WILLIAM E. SIMON GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

SHADOW OPEN MARKET COMMITTEE

Policy Statement and
Position Papers

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CONTENTS

SHADOW OPEN MARKET COMMITTEE

The Committee met from noon to 5:00 p.m. on Sunday, September 17, 1989 in Washington D.C.

The Committee noted with great sadness the death of Karl Brunner, its co-chairman and one of its founders. Throughout his lifetime, Karl was a champion of rational, non-inflationary policies. We miss his wise counsel, his guidance, his wisdom and his good humor.

Members of the SOMC:

Professor Allan H. Meltzer, Graduate School of Industrial Administration, Carnegie Mellon University, Pittsburgh, Pennsylvania (412/268-2283).

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SOMC POLICY STATEMENT SUMMARY

Washington, September 18 — The Shadow Open Market Committee today called on the Federal Reserve, the Administration and Congress to adopt a three-part program to deal with critical problems confronting the economy:

1. The Federal Reserve should continue restrictive monetary policy to "bring more than 25 years of inflation to an end."

2. The Treasury should cease and desist from meddling in the foreign exchange markets. Costs of prior intervention should be fully disclosed.

3. The Administration and Congress should complete their overhaul of the Federal deposit insurance system. Legislation enacted this summer deals with the symptoms, but not the primary causes of the massive problems in the savings and loan industry.

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The SOMC is a group of academic and business economists who meet regularly to comment on public policy. It was founded in 1973 by Professor Allan H. Meltzer of Carnegie Mellon University and the late Professor Karl Brunner of the University of Rochester.

In a policy statement, the Committee noted that to date, the response of the economy to disinflation has been "remarkably good," and the cost of the policy has remained low. The SOMC warned that may not continue. "Sluggish economic growth or recession in coming quarters may prompt the Federal Reserve to seek faster growth of monetary aggregates by pushing short-term interest rates down aggressively.

"That would be a mistake ... The main response to faster money growth would be higher inflation in the future and further delay in returning the economy to price stability. To avoid this mistake, the Federal Reserve should give more attention to monetary aggregates and less attention to interest rates."

The Committee supported proposals by Representative Stephen Neal (D-North Carolina) to require the Fed to maintain "zero inflation" and by Representative Lee Hamilton (D-Indiana) to compel the central bank to disclose its policy decisions immediately. The SOMC reiterated its "long-standing suggestion that if the monetary authorities fail to meet announced targets within a reasonable tolerance, they should be required to offer their resignations."

The SOMC attacked U.S. intervention in the foreign exchange markets as a "costly gamble" that brings no benefits to the public. "By acquiring $34 billion of foreign currency," the SOMC said, "the monetary authorities have taken a speculative position that yen, D-marks and other currencies will appreciate in relation to the dollar. In effect, U.S. authorities are gambling that their own anti-inflationary policies will fail.

The Committee statement called on the Administration, which is responsible for U.S. exchange policy, to end the practice of intervention, and on the Treasury and the Fed to account fully for the cost of prior actions. The Federal Reserve acts as agent for the Treasury in forex trading.

SHADOW OPEN MARKET COMMITTEE

Policy Statement
September 18, 1989

At its meeting yesterday, the Shadow Open Market Committee discussed monetary policy, economic activity, inflation, the budget deficit and international economic developments.

Monetary policy remains restrictive. As a result, inflation will be reduced and economic growth will remain temporarily below average during the next several quarters. Growth of Federal entitlement programs continues at a high rate. The misdirection of Federal outlays to favor consumption over investment has not changed. Attempts by the U.S. Treasury to manipulate the value of the dollar involve large hidden costs and are ineffective.

The Committee recommends that:

1. The Federal Reserve continue with its disinflationary policy;

2. The Treasury should cease and desist from meddling in the foreign exchange markets. Costs of prior intervention should be fully disclosed; and

3. The Administration and Congress should complete their overhaul of the deposit insurance system. Legislation enacted this summer deals with the symptoms, but not the primary causes of the massive problems in the savings and loan industry.

Recent Monetary Policy

Restrictive monetary policy remains in effect. During the past year, the Federal Reserve has held the growth rate of the monetary base — bank reserves and currency — at the lowest level since the early 1980s. Relatively slow growth of the base and other monetary aggregates is part of a pattern of slower money growth that is now entering its third year.

Continuation of this pattern will bring more than 25 years of inflation to an end. We urge the Federal Reserve to continue on the path toward stable prices. To remain on this path, growth of the monetary base should remain in the neighborhood of 4 percent in the year ahead.

To date, the response of the economy to disinflation has been remarkably good. The measured rate of inflation has fallen while costs of disinflation have remained low, encouraging continuation of the policy.

The costs of disinflation are not likely to remain low in the near future. Sluggish economic growth or recession in coming quarters may prompt the Federal Reserve to seek faster growth of monetary aggregates by pushing short-term interest rates down aggressively.

That would be a mistake. Policy action cannot have much effect on the near-term course of the economy. The main response to faster money growth would be higher inflation in the future and further delay in returning the economy to price stability. To avoid this mistake, the Federal Reserve should give more attention to monetary aggregates and less attention to interest rates.

Congress is currently considering propoals to increase political oversight of the Federal Reserve. Representative Stephen Neal (D-North Carolina) has proposed a Joint Congressional Resolution directing the Federal Open Market Committee to "adopt and pursue monetary policies leading to, and then maintaining, zero inflation." We applaud this initiative and urge its adoption. Representative Lee Hamilton (D-Indiana) has introduced a bill that, among many provisions, would require the FOMC to disclose its decisions immediately. We support this.

These are excellent proposals. However, they lack adequate means of enforcement and ignore incentives. We reiterate our long-standing suggestion that, if the monetary authorities fail to meet announced targets within a reasonable tolerance, they should be required to offer their resignations.

The Fed and P^*

In Congressional testimony and in widely circulated analytic work, the Federal Reserve has called attention to the relation between money and the price level. The particular relation involves a construct, called P^*, that in the past has moved in advance of changes in the rate of inflation, thereby providing advance warning of changes in inflation. A rise in P^* relative to the current price level signals that inflation will increase, and a fall in P^* relative to the current price level signals disinflation.

Although the relation between money and prices and between money growth and inflation has been known for centuries, the particular way the Federal Reserve has expressed the relation is novel. If P^* had been allowed to constrain monetary growth in the 1960s and 1970s, inflation and subsequent disinflation would have been less costly. We, therefore, welcome the introduction of P^* as a factor in the discussion of monetary policy.

Unfortunately, the Federal Reserve has given no indication about how

P^* will be used to discipline monetary actions. We do not know when, how, or indeed, whether P^* will be used or when it will be ignored or overridden by other considerations. The Federal Reserve has announced and ignored many policy indicators in recent years.

Most of these indicators, if followed, would have prevented the high and persistent inflation of the recent past. The choice of P^* may be just another indicator that is considered, announced and ignored. Until the Federal Reserve clarifies how P^* will affect its decision process, we remain skeptical that a change has occurred.

There are, in addition, some technical issues raised by the choice of P^*. Two are of particular importance. *First*, in the derivation of P^*, $M2$ velocity is assumed to have a constant long-run value. The best available research suggests that velocity is subject to unpredictable permanent changes in level; it does not have a stationary mean as assumed in the Federal Reserve's research.

Second, P^* depends on $M2$, a relatively comprehensive measure of money. The Federal Reserve has not implemented procedures to control any of the monetary aggregates reliably, so it is unclear how the Federal Reserve can restrain growth of $M2$ to make use of the new P^*.

Despite these reservations, we commend the Federal Reserve for its concern about the long-term effects of its policy on price stability. We look forward with interest to the announcement of plans for using P^* as part of a program to restore and maintain price stability.

Exchange Market Intervention

During 1989, the nominal value of the U.S. dollar has risen on the foreign exchange markets as a consequence of the vigorous monetary restraint the Federal Reserve initiated in May 1988. The rise of the dollar has coincided with a decline in gold prices and a one percentage point drop in long-term bond yields between March and September.

These developments demonstrate that the Fed's anti-inflationary policy actions are understood in the financial markets and are achieving their intended results. Fears that the strong dollar will hamper growth of U.S. exports are unfounded. Exports depend on real, inflation-adjusted exchange rates, not on nominal exchange rates. If inflation drops, a fall in the real value of the dollar will coincide with a rise in its nominal value.

By acquiring $34 billion of foreign currency, the monetary authorities have taken a speculative position that yen, D-marks and other currencies will

appreciate in relation to the dollar. In effect, U.S. authorities are gambling that their own anti-inflationary policies will fail.

These gambles have been costly. In 1988, the Federal Reserve reported losses of more than $500 million on foreign exchange market intervention. This is only a small part of the cost of intervention to the U.S. public. There are three major omissions: *One*, the Federal Reserve reports only realized losses. The $500 million loss is the difference between purchases of foreign currency made at a higher price than was received when the currency was sold. But if no sales occur, no losses are reported.

Two, the Federal Reserve only accounts for losses on foreign exchange on its own books. It also intervenes for the account of the Treasury's secret Exchange Stabilization Fund. The Fund does not report the results of its operations publicly.

Three, the Federal Reserve made net purchases of $23 billion of foreign exchange in the 13 months ending July 1989. Most of the holdings are in Japanese yen and German marks. Since the dollar appreciated against both currencies during the period, the Federal Reserve has large unreported losses. We estimate that, on a conservative basis, the Fed had realized and unrealized losses of $5 billion in the year ending July 1989.

The Federal Reserve, by sterilizing its foreign currency purchases, has not allowed exchange market operations to alter its restrictive monetary stance. Hence, the intervention has not changed the growth rate of the monetary base.

From June 1988 through May 1989 the monetary base grew by $10 billion. However, during the same period, domestic interest-bearing securities held in the System Open Market Account declined by $7 billion. Net income of the Federal Reserve Banks, which is normally rebated to the Treasury, has accordingly been reduced — another loss for taxpayers.

There are no benefits to offset the losses. Sterilized intervention has no effect on exchange rates. We urge that these costly operations be stopped. At the same time, the public has a right to know how much has been lost in foreign exchange market operations. The Congress should insist on a public accounting of the realized and unrealized losses.

Foreign Investment in the United States

In a well-functioning economy, there is no necessary relation between the geographic location of saving and the geographic location of investment in new physical facilities. This proposition holds for a national economy and

for the world economy. Individuals and firms save — consume less than their incomes — for a variety of reasons. Where they invest is determined primarily by the prospective return on investment after allowing for risk. For any given individual or business, the problem may involve decisions as to what *financial* assets to buy. To understand the process, we need to trace the funds to the *physical* assets they finance.

Some analysts argue that U.S. macroeconomic policy may be constrained by the need to keep foreign financial capital from fleeing the country. This argument is invalid. Financial capital owned by U.S. residents is just as mobile as foreign-owned capital. In the late 1970s, dollar depreciation caused by capital outflow became a policy problem, but the difficulty had nothing to do with the ownership of the capital that was moving. United States inflation and low real returns on capital were responsible. Dealing with these core issues reduced the outflow of capital owned by U.S. residents and attracted foreign capital.

Capital mobility does not raise policy problems. It is desirable that policymakers are constrained by market realities. We benefit when market participants respond to costly policies in a manner that makes life difficult for politicians. International capital mobility promotes efficient international investment. The Committee strongly opposes any attempt to interfere with the free movement of capital across national borders.

Fiscal Policy

Since the mid-1980s, the Federal budget imbalance has been reduced. However, important problems remain. Chief among these is the continued rising share of outlays for consumption-oriented entitlements and the declining share for investment and growth-enhancing activities.

Congress and the Administration should focus on the level of spending, rather than accounting for the precise size of the deficit. Politicians should eliminate the bias in the Federal budget that favors consumption over investment. Congress should maintain the recent downward trend in spending relative to GNP. Consistent with the goal of the Humphrey-Hawkins Act of 1978, we urge that spending be reduced to 20 percent of GNP. Entitlement programs for middle and upper-income individuals should bear the brunt of reductions in growth of spending.

Improvement in the budget imbalance is illustrated by the primary deficit. This measure includes all of the items in the conventional budget except net interest payments; it is a measure of the amount government spends, trans-

fers and taxes for all purposes other than debt service.

In fiscal 1986, the primary deficit was $85 billion. By fiscal 1989, the primary deficit had been eliminated and replaced by a surplus of approximately $3 billion. Further, primary government outlays (outlays net of interest) will be less than 19.5 percent of GNP in fiscal 1989, and total outlays including interest payments will be reduced to 22.4 percent of GNP.

Much of the reduction in spending as a share of GNP reflects continued growth of the economy, reduced growth of spending for national defense and reductions in so-called non-defense, discretionary outlays. Entitlements and mandatory outlays continue to rise. These categories of spending are mainly for consumption, so growth of these outlays shows that neither Congress nor the Administration has been willing to shift resources away from the growth of consumption spending to reduce the bias in the U.S. economy against investment spending.

Pressure to enact numerous costly spending programs has mounted. Last year, Congress passed legislation to provide catastrophic health insurance. It is now in the process of creating new programs to assist the handicapped. These programs are financed by higher taxes and/or mandated expenditures by the private sector. The fact that these bills do not appear to increase the budget deficit does not alter the reality that their cost must be paid by consumers and business just as if taxes were raised.

Thus, the Bush Administration has reneged on its promise not to raise taxes just as if it had acted directly to tax to spend. However helpful and humane the mandated services prove to be, they will add little to productivity. Like other transfer programs, the cost must be paid from the earnings of those who work.

Ongoing efforts to meet the Gramm-Rudman-Hollings deficit targets have influenced the structure of the currently pending capital gains tax legislation. We fully support indexing capital gains subject to tax for inflation. Congress has already done this for personal income taxes. However, we oppose a temporary reduction in capital gains taxes designed to generate temporary revenue gains at the expense of future tax collections.

ECONOMIC OUTLOOK THROUGH 1990

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Summary

The forecast for the next year is positive. Inflation in the United States peaked for this cycle in the first half of 1989 and will trend downward in 1990. Internationally, inflation should settle at a lower level. At the same time, growth of U.S. output and employment in the next year will be above the slow pace of 1989.

Interest rates will fluctuate in a fairly narrow range compared to the experience of the past two decades. For example, long-term government bond yields are forecast to remain in the range of about 7.5–8.5 percent through 1990. Similarly, the foreign-exchange value of the dollar will trade in a narrower range than in the past.

As is normal, not all sectors and regions will perform equally well. Both housing starts and automobile sales peaked for the past cycle in 1986 and then fell through 1989. We forecast a higher level of housing starts and auto sales for 1990 than the estimated 1989 levels. Non-residential construction, however, will be depressed through at least 1990 by high vacancy rates. Investment spending by businesses will increase in real terms next year, but at a more moderate pace than in 1988–89.

The U.S. external trade deficit, after falling through 1989, will rise again in 1990, although we do not expect it to reach its previous peaks. Nevertheless, the continuing deficit will mean strong inflows of foreign capital into U.S. financial markets. Foreign direct investment in the United States should also continue at a high level.

After rising to the 5.5–6.0 percent range early next year, the national unemployment rate will resume a gradual decline.

U.S. Outlook for 1990

Monetary Policy

Actions by the Federal Reserve will continue as the most important U.S. macroeconomic policy affecting both American business firms and economic conditions abroad. The Federal Reserve's stated objectives remain unchanged:

1. reduce and control inflation;

2. sustain economic growth;

3. contribute to a stable dollar on foreign-exchange markets; and

4. safeguard the integrity of the U.S. financial system.

During the past two years the Federal Reserve has focused on the first of these four objectives, dampening inflation. Between the first part of 1988 and 1989 the target for the federal funds rate was raised by more than three percentage points. Money growth as measured by the monetary base (currency plus bank reserves) was cut in half from nearly 7 percent in 1988 to an estimated rate of less than 3.5 percent in 1989.

The Federal Reserve views the potential real growth of the U.S. economy as about 2.5 percent per year and is trying to keep growth below that pace to quell inflation. During the first half of 1989, the economy grew at an average real rate of slightly over 2 percent excluding effects of the drought rebound. The Fed's goal of a "soft landing" seemed on track.

In its mid-year report on monetary policy to Congress, the Federal Reserve indicated that it looks for real growth to continue in the 1.5–2 percent range in 1990. A key issue affecting the outlook for next year is whether the Fed can or will hold the economy to such a low growth track. Two points are relevant. First, fine-tuning the economy is extremely difficult and a tight-policy "overshoot," tipping the economy into recession in the next several months, is a significant possibility. Second, even if the overall economy continues to post positive growth, important sectors could decline. Manufacturing, now stagnating, seems particularly vulnerable.

The main assumption behind our forecast is that a substantial weakening in the economy in the latter part of 1989 will prompt an easing in Federal Reserve policy. This will imply both lower interest rates and more rapid monetary growth. While changes in monetary policy affect inflation with quite a long lead time — about two years — accelerations and decelerations in monetary base growth affect real economic activity relatively quickly. Consequently, we would expect the Fed to prevent any downturn in the economy from becoming deep or prolonged.

We assume that the monetary base will expand somewhat over 5 percent in 1990. This is a pace which should accommodate both moderate real economic growth and lower inflation.

Resilient Economic Growth

The U.S. economy is resilient and, as a market economy, has a natural tendency to grow. The economy even seemed to weather, at least through the first half of 1989, the impact of a major tightening in monetary policy. While we expect a much weaker performance in the second half of 1989, a swing to more accommodative monetary policy should allow the economy to return to a real growth rate of 2.5–3 percent by the spring of 1990.

Following an estimated gain of only 1.7 percent this year (fourth quarter to fourth quarter), our forecast is a rise of 2.4 percent in real GNP in 1990. Growth during the next year would thus be close to the 2.5 percent potential estimated by the Federal Reserve, but below the 3 percent rate we believe is sustainable. During the past thirty years, real GNP growth has averaged about 3 percent per year.

Consumer Spending — In 1986, real consumption outlays peaked at over 66 percent of gross national product. During 1990 we expect consumer spending to grow at a slower pace than overall production of goods and services, reducing the consumer spending-GNP ratio. Several forces appear to be causing a moderation in consumer spending growth: the maturing of the "baby boom generation," an easing of inflationary expectations, and the phasing out of deductions for certain interest expenses.

Auto sales have experienced a difficult year in 1989 and have been supported mainly by costly rebate and incentive programs. In 1990, we expect a small increase of about 200,000 cars for total sales of 10.2 million. Including another sales year of 4.6 million light trucks, total motor vehicle purchases would total 14.8 million in 1990, up slightly from this year's 14.6 million.

Construction Spending — We believe that 1989 will mark the low point for the current housing cycle and that housing starts will be higher in 1990. The ability of financial institutions to continue to attract funds during periods of tight money, albeit at higher rates, has dampened significantly the amplitude of housing cycles.

Our forecast for 30-year, fixed-rate mortgage rates to average below 10 percent in 1990 should shark a moderate recovery in homebuilding. We look for a gain of 4.7 percent in housing starts to a total of 1.48 million units in 1990. Most of the gain next year will be in the single-family sector. Nonresidential building in most markets will be constrained by high vacancy rates in 1990. Projects already in the pipeline will support a substantial amount of construction, and both domestic and foreign investors will develop projects with longer time horizons. However, the dollar value of permits for

non-residential building is likely to increase by less than 2 percent in 1990, a showing similar to that estimated for this year.

Investment Spending — United States business firms have invested heavily during the past two years to improve their competitive position in both domestic and foreign markets. Between the middle of 1987 and the middle of 1989, outlays for capital equipment expanded at an annual rate averaging over 9 percent in real terms.

The slowdown which the manufacturing sector has already started to see, and which is projected to become more generalized by the end of 1989, is likely to restrain new capital spending in coming months. Machine tool companies have already seen deferrals in new orders by the auto industry.

Various companies experiencing a squeeze on profits may delay purchases of capital equipment, such as new computers or trucks. We expect such cutbacks to be relatively short lived, however. A return to better economic growth by next spring, along with lower interest rates, should bolster further gains in outlays to modernize facilities and improve productivity.

Labor Markets — In just the five years through 1989, the U.S. economy has generated nearly 13 million jobs, or an average of 2.6 million per year. In the next year, we expect a still significant, but more modest, average of 1.5 million new jobs. This smaller number of additions to payrolls will reflect both more moderate economic growth and efforts by business firms to raise the productivity of their existing work forces.

The unemployment rate dropped towards the 5 percent level during the first half of 1989. This level probably represents essentially "full employment." The fact that certain people are unemployed even when the economy is at "full employment" represents two key factors:

1. frictional unemployment — individuals looking for their first job, people reentering the work force such as formerly retired workers or women, and individuals between jobs; and

2. structural unemployment — individuals without the skills necessary to find work at wages they will accept or which are required by law.

We expect the slowing in the economy to push the jobless rate up to an average of 5.7 percent in the first quarter of 1990. While this will represent some slack in the overall labor market, sectors and regions experiencing extremely tight situations this year are likely to see little relief.

Inflation Outlook

We believe that inflation peaked in the second quarter of 1989 and should head lower through the end of this year and in 1990. Consumer prices soared at an annual rate of 6.4 percent in the second quarter and are likely to be up 5.0 percent for the fully ear (measured fourth quarter to fourth quarter). In 1990, we expect prices to be up 4.2 percent.

Inflation remains essentially a monetary phenomenon. Its basic cause in every country is the expansion of the money supply at a rate more rapid than a nation's ability to increase the output of goods and services. What is the appropriate measure of the money supply? Both our own research and work done at the Federal Reserve suggest that, in the United States, $M2$ (currency, checking, savings, and small time deposits) is the best predictor of change in prices.

To gauge the pressure on prices, the Federal Reserve uses 2.5 percent as the measure of real potential growth and subtracts that from the growth rate of $M2$. Although the lag between accelerations and decelerations in money and prices can vary, we find that the typical lead time is about eight quarters or two years. With $M2$ growth this year likely to be less than 4 percent, subtracting 2.5 percent for potential growth (a number we believe is conservatively small) implies an inflation rate for 1991 of less than 2 percent. While inflation is unlikely to be that low, the impact of monetary policy clearly will be to dampen the rise in prices.

Supply shocks can have short-term but substantial impacts on prices. Large increases in both food and energy prices contributed to the run-up in consumer prices in the first part of 1989. However, by the middle of the year, we had already started to see the unwinding of those price rises. Larger crops in the United States this year should help to moderate food price increases in the coming year. Our assumption also is that oil prices (West Texas Intermediate) will average \$16–\$18 a barrel through the end of 1990.

Widespread concern exists that a low rate of unemployment will push wages upward and contribute to higher inflation. Wage increases, however, are not a cause but rather a result of the same monetary force pushing up prices of all types of goods and services. Average employee costs are likely to rise by about 4.8 percent this year and next.

Interest Rates

Just as inflation probably peaked in the first half of 1989, we believe interest rates reached their cyclical highs during that time. Both short- and long-term rates, measured in terms of yields on three-month and 30-year Treasury bonds, reached their highs in March. Interest rates are likely to move lower through the spring of next year and then move gradually upward through the end of 1990.

