	1.8	1.9
3. Italy	5.9	4.1	3.5
4. United Kingdom*	2.9	2.7	2.7
5. Canada	2.1	1.8	1.6
6. Japan	-0.8	0.4	1.5
7. G-10 Average**	1.0	1.3	1.7
8. United States	2.7	3.1	3.2

\*Excluding mortgage interest payments.

\*\*Weighted by U.S. non-oil imports.

## U.S.-EU\* Inflation Differential

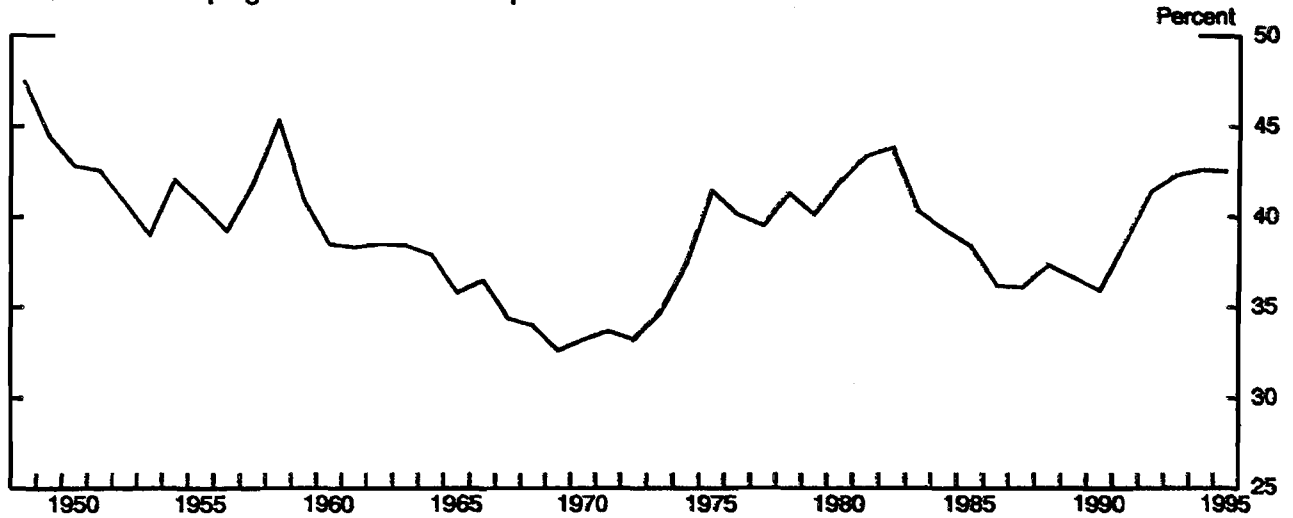


\*EU members of the G-10, weighted by U.S. non-oil imports.

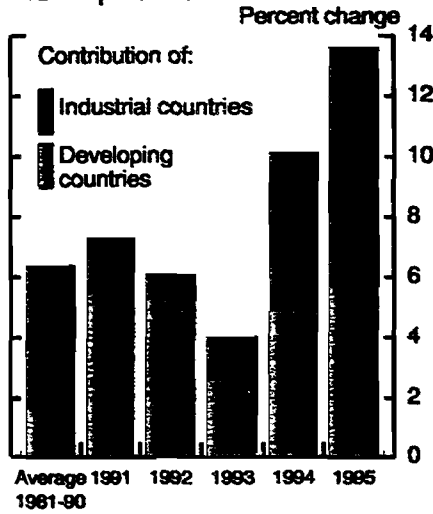
Chart 7

## Foreign Growth and U.S. Exports

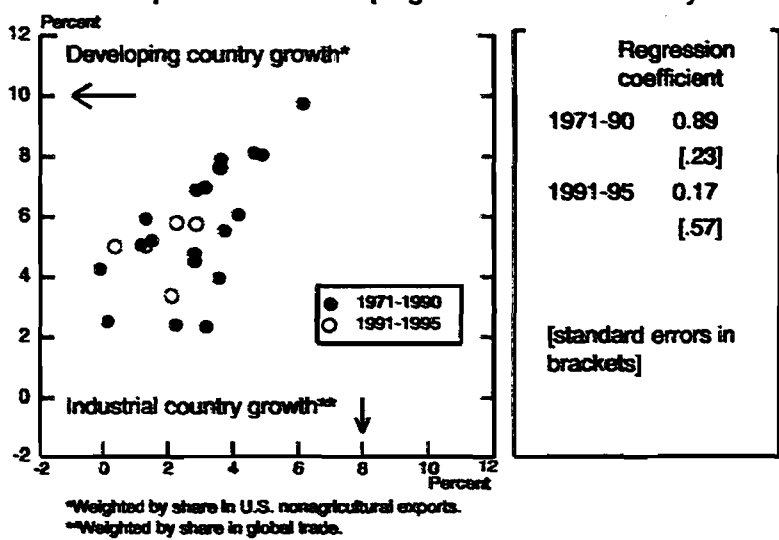
Share of Developing Countries in U.S. Exports



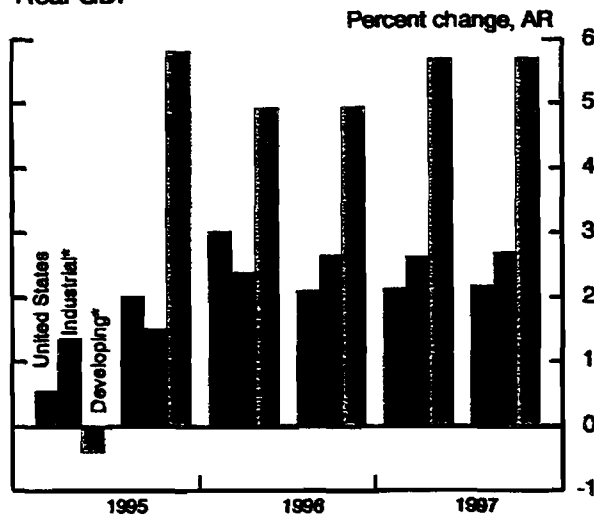
U.S. Export Growth



Relationship between Developing and Industrial Country Growth



Real GDP



\*U.S. nonagricultural export weights.

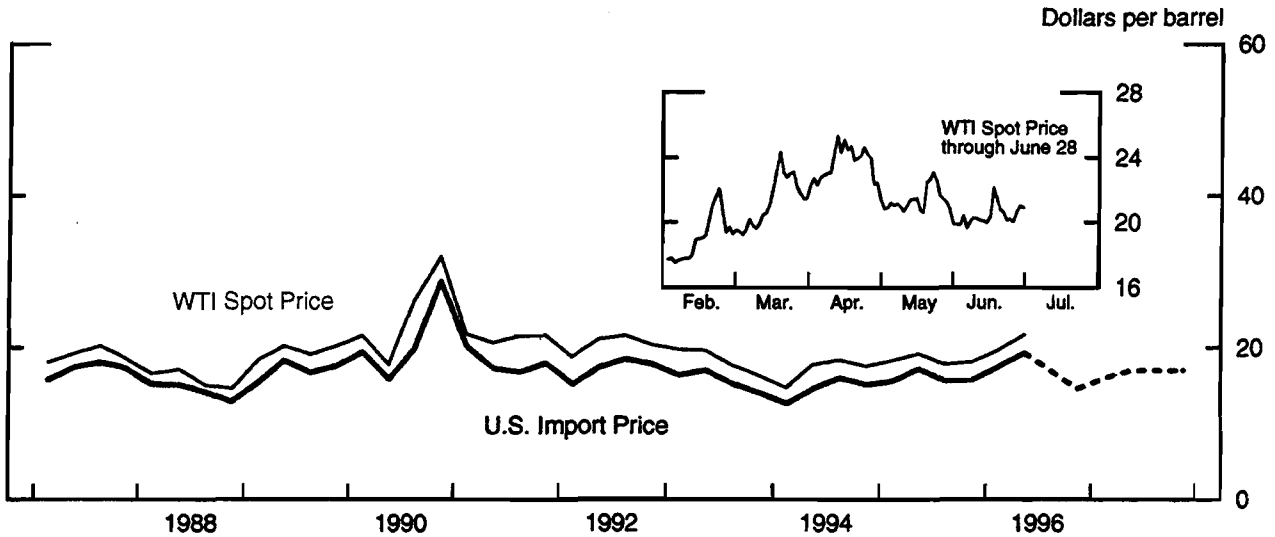
	Percent change, Q4/Q4		
	1995	1996	1997
1. Germany	1.0	1.4	2.3
2. France	0.5	2.4	2.7
3. Italy	2.3	2.0	2.2
4. United Kingdom	1.9	2.1	2.5
5. Canada	0.7	2.4	2.8
6. Japan	2.5	4.0	2.6
7. Industrial countries*	1.4	2.5	2.6
8. Mexico	-5.8	3.8	5.2
9. Total foreign*	1.7	3.5	3.8
10. United States	1.3	2.5	2.2

\*U.S. nonagricultural export weights.