Most of the movement in interest rates during the next year will be in instruments with shorter maturities. Three forces are especially important in determining the course of short-term rates:

1. the pace of economic growth;

2. the rate of inflation; and

3. the growth of bank reserves.

Signs of slower economic growth push interest rates lower through weaker credit demands and expectations of easing on the part of the Federal Reserve. Lower inflation reduces the inflation premium in interest rates and also leads to expectations of a relaxing in monetary policy. An easing of monetary policy, in terms of more rapid growth of bank reserves, also has some short-term liquidity effect in pushing interest rates downward.

The climb in short-term rates between early 1988 and 1989, a rise prompted largely by Federal Reserve actions, appears much larger than would be justified by the pace of economic growth and inflation. Consequently, we believe that a significant reduction in short-term rates will take place in the latter part of 1989 and first part of 1990. The Federal Reserve will probably have to allow short-term rates to fall in order to revive monetary growth and prevent a substantial economic downturn. A return to better economic growth by the second quarter of next year is then likely to cause a gradual new upward trend in short-term rates.

Our specific forecast is for short-term rates to drop about 1.5 percentage points by the spring of 1990 from their levels of early September 1989. This would take rates on 3-month Treasury bills from 8 percent in the summer of 1989 to an average of 6.5 percent in the first half of 1990. By the fourth quarter of 1990, Treasury-bill rates would then have risen about one-half percentage point to an average of about 7 percent.

Although long-term interest rates generally move in the same direction as short-term rates, the magnitude of their change is likely to be much smaller

than that of short rates during the next two years. This is because of the greater impact of inflationary expectations on yields of longer term assets and the "stickiness" of those expectations.

We expect the yield on the benchmark 30-year government bond to stay within a range of about 50 basis points above and below 8 percent. Investors need to become much more convinced that inflation in the long-term will run significantly below the 4.8 percent average (consumer prices) of the past 30 years before accepting much lower returns.

Following the pattern of short-term rates, long-term bond yields are likely to drift lower through the middle of 1990 and then move gradually higher. This would result in 30-year government bond yields moving from an average of 8.1 percent in the third quarter of 1989 to an average of 7.8 percent in the first half of 1990.

Efforts by the Federal Reserve to push short-term rates higher culminated in a flat and even inverted yield curve (short-term yields above long-term yields) during much of 1989. The faster decline of short-term relative to long-term rates should produce a more normal, positively sloped curve by the end of 1989 or first part of 1990.

Industry Outlook

Although 1989 has proven stronger than we had expected a year ago, the slowdown from 1988 is apparent in several industries, particularly automobiles and segments of retail trade. Cyclic industries such as consumer durables and housing have experienced weaker sales and profits. At the same time, industries that are less cyclic and those oriented towards export markets have continued to grow. These trends are likely to continue before a more general recovery gets under way.

Energy — The domestic production of oil will continue to decline — barring a sustained increase in world crude oil prices, a development we think is possible but not very likely in the next decade. Expanded production by Organization of Petroleum Exporting Countries (OPEC) is likely to at least offset demand growth, with some decline in price probably needed to clear markets. While a major price drop is possible within the next two years, we would not expect a price below $14 would be long sustained; similarly, we think prices much above $20 before the end of 1990 are likely to set up corrective market responses.

Manufacturing — Industrial production, as gauged by the Federal Reserve Board Index, is expected to decline in the last quarter of 1989 before

resuming modest growth in both 1990 and 1991. Global competitive pressures and opportunities will boost durable-goods demand, so we expect the production of durables to grow somewhat faster during the recovery than that of non-durables. Similarly, domestic investment and export demand will tend to favor sectors such as business equipment over consumer goods, both in the next two years and longer term.

Wholesale and Retail Trade — The slowdown in economic growth has been very apparent in retail trade. Inflation, of course, tends to boost retail sales; constant-dollar sales are a better indication of the health of the business. There has been little growth in constant-dollar sales figures for the last three quarters, and the situation is not likely to improve dramatically.

The International Economy

Industrial Countries

Economic activity in the industrial countries outside the United States is expected to remain relatively buoyant in 1990. In 1988, the collective real growth rate of the six largest economies (the G–7 minus the United States) reached 4.5 percent, its highest level of the decade. Japan, with a 5.6 percent rise in real GNP, was the growth leader, but the European economies and Canada also turned in sound growth performances. At the same time, inflation was quite modest in Japan and Germany, the two largest of these economies.

During 1989, growth in Japan and Germany appears to be continuing at a fairly rapid pace. The economic restructuring of Europe is providing considerable impetus to investment throughout the EC. Thus, although aggregate growth in the industrial countries will be slower than last year, the pace of economic expansion will still be higher than earlier in the 1980s. This pattern should generally continue during 1990. The United Kingdom and Canada, however, appear likely to slow more than the other large industrial economies. Inflationary pressure, closer relations with the slowing U.S. economy, and balance-of-payments trends all indicate that monetary policy in these two countries may remain tighter than elsewhere. Overall the collective increase in real GDP in the six largest industrial economies outside the United States is likely to remain in the 3–4 percent range during the forecast period.

Following a "boom" in investment last year, private-sector capital formation should continue to be one of the leading growth factors during the

forecast period in most major industrial countries. The new dimensions of global competition are causing corporations throughout the world to revise strategies and to focus on increased productivity. Investments to take advantage of more rapid economic growth, a less regulated business environment, and economies of scale are underpinning the rise in capital formation. Producers of capital goods, such as Germany, are beneficiaries of the shift toward investment.

One factor that has affected investment decisions globally is the prospect of a unified European economy by the end of 1992. European companies and financial institutions are attempting to position themselves to compete effectively in this market, while non-EC companies are also looking at Europe as an increasingly attractive market. During the coming two years, the approach of 1992 will continue to support a higher level of investment globally.

During 1989, some rise in inflation has occurred, although in most countries price rises remain moderate. In Japan, inflation should remain in the 1–2 percent range during the forecast period, while in Germany a 2–3 percent range is expected. In the United Kingdom, however, an inflationary surge in 1989 has been brought about by previously expansive monetary policy and by a lower pound. Monetary policy has been tightened, and inflation is expected to decline after this year. Similarly, moderate rises in the inflation rates in France and Italy are occurring, but by 1991 the rate of inflation in most countries will be back to 1988 levels.

Higher rates of economic growth have begun to bring down unemployment levels in Europe, where job creation had previously been low. The EC unemployment rate, which was 10.8 percent in 1986, was in the 9.0–9.5 percent range during the first half of 1989, and further declines are in prospect during 1990. Nevertheless, unemployment rates in Europe remain significantly higher than in North America or Japan.

Although economic growth and inflation are tending to converge among the major countries, wide disparities in balance-of-payments performances remain. Japan and Germany continue to record large surpluses in their trade and current accounts, while the other large countries this year have recorded substantial deficits. In the United Kingdom and Canada, in particular, the magnitude of the current-account deficits has become a constraint on monetary policy and is one factor leading to slower growth prospects in both countries. During 1990, both Japan and Germany are forecast to record only modest reductions in their surpluses, but the deficits of the other large industrial countries should decline.

World Trade — Volume expanded vigorously in 1988 and continues to do so in 1989 as collective industrial-country real economic growth remains solid. During the 1980s, we have seen substantial realignments in world trade as some parts of the world economy have achieved higher growth than others. Developing Asia, for example, now produces about 13 percent of world exports, an increase from 8.5 percent in 1980. The Middle East's share of world imports has fallen from 12.3 percent in 1980 to less than 4.5 percent. During the same period, Africa's share of world trade has been cut nearly in half, and Latin America's share has fallen as a result of external debt and other political and economic burdens.

The volume of world trade measured by imports is recording its seventh consecutive year of expansion since the contraction of 1982. Growth of world trade has outpaced overall economic growth since the world-wide recession of 1981–82. The industrial countries have recorded a collective real economic growth rate of 3.6 percent annually since 1982, while the volume of world trade has increased 6.2 percent per year. Our forecast is for the volume (adjusted for inflation) of world trade to grow more slowly in 1990 as industrial-country growth slows. World trade in nominal terms should show the same pattern.

Less-Developed Countries — The heavily indebted developing countries appear to be moving in the direction of market-oriented policies, although the process varies across countries. In addition, a number of countries continue to suffer the legacy of past decades of statism and oligopoly. In those countries where policies are changing, however, the beginning of the 1990s may be a period of increasing economic growth and improving external-debt indicators.

Overall, global economic conditions will be relatively favorable for an improvement in the financial positions of the heavily indebted countries. In particular, lower international interest rates, fairly high rates of economic growth in the industrial countries, and a generally free-trade environment mean that developing-country exports should perform fairly well.

Very high inflation remains a problem in some countries where the reform of economic policies has still not gone far enough. Brazil, with the largest economy and the largest external debt among the countries classified as "highly indebted," continues to suffer from inflation in excess of 1,000 percent annually, while Argentina's efforts to cope with even higher inflation rates have only just began. Economic growth in the highly indebted countries was only barely positive during 1988.

Despite the considerable problems still faced, the realization that eco-

nomic policy reform is essential to a revival of growth and longer-term development is now becoming widespread. Chilean economic policies have produced a record of fairly rapid growth, export diversification, and an improved external financial position during the past few years. Venezuela's new government has also begun to implement a new set of market-oriented policies that include privatization of some public enterprises and reducing trade and foreign-exchange restrictions.

For the United States, perhaps the most significant changes in economic policy are occurring in Mexico. The longer-term problems of Mexico — including inadequate social and physical infrastructure — remain significant. Nevertheless, a major reduction of trade restrictions, partial liberalization of foreign-investment regulations, privatization of public-sector enterprises, and moves toward domestic deregulation have all occurred. In addition, the government's program to reduce inflation from earlier triple-digit levels appears to be working. Mexico's position as the third largest trading partner of the United States has been solidified as a result of rapid rises in imports and exports of an increasing variety of industrial products.

Mexico appears poised for an increase in the level of foreign investment, and economic growth will be more rapid in 1990 than during the recent past. The restructuring of the country's foreign debt, which has been negotiated with official creditors and commercial banks, will improve the country's financial position, although foreign debt will remain a constraint on economic policymaking.

United States commercial banks have continued to reduce their exposure to the highly indebted developing countries. The so-called "Brady Plan," proposed by Secretary of the Treasury Brady earlier this year, gave official recognition and support to the trend of debt reduction that had already been in place. United States banks other than the money-center banks have actively reduced their exposure to the highly indebted countries, which has declined by more than one-third during the past two years. Only the money-center banks remain significantly exposed to this problem.

U.S. Dollar — Various factors combined in 1989 to keep the U.S. dollar much stronger than expected. Increasing political problems in West Germany, Japan, and then the United Kingdom enhanced the value of the dollar in relation to those countries' currencies. Continued economic strength in the U.S. economy also helped buoy the dollar.

It is very likely that we will see considerably less foreign-exchange volatility during 1990 than in earlier years. If monetary policy is more stable and leads to a lower inflation rate, then we should expect that the dollar will

also be more stable. A dollar that fluctuates less would be a great benefit to U.S. businesses in supporting trade and investment.

Our forecast is for the dollar to average somewhat lower in 1990 compared with 1989. The major risk to this forecast would be difficulties abroad that would add considerable strength to the dollar. Developments that would lead to a serious depreciation of Japanese land values and other asset values could result in a lower yen against the dollar and some substantial revisions in cross rates with other currencies.

U.S. Current-Account Deficit — Our forecast for the U.S. trade and current-account deficits is that they have bottomed out in 1989 and that both will increase somewhat during 1990. We expect that the 1989 merchandise-trade deficit will fall about 13 percent from the 1988 level. Export growth in 1989 will be somewhat more than twice import growth, but the differential has narrowed considerably from that in 1988 when export growth was nearly triple import growth.

We expect U.S. export growth to slow as most of the potential of the dollar's depreciation since February 1985 is fulfilled and growth abroad slows. United States exports have benefited from the appreciation of the Taiwanese and South Korean currencies and from lower barriers to imports in both of these countries. Since Taiwan and South Korea have given up some of their international competitiveness, other countries are moving in rapidly to replace them in the more labor-intensive industries. The leading example of a newly emerging NIE (Newly Industrializing Economy) is Thailand; another is probably Malaysia. Both should be potentially good markets for U.S. exports of plant and equipment.

THE U.S. ECONOMY

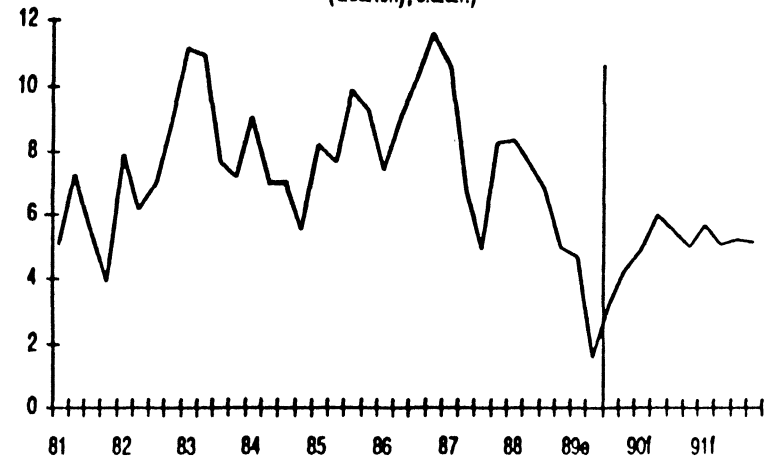
Shadow Open Market Committee

Jerry L. Jordan
Senior Vice President and Chief Economist
First Interstate Bancorp

Washington, D.C.
September 17-18, 1989

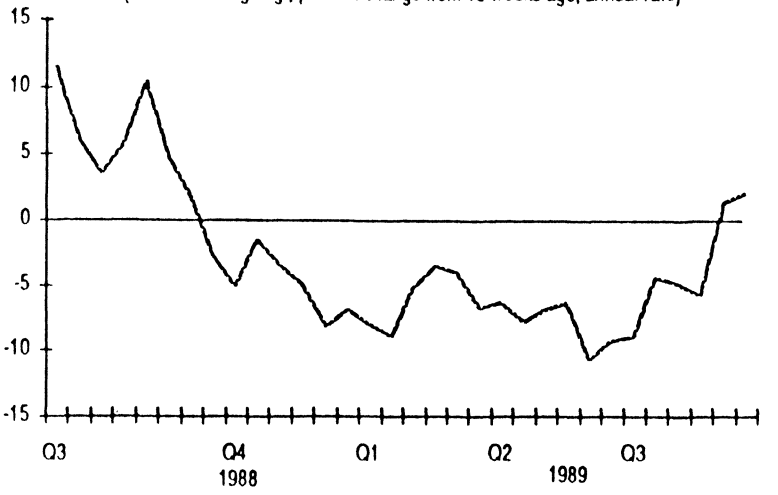
MONETARY BASE

(Quarterly, s.a.a.r.)



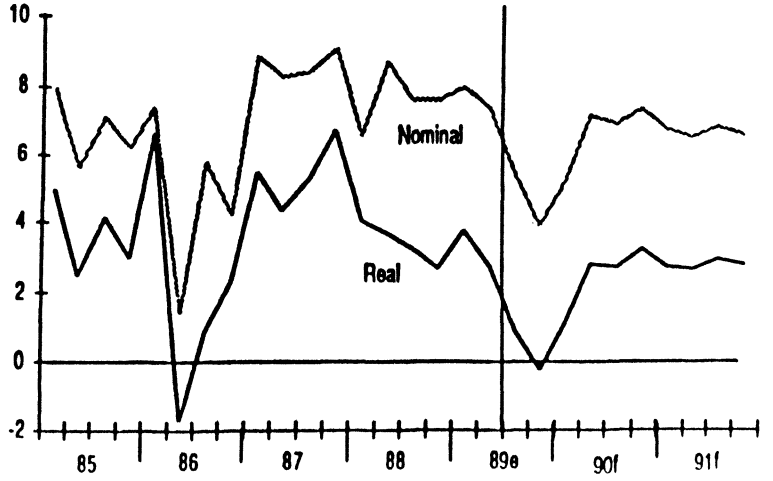
GROWTH OF TOTAL BANK RESERVES

(4-week moving avg., percent change from 13 weeks ago, annual rate)



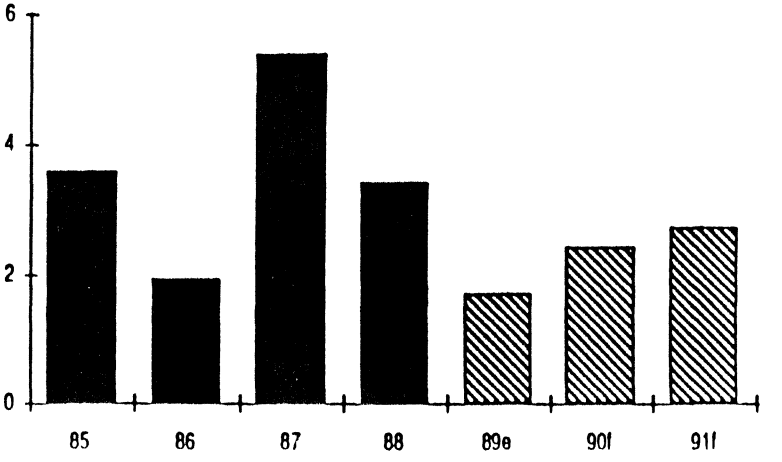
NOMINAL AND REAL GNP

(Percent change from prior quarter, annual rate)



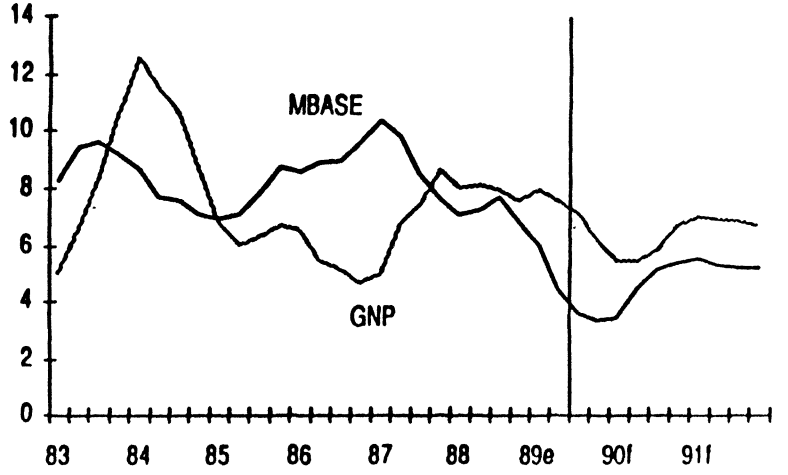
REAL GNP

(Percent change, 4th quarter to 4th quarter)



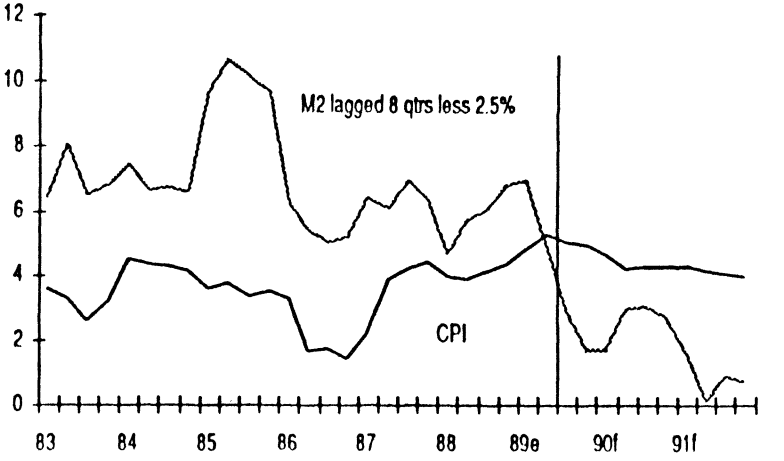
MONETARY BASE AND GNP

(Percent change over year ago)



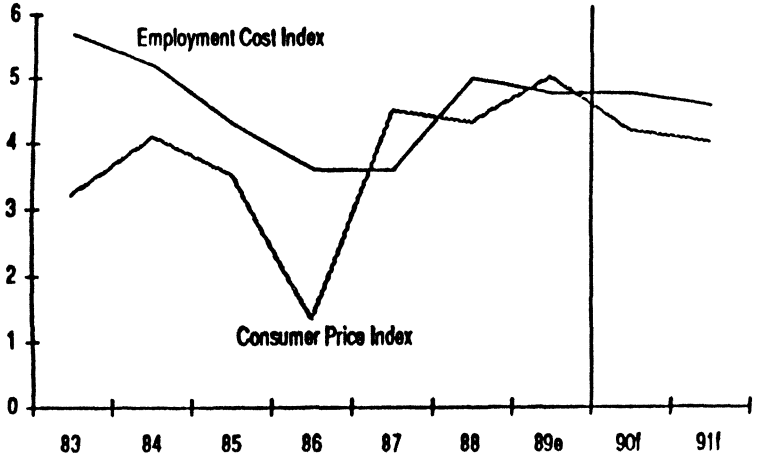
MONETARY GROWTH POINTS TO LOWER INFLATION

(Quarterly, percent change over year ago)



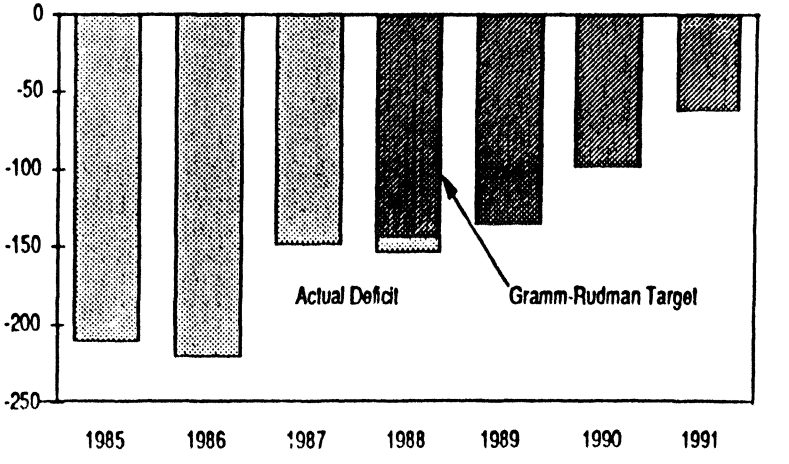
CONSUMER AND EMPLOYEE COSTS

(Percent change, 4th quarter to 4th quarter)



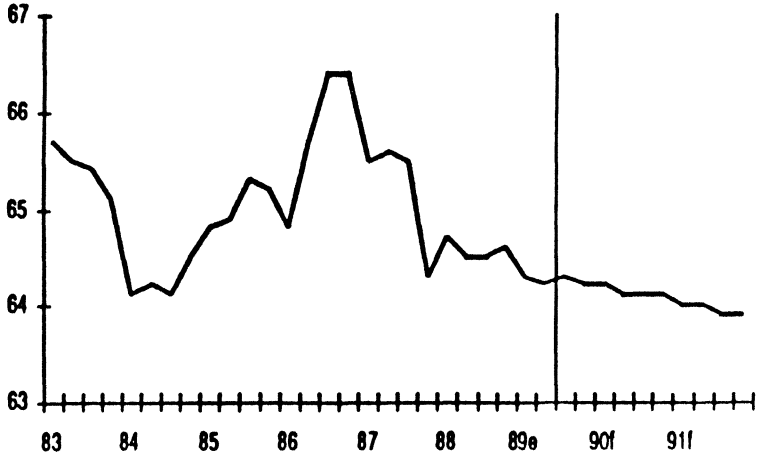
FEDERAL BUDGET DEFICIT

(Billions of dollars, fiscal years)



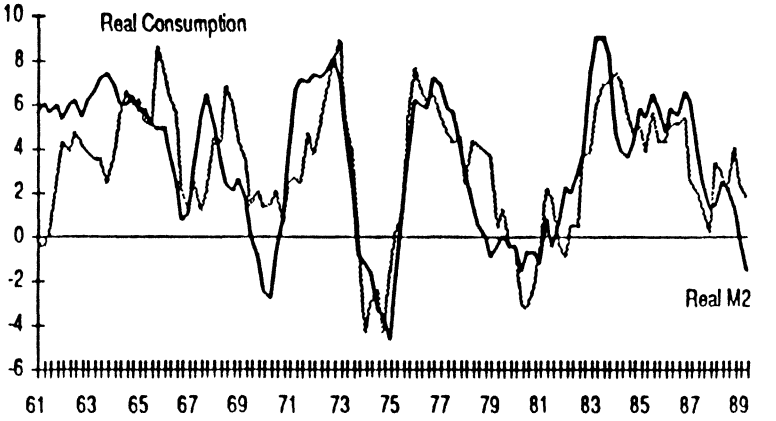
REAL CONSUMER SPENDING AS A SHARE OF GNP

(Quarterly, percent)



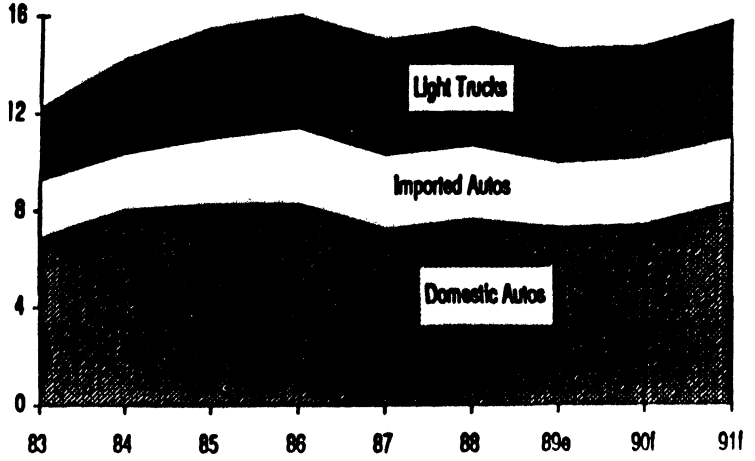
IMPACT OF MONEY GROWTH ON CONSUMER SPENDING

(Quarterly percent change over year ago)



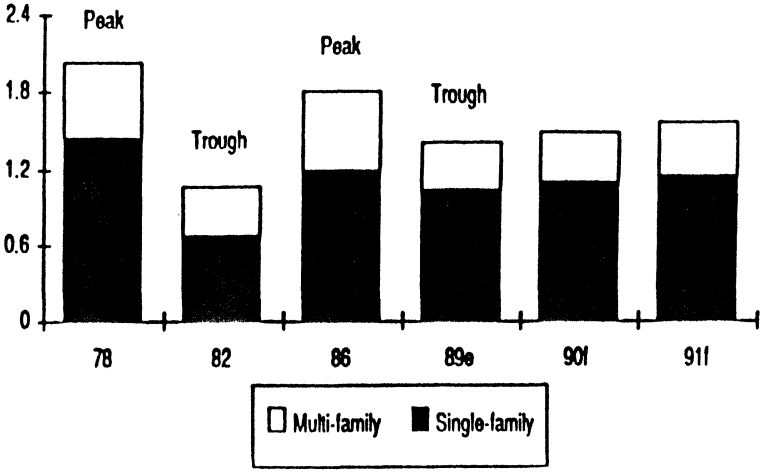
AUTO AND TRUCK SALES

(Millions of units)



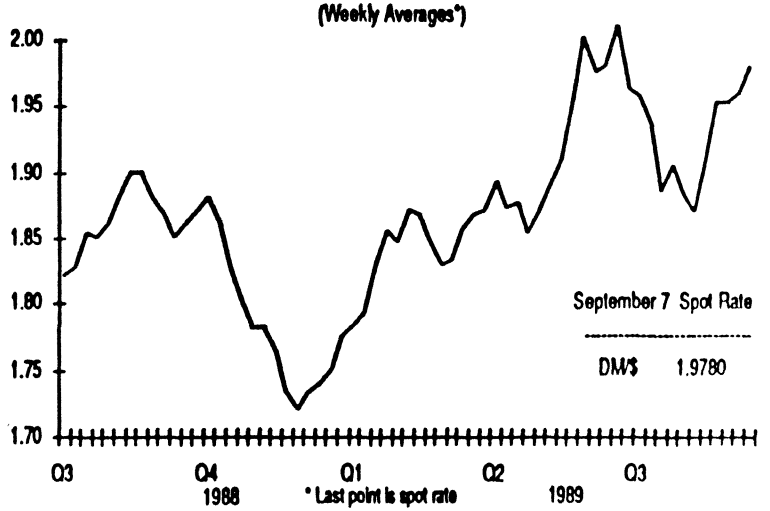
HOUSING STARTS

(Millions of units)



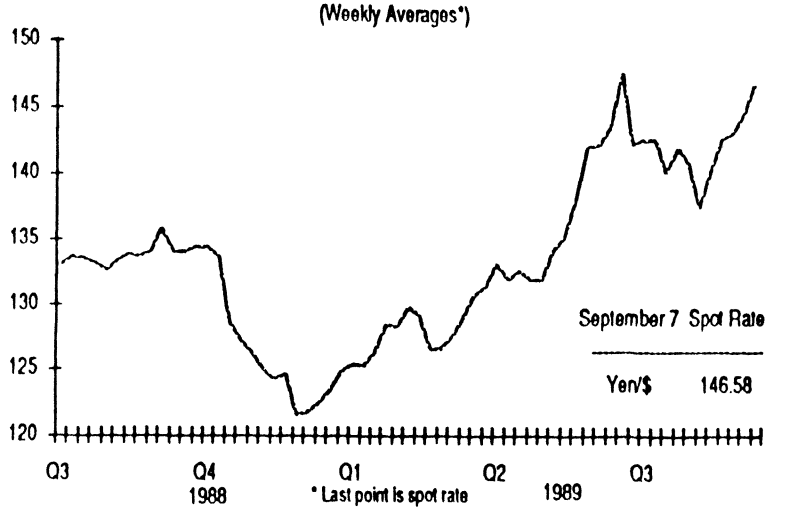
EXCHANGE RATE - DM/$

(Weekly Averages*)



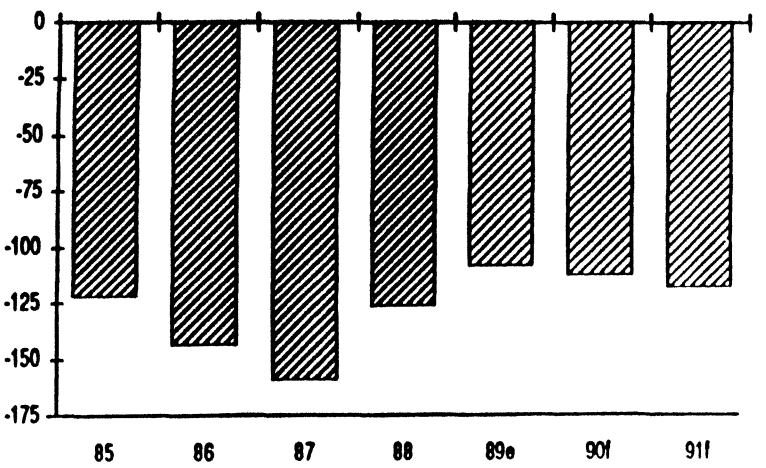
EXCHANGE RATE - YEN/$

(Weekly Averages*)



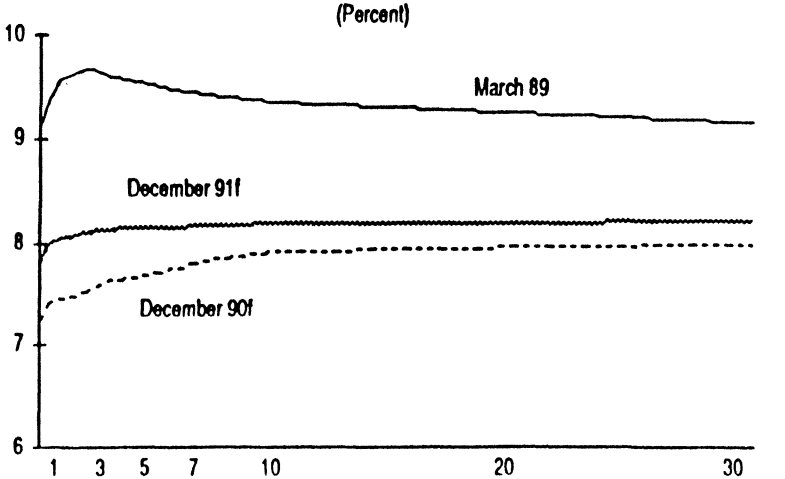
FOREIGN-TRADE DEFICIT

(Billions of dollars, balance of payments method)



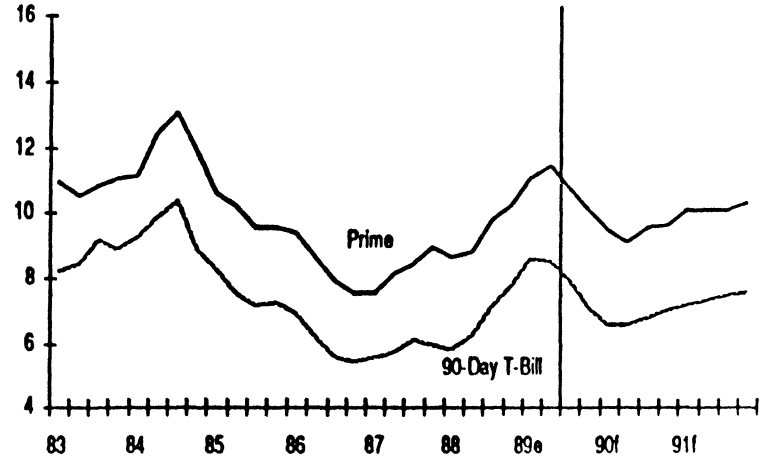
YIELD CURVE ANNUALLY 1 TO 30 YEARS

(Percent)



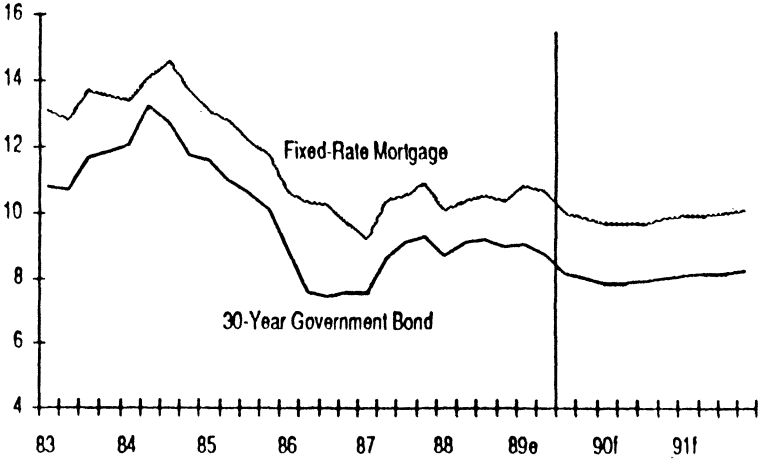
SHORT-TERM INTEREST RATES

(Percent, quarterly averages)



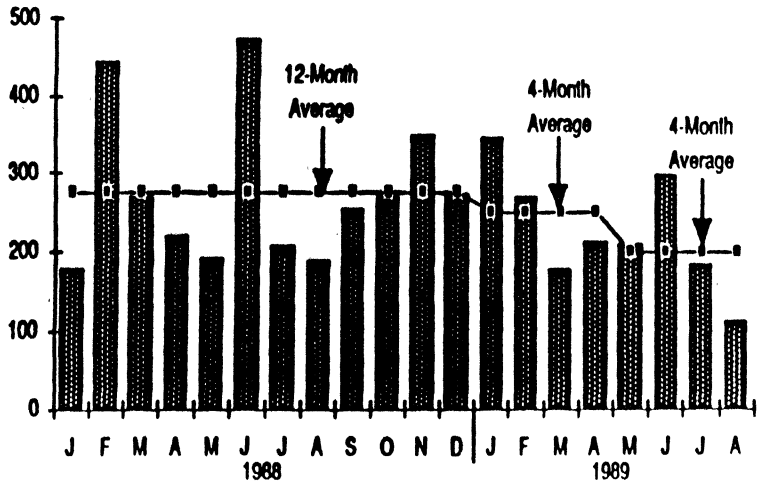
LONG-TERM INTEREST RATES

(Percent, quarterly averages)



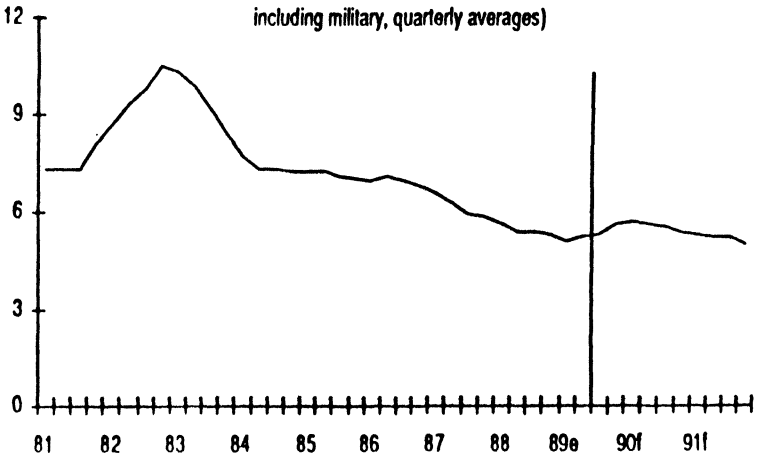
NONFARM EMPLOYMENT GROWTH

(Change from prior month, in thousands)



UNEMPLOYMENT RATE

(Unemployment as percent of total labor force, including military, quarterly averages)



A Federal Budget Update

Mickey D. Levy
First Fidelity Bancorporation

The federal budget process continues to plod along. The latest round of negotiations has followed a well-known script: the Administration's *Mid-Session Review of the 1990 Budget* optimistically proposes a dramatic decline in the deficit to $105 billion in FY1990; OMB's Initial Sequestration Report, which includes its estimated on-budget costs of the savings and loan restructuring legislation, projects a deficit of $116.2 billion, just over the Gramm-Rudman-Hollings (GRH) maximum allowable level to avoid across-the-board cuts ($110 billion: the $100 billion target plus $10 billion leeway); the CBO projects significantly higher deficits based on seemingly more realistic assumptions; and Congress considers action on the reconciliation instructions stemming from the Congressional Budget Resolution adopted in May 1989 which, if enacted, would generate sufficient savings to avoid the automatic cuts.

The current rendition of the budget process may suggest little "progress." But in fact a string of budget legislation since the mid-1980s has yielded a substantial net shift in the budget: federal spending has declined sharply as a share of GNP, deficits have receded and the budget excluding net interest outlays is now in surplus, and the ratio of federal debt-to-GNP has stabilized. Yet the mix of federal spending continues to shift, with a rising share for entitlement programs, and a declining portion for investment and growth-enhancing activities. And a steady stream of costly new spending legislation has been proposed with little discussion of how it will be financed.

A Budget Update

The FY1989 deficit should be approximately $160 billion, slightly higher than the $155 billion in FY1988. Large rises over 1988 levels have occurred in both outlays (8.3 percent) and tax revenues (9 percent). While enactment of the Financial Institutions Reform Recovery and Enforcement Act adds approximately $15 billion to FY1989 outlays, over half of the total increase in outlays has occurred in the category of entitlements and other mandatory spending. Stronger than expected tax revenues have partially offset this impact on the federal deficit.

The budget outcome in FY1990 depends crucially on economic performance, interest rate trends, the extent of the savings from the spring 1989

budget resolution that the Congress enacts, and the on-budget spending pattern for the savings and loan industry restructuring. OMB's projection of a $116.2 billion budget deficit is based on 2.6 percent real GNP growth from fourth quarter 1989 to fourth quarter 1990, sharp interest rate declines, full enactment of the earlier budget resolution, and a front-loading into FY1989 of on-budget outlays incurred by the Resolution Trust Corporation for the savings and loan industry restructuring (see tables 1 and 2). The CBO baseline projection, based on 2 percent real GNP growth, more modest interest rate declines, and a spreading out of the on-budget outlays for the savings and loan restructuring, projects a deficit of $141 billion, without enactment of the budget resolution.

Real GNP growth should be significantly weaker than either the CBO's or Administration's projections, based on the monetary restrictiveness in 1988–1989 and several indicators of economic activity (see chart 1). This would suppress tax revenues, add modestly to outlays, and prevent the deficit from falling significantly below $135 billion, even with full enactment of the Congressional Budget Resolution.

Since avoiding GRH's across-the-board cuts requires only that OMB's projections, not actual budget outcomes, meet GRH's deficit targets, automatic cuts for FY1990 are not expected. Meeting the GRH target of $64 billion in FY1991, however, is virtually impossible. Even the Administration's budget, which is based on sustained strong economic growth and declining real interest rates — a seemingly inconsistency — falls far short of the target with a projected deficit of $88 billion. The CBO projects the FY1991 deficit to be substantially higher — $138 billion using its own estimating procedures but the Administration's economic assumptions, and $146 billion in its baseline projection. The actual budget outcome will be even worse with weaker economic performance or without full enactment of the Administration's budget proposals.

There is a reasonable chance that the GRH sequestration process will be suspended for FY1991. Under the amended GRH law, if either

1. real GNP growth is below 1 percent for two consecutive quarters, or

2. OMB or CBO forecasts recession.

The House and Senate must vote on a joint resolution to suspend sequestration. Under such circumstances, the magnitude of the automatic cuts necessary to meet the current GRH targets would be intolerable politically, and Congress likely would vote for suspension.

Of course, suspending GRH would not resolve anything, and would only generate more questions about the budget process. Subsequently, "re-benching" the GRH deficit targets and stretching out the artificial deficit reduction schedule would not constitute meaningful fiscal policy reform.

Shifting Budget Outcomes

Although recent budget negotiations seem stuck on a perpetual muddle-through track, a series of incremental changes since the mid-1980s has generated a sizeable shift in the budget, most notably, reductions in actual and projected deficits. In the early 1980s, federal spending rose sharply as a share of GNP, driven by large increases in defense outlays and entitlement programs (see chart 2). Spending peaked at 25.1 percent GNP in FY1983, up dramatically from 21.4 percent in FY1979. Tax revenues, which rose to 20.8 percent of GNP in FY1981, and were projected to rise substantially higher by pre-Reagan policymakers, were reduced temporarily below 19 percent of GNP in FY1983–1984 by the Economic Recovery Tax Act of 1981, and since then have stabilized between 19 and 19.5 percent of GNP. Consequently, deficits rose sharply, from an average of 2.6 percent of GNP between FY1977 and FY1981 to a peak 6.4 percent in FY1983. It remained above 5 percent through FY1986. In nominal terms, deficits averaged $206.7 billion from FY1983 to FY1986, and peaked at $221.2 billion in 1986.

The deterioration in the budget is also illustrated by the so-called "primary deficit" (the deficit minus net interest outlays) and the ratio of publicly-held federal debt-to GNP. In FY1979, excluding net interest outlays, the budget was in surplus by $2.4 billion. As spending soared, this "primary surplus" evaporated and, by FY1983, the primary deficit reached $118 billion. It was $85.2 billion in FY1986 (see chart 3). The ratio of federal debt-to-GNP rose substantially in response to the unprecedented deficits and high Treasury interest rates, which far exceeded nominal GNP growth. The ratio, which reached a postwar trough of 25 percent in FY1974, rose to 40 percent in FY1985 and was projected to rise dramatically higher.

These earlier budget trends have been reversed: the deficit will fall to approximately 3.1 percent of GNP in FY1989 and is expected to recede substantially further (in FY1991, it falls to 1.5 percent in the Administration's budget and 2.5 percent in the CBO baseline projection). In a dramatic turnaround since FY1986, the primary deficit has been completely eliminated. In FY1989, tax receipts will exceed federal outlays, excluding net interest outlays, by $3 billion. The primary surplus is projected to rise sharply in

FY1990 and FY1991, substantially exceeding peak levels of the 1970s. Insofar as net interest outlays to service the outstanding federal debt reflects primarily the costs of earlier policies, this sharp reversal accentuates the shift in fiscal policy. As a consequence of this deficit trend and the lower level of interest rates, the federal debt-to-GNP ratio has stabilized at approximately 42 percent and is projected to recede.

This reversal has been accomplished through modest tax increases — tax receipts have risen to 19.3 percent of GNP in FY1989 — and significant cuts in spending — to 22.4 percent of GNP in FY1989. This has involved a sizeable shift in the mix of spending: outlays for social security and retirement programs and net interest outlays have risen as shares of total outlays, while outlays for defense and non-defense non-entitlement programs have declined (see chart 4). Measured as a share of GNP, outlays for defense — 5.9 percent in FY1989 and an estimated 5.5 percent in FY1990 — have retraced most of their early 1980s build-up. Since the peak in spending in FY1983, 58.8 percent of the increases in non-interest outlays have been for entitlements and other mandatory spending.

The shifting mix of federal outlays reveals the change in national priorities and also the impact of GRH. While actual budget outcomes have *never* achieved either the original or the revised GRH targets, the GRH law appears to have been an effective political restraint on spending. No doubt it has also contributed to higher taxes. While GRH has successfully helped to lower deficits, it has also contributed unintendedly to the changing mix of outlays. Contrary to GRH's original intent of evenly distributed automatic cuts, the law sequesters an uneven patchwork of programs, and over 50 percent of total outlays escape its grip. Most notably, GRH excludes social security and several other non-means-tested entitlement programs; since GRH's adoption, social security and net interest outlays have been the most rapidly growing outlay categories in the budget. Those programs subject to GRH have incurred some of the largest budget cuts.