Chart 8

# World Oil Markets

## Oil Prices



## Growth in World Consumption and Production of Oil

Year-to-year change, mb/d

	1994	1995	1996p	1997p
<b>Consumption</b>				
1. World	1.0	1.5	1.7	1.7
<b>Production</b>				
2. World	0.8	1.6	1.9	1.7
3. Iraq	0.0	0.0	0.3	0.5
4. OPEC*	0.3	0.5	0.3	0.4
5. North Sea	0.7	0.4	0.4	0.3
6. Non-OPEC LDCs	0.5	0.4	0.7	0.6
7. Former USSR	-1.0	0.1	0.1	0.0
8. United States	-0.1	-0.1	-0.2	-0.2
9. Other	0.4	0.3	0.1	0.1
<b>Stockbuilding**</b>	-0.2	0.1	0.2	0.0

## Excess Capacity at End of 1995

Mb/d

<b>Total</b>	<b>6.5</b>
Iraq	3.0
OPEC*	3.5
ROW	0.0
<b>Longer-term Sources of Additional Oil Production</b>	
1. Middle East	
2. Former USSR	
3. Latin America	
4. Africa	

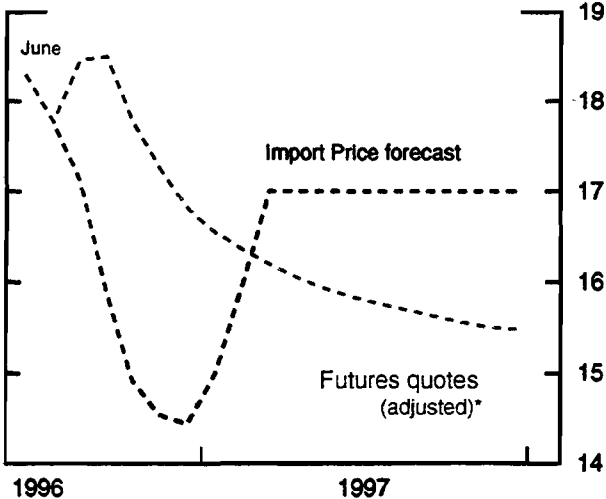
\* OPEC excluding Iraq.

\*\* Includes reported stock changes and oil in transit. Amount shown is the change in the change of stocks.

\* OPEC excluding Iraq.

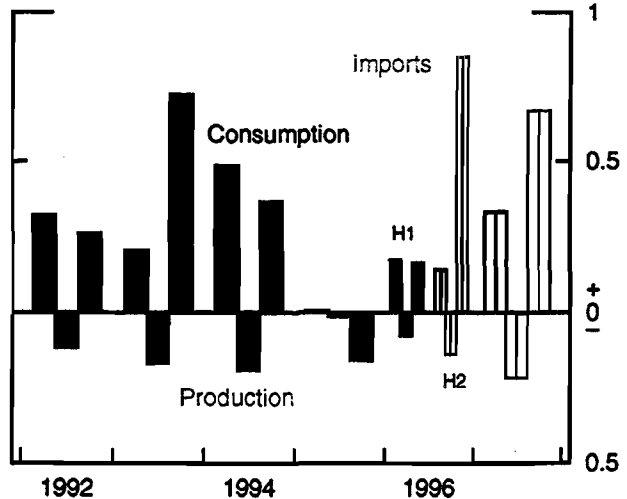
## U.S. Import Prices

Dollars per barrel



## U.S. Developments

Change in annual average, mb/d



\* Quotes on WTI adjusted to be consistent with import prices.

# Exports and Imports

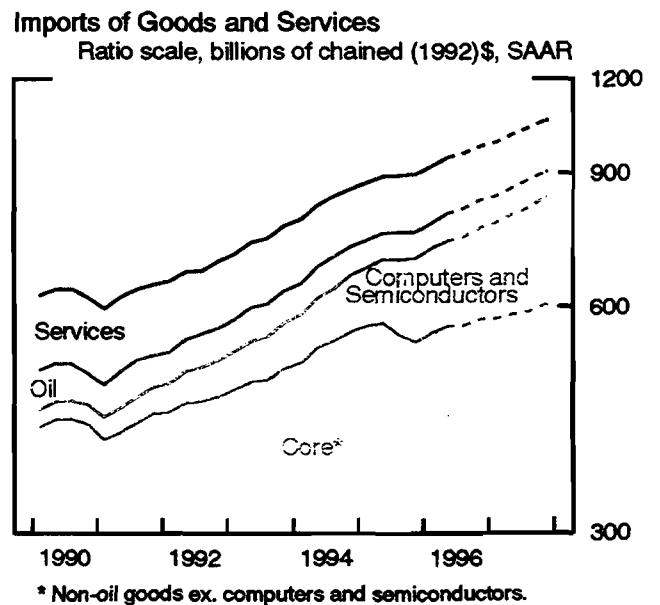
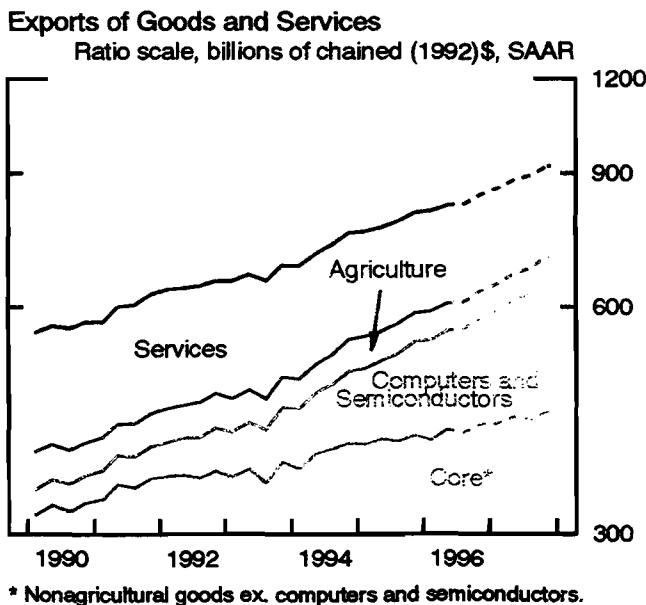
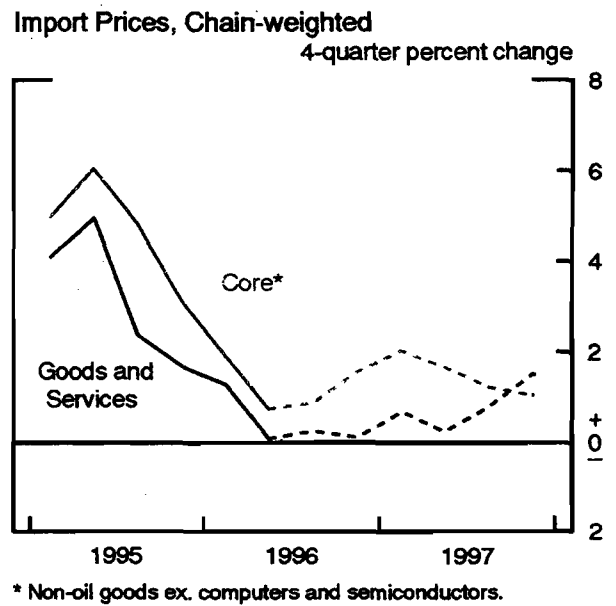
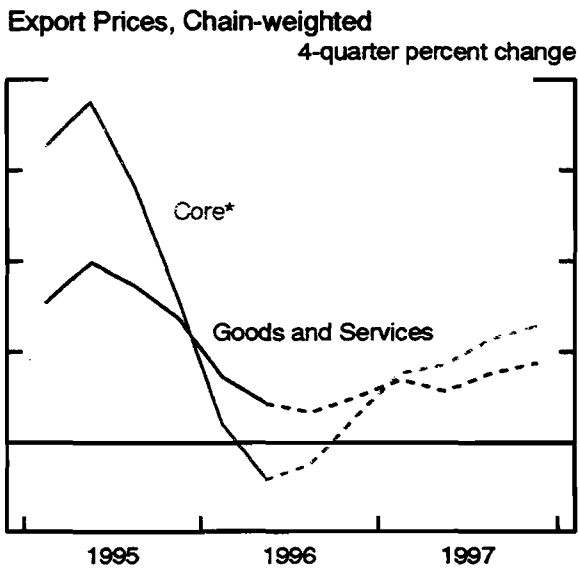
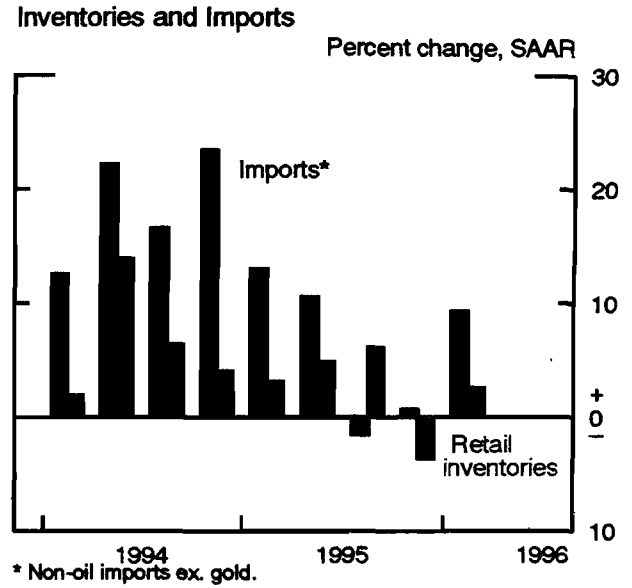
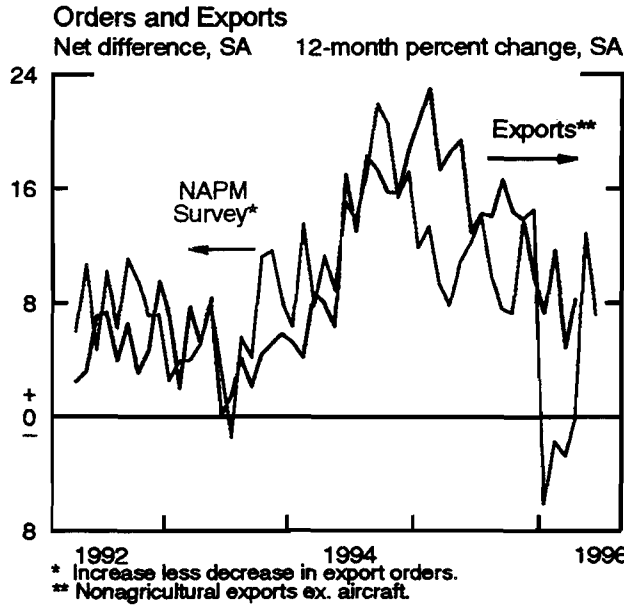
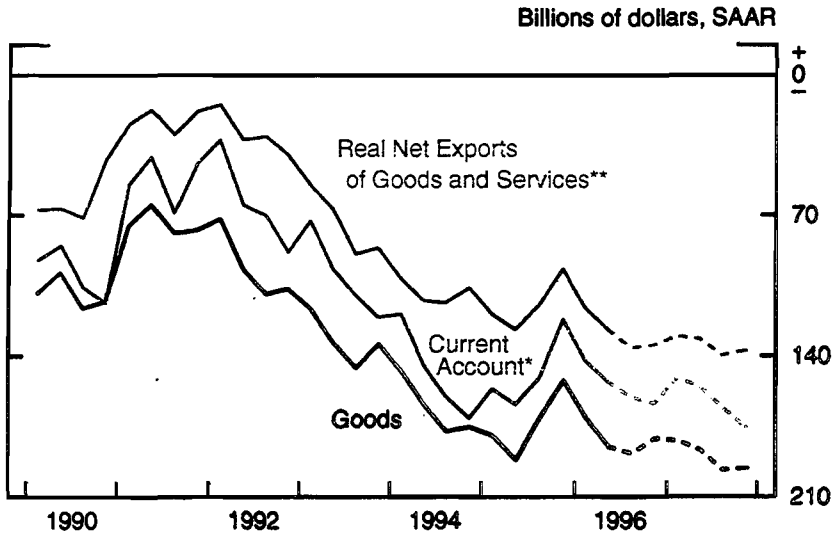