While large deficits and efforts to reduce them have been the primary focus of the fiscal policy debate, the sizeable shift in the mix of federal spending that has resulted from recent deficit-cutting legislation may not meet acceptable standards of equity or efficiency in terms of the proper allocation of national resources consistent with long-run economic growth. Transfer payments constitute a rising portion of total federal outlays, with a sizeable share going to non-poor households through the ballooning non-means-tested entitlement programs. Meanwhile, notable pockets of poverty persist. An insufficient share of budget outlays is allocated to investment-oriented

activities, including education, research and development, and public infrastructure. These trends are reinforced by some recent spending initiatives, including the savings and loan industry restructuring and the new drug enforcement program. While spending for these programs may be necessary, they will be extraordinarily costly, regardless of how they are financed (whether on or off-budget, subject to GRH, or financed on the state or local level), they do not contribute to long-run economic growth, and they may displace other investment or growth-enhancing budget initiatives.

Unfortunately, although there will be future efforts to push deficits lower, an improved allocation of national resources — one that provides a larger share of budget resources for investment and growth-enhancing activities, and also eliminates some glaring inequities – is *not* a likely outcome of the flawed budget process imposed by GRH.

Table 1
Selected Budget Projections

	actual 1988	1989	1990	1991	1992	1993
Receipts						
President's Budget*	909.0	995.9	1080.1	1151.3	1220.9	1298.3
CBO Baseline	909.0	991.0	1071.0	1138.0	1207.0	1287.0
Outlays						
President's Budget*	1064.0	1144.1	1179.4	1237.2	1287.7	1328.8
CBO Baseline	1064.0	1152.0	1212.0	1282.0	1348.0	1430.0
Deficits						
President's Budget*	155.1	148.3	105.0	88.0	66.7	30.3
CBO Baseline	155.0	161.0	141.0	144.0	141.0	143.0
Memo:						
New GRH Targets	144.0	136.0	100.0	64.0	28.0	0.0
Original GRH Targets	108.0	72.0	36.0	0.0	0.0	-
Receipts, % Change						
President's Budget	6.4	9.6	8.5	6.6	6.0	6.3
CBO Baseline	6.4	9.0	8.1	6.3	6.1	6.6
Outlays, % Change						
President's Budget	6.0	7.5	3.0	4.9	4.1	3.2
CBO Baseline	6.0	8.3	5.2	5.8	5.1	6.1
As a Percentage of GNP:						
Revenues						
President's Budget**	19.0	19.3	19.6	19.6	19.4	19.3
CBO Baseline	19.0	19.3	19.6	19.5	19.4	19.3
Outlays						
President's Budget**	22.3	22.2	21.4	21.0	20.4	19.8
CBO Baseline	22.3	22.4	22.2	22.0	21.7	22.5
Deficit						
President's Budget	3.2	2.9	1.9	1.5	1.1	0.4
CBO Baseline	3.2	3.1	2.6	2.5	2.3	2.1
Publicly-held debt						
President's Budget	42.9					
CBO Baseline	42.9	42.7	42.8	42.6	42.1	41.5

* Excludes asset sales
** Based on unofficial estimates of GNP levels

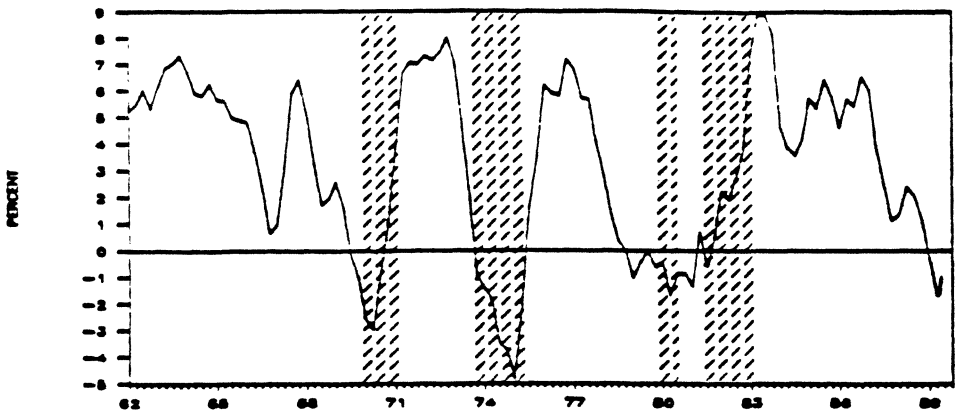
Table 2
Administration and CBO Economic Projections

	actual 1988	1989	1990	1991	1992	1993
Percent change, fourth quarter over fourth quarter:						
Real GNP						
Administration	2.8	2.7	2.6	3.3	3.2	3.1
CBO	2.8	2.4	2.0	2.4	2.5	2.5
Nominal GNP						
Administration	6.8	7.1	6.8	7.2	6.8	6.4
CBO	7.2	6.8	6.4	6.8	6.9	6.9
CPI-W						
Administration	4.2	4.9	4.1	3.8	3.5	3.2
CBO	4.3	5.3	4.7	4.6	4.6	4.6
Percent change, calendar years:						
Nominal GNP						
Administration	7.5	7.5	6.6	7.2	7.0	6.8
CBO	7.5	7.4	6.2	6.7	6.9	6.9
Real GNP						
Administration	3.9	2.9	2.3	3.1	3.2	3.1
CBO	3.9	2.8	1.7	2.3	2.5	2.5
GNP Deflator						
Administration	4.5	4.5	4.2	3.9	3.6	3.3
CBO	4.5	4.4	4.3	4.3	4.3	4.3
CPI-U						
Administration	4.1	5.0	4.2	3.9	3.6	3.3
CBO	4.1	5.2	4.7	4.6	4.6	4.6
Interest Rates, percent, Calendar Year Averages:						
3-Month T-Bill						
Administration	6.7	8.0	6.7	5.3	5.0	4.7
CBO	6.7	8.2	7.2	6.8	6.5	6.3
10-Year Government Bond						
Administration	8.8	8.5	7.7	6.8	6.0	5.7
CBO	8.8	8.6	8.2	8.1	7.9	7.7
Memo: Inflation-Adjusted Rates (CPI)						
3-Month T-Bill						
Administration	2.6	3.0	2.5	1.4	1.4	1.4
CBO	2.6	3.0	2.5	2.2	1.9	1.7
10-Year Government Bond						
Administration	4.7	3.5	3.5	2.9	2.4	2.4
CBO	4.7	3.4	3.5	3.5	3.3	3.1

CHART 1

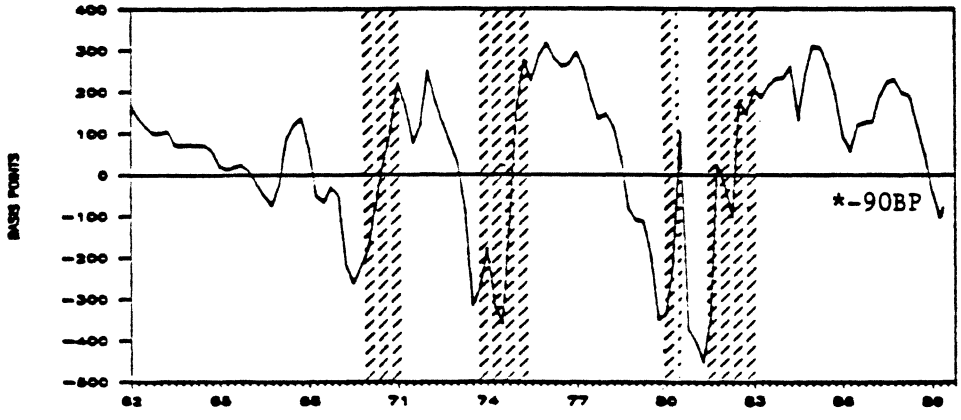
MONETARY POLICY INDICATORS OF DOMESTIC DEMAND GROWTH

YR/YR % CHANGE IN REAL M2



REAL (INFLATION-ADJUSTED) M2 HAS BEEN DECLINING YEAR-OVER-YEAR SINCE LATE 1988.

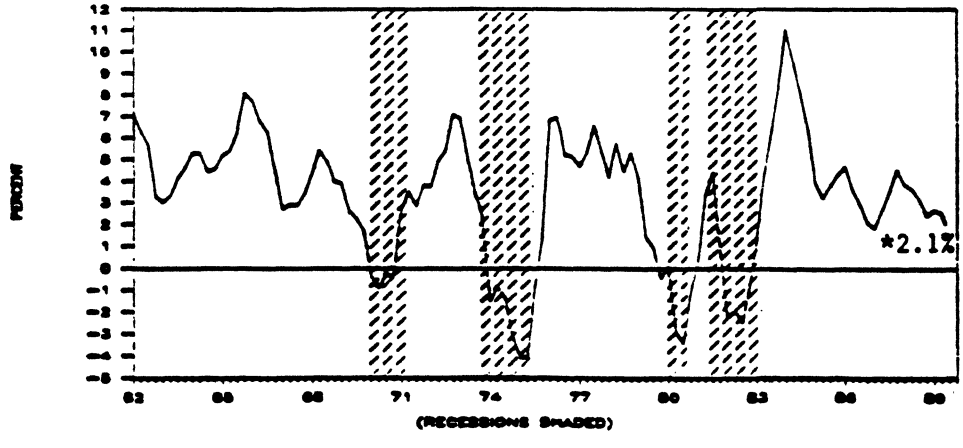
SPREAD: 30 YR.T-BOND - FED FUNDS



THE SPREAD BETWEEN THE LONG-TERM TREASURY BOND YIELD AND THE FEDERAL FUNDS RATE HAS INVERTED FOR THE FIRST TIME SINCE THE 1981-1982 RECESSION.

A DECLINE IN REAL M2 AND AN INVERSION OF THE SPREAD HAS PRECEDED EVERY RECENT RECESSION.

YR/YR % CHG. IN REAL DOMESTIC DEMAND



THESE INDICATORS OF MONETARY POLICY, WHEN COMBINED, HAVE ALWAYS PROVIDED AN ACCURATE PREDICTION OF MAJOR ECONOMIC SHIFTS. THEY NOW POINT TOWARD SHARPLY SLOWER DOMESTIC DEMAND GROWTH.

CHART 2

FEDERAL OUTLAYS AND TAXES

(AS A PERCENTAGE OF GNP)

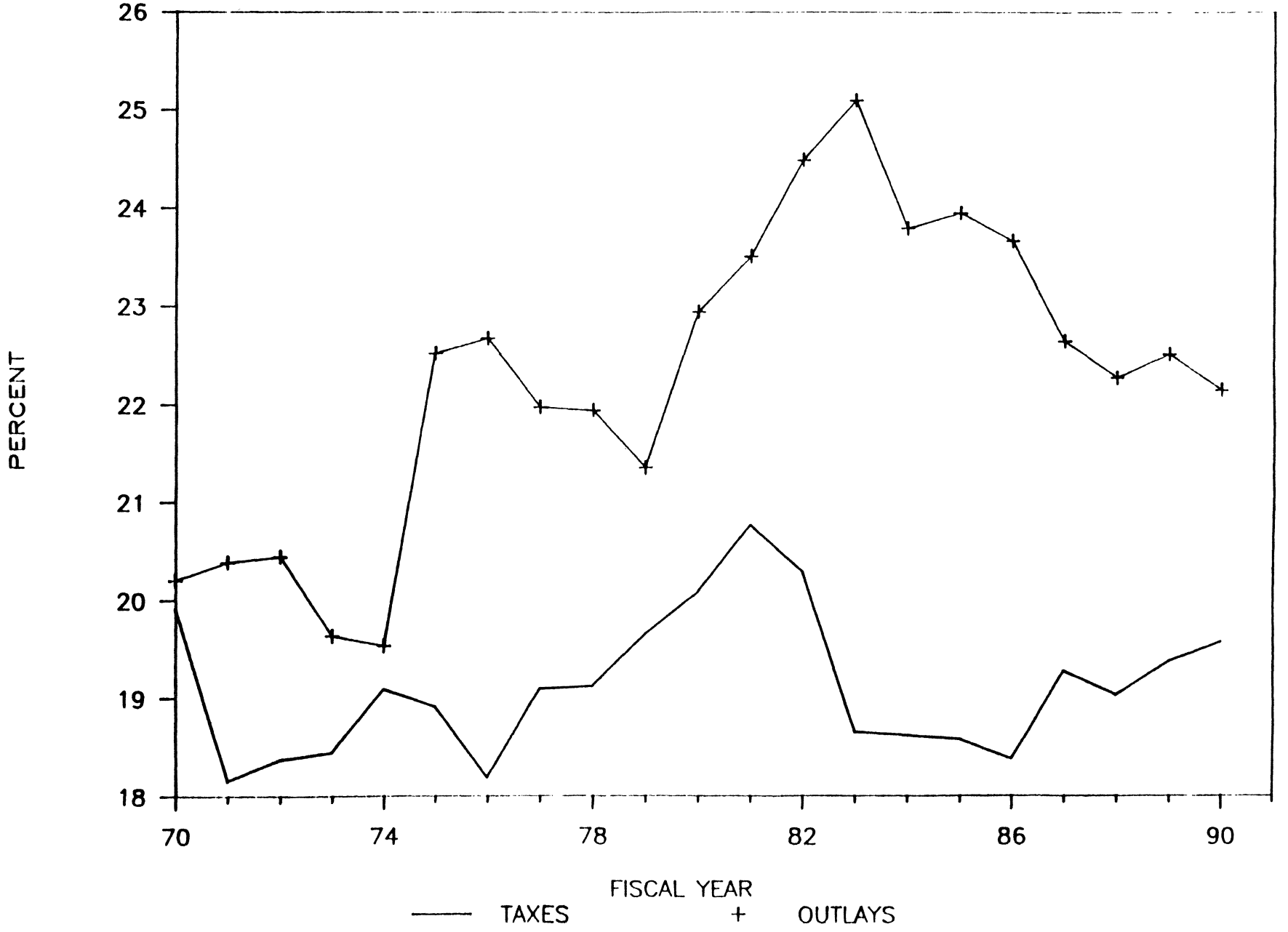


CHART 3

BUDGET DEFICIT LESS NET INTEREST OUTLAY

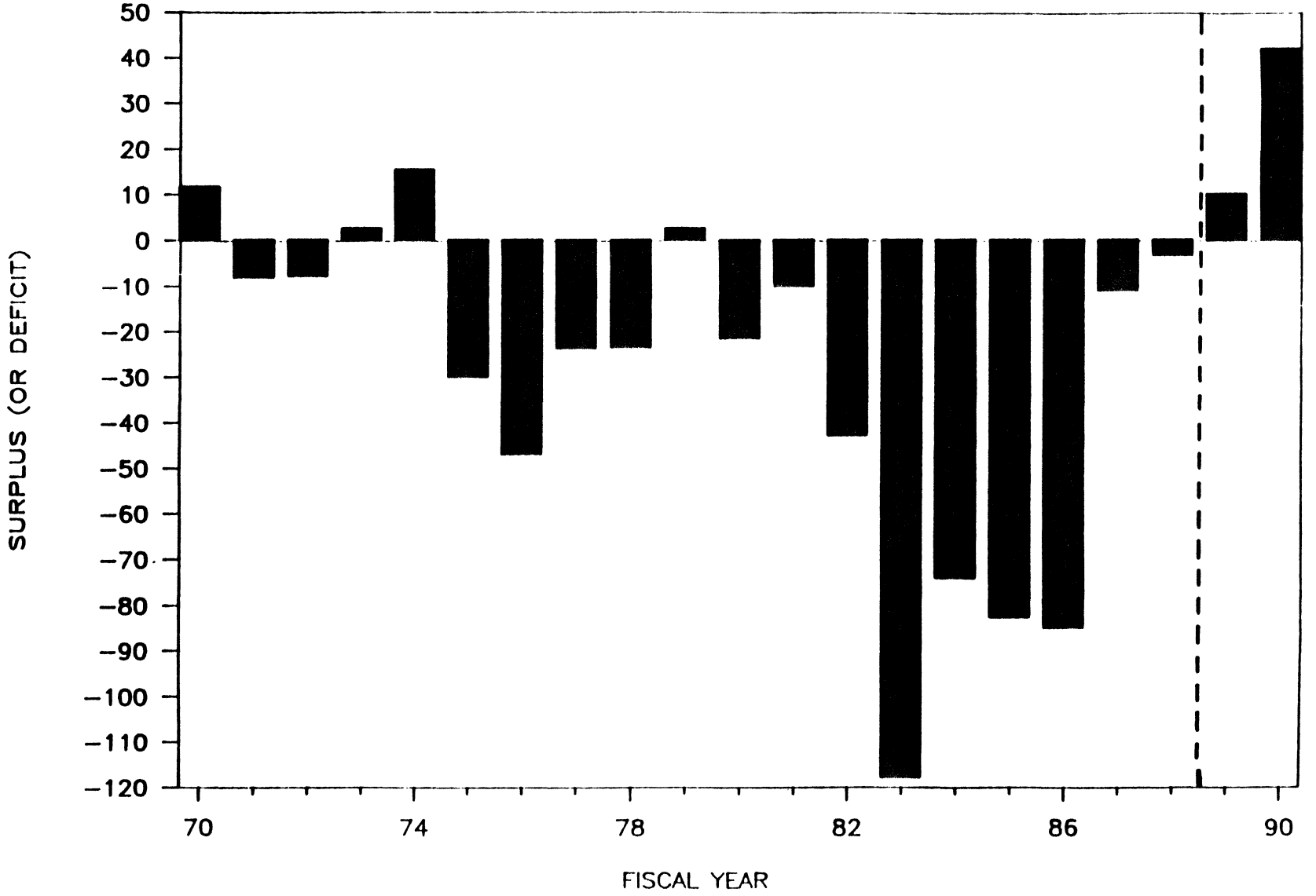
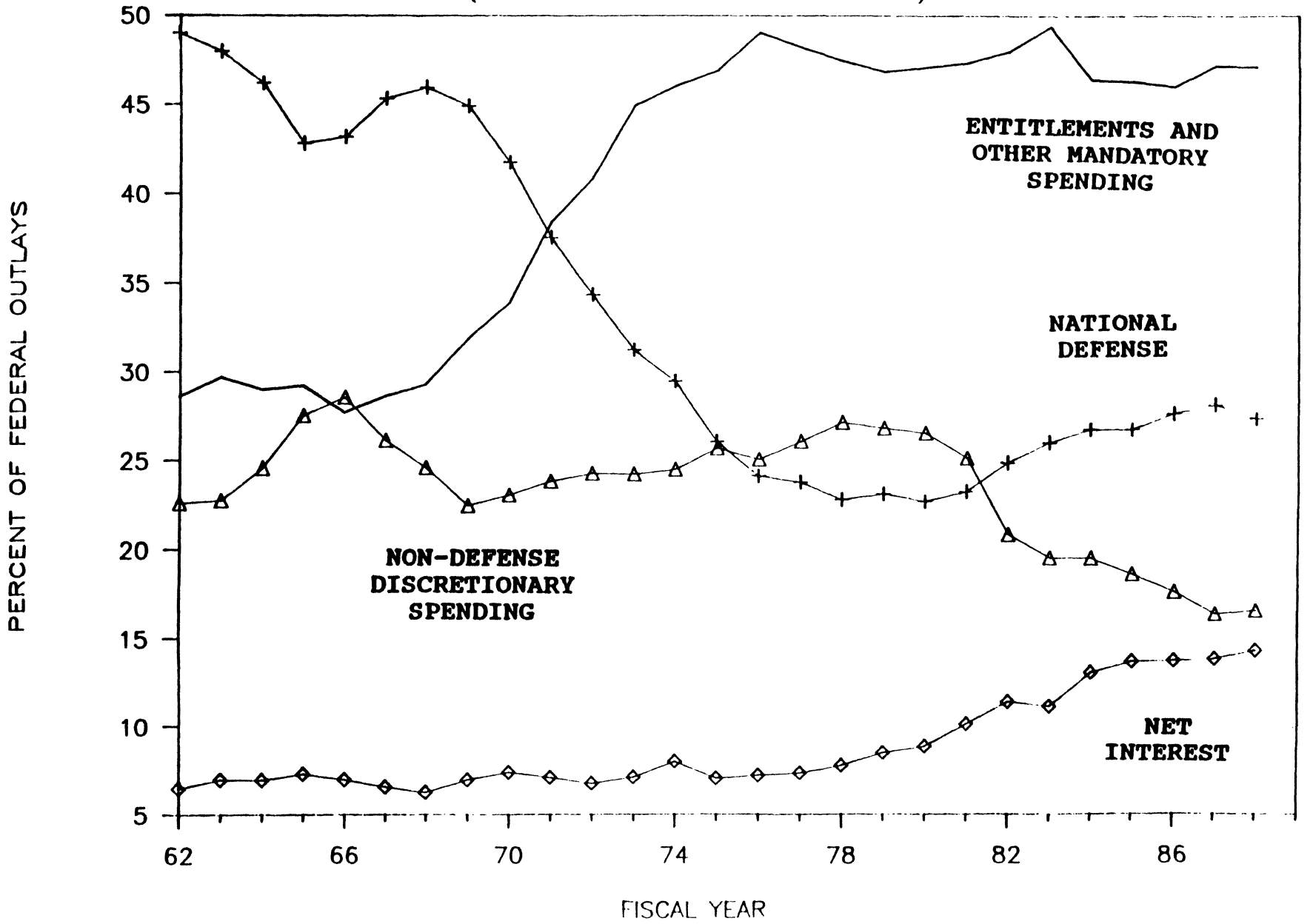


CHART 4

OUTLAYS FOR MAJOR SPENDING CATEGORIES

(AS A PERCENT OF FEDERAL OUTLAYS)



The Economic Outlook

H. Erich Heinemann
Ladenburg, Thalmann & Co., Inc.

Federal Reserve actions have resulted in a major slowdown in monetary growth since early 1987. Both total bank reserves and the transaction component of the money supply have posted record contractions. Economic growth has decelerated. The Baseline Forecast prepared by Heinemann Economic Research projects a recession during the first half of 1990 (see attached table).

Incoming economic data highlight this pattern. Total *civilian employment* rose at an annual rate of 3.7 percent in the first quarter, 1.3 in the second quarter and at a rate of only three-tenths of one percent in July and August. *Industrial production*, which rose at a rate of 5.25 percent during the 18 months ended December 1988, has gone up at a rate of less than 2 percent so far this year.

Consumer spending has stalled. On the assumption that consumer prices rose no more than three-tenths of one percent in August, real retail sales last month were unchanged from November 1988. That was well below the 5-percent-plus growth typical during the prior year. In July, total business sales slumped and inventories of unsold goods rose by almost $5 billion, or six-tenths of one percent.

New orders for non-defense capital goods have gained at a rate of only 3.2 percent over the past three quarters, a fraction of the 19 percent rate of increase from third quarter 1986 through third quarter 1988. Moreover, business investment has focused narrowly on just two areas: computers and jet aircraft.

Outlays for structures (the "plant" side of plant and equipment) have been going down for more than a year. Spending for machinery other than information processing and related equipment dropped at an annual rate of almost 10 percent in the second quarter.

Corporate profits have been exceptionally weak. Operating profits per unit of real output in non-financial corporations dropped at an annual rate of 32 percent in the first quarter and 23 percent in the second. At last reading, unit profits were down more than 13 percent from 1988. Price/earnings ratios based on earnings per share of the S&P 500 appear to be stable and modest.

However, equity multiples based on operating earnings have risen sharply. This is a very typical pre-recession pattern. There are two reasons:

1. large companies that dominate the S&P do better during recessions than smaller concerns; and

2. operating earnings are a better measure of corporate performance.

Each of these indicators — plus a host of other measures — point clearly toward an economic contraction. Federal Reserve actions over the past six months have increased the likelihood that the next recession will be more severe than was likely at the time of our meeting in mid-March.

Policymakers have been reluctant to allow short-term interest rates to decline, even though demand for credit is weak. During the three months ended in July (the most recent period for which data are available) domestic non-financial debt rose at a rate of only 7 percent, its slowest growth rate in the past 15 years — including the bottom of the severe 1981–82 recession.

In this environment, the Federal Reserve has had to drain reserves from the banking system to prevent interest rates from declining. Total bank reserves averaged $58.8 billion in August, down 3.5 percent from a year earlier — the largest year-over-year decline in reserves in the post-war period.

Total checkable deposits, the transaction component of the money supply, dropped $25 billion in the first half of 1989. In 1986, these deposits rose by almost $100 billion. Bank reserves and checkable deposits were lower in August 1989 than in April 1987. Broader measures of monetary expansion have also shown marked decelerations.

This pattern of violent go-stop monetary policy has placed the economy in jeopardy. Federal Reserve chairman Alan Greenspan conceded two months ago that he could not "rule out a policy mistake as the trigger for a downturn." Mr. Greenspan told the House Subcommittee on Domestic Monetary Policy that "we at the Federal Reserve might fail to restrain a speculative surge in the economy or fail to recognize that we were holding reserves too tight for too long."

Under current circumstances, he added, "our policy ... is not oriented toward avoiding a slowdown in demand, for a slowing from the unsustainable rates of 1987 and 1988 is probably unavoidable. Rather, what we seek to avoid is an unnecessary and destructive recession."

As Mr. Greenspan's gratuitous *mea culpa* made clear, the probability that this will occur has risen. The SOMC should monitor Federal Reserve actions closely and, if necessary, be prepared to issue an appropriate warning prior to the Committee's next scheduled meeting in mid-March.

Senior policymakers are well aware that when real economic activity begins to decline in earnest, the Fed will find itself under intense pressure

to reverse course and reflate the economy. Go-stop-go monetary policy — the Fed's traditional trade mark — will be perpetuated. This will impose needless costs on the economy. It will also tend to raise the expected rate of inflation over the long run.

The reported rate of inflation has slowed in recent months as a result of the Fed's long campaign of monetary restraint. This slowdown was predictable, indeed inevitable. The jump in the rate of change in prices during the first half of 1989 was typical of the latter stages of a cyclical expansion in the American economy.

The short-lived surge in prices reflected lingering aftereffects of excessive expansion in the U.S. money stock in 1985 and 1986. But because the monetary authorities took preemptive action to contain these price pressures long before they became obvious, inflation did not accelerate for an extended period.

At this point, the Fed's challenge is to devise a strategy to consolidate these gains. The danger, as an anonymous member of the Federal Open Market Committee warned at the FOMC meeting in July, is that "a substantial weakening of the economy would be followed by rapid monetary growth and a marked rebound in activity — a pattern that would be unlikely to foster the [Federal Reserve's] objective of price stability over time."

The foreign exchange value of the dollar is likely to be volatile during the forecast period (1989-1990). To date during 1989, the combination of a tight monetary policy and high real rates of return on dollar assets have acted as a magnet for overseas investors. The Federal Reserve's trade-weighted dollar index is currently above 102, up more than 10 percent from its low in November 1988.

Central banks have intervened to limit the rise in the dollar. This intervention had only temporary effects on foreign exchange values because the transactions were "sterilized" — purchases of international assets were offset by comparable sales of domestic securities. If the Baseline Forecast is correct, the real return on dollar assets will decline in the months ahead. Federal Reserve policy will ease. In that case, the dollar will weaken and continue to decline through much of 1990.

The deficit in U.S. international payments has improved steadily since 1986. Real "net exports," as defined in the national income accounts, were at a negative $52.5 billion annual rate in the second quarter of 1988, a gain of more than $20 billion from a year earlier. Even though the growth rate of U.S. merchandise exports has dropped substantially, further gains in U.S. trade performance are likely as domestic demand slows.

If the Baseline Forecast is accurate, imports will grow less rapidly. Exports should pick up considerably as domestic capacity is freed to service markets overseas. Overall, the trade deficit should gain by more than $30 billion between second quarter 1989 and second quarter 1990. Trade should play a major role in limiting the 1990 downturn.

The federal budget, by contrast, is likely to suffer substantially if economic growth falls short of the optimistic scenario outlined by the Bush Administration. On the basis of the national income accounts, the federal deficit — including the "surplus" in Social Security — was at an annual rate of about $148.4 billion in the second quarter of 1988.

The Baseline Forecast indicates that GNP will decline at an annual rate of 2 percent to 3 percent in the first half of 1990. If this is correct, then the red ink flowing out of the Treasury is likely to show a major increase — to an annual rate of more than $180 billion by the end of next year.

Tax receipts will dwindle as the rate of growth in income slows. Expenditures will rise as contracyclical income maintenance programs automatically kick into action. The Gramm-Rudman "budget balancing" program (which may well have hindered the budget process more than it has helped) will likely be suspended. Improbable as it may seem, members of Congress may actually make some difficult decisions about fiscal policy.

Were the Federal Reserve to adhere to a policy of moderate stable expansion in the money supply, over the long run the economy would prosper. But when the authorities deviate from this path - either by freezing the money supply or by bringing it to a boil — the economy will suffer. The Federal Reserve has made a major gain against inflation over the past two years. It would be sad if this advantage were frittered away with erratic monetary policy.

30-Aug-89 HEINEMANN ECONOMIC RESEARCH

Baseline Forecast - August 1989 (1989-3.2)

	IV'88 A	I'89 A	II'89 A	III'89 F	IV'89 F	I'90 F	II'90 F	III'90 F	IV'90 F	1988 A	1989 F	1990 F
THE ECONOMY:												
Gross National Product ($82)	4069.4	4106.8	4133.9	4153.8	4160.6	4135.8	4108.6	4149.9	4204.2	4024.4	4138.8	4149.6
Pct Chg	2.7%	3.7%	2.7%	1.9%	0.7%	-2.4%	-2.6%	4.1%	5.3%	4.4%	2.8%	0.3%
Personal Consumption ($82)	2627.7	2641.0	2655.3	2664.6	2667.9	2664.4	2659.0	2671.4	2692.3	2598.4	2657.2	2671.8
Pct Chg	3.0%	2.0%	2.2%	1.4%	0.5%	-0.5%	-0.8%	1.9%	3.2%	3.4%	2.3%	0.5%
Business Investment ($82)	492.7	501.0	511.0	517.2	521.9	506.4	486.2	491.6	505.9	493.8	512.8	497.5
Pct Chg	-6.5%	6.9%	8.2%	4.9%	3.7%	-11.4%	-15.0%	4.5%	12.2%	8.4%	3.8%	-3.0%
Prod. Dur. Equip. ($82)	371.3	379.9	392.8	399.1	404.4	395.5	381.3	390.2	403.1	371.6	394.0	392.5
Pct Chg	-6.9%	9.6%	14.3%	6.5%	5.4%	-8.5%	-13.6%	9.7%	13.9%	11.5%	6.0%	-0.4%
Residential Invest. ($82)	198.1	195.6	189.1	194.7	197.2	199.9	203.1	209.6	217.5	194.1	194.1	207.5
Pct Chg	6.3%	-5.0%	-12.6%	12.3%	5.3%	5.7%	6.6%	13.4%	15.9%	-0.3%	0.0%	6.9%
Change in Inventory ($82)*	16.1	21.2	22.3	12.0	0.6	-14.4	-29.5	-17.2	-13.1	12.3	14.0	-18.6
Net Exports ($82)	-73.8	-55.0	-52.5	-49.1	-45.1	-43.4	-37.6	-40.0	-42.4	-74.9	-50.4	-40.8
Government Purchases ($82)*	806.6	803.0	808.7	814.4	818.1	822.9	827.3	834.5	844.0	800.7	811.1	832.2
Pct Chg	6.5%	-2.7%	2.9%	2.9%	1.8%	2.4%	2.2%	3.5%	4.6%	1.9%	1.3%	2.6%
Final Domestic Sales ($82)	4127.1	4140.6	4164.1	4190.9	4205.1	4193.7	4175.7	4207.1	4259.7	4087.0	4175.2	4209.0
Pct Chg	2.7%	1.3%	2.3%	2.6%	1.4%	-1.1%	-1.7%	3.0%	5.1%	3.5%	2.2%	0.8%
Gross Nat'l Prod. ($ Current)	5017.3	5113.1	5203.8	5266.2	5306.8	5325.2	5339.0	5445.2	5582.5	4880.6	5222.5	5423.0
Pct Chg	7.5%	7.9%	7.3%	4.9%	3.1%	1.4%	1.0%	8.2%	10.5%	7.9%	7.0%	3.8%
Disposable Income ($82)	2835.9	2881.7	2886.6	2895.7	2884.2	2864.6	2854.1	2880.1	2913.1	2793.2	2887.1	2878.0
Pct Chg	4.3%	6.6%	0.7%	1.3%	-1.6%	-2.7%	-1.5%	3.7%	4.7%	4.4%	3.4%	-0.3%
Savings Rate (Percent)	4.6%	5.6%	5.3%	5.5%	5.7%	5.8%	5.9%	5.5%	5.4%	4.2%	5.5%	5.7%
Operating Profits ($ Current)	340.2	316.3	309.1	307.2	301.2	284.0	256.6	261.7	277.3	328.6	308.5	269.9
Pct Chg	11.7%	-25.3%	-8.8%	-2.5%	-7.5%	-20.9%	-33.4%	8.2%	26.0%	10.0%	-6.1%	-12.5%
Industrial Prod. (1977=100)	139.9	140.7	141.4	142.0	142.2	138.7	134.5	135.7	138.3	137.2	141.6	136.8
Pct Chg	4.4%	2.3%	2.0%	1.8%	0.4%	-9.6%	-11.5%	3.7%	7.9%	5.7%	3.2%	-3.4%
Housing Starts (Mill. Units)	1558.7	1517.3	1350.7	1422	1436	1470	1523	1626	1699	1494.8	1432	1579
Pct Chg	27.5%	-10.2%	-37.2%	23.0%	3.9%	9.8%	15.2%	29.8%	19.3%	-8.5%	-4.2%	10.3%
Auto Sales (Million Units)	10.494	9.727	10.251	10.1	9.6	9.1	8.9	9.3	9.9	10.642	9.9	9.3
Pct Chg	-6.1%	-26.2%	23.4%	-7.6%	-18.4%	-18.5%	-7.7%	21.7%	27.3%	3.5%	-7.0%	-5.9%
Total Employment (Millions)	115.8	116.9	117.3	117.4	117.5	117.0	116.7	117.5	118.5	115.0	117.3	117.4
Pct Chg	2.3%	3.7%	1.3%	0.5%	0.3%	-1.9%	-0.9%	2.9%	3.2%	2.2%	2.0%	0.1%
Unemployment Rate (Percent)	5.3%	5.2%	5.3%	5.4%	5.6%	6.1%	6.7%	7.0%	6.9%	5.5%	5.4%	6.7%
Comp. Per Hour Non-Farm Bus**	203.3	205.7	208.6	211.3	213.7	215.9	217.4	219.7	222.1	199.2	209.8	218.8
Pct Chg	5.7%	4.8%	5.8%	5.2%	4.7%	4.1%	3.0%	4.1%	4.5%	4.9%	5.3%	4.3%
Productivity Non-Farm Bus**	112.1	111.8	112.0	111.9	111.7	111.3	111.1	111.3	111.7	111.4	111.8	111.4
Pct Chg	1.8%	-1.1%	0.7%	-0.4%	-0.8%	-1.2%	-0.8%	0.7%	1.4%	2.2%	0.4%	-0.4%
Unit Labor Cost Non-Farm Bus**	181.3	184.1	186.3	188.8	191.4	193.9	195.7	197.3	198.8	178.8	187.6	196.4
Pct Chg	3.8%	6.3%	4.9%	5.5%	5.6%	5.3%	3.8%	3.4%	3.1%	2.7%	4.9%	4.7%
GNP Deflator (1982=100)	123.3	124.5	125.9	126.8	127.5	128.8	128.9	131.2	132.8	121.3	126.2	130.7
Pct Chg	4.7%	4.0%	4.5%	2.9%	2.4%	3.8%	3.7%	4.0%	4.9%	3.3%	4.1%	3.6%
CPI Less Energy (1982-84=100)	124.6	126.3	127.7	128.9	130.1	131.3	132.5	134.0	135.4	122.5	128.3	133.3
Pct Chg	4.8%	5.6%	4.4%	3.7%	3.9%	3.5%	3.9%	4.4%	4.5%	4.4%	4.7%	3.9%
Federal Deficit ($ Current)	-167.6	-147.5	-148.4	-151.4	-155.3	-171.9	-187.9	-203.5	-215.3	-145.9	-158.6	-194.7
FINANCIAL MARKETS:												
Federal Funds Rate	8.47%	9.44%	9.73%	8.4%	7.5%	6.9%	6.8%	7.3%	7.8%	6.47%	8.8%	7.2%
Three-month Bills (Discount)	7.72%	8.54%	8.41%	7.3%	6.6%	6.1%	6.0%	6.3%	6.9%	6.76%	7.7%	6.3%
Prime Rate, Major Banks	10.18%	10.98%	11.36%	9.4%	8.5%	7.9%	7.8%	8.3%	8.8%	8.79%	10.1%	8.2%
30-Year Treasury Bonds	8.97%	9.04%	8.71%	8.1%	7.7%	7.4%	7.1%	7.3%	7.6%	8.74%	8.4%	7.4%
Money Supply (M-1, $ Current)	787.4	786.7	775.6	778.3	793.4	809.2	827.0	843.3	858.6	776.0	783.5	834.5
Pct Chg	2.3%	-0.4%	-5.5%	1.4%	8.0%	8.2%	9.1%	8.1%	7.4%	4.3%	1.0%	6.5%
Velocity (Ratio: GNP TO M-1)	6.372	6.500	6.710	6.766	6.688	6.581	6.456	6.457	6.502	6.289	6.666	6.499
Pct Chg	5.1%	8.3%	13.6%	3.4%	-4.5%	-6.3%	-7.4%	0.1%	2.8%	3.5%	6.0%	-2.5%
Trade-Weighted $ (1973=100)	91.8	96.0	100.9	99.9	96.7	93.6	91.8	91.7	88.1	92.5	98.4	91.3
Memo: CCC Purchases	-2.2	-3.3	3.3	-0.3	3.6	-2.0	4.9	2.3	-3.9	-15.6	8.8	8.3

A=Actual F=Forecast Billions of dollars unless noted.

*Adjusted for Commodity Credit Corp. purchases. **Compensation, productivity and unit labor costs are index numbers, 1977=100.

Source: Citibase; Heinemann Economic Research

	I'88 A		II'88 A		III'88 A		IV'88 A		1988 A	
THE ECONOMY:	$ Change	Pct Chg	$ Change	Pct Chg	$ Change	Pct Chg	$ Change	Pct Chg	$ Change	Pct Chg
Gross National Product ($82)	$38.9	4.1%	$36.0	3.6%	$32.0	3.2%	$26.7	2.7%	$170.6	4.4%
Personal Consumption ($82)	$38.5	4.0%	$16.0	1.6%	$21.3	2.1%	$19.6	2.0%	$84.6	2.2%
Business Investment ($82)	$10.9	1.1%	$14.2	1.4%	$3.2	0.3%	($0.3)	-0.0%	$38.3	1.0%
Prod. Dur. Equip. ($82)	$14.8	1.5%	$13.5	1.4%	$2.7	0.3%	($6.7)	-0.7%	$38.4	1.0%
Residential Invest. ($82)	($2.8)	-0.3%	$5.1	0.5%	$0.9	0.1%	$3.0	0.3%	($0.7)	-0.0%
Change in Inventory ($82)*	($41.2)	-4.1%	($11.8)	-1.2%	$15.5	1.6%	($1.3)	-0.1%	($7.5)	-0.2%
Net Exports ($82)	$31.6	3.3%	$5.6	0.6%	($2.3)	-0.2%	$1.1	0.1%	$40.8	1.1%
Government Purchases ($82)*	$1.9	0.2%	$6.9	0.7%	($6.6)	-0.7%	$12.6	1.3%	$15.0	0.4%
Final Domestic Sales ($82)	$48.5	5.0%	$42.2	4.3%	$18.8	1.9%	$26.9	2.7%	$137.3	3.6%
GNP ($82) Four qtr chg (%)		5.1%		4.9%		4.4%		3.4%		

	I'89 A		II'89 A		III'89 F		IV'89 F		1989 F	
THE ECONOMY:	$ Change	Pct Chg	$ Change	Pct Chg	$ Change	Pct Chg	$ Change	Pct Chg	$ Change	Pct Chg
Gross National Product ($82)	$37.4	3.7%	$27.1	2.7%	$19.9	1.9%	$6.8	0.7%	$114.4	2.8%
Personal Consumption ($82)	$13.3	1.3%	$14.3	1.4%	$9.3	0.9%	$3.3	0.3%	$58.8	1.5%
Business Investment ($82)	$8.3	0.8%	$10.0	1.0%	$6.2	0.6%	$4.7	0.5%	$19.0	0.5%
Prod. Dur. Equip. ($82)	$8.6	0.8%	$12.9	1.3%	$6.3	0.6%	$5.3	0.5%	$22.4	0.6%
Residential Invest. ($82)	($2.5)	-0.2%	($6.5)	-0.6%	$5.6	0.5%	$2.5	0.2%	$0.0	0.0%
Change in Inventory ($82)*	$5.1	0.5%	$1.1	0.1%	($10.3)	-1.0%	($11.4)	-1.1%	$1.8	0.0%
Net Exports ($82)	$18.8	1.9%	$2.5	0.2%	$3.4	0.3%	$4.0	0.4%	$24.5	0.6%
Government Purchases ($82)*	($5.6)	-0.5%	$5.7	0.6%	$5.7	0.6%	$3.7	0.4%	$10.3	0.3%
Final Domestic Sales ($82)	$13.5	1.3%	$23.5	2.3%	$26.8	2.6%	$14.2	1.4%	$88.2	2.2%
GNP ($82) Four qtr chg (%)		3.3%		3.1%		2.7%		2.2%		

	I'90 F		II'90 F		III'90 F		IV'90 F		1990 F	
THE ECONOMY:	$ Change	Pct Chg	$ Change	Pct Chg	$ Change	Pct Chg	$ Change	Pct Chg	$ Change	Pct Chg
Gross National Product ($82)	($24.8)	-2.4%	($27.2)	-2.6%	$41.3	4.0%	$54.3	5.2%	$10.9	0.3%
Personal Consumption ($82)	($3.5)	-0.3%	($5.5)	-0.5%	$12.5	1.2%	$20.9	2.0%	$14.6	0.4%
Business Investment ($82)	($15.5)	-1.5%	($20.1)	-1.9%	$5.3	0.5%	$14.3	1.4%	($15.2)	-0.4%
Prod. Dur. Equip. ($82)	($8.9)	-0.9%	($14.2)	-1.4%	$8.9	0.9%	$12.9	1.2%	($1.5)	-0.0%
Residential Invest. ($82)	$2.7	0.3%	$3.2	0.3%	$6.5	0.6%	$7.9	0.8%	$13.4	0.3%
Change in Inventory ($82)*	($15.0)	-1.4%	($15.1)	-1.5%	$12.3	1.2%	$4.1	0.4%	($32.6)	-0.8%
Net Exports ($82)	$1.7	0.2%	$5.8	0.6%	($2.4)	-0.2%	($2.4)	-0.2%	$9.6	0.2%
Government Purchases ($82)*	$4.8	0.5%	$4.4	0.4%	$7.1	0.7%	$9.5	0.9%	$21.1	0.5%
Final Domestic Sales ($82)	($11.4)	-1.1%	($18.0)	-1.7%	$31.4	3.1%	$52.6	5.1%	$33.9	0.8%
GNP ($82) Four qtr chg (%)		0.7%		-0.6%		-0.1%		1.0%		

16-Sep-89

Table 1 - Part 1 (Federal Reserve Bank of St. Louis Monetary Base)

Federal Reserve Action and Monetary Growth

($ Billions)

Date	(1) Monetary Base	(2) Currency	(3) Total Adjusted Bank Reserves	(4) Demand Deposits	(5) Savings & Small Time Deposits*	(6) Large Time Deposits	(7) Non-deposit Liabil.	(8) Foreign Deposits	(9) Treasury Deposits	(10) Total Deposits**
Jan 1987	$253.8	$182.2	$71.6	$542.7	$906.1	$291.8	$205.3	$11.8	$27.5	$1,985.2
Feb	254.5	183.6	70.9	541.0	905.6	295.3	204.3	11.0	28.5	1985.7
Mar	255.7	184.4	71.3	543.0	907.7	298.2	200.1	10.4	17.1	1976.5
Apr	257.7	185.6	72.1	552.4	906.4	303.1	199.1	10.8	21.6	1993.4
May	259.6	187.0	72.6	552.3	902.7	308.1	203.4	11.0	30.8	2008.3
Jun	259.5	187.8	71.7	547.6	905.4	311.9	203.0	11.3	25.4	2004.6
Jul	260.0	189.0	71.0	547.9	907.5	312.2	198.5	11.3	26.6	2004.0
Aug	262.2	190.0	72.2	548.5	910.6	314.0	209.6	11.0	21.6	2015.3
Sep	263.6	191.4	72.2	549.5	911.4	315.1	218.5	11.3	25.5	2031.3
Oct	265.4	193.1	72.3	557.1	913.6	316.5	216.5	11.4	38.6	2047.7
Nov	267.1	195.1	72.0	552.6	918.6	324.0	212.4	11.1	25.8	2044.5
Dec	267.1	196.4	70.7	548.7	922.6	325.4	207.1	11.3	22.3	2037.4
Jan 1988	271.4	198.5	72.9	552.8	927.7	323.7	207.7	11.8	24.9	2048.6
Feb	271.6	199.4	72.2	553.5	934.8	328.4	208.4	11.0	28.2	2064.3
Mar	273.2	200.7	72.5	555.9	942.9	331.0	209.5	10.9	22.3	2072.5
Apr	275.6	202.4	73.2	561.5	948.7	331.8	210.6	11.0	21.7	2085.3
May	276.6	203.4	73.2	560.3	950.0	334.1	220.2	10.9	30.4	2105.9
Jun	278.8	204.7	74.1	564.5	957.7	339.6	222.7	11.4	21.0	2116.9
Jul	280.4	206.4	74.0	568.9	962.3	345.5	221.2	11.9	22.0	2131.8
Aug	281.6	207.0	74.6	568.2	965.1	350.8	227.8	11.0	11.9	2134.8
Sep	282.7	208.6	74.1	567.8	968.2	355.0	222.7	11.2	24.5	2149.4
Oct	283.8	209.7	74.1	568.3	973.7	359.2	219.4	10.8	27.7	2158.1
Nov	284.6	210.5	74.1	568.7	983.3	361.2	222.6	11.2	16.2	2163.2
Dec	285.3	211.8	73.5	570.9	988.1	364.9	224.7	11.6	22.9	2183.1
Jan 1989	287.9	213.4	74.5	565.3	990.1	370.7	223.2	11.3	25.8	2185.6
Feb	287.5	214.3	73.2	565.7	993.8	378.2	223.7	11.3	25.9	2198.6
Mar	289.3	215.6	73.7	563.4	1000.7	385.5	229.1	10.7	18.1	2207.5
Apr	289.1	215.9	73.2	559.9	1007.3	392.5	219.9	10.7	20.2	2210.5
May	289.0	216.4	72.6	549.5	1006.3	395.8	217.5	10.6	34.3	2214.0
Jun	289.7	217.4	72.3	545.7	1011.4	396.4	218.9	11.7	26.2	2210.3
Jul	290.5	218.0	72.5	552.1	1017.8	398.3	220.8	11.6	23.0	2223.6
Aug PE	290.7	218.5	72.2	552.0	1027.4	397.7	215.0	10.4	15.8	2218.3