Chart 10  
**Summary**

**External Balances**



**Contribution of Net Exports to Real GDP Growth\***

	Percentage Points
1990	0.6
1991	0.4
1992	-0.4
1993	-0.7
1994	-0.3
1995-H1	-0.6
1995-H2	0.9
1996-H1	-0.9
1996-H2	-0.2
1997	0.0

\* Adjusted for Gulf War transfers.  
 \*\* Billions of chained (1992) dollars.

\* From end of previous period.

**Alternative Scenarios**

**Baseline:** Greenbook forecast extended.

- Alternatives:**
- (a) Growth spurt in industrial countries equal to 1-1/2 percent of real GDP.
  - (b) Growth spurt in developing countries equal to 2-1/2 percent of real GDP.

**Policy assumption:** U.S. and foreign monetary authorities target baseline nominal GDP.

Percent change, Q4 to Q4

	1996	1997	1998	1999
<b>U.S. Real GDP</b>				
Baseline	2.5	2.2	1.7	1.7
(a) Industrial spurt	2.7	2.5	1.7	1.6
(b) Developing spurt	2.6	2.4	1.7	1.7
<b>U.S. Consumer Prices</b>				
Baseline	3.1	3.2	3.2	3.2
(a) Industrial spurt	3.2	3.4	3.4	3.4
(b) Developing spurt	3.1	3.3	3.3	3.3

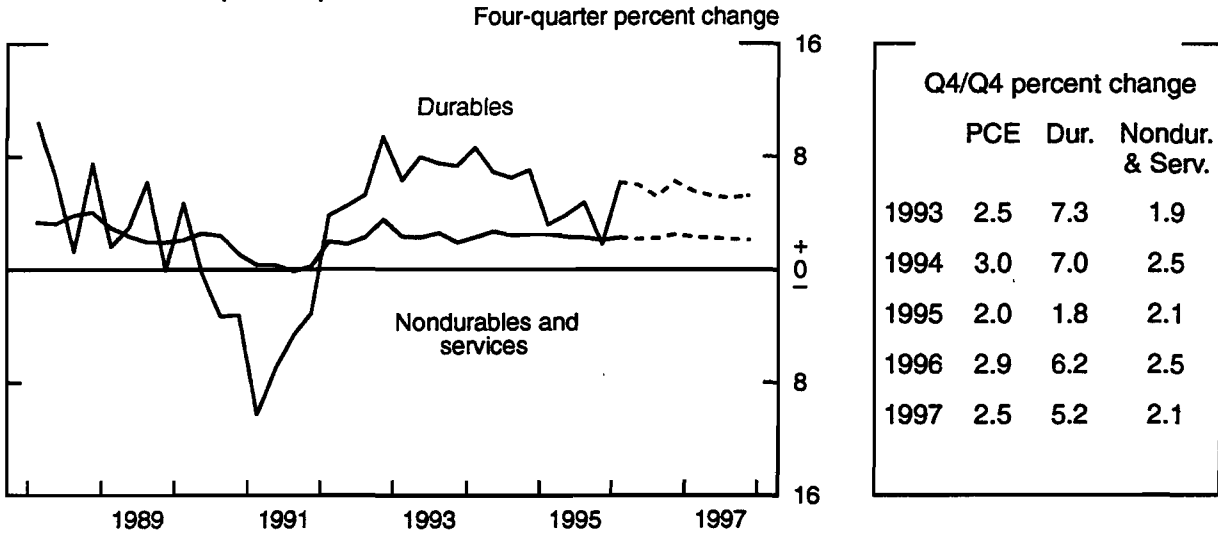
Billions of Dollars, Q4

	1996	1997	1998	1999
<b>U.S. Current Account</b>				
Baseline	-164	-175	-169	-190
(a) Industrial spurt	-146	-136	-125	-144
(b) Developing spurt	-159	-163	-151	-168



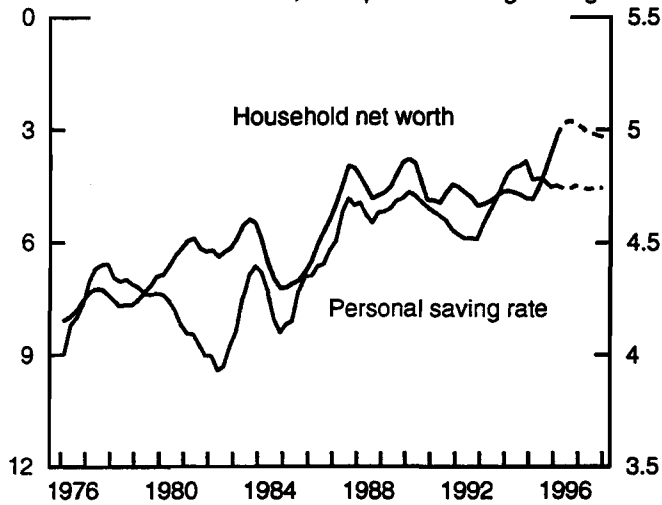
# Consumer Spending

## Personal Consumption Expenditures

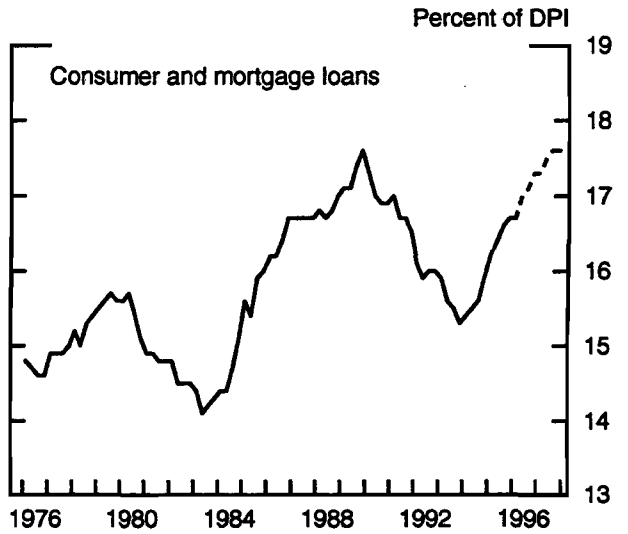


## Net Worth and Personal Saving

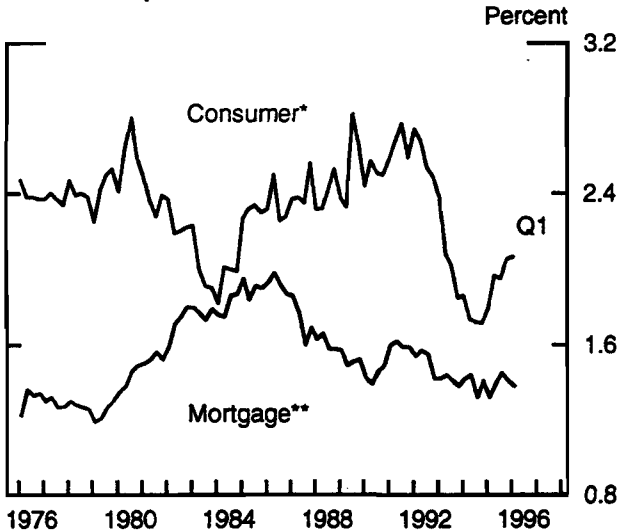
Percent of DPI, four-quarter moving average



## Debt Service Burdens



## Loan Delinquencies



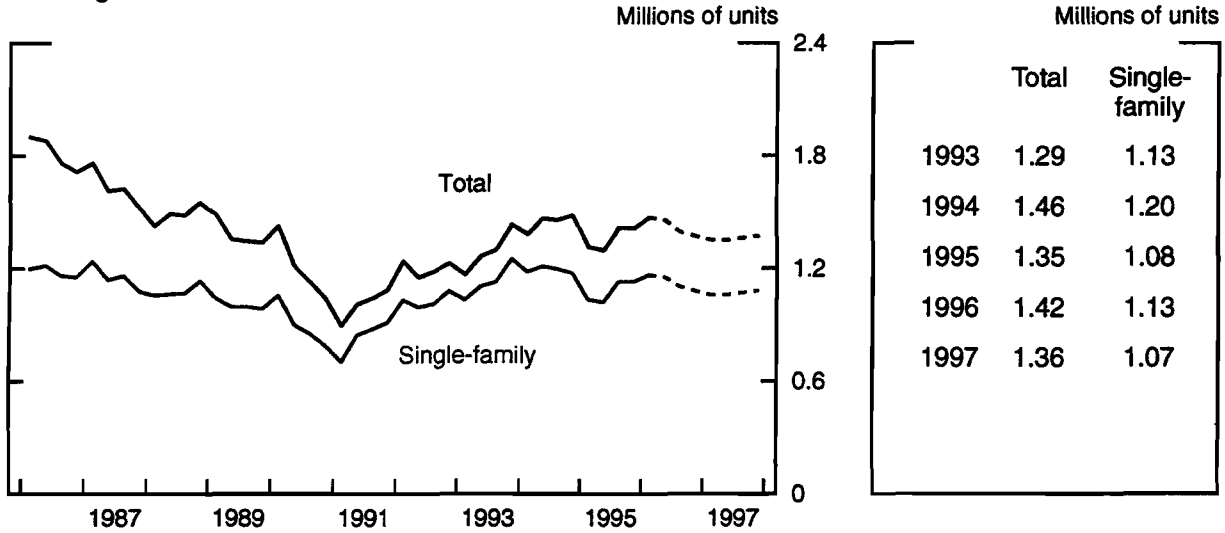
## Bank Willingness to Make Consumer Loans



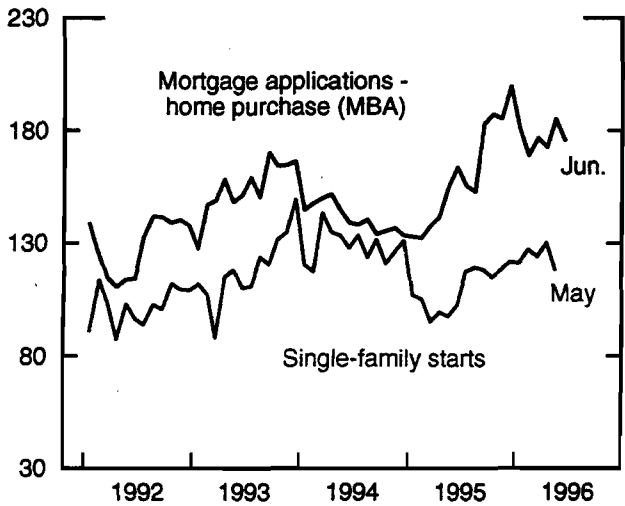
\* Consumer installment loans - ABA - 30 or more days.  
 \*\*For all mortgages - MBA - 60 or more days.

Chart 12  
**Housing**

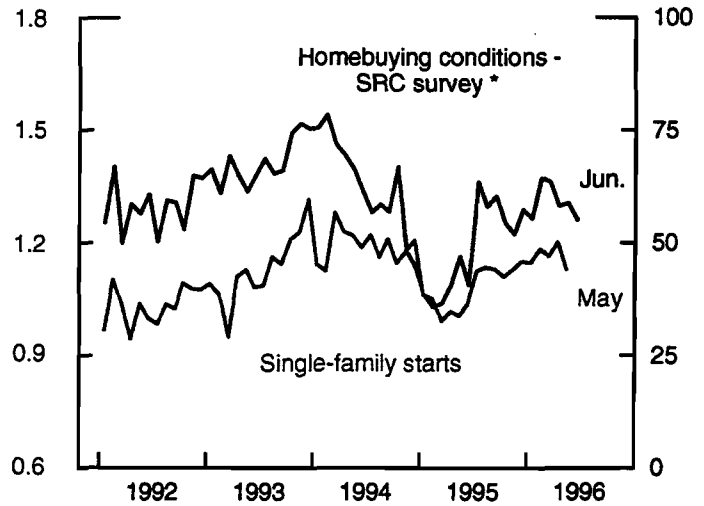
**Housing Starts**



**Mortgage Applications and Housing Starts Index**

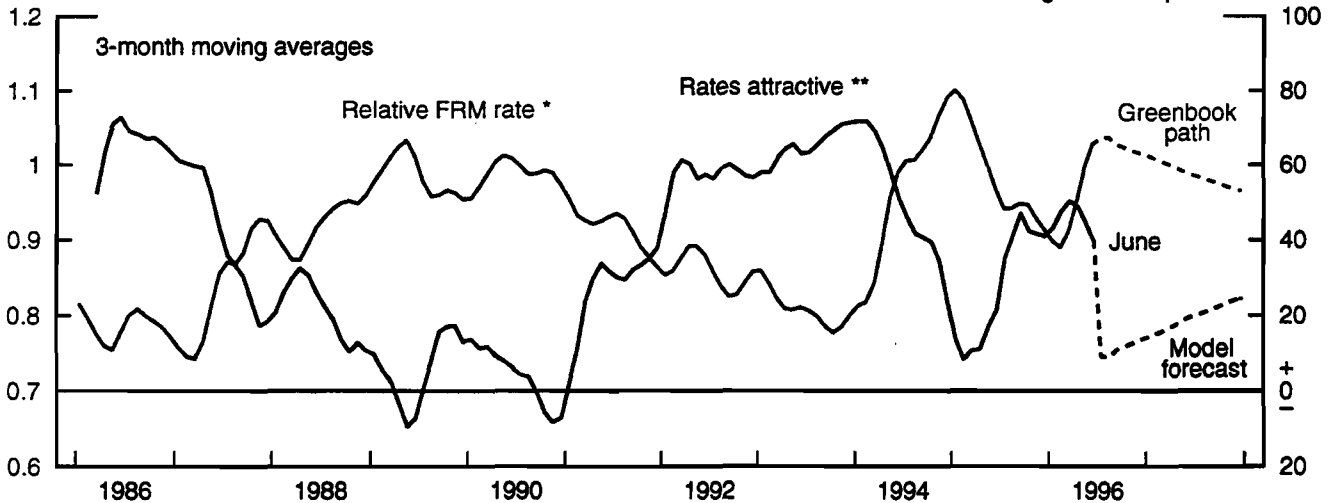


**Perceived Homebuying Conditions and Housing Starts**



\* Good time to buy minus bad time to buy.

**Perceived Attractiveness of Mortgage Rates**



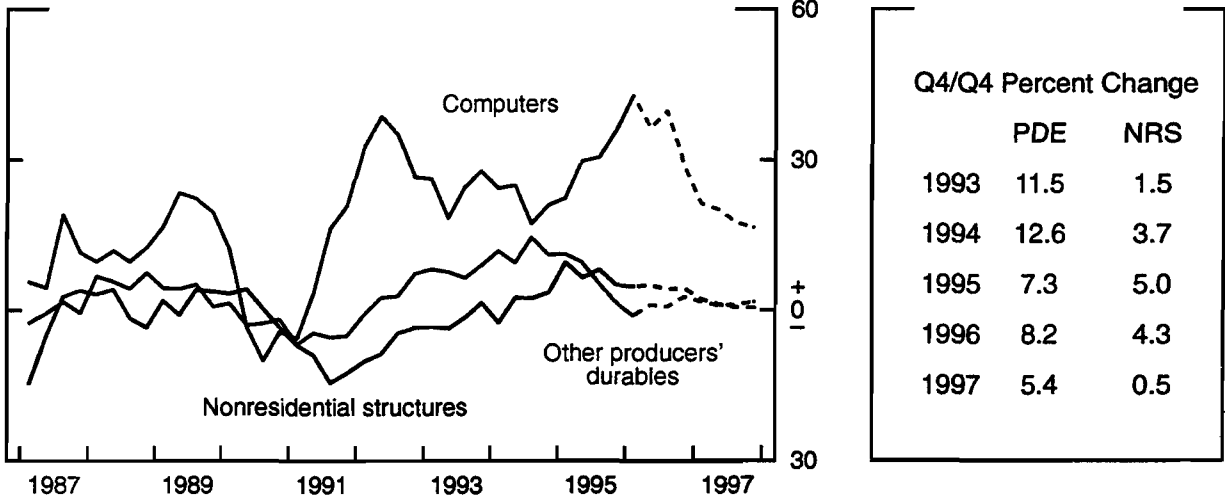
\* Ratio of current FRM rate to average of past four years.

\*\* Good time to buy because rates low minus bad time to buy because rates high - SRC survey.

# Business Investment

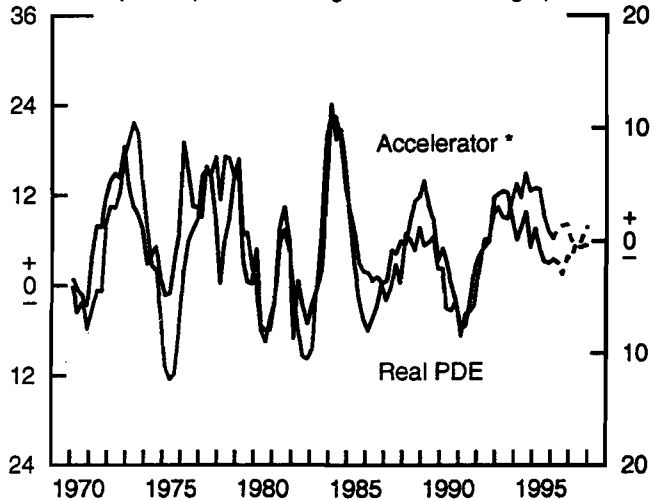
## Business Fixed Investment

Four-quarter percent change, annual rate



## Real PDE and the Acceleration of Business Output

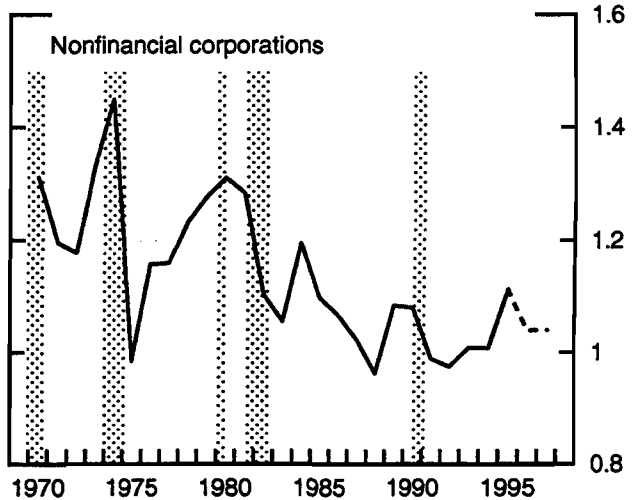
Four-quarter percent change Percentage points



\*The accelerator is the eight-quarter percent change in business output less the year-earlier eight-quarter percent change.