* Includes Money Market Deposit Accounts

** (4+5+6+7+8+9)

Table 1 - Part 2

Federal Reserve Action and Monetary Growth

Date	(11) Adjusted Reserve Ratio (3/10)	(12) Currency Ratio (2/4)	(13) Savings & Small Time Deposit Ratio (5/4)	(14) Large Time Deposit Ratio (6/4)	(15) Non-deposit Liabil. Ratio (7/4)	(16) Foreign Deposit Ratio (8/4)	(17) Treasury Deposit Ratio (9/4)	(18) Money Multi-plier (2+4/1)
Jan 1987	0.0361	0.3357	1.6696	0.5377	0.3783	0.0217	0.0587	2.8562
Feb	0.0357	0.3394	1.6739	0.5458	0.3776	0.0203	0.0527	2.8472
Mar	0.0361	0.3396	1.6716	0.5492	0.3685	0.0192	0.0315	2.8447
Apr	0.0362	0.3360	1.6408	0.5487	0.3604	0.0196	0.0391	2.8638
May	0.0361	0.3386	1.6344	0.5578	0.3683	0.0199	0.0558	2.8478
Jun	0.0358	0.3430	1.6534	0.5696	0.3707	0.0206	0.0464	2.8339
Jul	0.0354	0.3450	1.6563	0.5698	0.3623	0.0206	0.0485	2.8342
Aug	0.0358	0.3464	1.6602	0.5725	0.3821	0.0201	0.0394	2.8166
Sep	0.0355	0.3483	1.6586	0.5734	0.3976	0.0206	0.0464	2.8107
Oct	0.0353	0.3466	1.6399	0.5717	0.3886	0.0205	0.0549	2.8267
Nov	0.0352	0.3531	1.6623	0.5863	0.3844	0.0201	0.0467	2.7993
Dec	0.0347	0.3579	1.6814	0.5930	0.3774	0.0206	0.0406	2.7896
Jan 1988	0.0356	0.3591	1.6782	0.5856	0.3757	0.0213	0.0450	2.7682
Feb	0.0350	0.3603	1.6889	0.5933	0.3765	0.0199	0.0509	2.7721
Mar	0.0350	0.3610	1.6962	0.5954	0.3769	0.0196	0.0481	2.7694
Apr	0.0351	0.3605	1.6896	0.5909	0.3751	0.0196	0.0386	2.7718
May	0.0348	0.3630	1.6955	0.5963	0.3930	0.0195	0.0543	2.7610
Jun	0.0350	0.3626	1.6965	0.6016	0.3945	0.0202	0.0372	2.7590
Jul	0.0347	0.3628	1.6915	0.6073	0.3888	0.0209	0.0387	2.7650
Aug	0.0349	0.3643	1.6985	0.6174	0.4009	0.0194	0.0298	2.7528
Sep	0.0345	0.3674	1.7052	0.6252	0.3922	0.0197	0.0431	2.7464
Oct	0.0343	0.3690	1.7134	0.6321	0.3861	0.0190	0.0487	2.7414
Nov	0.0343	0.3701	1.7290	0.6351	0.3914	0.0197	0.0285	2.7379
Dec	0.0337	0.3710	1.7308	0.6392	0.3936	0.0203	0.0401	2.7434
Jan 1989	0.0341	0.3775	1.7515	0.6558	0.3948	0.0200	0.0442	2.7048
Feb	0.0333	0.3788	1.7568	0.6686	0.3954	0.0200	0.0458	2.7130
Mar	0.0334	0.3827	1.7762	0.6842	0.4066	0.0190	0.0321	2.6927
Apr	0.0331	0.3856	1.7991	0.7010	0.3927	0.0191	0.0361	2.6835
May	0.0328	0.3938	1.8313	0.7203	0.3958	0.0193	0.0624	2.6502
Jun	0.0327	0.3984	1.8534	0.7264	0.4011	0.0214	0.0490	2.6337
Jul	0.0326	0.3949	1.8435	0.7214	0.3999	0.0210	0.0417	2.6509
Aug PE	0.0325	0.3958	1.8612	0.7285	0.3995	0.0188	0.0286	2.6505

Source: Federal Reserve Board; Meinemann Economic Research

Table 2

Federal Reserve Action and Monetary Growth

(Compound Annual Rates of Change)

Date	Monetary Growth (M-1)	Federal Reserve Actions (Monetary Base Growth)	Contribution of the Money Multiplier	This is accounted for by changes in the: Adjusted Reserve Ratio	Currency Ratio	Savings & Small Time Deposit Ratio	Large Time Deposit Ratio	Non-Deposit Liability Ratio	Foreign Deposit Ratio	Treasury Deposit Ratio
Jan 1987	10.49%	17.01%	-6.52%	-2.21%	-1.20%	0.18%	-0.11%	-0.06%	-0.04%	-1.38%
Feb	-0.50	3.36	-3.86	3.72	-6.34	-0.43	-0.81	0.07	0.14	-0.20
Mar	4.74	5.81	-1.07	-3.85	-0.42	0.24	-0.35	0.06	0.12	2.23
Apr	18.96	9.80	9.16	-0.98	6.88	3.19	0.05	0.03	-0.04	-0.77
May	2.13	9.22	-7.08	0.19	-4.54	0.64	-0.91	-0.78	-0.04	-1.65
Jun	-6.15	-0.46	-5.69	3.09	-7.10	-1.78	-1.10	-0.23	-0.07	0.89
Jul	2.48	2.34	0.14	1.82	-1.85	-0.15	-0.01	0.44	0.00	-0.11
Aug	2.64	10.64	-8.00	-3.90	-2.52	-0.37	-0.26	-1.91	0.06	0.89
Sep	3.97	6.60	-2.63	2.89	-3.33	0.15	-0.09	-1.51	-0.05	-0.69
Oct	16.15	8.51	7.64	2.45	3.10	1.86	0.17	0.89	0.01	-0.84
Nov	-3.93	7.96	-11.89	0.90	-10.53	-2.11	-1.38	0.41	0.04	0.79
Dec	-4.09	0.00	-4.09	5.25	-8.09	-1.80	-0.64	0.66	-0.05	0.58
Jan 1988	10.46	21.12	-10.67	-9.27	-2.15	0.33	0.77	0.18	-0.08	-0.45
Feb	2.59	0.89	1.70	5.24	-1.66	-0.85	-0.62	-0.06	0.12	-0.47
Mar	6.06	7.30	-1.24	-0.06	-1.31	-0.67	-0.20	-0.03	0.02	1.01
Apr	12.21	11.07	1.15	-1.21	0.99	0.62	0.43	0.17	0.00	0.14
May	-0.31	4.44	-4.76	3.36	-4.10	-0.53	-0.48	-1.61	0.01	-1.40
Jun	8.99	9.97	-0.98	-2.52	0.71	-0.10	-0.51	-0.15	-0.07	1.66
Jul	9.94	7.11	2.83	2.88	-0.38	0.46	-0.52	0.52	-0.07	-0.13
Aug	-0.15	5.26	-5.41	-2.17	-2.39	-0.61	-0.88	-1.06	0.14	1.57
Sep	1.87	4.79	-2.92	4.91	-5.16	-0.63	-0.74	0.83	-0.03	-2.09
Oct	2.50	4.77	-2.27	1.51	-2.57	-0.72	-0.60	0.54	0.06	-0.49
Nov	1.87	3.44	-1.57	0.63	-1.83	-1.35	-0.27	-0.47	-0.06	1.78
Dec	5.53	2.99	2.53	5.40	-1.25	-0.14	-0.32	-0.17	-0.05	-0.93
Jan 1989	-5.96	11.50	-17.46	-3.98	-9.89	-1.75	-1.41	-0.11	0.03	-0.35
Feb	2.02	-1.65	3.68	6.98	-1.80	-0.39	-0.95	-0.05	0.00	-0.12
Mar	-1.53	7.78	-9.30	-0.89	-5.83	-1.59	-1.29	-0.82	0.08	1.14
Apr	-4.82	-0.83	-3.99	2.54	-4.22	-1.78	-1.31	1.10	-0.01	-0.31
May	-14.28	-0.41	-13.87	2.94	-10.80	-2.38	-1.43	-0.23	-0.01	-1.95
Jun	-4.30	3.12	-7.42	0.59	-6.48	-1.68	-0.47	-0.41	-0.16	1.11
Jul	11.58	3.19	8.39	1.21	5.39	0.78	0.39	0.09	0.03	0.50
Aug PE	0.63	0.83	-0.20	0.61	-1.61	-1.53	0.08	0.91	0.19	1.14
	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985
	12.43	8.97	3.46	-1.16	3.24	0.71	0.39	0.25	0.03	0.01
	1986	1986	1986	1986	1986	1986	1986	1986	1986	1986
	17.35	10.07	7.27	-1.65	6.23	1.69	0.77	0.26	0.02	-0.04
	1987	1987	1987	1987	1987	1987	1987	1987	1987	1987
	3.91	6.73	-2.82	0.81	-3.01	-0.04	-0.46	-0.10	0.01	-0.04
	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988
	5.13	6.93	-1.80	0.72	-1.75	-0.35	-0.33	-0.11	-0.00	0.02
	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989
	-2.08	2.94	-5.02	1.25	-4.39	-1.29	-0.80	0.05	0.02	0.14

Source: Federal Reserve Board; Heinemann Economic Research

Table 3

Federal Reserve Action and Monetary Growth
(Compound Annual Rates of Change)

THREE-MONTH MOVING AVERAGES

Date	Monetary Growth (M-1)	Federal Reserve Actions (Monetary Base Growth)	Contribution of the Money Multiplier	This is accounted for by changes in the: Adjusted Reserve Ratio	Currency Ratio	Savings & Small Time Deposit Ratio	Large Time Deposit Ratio	Non-Deposit Liability Ratio	Foreign Deposit Ratio	Treasury Deposit Ratio
Jan 1987	23.32%	14.62%	8.70%	-3.34%	9.25%	2.60%	0.98%	-0.08%	0.03%	-0.73%
Feb	15.97	11.79	4.18	-0.70	3.86	1.56	0.30	-0.08	0.05	-0.81
Mar	4.91	8.72	-3.81	-0.89	-2.71	-0.02	-0.43	0.01	0.07	0.15
Apr	7.73	6.32	1.41	-0.37	0.04	1.00	-0.37	0.62	0.07	0.42
May	8.61	8.27	0.34	-1.55	0.64	1.36	-0.40	0.33	0.02	-0.06
Jun	4.98	6.18	-1.20	0.97	-1.58	0.69	-0.65	-0.06	-0.05	-0.51
Jul	-0.51	3.70	-4.21	1.90	-4.49	-0.43	-0.68	-0.19	-0.03	-0.29
Aug	-0.35	4.17	-4.52	0.54	-3.82	-0.77	-0.46	-0.57	-0.00	0.56
Sep	3.03	6.53	-3.50	0.27	-2.57	-0.12	-0.12	-0.99	0.00	0.03
Oct	7.58	8.58	-1.00	0.48	-0.92	0.55	-0.06	-0.84	0.01	-0.21
Nov	5.40	7.69	-2.29	2.08	-3.59	-0.03	-0.44	-0.07	-0.00	-0.25
Dec	2.71	5.49	-2.78	2.87	-5.18	-0.68	-0.62	0.65	-0.00	0.18
Jan 1988	0.81	9.70	-8.88	-1.04	-6.93	-1.19	-0.42	0.41	-0.03	0.30
Feb	2.98	7.34	-4.36	0.41	-3.97	-0.77	-0.16	0.26	-0.00	-0.11
Mar	6.37	9.77	-3.40	-1.37	-1.71	-0.40	-0.01	0.03	0.02	0.03
Apr	6.95	6.42	0.53	1.32	-0.66	-0.30	-0.13	0.02	0.05	0.22
May	5.99	7.60	-1.62	0.70	-1.47	-0.19	-0.08	-0.49	0.01	-0.09
Jun	6.96	8.49	-1.53	-0.12	-0.80	-0.00	-0.19	-0.53	-0.02	0.13
Jul	6.21	7.17	-0.97	1.24	-1.23	-0.06	-0.50	-0.41	-0.04	0.04
Aug	6.26	7.45	-1.19	-0.61	-0.66	-0.08	-0.64	-0.23	-0.00	1.03
Sep	3.89	5.72	-1.83	1.87	-2.62	-0.26	-0.71	0.10	0.01	-0.22
Oct	1.41	4.94	-3.53	1.41	-3.38	-0.65	-0.74	0.18	0.06	-0.34
Nov	2.08	4.33	-2.25	2.35	-3.19	-0.90	-0.54	0.30	-0.01	-0.27
Dec	3.30	3.73	-0.43	2.51	-1.89	-0.74	-0.40	-0.03	-0.02	0.12
Jan 1989	0.48	5.98	-5.50	0.68	-4.32	-1.08	-0.67	-0.25	-0.03	0.17
Feb	0.53	4.28	-3.75	2.80	-4.31	-0.76	-0.89	-0.11	-0.01	-0.47
Mar	-1.82	5.87	-7.70	0.70	-5.84	-1.25	-1.22	-0.36	0.04	0.22
Apr	-1.44	1.77	-3.21	2.88	-3.95	-1.26	-1.18	0.04	0.02	0.24
May	-6.88	2.18	-9.06	1.53	-6.95	-1.92	-1.34	-0.02	0.02	-0.38
Jun	-7.80	0.63	-8.43	2.02	-7.14	-1.95	-1.07	0.15	-0.06	-0.38
Jul	-2.33	1.97	-4.30	1.58	-3.94	-1.09	-0.58	-0.18	-0.05	-0.12
Aug PE	2.64	2.38	0.26	0.88	-0.87	-0.81	0.08	0.20	0.02	0.91

Source: Federal Reserve Board; Meinemann Economic Research

Table 4

Federal Reserve Action and Monetary Growth
(Compound Annual Rates of Change)

(Memo)

Date	Reserve Growth Rate Month to Month	Reserve Growth Rate Three-month Moving Average
Jan 1987	28.93%	30.45%
Feb	-11.12	17.35
Mar	6.98	8.26
Apr	14.33	3.40
May	8.65	9.99
Jun	-13.90	3.02
Jul	-11.11	-5.45
Aug	22.28	-0.91
Sep	0.00	3.72
Oct	1.67	7.98
Nov	-4.87	-1.06
Dec	-19.64	-7.61
Jan 1988	44.44	6.65
Feb	-10.93	4.62
Mar	5.10	12.87
Apr	12.22	2.13
May	0.00	5.77
Jun	15.79	9.34
Jul	-1.61	4.73
Aug	10.18	8.12
Sep	-7.75	0.27
Oct	0.00	0.81
Nov	0.00	-2.58
Dec	-9.30	-3.10
Jan 1989	17.61	2.77
Feb	-19.04	-3.58
Mar	8.51	2.36
Apr	-7.84	-6.12
May	-9.40	-2.91
Jun	-4.21	-7.15
Jul	2.69	-3.64
Aug PE	-4.85	-2.13
	1985	
	13.67	
	1986	
	17.54	
	1987	
	1.85	
	1988	
	4.85	
	1989	
	-2.07	

Source: Federal Reserve Board; Heimemann Economic Research

16-Sep-89

Table 1 - Part 1 (Federal Reserve Board Monetary Base)

Federal Reserve Action and Monetary Growth

($ Billions)

Date	(1) Monetary Base	(2) Currency	(3) Total Adjusted Bank Reserves	(4) Demand Deposits	(5) Savings & Small Time Deposits*	(6) Large Time Deposits	(7) Non-deposit Liabil.	(8) Foreign Deposits	(9) Treasury Deposits	(10) Total Deposits**
Jan 1987	$243.8	$182.2	$61.6	$542.7	$906.1	$291.8	$205.3	$11.8	$27.5	$1,985.2
Feb	245.2	183.6	61.6	541.0	905.6	295.3	204.3	11.0	28.5	1985.7
Mar	245.7	184.4	61.3	543.0	907.7	298.2	200.1	10.4	17.1	1976.5
Apr	247.7	185.6	62.1	552.4	906.4	303.1	199.1	10.8	21.6	1993.4
May	249.4	187.0	62.4	552.3	902.7	308.1	203.4	11.0	30.8	2008.3
Jun	249.7	187.8	61.9	547.6	905.4	311.9	203.0	11.3	25.4	2004.6
Jul	250.6	189.0	61.6	547.9	907.5	312.2	198.5	11.3	26.6	2004.0
Aug	251.9	190.0	61.9	548.5	910.6	314.0	209.6	11.0	21.6	2015.3
Sep	253.2	191.4	61.8	549.5	911.4	315.1	218.5	11.3	25.5	2031.3
Oct	255.6	193.1	62.5	557.1	913.6	318.5	216.5	11.4	30.6	2047.7
Nov	257.2	195.1	62.0	552.6	918.6	324.0	212.4	11.1	25.8	2044.5
Dec	258.0	196.4	61.6	548.7	922.6	325.4	207.1	11.3	22.3	2037.4
Jan 1988	261.0	198.5	62.5	552.8	927.7	323.7	207.7	11.8	24.9	2048.6
Feb	262.0	199.4	62.6	553.5	934.8	328.4	208.4	11.0	28.2	2064.3
Mar	263.3	200.7	62.6	555.9	942.9	331.0	209.5	10.9	22.3	2072.5
Apr	265.6	202.4	63.2	561.5	948.7	331.8	210.6	11.0	21.7	2085.3
May	266.8	203.4	63.4	560.3	950.0	334.1	220.2	10.9	30.4	2105.9
Jun	268.2	204.7	63.5	564.5	957.7	339.6	222.7	11.4	21.0	2116.9
Jul	270.3	206.4	63.9	568.9	962.3	345.5	221.2	11.9	22.0	2131.8
Aug	271.0	207.0	64.0	568.2	965.1	350.8	227.8	11.0	11.9	2134.8
Sep	272.4	208.6	63.8	567.8	968.2	355.0	222.7	11.2	24.5	2149.4
Oct	273.7	209.7	64.0	568.3	973.7	359.2	219.4	10.8	27.7	2159.1
Nov	274.4	210.5	63.9	568.7	983.3	361.2	222.6	11.2	16.2	2163.2
Dec	275.5	211.8	63.7	570.9	988.1	364.9	224.7	11.6	22.9	2183.1
Jan 1989	276.8	213.4	63.4	565.3	990.1	370.7	223.2	11.3	25.0	2185.6
Feb	277.6	214.3	63.3	565.7	993.8	376.2	223.7	11.3	25.9	2198.6
Mar	278.6	215.6	63.0	563.4	1000.7	385.5	229.1	10.7	18.1	2207.5
Apr	278.7	215.9	62.8	559.9	1007.3	392.5	219.9	10.7	20.2	2210.5
May	278.3	216.4	61.9	549.5	1006.3	395.8	217.6	10.6	34.3	2214.0
Jun	279.1	217.4	61.7	545.7	1011.4	396.4	218.9	11.7	26.2	2210.3
Jul	280.0	218.0	62.0	552.1	1017.8	398.3	220.8	11.6	23.0	2223.6
Aug PE	280.3	218.5	61.8	552.0	1027.4	397.7	215.0	10.4	15.8	2218.3

* Includes Money Market Deposit Accounts

** (4+5+6+7+8+9)

Table 1 - Part 2

Federal Reserve Action and Monetary Growth

Date	(11) Adjusted Reserve Ratio (3/10)	(12) Currency Ratio (2/4)	(13) Savings & Small Time Deposit Ratio (5/4)	(14) Large Time Deposit Ratio (6/4)	(15) Non-deposit Liabil. Ratio (7/4)	(16) Foreign Deposit Ratio (8/4)	(17) Treasury Deposit Ratio (9/4)	(18) Money Multiplier (2+4/1)
Jan 1987	0.0310	0.3357	1.6696	0.5377	0.3783	0.0217	0.0507	2.9739
Feb	0.0310	0.3394	1.6739	0.5458	0.3776	0.0203	0.0527	2.9556
Mar	0.0310	0.3396	1.6716	0.5492	0.3685	0.0192	0.0315	2.9604
Apr	0.0311	0.3360	1.6408	0.5487	0.3604	0.0196	0.0391	2.9795
May	0.0311	0.3386	1.6344	0.5578	0.3683	0.0199	0.0558	2.9640
Jun	0.0309	0.3430	1.6534	0.5696	0.3707	0.0206	0.0464	2.9456
Jul	0.0307	0.3450	1.6563	0.5698	0.3623	0.0206	0.0485	2.9411
Aug	0.0307	0.3464	1.6602	0.5725	0.3821	0.0201	0.0394	2.9311
Sep	0.0304	0.3483	1.6586	0.5734	0.3976	0.0206	0.0464	2.9256
Oct	0.0305	0.3466	1.6399	0.5717	0.3886	0.0205	0.0549	2.9351
Nov	0.0303	0.3531	1.6623	0.5863	0.3844	0.0201	0.0467	2.9076
Dec	0.0302	0.3579	1.6814	0.5930	0.3774	0.0206	0.0406	2.8881
Jan 1988	0.0305	0.3591	1.6782	0.5856	0.3757	0.0213	0.0450	2.8787
Feb	0.0303	0.3603	1.6889	0.5933	0.3765	0.0199	0.0509	2.8735
Mar	0.0302	0.3610	1.6962	0.5954	0.3769	0.0196	0.0401	2.8737
Apr	0.0303	0.3605	1.6896	0.5909	0.3751	0.0196	0.0386	2.8758
May	0.0301	0.3630	1.6955	0.5963	0.3930	0.0195	0.0543	2.8629
Jun	0.0300	0.3626	1.6965	0.6016	0.3945	0.0202	0.0372	2.8680
Jul	0.0300	0.3628	1.6915	0.6073	0.3888	0.0209	0.0387	2.8682
Aug	0.0300	0.3643	1.6985	0.6174	0.4009	0.0194	0.0209	2.8607
Sep	0.0297	0.3674	1.7052	0.6252	0.3922	0.0197	0.0431	2.8500
Oct	0.0296	0.3690	1.7134	0.6321	0.3861	0.0190	0.0487	2.8430
Nov	0.0295	0.3701	1.7290	0.6351	0.3914	0.0197	0.0285	2.8399
Dec	0.0292	0.3710	1.7308	0.6392	0.3936	0.0203	0.0401	2.8410
Jan 1989	0.0290	0.3775	1.7515	0.6558	0.3948	0.0208	0.0442	2.8134
Feb	0.0288	0.3788	1.7568	0.6686	0.3954	0.0200	0.0458	2.8103
Mar	0.0285	0.3827	1.7762	0.6842	0.4066	0.0190	0.0321	2.7960
Apr	0.0284	0.3856	1.7991	0.7010	0.3927	0.0191	0.0361	2.7839
May	0.0280	0.3938	1.8313	0.7203	0.3958	0.0193	0.0624	2.7518
Jun	0.0279	0.3984	1.8534	0.7264	0.4011	0.0214	0.0480	2.7346
Jul	0.0279	0.3949	1.8435	0.7214	0.3999	0.0210	0.0417	2.7505
Aug PE	0.0279	0.3958	1.8612	0.7285	0.3995	0.0188	0.0286	2.7488