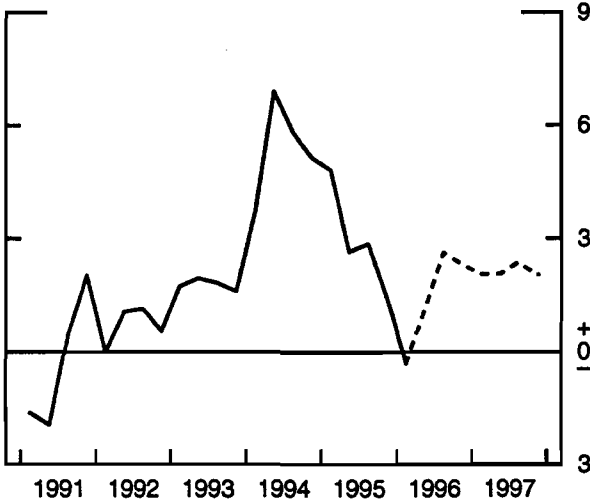
## Ratio of Capital Spending to Cash Flow

Ratio



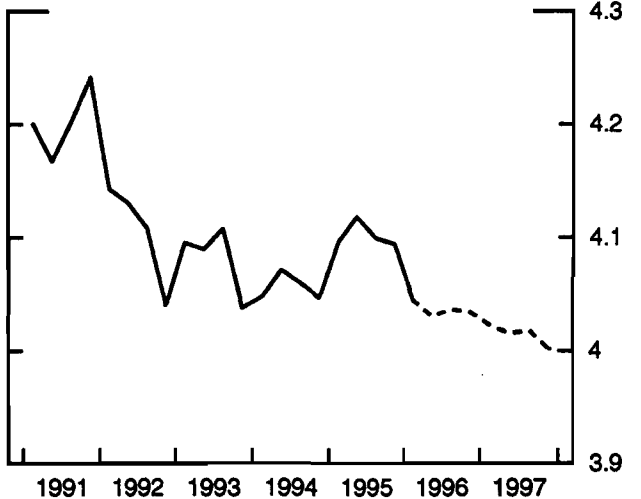
## Nonfarm Inventory Investment

Percent change in stock, saar



## Inventory-Sales Ratio \*

Ratio

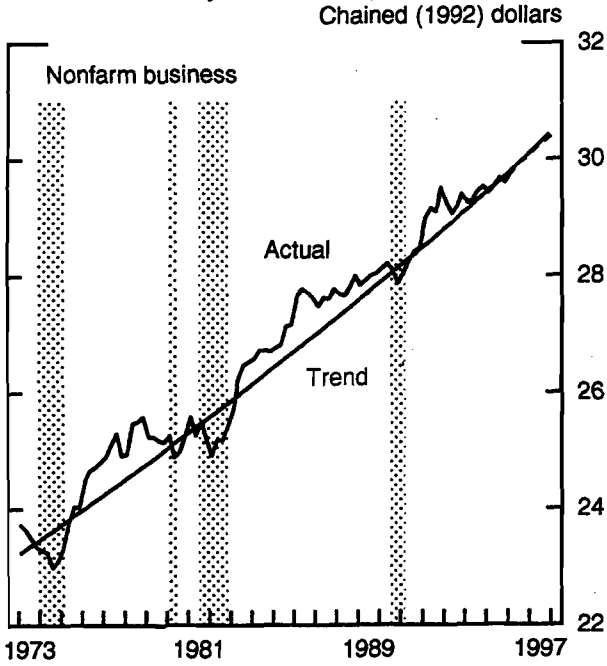


\* Nonfarm inventories relative to final sales of goods and structures.

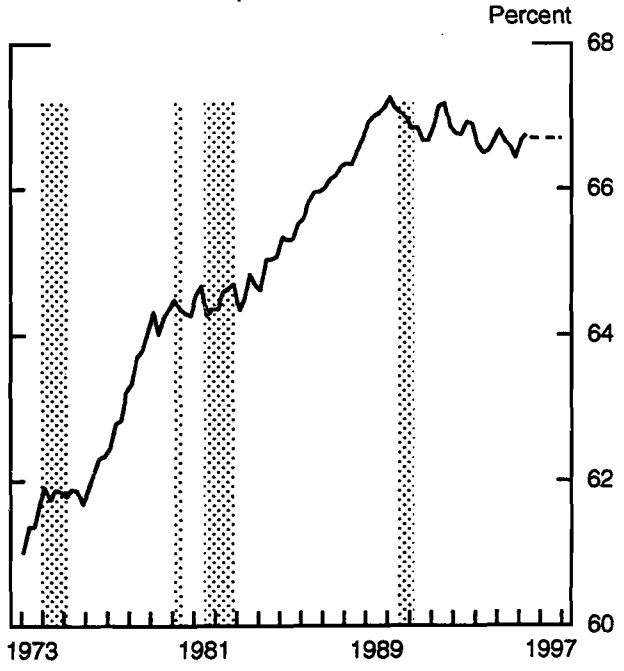
Chart 14

# Labor Markets

### Labor Productivity

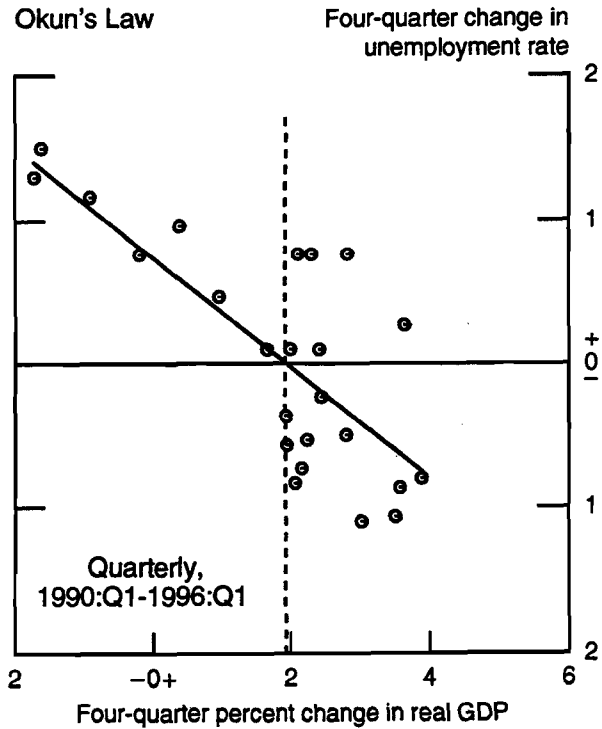


### Labor Force Participation Rate \*

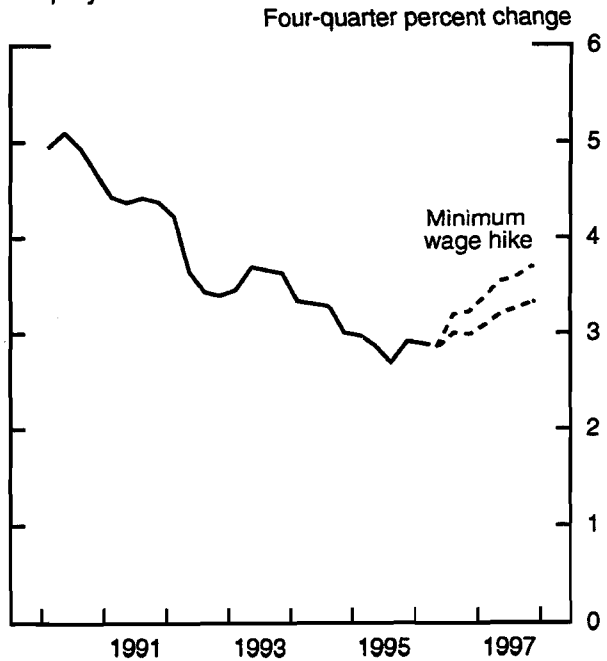


\* Pre-1994 data adjusted for change in CPS.