Source: Federal Reserve Board; Heinemann Economic Research

Table 2

Federal Reserve Action and Monetary Growth

(Compound Annual Rates of Change)

Date	Monetary Growth (M-1)	Federal Reserve Actions (Monetary Base Growth)	Contribution of the Money Multiplier	This is accounted for by changes in the: Adjusted Reserve Ratio	Currency Ratio	Savings & Small Time Deposit Ratio	Large Time Deposit Ratio	Non-Deposit Liability Ratio	Foreign Deposit Ratio	Treasury Deposit Ratio
Jan 1987	10.49%	12.10%	-1.62%	1.91%	-1.27%	0.09%	-0.10%	-0.77%	-0.03%	-1.25%
Feb	-0.50	7.11	-7.61	0.08	-6.60	-0.38	-0.72	0.06	0.12	-0.18
Mar	4.74	2.72	2.02	-0.17	-0.40	0.19	-0.28	0.77	0.10	1.80
Apr	18.96	10.13	8.83	-1.38	7.31	2.85	0.04	0.74	-0.04	-0.69
May	2.13	8.75	-6.62	0.65	-4.82	0.57	-0.82	-0.70	-0.03	-1.48
Jun	-6.15	1.14	-7.29	2.23	-7.48	-1.58	-0.98	-0.20	-0.06	0.79
Jul	2.48	4.35	-1.87	1.53	-3.68	-0.26	-0.02	0.74	0.00	-0.19
Aug	2.64	6.91	-4.27	-0.26	-2.61	-0.33	-0.23	-1.68	0.05	0.79
Sep	3.97	6.35	-2.38	3.15	-3.56	0.14	-0.08	-1.36	-0.05	-0.62
Oct	16.15	11.75	4.40	-0.82	3.33	1.67	0.15	0.80	0.01	-0.75
Nov	-3.93	7.52	-11.45	1.78	-11.19	-1.91	-1.25	0.37	0.03	0.71
Dec	-4.09	4.00	-8.09	1.19	-8.20	-1.55	-0.55	0.57	-0.04	0.50
Jan 1988	10.46	14.83	-4.38	-2.87	-2.16	0.29	0.66	0.15	-0.07	-0.39
Feb	2.59	4.87	-2.29	1.66	-2.02	-0.87	-0.63	-0.06	0.12	-0.48
Mar	6.06	5.97	0.09	1.08	-1.09	-0.47	-0.14	-0.02	0.02	0.71
Apr	12.21	11.22	1.00	-1.27	1.05	0.56	0.38	0.15	0.00	0.12
May	-0.31	5.23	-5.54	2.36	-4.31	-0.48	-0.43	-1.44	0.01	-1.25
Jun	8.99	6.69	2.30	0.90	0.70	-0.08	-0.43	-0.12	-0.06	1.39
Jul	9.94	9.83	0.12	0.21	-0.32	0.41	-0.46	0.46	-0.06	-0.12
Aug	-0.15	3.02	-3.17	0.09	-2.51	-0.55	-0.78	-0.94	0.12	1.39
Sep	1.87	6.57	-4.70	2.88	-5.29	-0.54	-0.64	0.71	-0.03	-1.80
Oct	2.50	5.60	-3.10	0.69	-2.72	-0.64	-0.53	0.48	0.06	-0.44
Nov	1.87	3.21	-1.34	0.93	-1.94	-1.22	-0.24	-0.42	-0.05	1.59
Dec	5.53	5.01	0.51	3.12	-1.25	-0.12	-0.27	-0.15	-0.04	-0.78
Jan 1989	-5.96	5.73	-11.70	1.78	-10.29	-1.56	-1.25	-0.09	0.03	-0.31
Feb	2.02	3.39	-1.36	2.37	-2.20	-0.40	-0.97	-0.05	0.00	-0.12
Mar	-1.53	4.69	-6.22	2.26	-6.16	-1.43	-1.16	-0.03	0.07	1.02
Apr	-4.82	0.26	-5.08	1.42	-4.45	-1.58	-1.16	0.97	-0.01	-0.27
May	-14.28	-1.48	-12.80	4.08	-11.49	-2.13	-1.28	-0.21	-0.01	-1.75
Jun	-4.38	3.18	-7.48	0.75	-6.80	-1.49	-0.42	-0.36	-0.15	0.99
Jul	11.58	4.06	7.52	0.20	5.74	0.69	0.34	0.08	0.03	0.44
Aug PE	0.63	1.38	-0.76	0.14	-1.52	-1.21	0.07	0.72	0.15	0.90
	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985
	12.43	8.76	3.67	-0.97	3.48	0.65	0.33	0.21	0.02	0.02
	1986	1986	1986	1986	1986	1986	1986	1986	1986	1986
	17.35	10.03	7.31	-1.72	6.61	1.52	0.70	0.23	0.02	-0.04
	1987	1987	1987	1987	1987	1987	1987	1987	1987	1987
	3.91	6.90	-3.00	0.05	-3.28	-0.04	-0.40	-0.07	0.01	-0.06
	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988
	5.13	6.84	-1.71	0.02	-1.82	-0.31	-0.29	-0.10	0.00	-0.00
	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989
	-2.08	2.65	-4.73	1.63	-4.65	-1.14	-0.73	0.03	0.01	0.11

Source: Federal Reserve Board; Heinemann Economic Research

Table 3

Federal Reserve Action and Monetary Growth
(Compound Annual Rates of Change)

THREE-MONTH MOVING AVERAGES

Date	Monetary Growth (M-1)	Federal Reserve Actions (Monetary Base Growth)	Contribution of the Money Multiplier	This is accounted for by changes in the: Adjusted Reserve Ratio	Currency Ratio	Savings & Small Time Deposit Ratio	Large Time Deposit Ratio	Non-Deposit Liability Ratio	Foreign Deposit Ratio	Treasury Deposit Ratio
Jan 1987	23.32%	13.22%	10.10%	-2.13%	9.74%	2.32%	0.87%	-0.87%	0.03%	-0.66%
Feb	15.97	11.42	4.54	-0.47	4.10	1.40	0.27	-0.07	0.05	-0.73
Mar	4.91	7.31	-2.40	0.70	-2.82	-0.03	-0.37	-0.02	0.06	0.07
Apr	7.73	6.65	1.08	-0.49	0.10	0.89	-0.32	0.52	0.06	0.31
May	8.61	7.20	1.41	-0.30	0.70	1.21	-0.35	0.27	0.01	-0.12
Jun	4.98	6.67	-1.69	0.50	-1.66	0.61	-0.58	-0.06	-0.04	-0.46
Jul	-0.51	4.75	-5.26	1.47	-5.32	-0.42	-0.61	-0.06	-0.03	-0.29
Aug	-0.35	4.13	-4.48	1.16	-4.59	-0.72	-0.41	-0.38	-0.00	0.46
Sep	3.03	5.87	-2.84	1.47	-3.28	-0.15	-0.11	-0.77	0.00	-0.01
Oct	7.58	8.34	-0.75	0.69	-0.95	0.50	-0.05	-0.75	0.00	-0.20
Nov	5.40	8.54	-3.14	1.37	-3.81	-0.03	-0.39	-0.06	-0.00	-0.22
Dec	2.71	7.76	-5.05	0.72	-5.35	-0.59	-0.55	0.58	-0.00	0.15
Jan 1988	0.81	8.78	-7.97	0.03	-7.18	-1.06	-0.38	0.36	-0.03	0.27
Feb	2.98	7.90	-4.92	-0.00	-4.13	-0.71	-0.17	0.22	0.00	-0.12
Mar	6.37	8.56	-2.19	-0.04	-1.76	-0.35	-0.04	0.02	0.02	-0.05
Apr	6.95	7.35	-0.40	0.49	-0.69	-0.26	-0.13	0.02	0.05	0.12
May	5.99	7.47	-1.48	0.72	-1.45	-0.13	-0.06	-0.44	0.01	-0.14
Jun	6.96	7.71	-0.75	0.66	-0.85	-0.00	-0.16	-0.47	-0.02	0.09
Jul	6.21	7.25	-1.04	1.16	-1.31	-0.05	-0.44	-0.37	-0.04	0.01
Aug	6.26	6.51	-0.25	0.40	-0.71	-0.07	-0.56	-0.20	0.00	0.89
Sep	3.89	6.47	-2.59	1.06	-2.70	-0.23	-0.63	0.08	0.01	-0.18
Oct	1.41	5.06	-3.66	1.22	-3.50	-0.58	-0.65	0.09	0.05	-0.28
Nov	2.08	5.13	-3.04	1.50	-3.31	-0.80	-0.47	0.26	-0.01	-0.21
Dec	3.30	4.61	-1.31	1.58	-1.97	-0.66	-0.35	-0.03	-0.01	0.12
Jan 1989	0.48	4.65	-4.18	1.95	-4.49	-0.96	-0.59	-0.22	-0.02	0.17
Feb	0.53	4.71	-4.18	2.42	-4.58	-0.69	-0.83	-0.10	-0.01	-0.40
Mar	-1.82	4.60	-6.43	2.14	-6.22	-1.13	-1.12	-0.32	0.03	0.20
Apr	-1.44	2.78	-4.22	2.02	-4.27	-1.14	-1.09	0.03	0.02	0.21
May	-6.88	1.16	-8.03	2.59	-7.37	-1.71	-1.28	-0.02	0.02	-0.34
Jun	-7.80	0.65	-8.45	2.08	-7.58	-1.73	-0.95	0.13	-0.06	-0.35
Jul	-2.33	1.92	-4.25	1.68	-4.18	-0.98	-0.45	-0.16	-0.04	-0.11
Aug PE	2.64	2.87	-0.24	0.37	-0.86	-0.67	-0.00	0.15	0.01	0.78

Source: Federal Reserve Board; Meinesmann Economic Research

Table 4

Federal Reserve Action and Monetary Growth
(Compound Annual Rates of Change)

(Memo)

Date	Reserve Growth Rate Month to Month	Reserve Growth Rate Three-month Moving Average
Jan 1987	10.50%	27.39%
Feb	-0.00	16.06
Mar	-4.78	1.90
Apr	16.45	3.89
May	6.73	6.13
Jun	-10.34	4.28
Jul	-5.91	-3.17
Aug	8.06	-2.73
Sep	-2.00	0.05
Oct	13.48	6.51
Nov	-8.31	1.06
Dec	-8.52	-1.12
Jan 1988	18.81	0.66
Feb	2.66	4.32
Mar	-0.59	6.96
Apr	13.05	5.04
May	2.50	4.98
Jun	2.76	6.10
Jul	7.89	4.38
Aug	1.34	4.00
Sep	-2.94	2.10
Oct	2.65	0.35
Nov	-1.47	-0.59
Dec	-3.31	-0.71
Jan 1989	-5.81	-3.53
Feb	-2.45	-3.86
Mar	-4.42	-4.23
Apr	-4.48	-3.78
May	-15.03	-7.97
Jun	-5.16	-8.22
Jul	6.55	-4.55
Aug PE	-3.43	-0.68
	1985	
	13.38	
	1986	
	18.27	
	1987	
	1.28	
	1988	
	3.61	
	1989	
	-4.28	

Source: Federal Reserve Board; Meinemann Economic Research

P^* Type Models: Evaluation and Forecasts

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Recently members of the research staff of the Board of Governors have constructed a model of the inflation process that has received considerable attention.[1] The purpose of this paper is to review critically the assumptions that are the basis of that inflation model and to examine a model of nominal income, real output and inflation that is implicit in the assumptions of that model, given the behavior of the monetary base and potential real output. In section I, the fundamental assumptions of the P^* model are examined in light of the existing literature on the behavior of $M2$ velocity. In section II some implicit assumptions of the P^* model about the behavior of velocity of the monetary base and the base-$M2$ multiplier are discussed and developed. An explicit statistical model of these variables is estimated, which satisfies the assumptions of the P^* model is estimated. In section III, the historical performance and forecasts of that model are examined.

Critical Assumptions of the P^* Model

In past deliberations of this Committee, we frequently have referred to different kinds of shocks that affect the economy. In particular, we have discussed transitory shocks to the level of a variable, permanent shocks to its level and permanent shocks to its growth rate. As an example we frequently have employed the working hypothesis that the velocity of the monetary base is a random walk; i.e., that it's behavior is predominantly affected by *permanent* shocks to its level. Many other economic variables appear to share this characteristic [Nelson and Plosser, 1982]. Such variables *do not* exhibit reversion to a trend or mean.[2]

The fundamental proposition of the P^* model of Hallman, Porter and Small (HPS) is a hypothesis about the type of shocks that drive the behavior of the velocity of $M2$ ($V2$). HPS assume that shocks to $V2$ are ***transitory shocks to the level of*** $V2$, and that $V2$ eventually reverts to an unchanged mean.[3] The mean to which $V2$ reverts they label V^*. They measure V^*

[1] Jeffrey J. Hallman, Richard D. Porter and David H. Small, "$M2$ per Unit of Potential GNP as an Anchor for the Price Level," Staff Study 157, Board of Governors of the Federal Reserve System.

[2] In more technical terms such variables are said to be non-stationary in levels, to possess unit roots, to be drift stationary, or to be integrated or order >= 1.

[3] HPS leave open the possibility that the mean of $V2$ may have changed since 1981.

by the sample mean of $V2$ over the period 55,1 through 88,1 (quarterly) as 1.6527. The hypothesis about the mean reverting behavior of $V2$ is crucial to the entire P^* model. If it is false, then V^* does not exist!

While all the statistical analysis produced by HPS is careful and exhaustive, they present very little evidence about $V2$ shocks. This is surprising, because their hypothesis conflicts with, or at least is not strongly supported by, previous research. HPS acknowledge that the behavior of $V2$ prior to 1955 differs from their characterization of the post-Accord period, but do not elaborate on this statement.

Previous research contradicts the V^* hypothesis. Gould and Nelson [1974] introduced the idea of permanent shocks to levels into macroeconomics with the analysis of the behavior of U.S. $M2$ velocity over most of a century. They concluded that during their sample period, $M2$ velocity was characterized as a random walk. Unfortunately, this conclusion is not directly comparable to that of HPS, since Gould and Nelson used data from Friedman and Schwartz [1963]. $M2$ defined by Friedman and Schwartz is not the same concept as $M2$ defined in the 1980 revisions of the U.S. money stock data (as if things aren't confusing enough, even names are not unique)! $M2$ under current official definitions is related most closely to the concept that Friedman and Schwartz call $M3$. Official estimates of $M2$ are available only for the period starting January 1959. HPS do not indicate how they construct their data back to January 1955 nor what $M2$ concept they mean in their reference to the pre-Accord behavior of $V2$.[4]

The conclusion reported by Gould and Nelson regarding the random walk character of $V2$ is supported by the research of Nelson and Plosser [1982] using annual data ending in 1970 (again the $M2$) concept is that of Friedman and Schwartz). In addition, Engle and Granger [1987] find only marginal evidence that ln $M2$ (new definitions) and lnGNP are co-integrated using quarterly data from 59,1 through 81,2. Co-integration of these variables is a necessary (but not sufficient) condition for $V2$ to exhibit the mean reversion property assumed by HPS.

The properties of V^* are critical to the P^* model because P^* is defined

[4] Rasche [1988]discusses the construction of a consistent $M2$ series on the current official definition from January 1948 through December 1958. I have used these estimates, plus the March 1989 revisions to the official $M2$ series, with the July 1989 revisions of the GNP estimates to construct a series on $V2$. The mean of $V2$ so constructed over the sample period 55,1 — 88,1 is 1.6525 compared with the mean of 1.6527 reported by HPS. I know of no data that permit estimates of the current official $M2$ concept prior to January 1948 because data for S&L shares prior to that data are rudimentary.

in terms of V^*:

$$P^* = (M2 \times V^*)/QPOT \tag{1}$$

where $QPOT$ is a measure of potential real output and $M2$ is *actual* $M2$. In terms of logs:

$$\ln P_t^* = \ln M2_t + \ln V^* - \ln QPOT_t \tag{2}$$

Since:

$$\ln P_t = \ln M2_t + \ln V2_t - \ln Q_t \tag{3}$$

where Q_t is actual real GNP, the "Price-Gap" which is the driving variable in the HPS inflation model is:

$$[\ln P_t - \ln P_t^*] = [\ln V2_t - \ln V^*] - [\ln Q_t - \ln QPOT_t] \tag{4}$$

By assumption the first term of the right hand side of equation (4) is the deviation of $V2$ from its sample mean. The second term is the deviation of actual real output from real potential output. They typical construction of real potential output imposes the condition that real output reverts to real potential output over the course of one or more business cycles, or alternatively that $[\ln Q_t - \ln QPOT_t]$ reverts to zero. Hence by construction $[\ln Q_t - \ln QPOT_t]$ typically is forced to exhibit transitory shocks to its level. Since $[\ln P_t - \ln P_t^*]$ is just the sum of these two terms, under the critical V^* assumption deviations of $\ln P_t$ from $\ln P_t^*$ revert to zero. Thus the V^* hypothesis establishes P^* as the equilibrium price level in the economy towards which the actual price level reverts.

HPS model the dynamics of this reversion process by their "Price-Gap" hypothesis:

$$\Delta INF_t = \alpha [\ln P_{t-1} - \ln P_t^*] + \sum_{i=1}^{4} \beta_i \Delta INF_{t-i} + \varepsilon_t \tag{5}$$

where $INF_t = \Delta \ln P_t$ measures the inflation rate. They attempt to justify this equation as a model of economic behavior based upon an inflation expectation mechanism. These assumptions are reminiscent of the attempts to construct an economic theory of the empirical Phillips curve relationship in the early 1960s. We know the Phillips curve broke down with the emergence of inflation in the late 1960s and 1970s because it was not based on economic behavior, but rather a reduced form that was specific to the inflationary experience of the 1950s and early 1960s. We should be equally concerned about the "Price-Gap" model.

An alternative interpretation is that the "Price-Gap" equation is not a model of economic behavior, but a model of the time series properties of $\ln P_t$ (or a reduced form model). It is known that the time series behavior of the quarterly GNP deflator is well described by an ARIMA(0,2,1) model where the estimated value of the single moving average parameter is on the order of $-.65$ [Rasche, 1987, table IV.1]. This process is:

$$\Delta INF_t = [\mu_t - .65\mu_{t-1}], \tag{6}$$

or in autoregressive representation:

$$\sum_{i=0}(.65)^i \Delta INF_{t-i} = \mu_t \tag{7}$$

or:

$$\begin{aligned} \Delta INF_t \;=\; & -.65\Delta INF_{t-1} - .42\Delta INF_{t-2} - .27\Delta INF_{t-3} \\ & - .18\Delta INF_{t-4} - \sum_{i=5}(.65)^i \Delta INF_{t-i} + \mu_t \end{aligned} \tag{8}$$

Note the similarity of the estimated lag coefficients in the HPS "Price-Gap" equation to the first four lag coefficients in equation (8). Since 88 percent of the coefficient weights in an infinite geometric distributed lag with a coefficient of .65 is achieved by lag 4, the fourth order autoregressive structure assumed by HPS in the "Price-Gap" equation will be an extremely close approximation to the infinite order AR structure of the ARIMA(0,2,1) model of $\ln P$. The only other difference is the inclusion of $[\ln P_{t-1} - \ln P^*_{t-1}]$ in equation (5), but not in equation (7). However, this term is an appropriate addition to the time series model in equation (7) under the V^* hypothesis. Under this hypothesis deviations of $\ln P_t$ from $\ln P^*_t$ are only transitory as argued above. HPS test and fail to reject this hypothesis. If, in addition, $\ln P_t$ is an ARIMA(0,2,1) model, then $\ln P_t$ and $\ln P^*_t$ satisfy the properties of co-integrated variables [Granger and Engle, 1987]. Under these conditions we know from the Granger Representation Theorem that the time series (reduced form) of $\ln P_t$ (and $\ln P^*_t$) is described by an error correction model of the form

$$\Delta INF_t = \sum_{i=1}^{n} \beta_i \Delta INF_{t-i} + \sum_{i=1}^{n} \alpha_i \Delta^2 \ln P^*_{t-i} + \Theta[\ln P_{t-1} - \ln P^*_{t-1}] + \varepsilon_t \tag{9}$$

Note that if we assume $\alpha_i = 0$ for all i, the error correction model for $[INF_t - INF_{t-1}]$ has the identical form to the "Price-Gap" equation.

There is no difficulty in using a correctly specified time series model of the inflation rate for forecasting purposes. However, some caution is required in using such an equation to investigate the outcomes of monetary policies that differ significantly from the way that the Federal Reserve has historically conducted monetary policy. Under such conditions the time series properties of the inflation rate could change considerably, and a model such as equation (9) or equation (5) would be inappropriate and inaccurate. The "Price-Gap" equation can be seriously affected by the "Lucas Critique" problem under such conditions.

The V^* – "Price-Gap" Model as a Model of Income Determination

At first glance, it is not apparent that the V^* – "Price-Gap" model offers an explanation of the impact of monetary policy on the economy. Clearly it is capable of predicting the impact of changes in $M2$ on nominal income, the price level and real output, but as Mickey Levy notes in his recent Congressional testimony, the model does not appear to link any of the important macro aggregates to anything directly under the control of the monetary authorities.[5]

Upon closer examination, it is clear that a link between the monetary base and economic activity is implicit in the assumptions of the V^* – "Price-Gap" model. It is well documented that the velocity of the monetary base is driven by permanent shocks to the level of the base, and does not exhibit a tendency to revert to trend. As a first approximation it is well characterized as a random walk (e.g., [Rasche, 1987, 1988]).