### Okun's Law

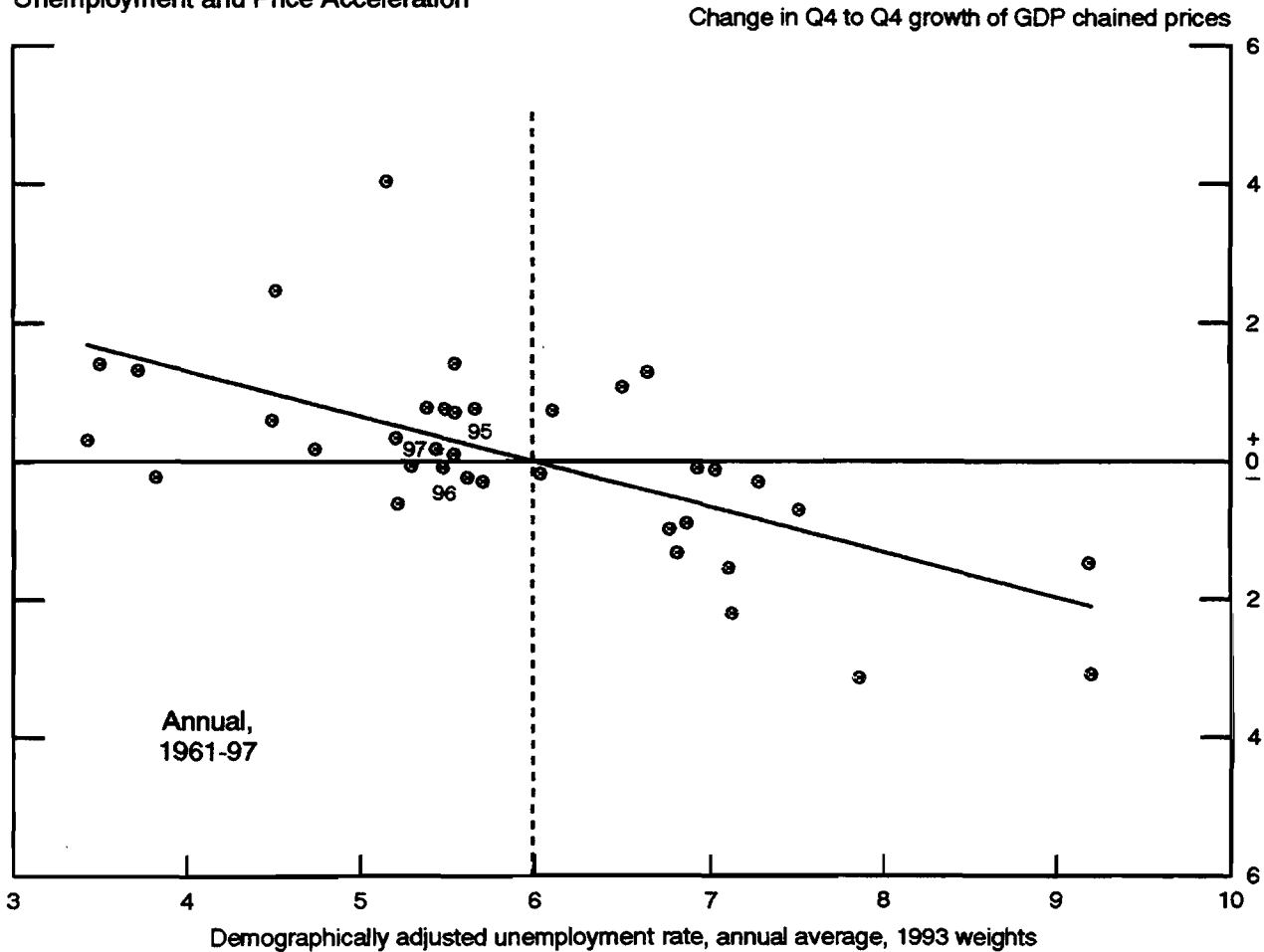


### Employment Cost Index



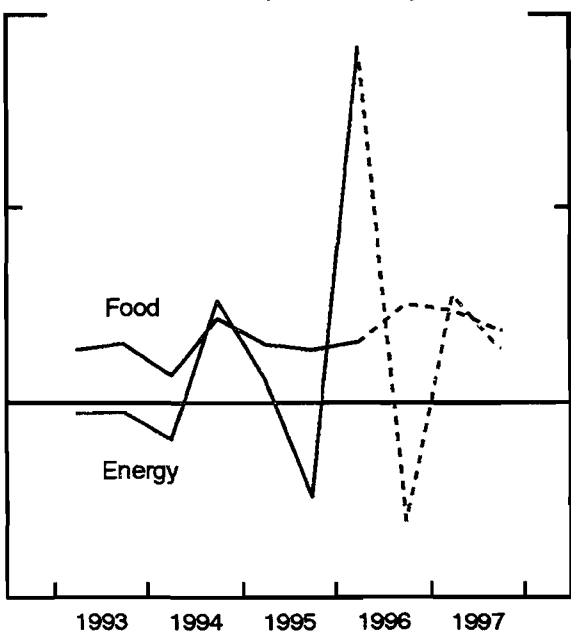
# Prices

### Unemployment and Price Acceleration



### CPI Food and Energy Inflation

Semiannual percent change, annual rate



### Intermediate Goods Inflation

Index 3-month change, annual rate

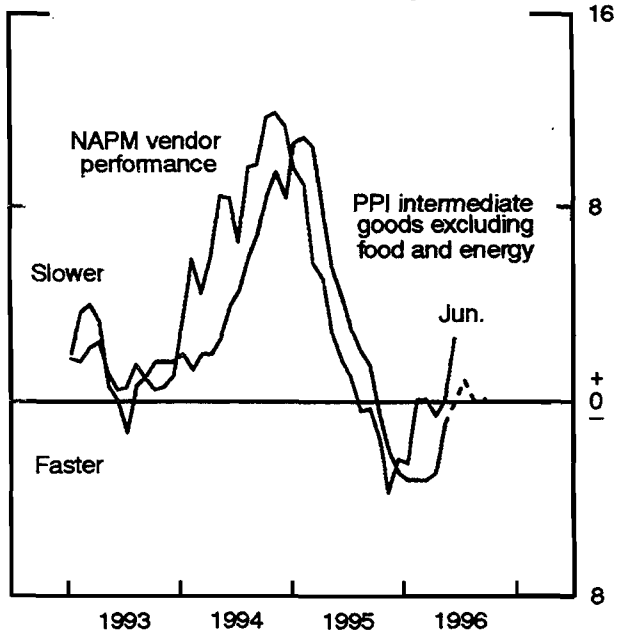


Chart 16

**ECONOMIC PROJECTIONS FOR 1996**

	<b>FOMC</b>		
	Range	Central Tendency	Staff
	—————Percent change, Q4 to Q4—————		
Nominal GDP	$4\frac{3}{4}$ to 6	$4\frac{3}{4}$ to $5\frac{1}{2}$	4.7
previous estimate	4 to 5	$4\frac{1}{4}$ to $4\frac{3}{4}$	4.5
Real GDP	$2\frac{1}{4}$ to 3	$2\frac{1}{2}$ to $2\frac{3}{4}$	2.5
previous estimate	$1\frac{1}{2}$ to $2\frac{1}{2}$	2 to $2\frac{1}{4}$	1.8
CPI	$2\frac{3}{4}$ to $3\frac{1}{2}$	3 to $3\frac{1}{4}$	3.1
previous estimate	$2\frac{1}{2}$ to 3	$2\frac{3}{4}$ to 3	3.0
	—————Average level, Q4, percent—————		
Unemployment rate	$5\frac{1}{4}$ to $5\frac{3}{4}$	About $5\frac{1}{2}$	5.5
previous estimate	$5\frac{1}{2}$ to 6	$5\frac{1}{2}$ to $5\frac{3}{4}$	5.6

**ECONOMIC PROJECTIONS FOR 1997**

	<b>FOMC</b>		
	Range	Central Tendency	Staff
	—————Percent change, Q4 to Q4—————		
Nominal GDP	$3\frac{3}{4}$ to 5	4 to 5	4.5
Real GDP	$1\frac{1}{4}$ to $2\frac{1}{2}$	$1\frac{3}{4}$ to $2\frac{1}{4}$	2.2
CPI	$2\frac{1}{2}$ to $3\frac{1}{4}$	$2\frac{1}{2}$ to 3	3.2
	—————Average level, Q4, percent—————		
Unemployment rate	$5\frac{1}{2}$ to 6	$5\frac{1}{2}$ to $5\frac{3}{4}$	5.5

NOTE: Central tendencies constructed by dropping top and bottom three from distribution, and rounding to nearest quarter percent.

July 2, 1996

Long-Run Ranges  
David E. Lindsey

M2 and M3 so far this year have been growing around the upper bounds of their annual ranges. We expect these broader aggregates to continue expanding at such rates over the next year and a half. This prospect again raises familiar issues for the Committee's decision at this meeting about the ranges for this year and next year.

Chart 1 in your package captures the essentials underlying the staff's view of the outlook for M2. It shows a scatter plot with quarterly data of the relationship between M2's velocity, on the vertical axis, and its opportunity cost, on the horizontal axis, since early 1959. The dots and line in black represent what we once had confidence in--the co-movement of M2's velocity and its opportunity cost prior to the 1990s. That is, M2 tended to move together with nominal GDP, except as influenced by changes in its opportunity cost. The solid black line represents a regression fit over this period, which is a simplified version of the staff's standard M2 demand equation. The two broken lines show the 95 percent confidence interval around it.

The red dots, which begin in 1990:Q1, indicate the progressive upward structural drift in M2 velocity through the early 1990s as the historical relationship between velocity and opportunity cost increasingly broke down. A number of reasons for this updrift in M2 velocity and associated weakness in M2 demand were adduced at the time. They involved the unusually steeply sloped yield curve and very low level of short-term interest rates, which helped to attract the public to more readily available long-term mutual funds out of liquid balances; the credit crunch at banks and the resolution of troubled

thrifts, which reduced the aggressiveness with which these institutions sought retail deposits; and the household balance-sheet restructuring, which entailed repayment of loans out of liquid money balances.

I've plotted the data starting in late 1994 in green. These six quarters all lie close to the green regression line fit over just this recent time frame. The close conformity with the lower black regression line might suggest that the upward structural drift in velocity has ended and that the behavioral patterns typifying M2 demand in the 1960s, 1970s, and 1980s have reemerged. This is what we've adopted as our working assumption in our forecasts, shown by the blue Xs, of M2 velocity for the fourth quarters of this year and next year. As the bluebook discussion indicated, we expect the opportunity cost of M2 to be edging down as competitive forces push up rates on small time deposits. So, M2's velocity should continue to diminish marginally through next year. With nominal GDP projected to grow at a 4-1/2 percent rate, this velocity behavior yields our M2 forecast of 5 percent growth this year and next.

Your second chart gives a different perspective on the relationship of M2 and GDP--it shows the behavior of real M2 in a business cycle context, as well as the record of real GDP. This chart indicates that, although real M2 was an imperfect leading indicator of real GDP prior to the 1990s, its properties in this regard broke down completely during the first half of the 1990s. Real M2 continued to decline while the expansion in real GDP persisted. Only about a year ago did real M2 resume its earlier uptrend. We have forecast continued growth in real M2 through the end of next year given the Greenbook's projection of sustained expansion in real GDP.



Judging by either chart, the evident return of M2's behavior to historical norms has lasted only for a brief recent period. This observation implies a wide range of uncertainty around the staff M2 projection and makes a significant upgrading M2's policy role seem premature.

The first column of your next exhibit, taken from page 11 of the bluebook, shows our M2 growth forecast of 5 percent over this year and next, along with our M3 growth projection of 6 percent for the two years. Also, we see debt expanding at a 4-1/2 percent rate over both years, matching the anticipated pace of nominal GDP. The central tendency of your own forecasts of nominal GDP is a bit higher than the staff's this year but about the same next year.

Two alternative sets of ranges are presented for Committee consideration. Alternative I replicates the current year's ranges previously selected by the Committee. The M2 range of 1 to 5 percent was originally reduced to its current specification in July 1993. At that time, forecasts for that year suggested, correctly as it turned out, that M2 growth would undershoot the lower bound of the 2 to 6 percent range previously set in February of that year. By July 1995 the restraining effects on M2 of special factors and of hikes in short-term interest rates had abated and faster growth of M2 apparently had resumed. Even so, the Committee was reluctant to readjust the M2 range upward for 1995 or to use a higher range for 1996 to align these ranges better with likely M2 growth. The Committee was concerned that the market could misperceive a decision to raise the range as signalling either lessened anti-inflationary resolve or heightened confidence about velocity patterns that would lead the FOMC to upgrade the monetary aggregates as policy variables.

These concerns did not deter the Committee a year ago, however, from making a large technical upward adjustment to the M3 range for 1995. It raised that range from 0 to 4 percent, which had been in effect since July 1993, to 2 to 6 percent. The Committee used this higher range for 1996 as well. This adjustment recognized that M3 seemingly had resumed its historical tendency to outpace M2. Historically, the velocity of M3 had trended down, while trend velocity of M2 had been flat. In reports to the Congress, both a year ago and last February after the ranges were reaffirmed, the Committee characterized the alternative I specifications for both M2 and M3 as benchmarks for longer-run growth of the monetary aggregates that, on the assumption of historically typical velocity trends, would be consistent with effective price stability.

To be sure, over this year and next, nominal GDP growth is likely to run noticeably above the pace that would be associated with effective price stability. Also, the velocities of M2 and M3 are likely to be marginally depressed by the edging lower of the average opportunity costs of holding retail deposits. Thus, the staff's baseline projections for M2 and M3 this year and next are around the upper ends of their alternative I ranges. In the framework of the staff projection, it would take a substantial increase in short-term interest rates, as in the tighter policy scenario in the second column, to move M2 and M3 comfortably within the alternative I ranges.

The alternative II ranges for the broad monetary aggregates are 1 percentage point higher than the alternative I ranges, enough to clearly encompass the staff's M2 and M3 projections. The Committee may judge that an additional half year of monetary data has lent credence to the staff's view that growth in broad money roughly in line with

nominal GDP will continue over the rest of this year and through next year as well. Even if the Committee has no intention of upgrading the broad monetary aggregates as guides for monetary policy adjustments, it may still wish for the ranges to line up better with the probable outcomes for M2 and M3.

STRICTLY CONFIDENTIAL (FR) CLASS I-FOMC

*Material for  
Staff Presentation on  
Long-Run Ranges*

*July 2-3, 1996*

Chart 1

# Velocity of M2 and Its Opportunity Cost

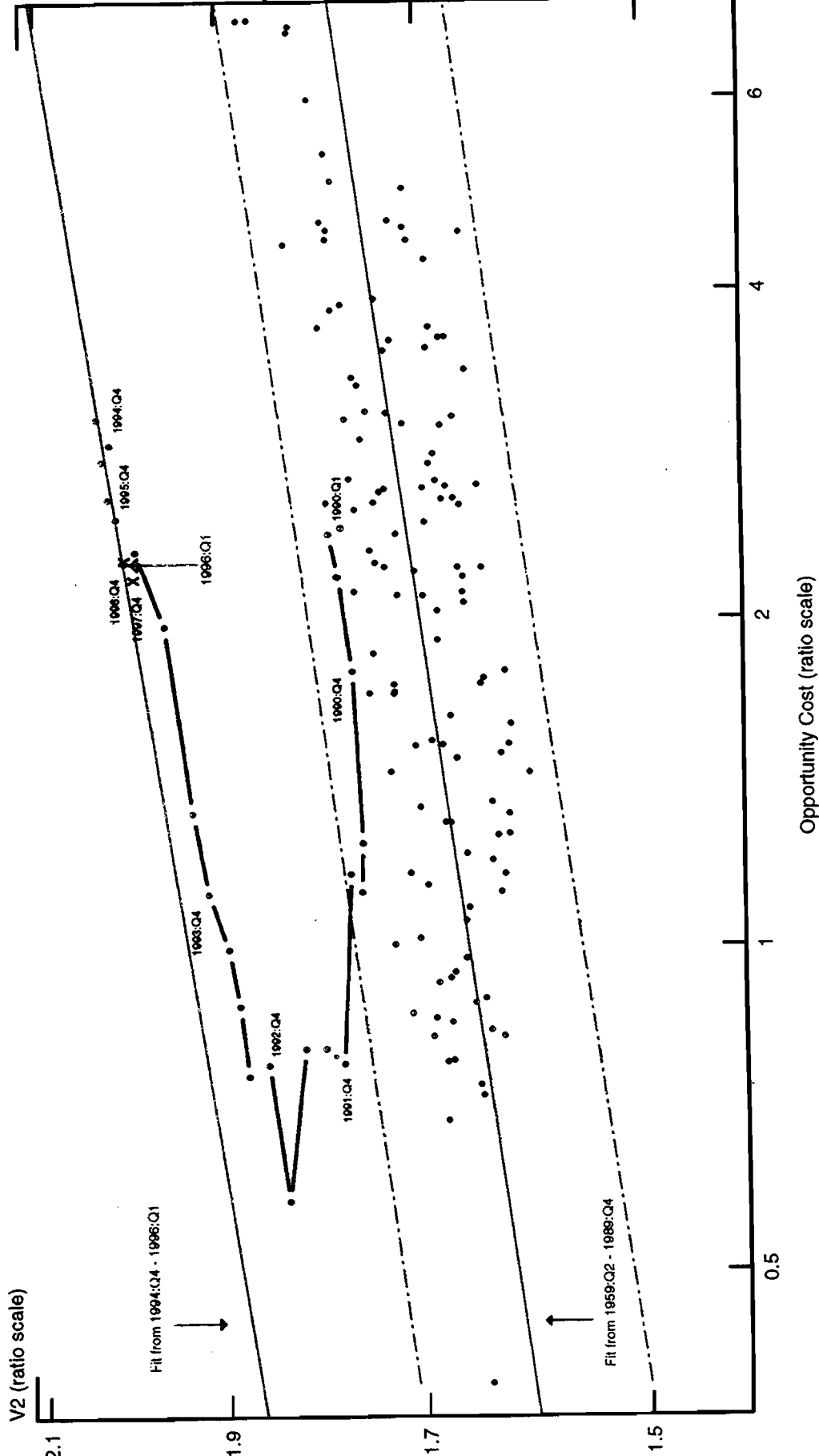
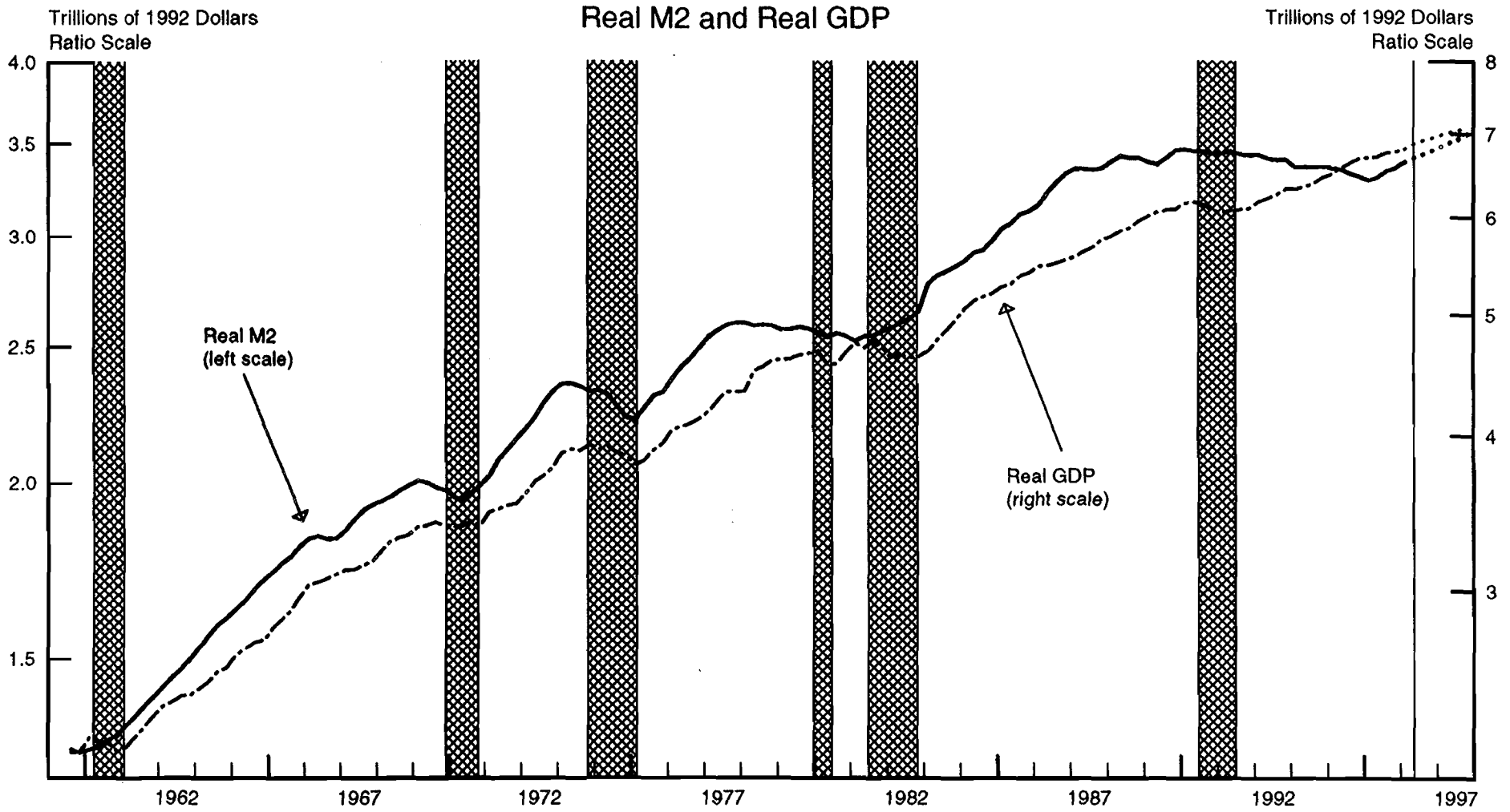


Chart 2



Note: Real M2 is deflated by the chain-weighted price index for GDP.

**Table 1**  
**Growth of Money and Credit and Alternative Ranges**  
**(Q4 to Q4, percent)**

	Staff Projections		Ranges		
	1996				
	Baseline (Greenbook)	Tighter	Alt. I (Current Ranges)	Alt. II	Memo: 1995:Q4 to June
<b>M2</b>	5	4-1/2	1 to 5	2 to 6	4.8
<b>M3</b>	6	5-3/4	2 to 6	3 to 7	6.3
<b>Debt</b>	4-1/2	4-1/2	3 to 7	3 to 7	4.8 <sup>a</sup>
<b>Memo:</b>					
<b>M1</b>	-1-1/2	-2-1/2			-1.5
<b>Adjusted   for Sweeps</b>	7	6			7.3
<b>Nominal GNP</b>	4-1/2	4-1/2			4.9 <sup>b</sup>
	1997				
	Baseline (Greenbook)	Tighter	Alt. I (Current 1996 Ranges)	Alt. II	
<b>M2</b>	5	3	1 to 5	2 to 6	
<b>M3</b>	6	4-1/2	2 to 6	3 to 7	
<b>Debt</b>	4-1/2	3-1/2	3 to 7	3 to 7	
<b>Memo:</b>					
<b>M1</b>	0	-3			
<b>Adjusted   for Sweeps</b>	5	2			
<b>Nominal GNP</b>	4-1/2	3-1/2			

a. 1995:Q4 to May.

b. 1995:Q4 to 1996:Q2 (Greenbook projection).

July 3, 1996

FOMC Current Monetary Policy  
Donald L. Kohn

The situation facing the Committee, as many of you remarked yesterday, is one in which the economy is operating around its estimated long-run capacity with the odds perhaps skewed toward growth above potential, but there are few signs of increased price pressures. In these circumstances, the decision facing the Committee at this meeting would seem to be whether the possibility of emerging inflation pressures is high enough to warrant an immediate tightening of policy, or whether policy should remain unchanged, pending further information. That choice, in turn, would seem to depend on a weighing of the risks and an evaluation of the costs and benefits of erring to one side or the other. Many of the possible rationales for each policy option appeared in the Bluebook, but I'd like to expand on a few of the major items.

On the unchanged policy side are two main arguments: One, that policy may already be restrictive enough to keep trend inflation from rising very much, if at all; and two, that it is worth waiting to get a clearer picture on that score because relatively little may be lost by a modest delay, even if tightening is needed.

Support for the argument that policy may already be well positioned comes importantly from the levels of real



interest rates relative to their historical values. As we've discussed before, these comparisons are tricky because other things certainly do not remain equal over time, so that equilibrium real rates vary. Nonetheless, past relationships can provide a starting point for assessing current financial conditions. As I showed in my briefing at the last meeting, a chart of real long-term interest rates against changes in inflation over the last 15 years indicates that those interest rates right now are around the value that on average in the past 15 years has been associated with stable inflation. At the short end of the yield curve, the real fed funds rate is close to 2-1/2 percent using the Philadelphia Fed survey of expected CPI inflation over the next year. This is a half point above its long-term average, and it hasn't come down much from last year; that is, by this measure, about three-fourths of the reduction in the nominal funds rate over the past year has been offset by decreases in inflation expectations.

Moreover, both short- and long-term rates probably would not react much to the choice of the unchanged reserve conditions of alternative B. Although the term structure of interest rates seems to have a modest firming of policy built into it some time in the next few quarters, that firming is quite modest and most market participants do not anticipate such a move until later this year, if at all.

The staff forecast sees neither the economy nor the level of interest rates as far from where they need to be to contain inflation, and such a judgment is important in assessing the costs and benefits to waiting. The possibility that the economy is now or soon will be producing beyond its potential implies that accommodative policy will extract an inflation penalty. But because the overshoot is unlikely to be large, the pickup in inflation would be small and gradual, and waiting to gauge the extent of actual inflation pressures probably would not foster a process that would be difficult to reverse. In the extensions of the Greenbook forecast in the long-run scenarios section of the Bluebook, a hike of only 50 basis points in the funds rate at the beginning of 1997 is enough to cap inflation, albeit at the slightly higher level than now prevailing.

There may be benefits to waiting as well. Although "unusual uncertainties" can be a cliché used by policymakers to avoid tough decisions, the behavior of prices and especially wages over recent years suggests that, with respect to the relationship of inflation to output, "unusual uncertainties" do in fact currently exist. With broad measures of inflation still well behaved and the early warning signs still mixed--as the cautionary reading emerging from the vendor delivery times in Monday's purchasing managers report is balanced against the quiescent nature of industrial commodity prices--the Committee might see itself as having

time to get additional information on the price and wage setting process. If the NAIRU is, effectively, lower than we previously thought, real interest rates will need to be lower as well than one might judge from history to accommodate a higher sustained level of production.

Most of these arguments for unchanged policy would seem most consistent with a view that at this stage of the business cycle policy should be directed at keeping inflation from rising, not to bringing it down further. To have much assurance that the latter outcome would prevail would seem more definitely to require a near-term policy tightening. But the case for firming may be broader than this, resting on a notion that short-term rates likely will need to be raised at some point even to keep inflation in check, and that waiting does risk complicating the conduct of policy down the road.

Although real interest rates may be reasonably positioned by historic standards, they need to be judged against persistent upside surprises to aggregate demand and the state of other financial conditions. And it is against this background that one could develop an argument that policy may be too accommodative for the opportunistic policymaker leaning hard against inflation upticks. After their increase this year, real long-term rates are noticeably below their levels in late 1994 and early 1995. While real GDP in 1995 ran below the growth of potential, final

demands still increased about 2 percent. Moreover, although long-term real rates have risen a percentage point or more since the turn of the year, they are only about half a point above their average levels in the spring and summer of last year. These later rates, crudely, might be associated with the three percent growth of GDP or final sales now projected for the first half of 1996, placing the economy perhaps slightly beyond its potential. Whether, in the face of strong aggregate demand, a half point rise is enough to keep the economy around the level of its potential--or even a bit below if you want to tilt inflation down--is an open question. In our new model, a half-point increase in intermediate- and long-term rates by itself cuts only about half that amount, that is, one-quarter percentage point, from annual growth in GDP over the next four quarters. The effect doubles when the dollar rises and the stock market falls, in line with historic relationships. We've seen the former but certainly not the latter. Not only has the stock market risen substantially, but the increase in Treasury rates has not fully shown through to private borrowers, given the narrowing of some yield spreads and the continuing aggressive posture of the banks outside the credit card area. That is, the rise in long-term rates may overstate the effective tightening of financial conditions.

In part reflecting the sense that financial conditions are not particularly restrictive, the Greenbook has,

in effect, an equilibrium funds rate above current levels, and has identified upside risks to the forecast. With the economy near its potential, it's not surprising the clear signs of added inflation presences have not emerged. If the economy is stronger than expected, they should do so with a lag.

Hence, if interest rates do need to be raised, the longer that adjustment is postponed, other things equal, the larger it will have to be. There are two reasons for this. One, the real rate will need to be more restrictive later, or restrictive for a longer period, to offset the additional stimulus from holding real rates too low now. Two, the nominal rate will need to rise by even more than the real rate as inflation expectations tilt up.

In concept, postponing rate increases in favor of larger rate increases later is not a problem if the Phillips curve is linear and inflation expectations do not respond asymmetrically, and if there are no constraints on upward rate adjustments. Staff work on Phillips curves has not been able to identify such nonlinearities or asymmetric reactions in labor and product markets. But the same may not hold for financial markets. Inflation expectations adjusted down to actual inflation only during the last half of last year. Financial market participants may be particularly prone to build price acceleration back in if they perceive the Federal Reserve as becoming more reluctant to

take anticipatory action to head off the possibility of higher inflation. In this regard, they might see a natural hesitancy to raise rates as being accentuated at this time by pressures on the Federal Reserve to test whether the economy could operate at a higher level on a sustained basis. Even if inflation expectations responded only slightly and normally in wage and price setting, an upward ratchet in financial markets would complicate the conduct of policy, in part by adding to market volatility and making more difficult the interpretation of incoming signals.

If the Committee were to tighten policy, it would be a surprise to markets, and the reaction could be considerable. As we said in the Bluebook, some extrapolation of any tightening is probably inevitable--perhaps more so from a 25 basis point move. Market participants would be unlikely to view the Committee as having taken the trouble to reverse its previous direction for only one quarter-point firming, and might view the action itself as suggesting that the Committee saw greater inflation risks and consequently the need for higher real interest rates than the market had perceived. But there are elements limiting the extent of the reactions. Unlike in 1994, policy has not been on hold for 17 months in an admittedly unsustainable posture and investors are probably not as exposed to a tightening. Moreover, in the 75 basis point easing of the last year investors have been subject to a limited adjustment in a

policy that was basically on track, so the concept would not be alien. The Committee's explanation of its actions, both in its announcement and in the Chairman's Humphrey-Hawkins testimony would be a chance to shape market perceptions.

If the Committee chose not to act at this meeting, but saw the risks as distinctly skewed toward a need for tightening, it might consider adopting an asymmetric directive. Especially if the Committee were concerned that in current circumstances it might be perceived as responding sluggishly to potential inflation pressures, it might want to signal its desire to act quite promptly--before the next scheduled meeting--should incoming data suggest a greater inflation threat. The publication of such a directive in late August should not restrict the Committee's actions if the asymmetry is adequately explained in the Minutes. Moreover, the Chairman's testimony in July would already have conveyed the Committee's concerns.