Base velocity and $M2$ velocity are related by the identity:

$$\ln VB - \ln MULT2 = \ln V2 \tag{10}$$

where VB is base velocity and $MULT2$ is the base multiplier for $M2$. It is also likely that the $M2$ multiplier is dominantly affected by permanent shocks to its level [Rasche and Johannes, 1987]. If the hypothesis that $V2$ reverts to its mean is correct, then $\ln VB$ and $\ln MULT2$ satisfy the definition of *co-integrated time series*.[6] The Granger Representation theorem

[5] "Economic Performance, Inflation and Monetary Policy," Subcommittee on Domestic Monetary Policy, Committee on Banking, Finance and Urban Affairs, U.S. House of Representatives, August 2, 1989.

[6] This is true regardless of whether $\ln MULT2$ is driven by permanent or transitory shocks to its level.

proves that there is an error correction model for all co-integrated variables. Hence the assumption that $\ln V2$ reverts to its mean is an assumption of the existence of an error correction model in $\ln VB$ and $\ln MULT2$. Estimates of such an error correction model are given in table I over the 55,1–88,1 sample period used in HPS.[7] Note that the maximum lag in the VAR is the log differences of VB and $MULT2$ is 2. A preliminary estimation was constructed with a lag length of 4, but all estimated coefficients of lags greater than 2 were insignificant. When the lag length is truncated at 2 all autocorrelation coefficients up to order 4 are less than .09 in absolute value, so there is no apparent evidence of significant serial correlation in the residuals of this specification. The error correction model includes both a constant and a dummy variable (D82) which is zero through 81,4 and 1.0 thereafter. The latter variable is included because of the strong evidence in the "shift in the drift" in base velocity in late 1981 [Rasche, 1987, 1988]. The equations for $\ln VB$ and $\ln MULT2$ are estimated by generalized least squares and the cross equation differences of the estimated constants and the estimated coefficients of D82 are constrained to zero. This is required to be consistent with the assumption that $\ln V2$ reverts to its mean and does not exhibit any trend [Engle and Yoo, 1987]. The estimated constant and the estimated coefficient on D82 are constrained to sum to zero, since there is substantial evidence that there is no drift in base velocity after 1981. These three restrictions are not rejected by the data.

The significance of the estimated coefficients on the lagged deviations of $\ln V2$ from its sample mean ($QV2D_{t-1}$) in both of the equations in table I is another test of the hypothesis that $V2$ reverts to its mean. The t-ratios on these coefficients are -1.41 and 3.02, respectively. Once again, the evidence for the $V2$ hypothesis is mixed: it is strongly supported in the base multiplier error correction equation, but is rejected in the base multiplier equation.

For a given path of the monetary based established (explicitly or implicitly) by the Federal Reserve, the error correction model of $\ln VB$ forecasts the resulting path of nominal GNP. For the same path of the monetary base, the error correction model for $\ln MULT2$ forecasts the resulting path of $M2$. Both forecasts are constrained by the assumption that $V2$ reverts to its mean by the structure of the error correction process. Thus, the V^* model is implicitly a model of nominal income driven by the monetary base.

[7]The Monetary Base data are those for the St. Louis Federal Reserve Bank Adjusted Monetary Base as published in August 1989. The GNP and $M2$ data are those described above.

The error correction model is an explicit reduced form representation of that implicit model.

The forecast of $M2$ from the $M2$ multiplier model and the path of the monetary base can be combined with the estimate of V^* and the value of potential output to produce a forecast of P^*. This forecast of P^* can be used with the HPS "Price-Gap" hypothesis to generate forecasts of the path of the price level and inflation. The forecast path of real GNP is then determined as the residual component of nominal GNP through the identity:

$$\ln Y - \ln P = \ln Q \tag{11}$$

where Y is nominal GNP and Q is real GNP.

The structure, though not the equations, of the V^* – "Price-Gap" model is closely related to the structure of the old "St. Louis Model" [Andersen and Carlson, 1970].

Our data closely replicate the estimates of the OLS "Price-Gap" equation reported by HPS. For the sample period 55,1–88,1 our estimates are:

$$\begin{aligned} \Delta INF_t = &-.030[\ln P_{t-1} - \ln P^*_{t-1}] - .643\Delta INF_{t-1} - .445\Delta INF_{t-2} \\ &\quad (.008) \qquad\qquad (.085) \qquad\quad (.098) \\ &-.262\Delta INF_{t-3} - \quad .077\Delta INF_{t-4} \quad \overline{R}^2 = .307 \\ &\quad (.097) \qquad\qquad (.080) \qquad\quad se = .00392 \end{aligned} \tag{12}$$

We have estimated all three stochastic equations of the income determination model (the two error correction equations and the "Price-Gap" equation) by generalized least squares. The resulting estimates are given in table II. The estimates in table II can be used in several ways. First, we can investigate the in-sample and post-sample (88,2-89,2) accuracy of the model given the historical behavior of the monetary base. Second, we can construct forecasts for 89,3–91,4 based on assumed values for real potential output and the monetary base. We assume real potential output will follow a 2.5 percent annual trend rate over this entire period.[8] We have assumed the following annualized growth rates for the monetary base to be consistent with Jerry Jordan's assumptions for this meeting:

[8] For the sample period 83,1–88,4 a regression of $\ln QPOT$ on a constant and a time trend yields the following result:

$$\ln QPOt_t = 7.242605 + .06235406$$

with an R^2 of 1.00.

Quarter	Base Growth Rate
89,3	3.0
89,4	4.3
90,1	4.8
90,2	6.0
90,3	5.5
90,4	5.0
91,1	5.0
91,2	5.0
91,3	5.0
91,4	5.0

Finally, we can investigate the behavior of the model under a variety of assumed rules for the behavior of the monetary base. In particular, we can compare constant growth rules for the monetary base at various rates and the behavior of the model under a Meltzer-McCallum type feedback rule in response to fluctuations in base velocity.

Historical Accuracy of V^* – "Price-Gap" Income Determination Model

Some characteristics of the model accuracy during the in-sample and recent post-sample periods is presented in the attached figures for the growth rate of the monetary base, nominal GNP, the inflation rate, the price level, and real GNP. These figures show the (static) model errors for the estimation period (55,1–88,1) and the immediate post-sample period (88,2–89,2). The velocity growth graph illustrates the *residuals* of the first equation in table II. These residuals are exactly the forecast errors for the growth rate of nominal GNP (and the level of nominal GNP), since the path of the monetary base is taken to be exogenous. The graph of the inflation rate forecasts shows the errors from the third ("Price-Gap") equation in table II.

The important post-sample characteristic of these graphs is that the base velocity equation does not pick up the upward drift that has occurred in 1988–1989. During the five post-sample quarters, the mean error in base velocity growth is 2.5 percent (annual rates) which is significantly different from zero (t-ratio = 3.16). The residuals of the inflation equation on the other hand, are not significantly different from zero.

We have constructed a forecast from the equations in table II over the period 88,2–89,2 given the assumed path for the monetary base given above.

The projections are as follows:

(All At Annual Rates)

Quarter	Nominal GNP Growth	Real GNP Growth	Inflation
89,3	2.70	-1.63	4.33
89,4	3.60	-.56	4.16
90,1	3.90	-.14	4.04
90,2	5.18	1.29	3.89
90,3	4.98	1.15	3.83
90,4	4.72	.99	3.73
91,1	4.90	1.30	3.60
91,2	5.02	1.53	3.49
91,3	5.07	1.71	3.36
91,4	5.10	1.84	3.26

Taken literally this model forecasts a recession beginning with the current quarter, since there are three quarters for which real GNP growth is forecast to be negative. This is probably unduly pessimistic an interpretation, since $-.56$ and $-.14$ percent real GNP growth is not likely to be significantly different from zero.

More significant is the very slow real growth that is forecast over the entire period through the end of 1991. This is substantially the implication of the assumption of the mean reversion characteristic of $M2$ velocity and the initial condition of mid-1989. In the second quarter of 1989 $M2$ velocity according to current estimates is 1.6902 compared with the assumed value of V^* of 1.6525. Thus under the initial conditions for this forecast $M2$ velocity is approximately 2.25 percent *above* its assumed equilibrium value. The assumption built into the model is that $M2$ velocity will decline toward this equilibrium value (which it does steadily throughout the forecast period to achieve a value of 1.661 by the end of 1991). In the early part of the forecast period, this decline in $M2$ velocity is accomplished by a negative growth rate in base velocity given the structure of the estimated error correction model. In the latter part of the forecast period the reversion of $M2$ velocity to its assumed equilibrium value is accomplished by positive growth in the $M2$-monetary base multiplier with virtually no change in the base velocity. Thus in the early portion of the forecast period, the assumption of mean reversion of $V2$ holds forecast nominal income growth below the assumed growth rate of the monetary base; in the latter part of the forecast period nominal income growth follows base growth quite closely.

The structure of the "Price-Gap" equation implies that there is considerable inertia in the adjustment of the actual inflation rate. The assumption that base growth will stabilize at a 5.0 percent implies that the equilibrium growth rate of nominal income is 5.0 percent. With the assumed trend in real potential output of 2.5 percent, the structure of the three equations in table II implies that ultimately the inflation rate will revert to 2.5 percent under these conditions. Thus a slow decline in the inflation rate toward 2.5 percent is projected by the model.

Above all, it should be remembered that these forecasts are very imprecise. The R^2 of the base velocity equation in table II is quite small (.14) and the estimated standard error of the growth rate of base velocity during the sample period is in excess of 4.0 percent at annual rates. I had hoped to present the results of stochastic simulations of the entire model over the forecast period to show some estimated confidence errors for these forecasts, but a computer software bug has foiled these efforts to date.

There is probably room for substantial improvement in the quality of these forecasts. Substantial reductions in the standard error of the residuals of monetary base velocity equations can be accomplished by allowing for a feedback from changes in interest rates and the growth rate of real income [Rasche, 1988]. It is possible to modify the error correction model in table II to allow for such effects. Most important, however, is to establish beyond reasonable doubt the validity of the mean reversion hypothesis of V^2. If this can be ascertained, then this line of research can have considerable potential; if it is false the basic structure of the model is critically flawed.

Table I

DEPENDENT VARIABLE ΔlnQVB
FROM 55: 1 UNTIL 88: 1

NO.	LABEL	VAR	LAG	COEFFICIENT	STAND. ERROR	T-STATISTIC
1	CONSTANT	0	0	.3480809E-02	.7200136E-03	4.834365
2	D82	1	0	-.3480809E-02	.7200136E-03	-4.834365
3	ΔlnVB	18	1	.2280595	.8279808E-01	2.754406
4	ΔlnVB	18	2	-.3910711E-01	.8475201E-01	-.4614298
5	ΔlnMULT2	19	1	-.1151299	.1443930	-.7973374
6	ΔlnMULT2	19	2	.3590652	.1452109	2.472715
7	QV2D	14	1	-.4124354E-01	.2921858E-01	-1.411552

R^2 .181 $\bar{R}^2$ .142
SEE .103E-01 DURBIN-WATSON 2.005

Q(33)= 28.8569 SIGNIFICANCE LEVEL .67

Estimated Residual Autocorrelations

1	2	3	4
-.045855	-.008085	-.039172	-.029918

DEPENDENT VARIABLE ΔlnMULT2
FROM 55: 1 UNTIL 88: 1

NO.	LABEL	VAR	LAG	COEFFICIENT	STAND. ERROR	T-STATISTIC
8	CONSTANT	0	0	.3480809E-02	.7200136E-03	4.834365
9	D82	1	0	-.3480809E-02	.7200136E-03	-4.834365
10	ΔlnVB	18	1	-.6333032E-01	.4684530E-01	-1.351904
11	ΔlnVB	18	2	-.1086692	.4794321E-01	-2.266624
12	ΔlnMULT2	19	1	.4387845	.8181721E-01	5.362986
13	ΔlnMULT2	19	2	.1836402	.8159270E-01	2.250694
14	QV2D	14	1	.4888616E-01	.1616503E-01	3.024193

R^2 .42 $\bar{R}^2$ .40
SEE .562E-02 DURBIN-WATSON 1.94

Estimated Residual Autocorrelations

1	2	3	4
.011620	-.014840	.056297	-.072790

Q(33)= 34.7542 SIGNIFICANCE LEVEL .38

Restrictions: CHI-SQUARE(3) = 5.22 SIGNIFICANCE LEVEL .156

Table II

DEPENDENT VARIABLE ΔlnVB
FROM 55: 1 UNTIL 88: 1

NO.	LABEL	VAR	LAG	COEFFICIENT	STAND. ERROR	T-STATISTIC
1	CONSTANT	0	0	.3400168E-02	.7181057E-03	4.734912
2	D82	1	0	-.3400168E-02	.7181057E-03	-4.734912
3	ΔlnVB	18	1	.2203893	.7867077E-01	2.801413
4	ΔlnVB	18	2	-.1445296E-01	.8050591E-01	-.1795268
5	ΔlnMULT2	19	1	-.4979653E-01	.1361809	-.3656645
6	ΔlnMULT2	19	2	.3225544	.1366344	2.360711
7	QV2D	14	1	-.4910907E-01	.2848073E-01	-1.724291

R^2 .18 $\bar{R}^2$ .14
SEE .103E-01 DURBIN-WATSON 1.98

Q(33)= 28.1136 SIGNIFICANCE LEVEL .71

Estimated Residual Autocorrelations

1	2	3	4
-.034685	-.022528	-.025436	-.029907

DEPENDENT VARIABLE ΔlnMULT2
FROM 55: 1 UNTIL 88: 1

NO.	LABEL	VAR	LAG	COEFFICIENT	STAND. ERROR	T-STATISTIC
8	CONSTANT	0	0	.3400168E-02	.7181057E-03	4.734912
9	D82	1	0	-.3400168E-02	.7181057E-03	-4.734912
10	ΔlnVB	18	1	-.6101330E-01	.4675357E-01	-1.304998
11	ΔlnVB	18	2	-.1099130	.4784931E-01	-2.297065
12	ΔlnMULT2	19	1	.4341700	.8162360E-01	5.319172
13	ΔlnMULT2	19	2	.1898260	.8139773E-01	2.332080
14	QV2D	14	1	.4974711E-01	.1614885E-01	3.080536

R^2 .42 $\bar{R}^2$ .40
SEE .562E-02 DURBIN-WATSON 1.93

Q(33)= 34.9213 SIGNIFICANCE LEVEL .38

Estimated Residual Autocorrelations

1	2	3	4
.015675	-.018003	.054273	-.072068

Table II, Continued

DEPENDENT VARIABLE ΔINF
FROM 55: 1 UNTIL 88: 1

NO.	LABEL	VAR	LAG	COEFFICIENT	STAND. ERROR	T-STATISTIC
15	QDIFP	23	1	-.3088223E-01	.7363251E-02	-4.194103
16	ΔINF	20	1	-.6766859	.7875914E-01	-8.591840
17	ΔINF	20	2	-.4735397	.9071340E-01	-5.220174
18	ΔINF	20	3	-.2904600	.8908796E-01	-3.260373
19	ΔINF	20	4	-.1189892	.7326262E-01	-1.624146

R^2 .33 $\bar{R}^2$ .31
SEE .393E-02 DURBIN-WATSON 1.94

Q(33)= 26.7781 SIGNIFICANCE LEVEL .77

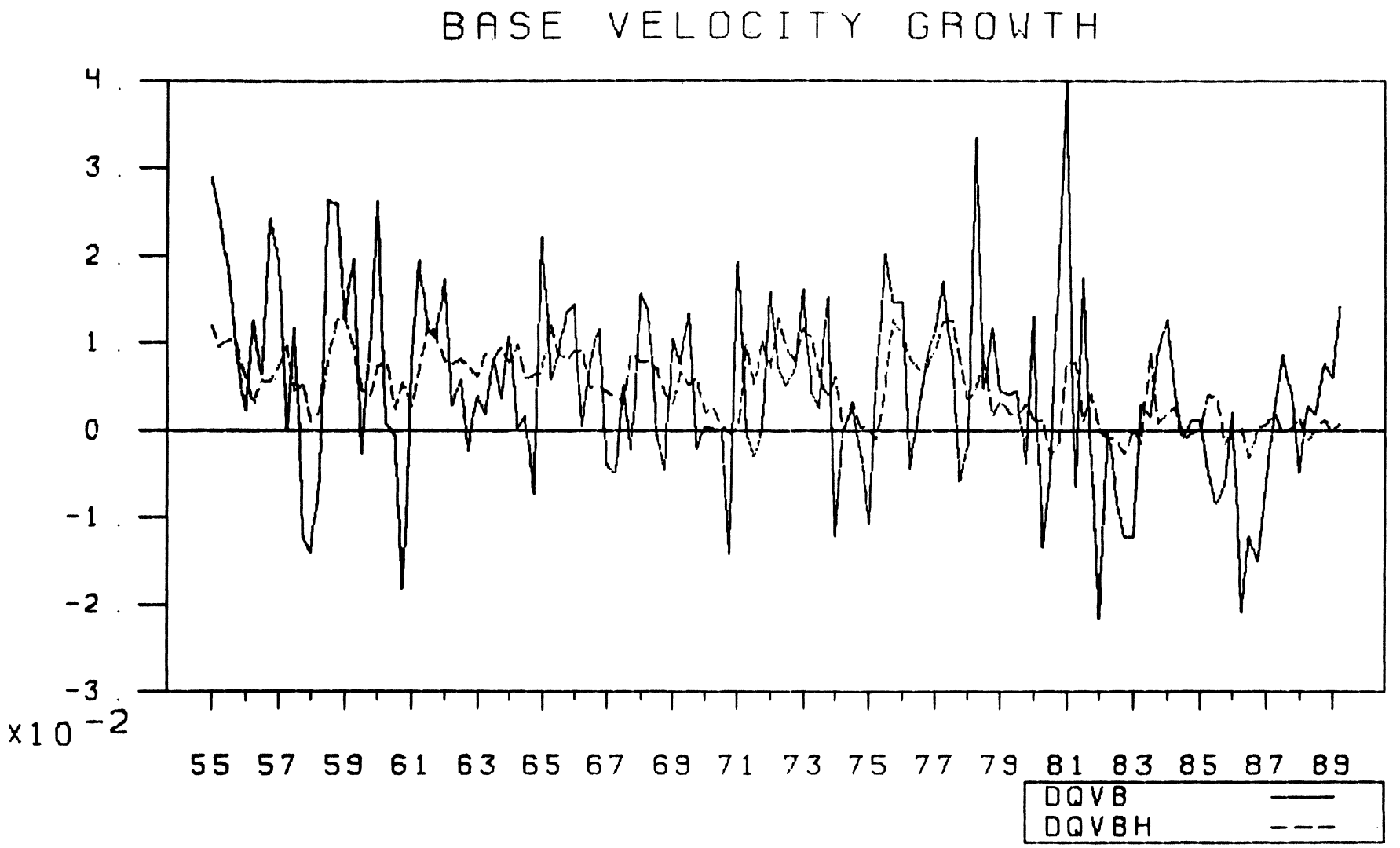
Estimated Residual Autocorrelations

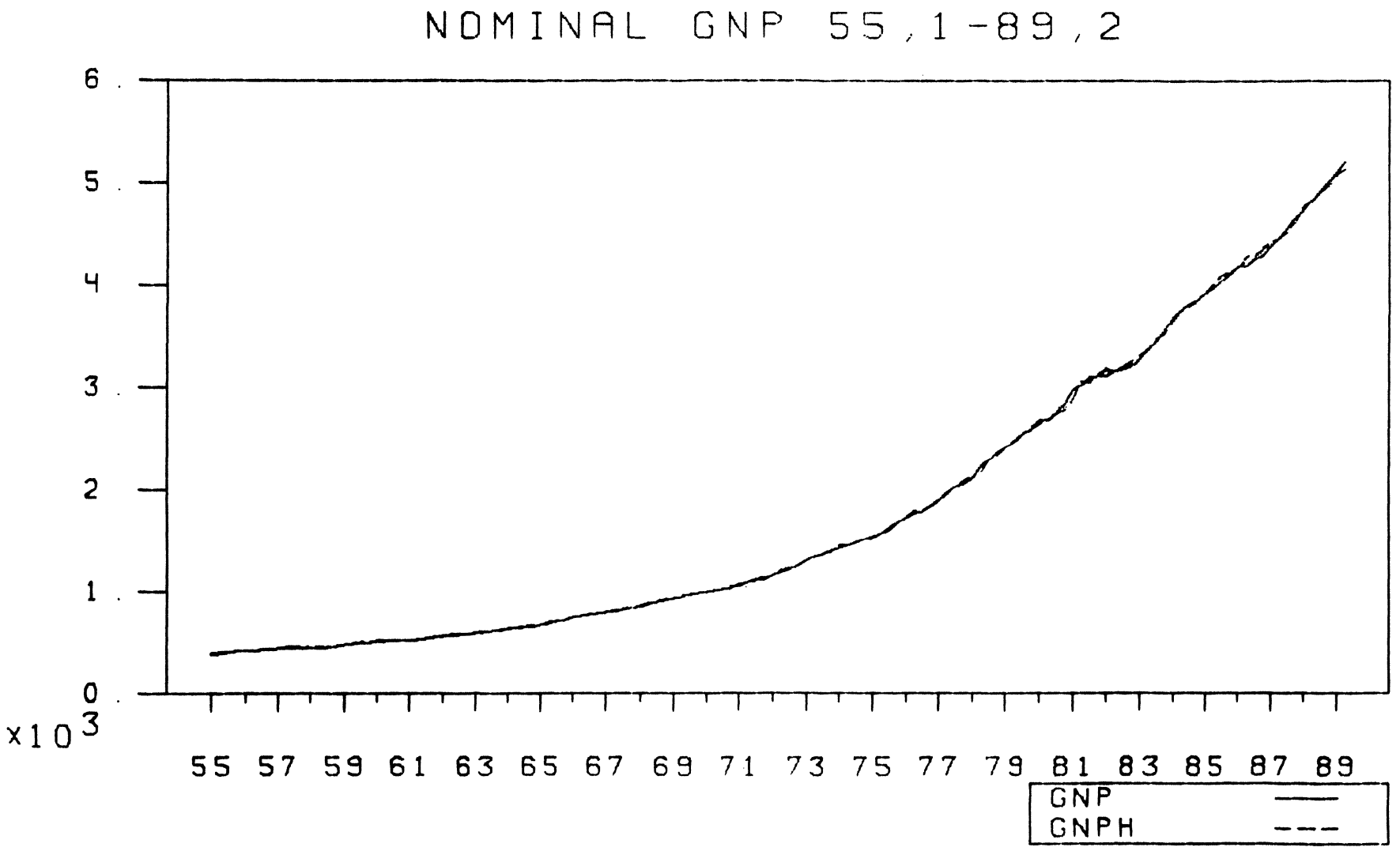
1	2	3	4
.013686	.002958	-.007391	-.057763

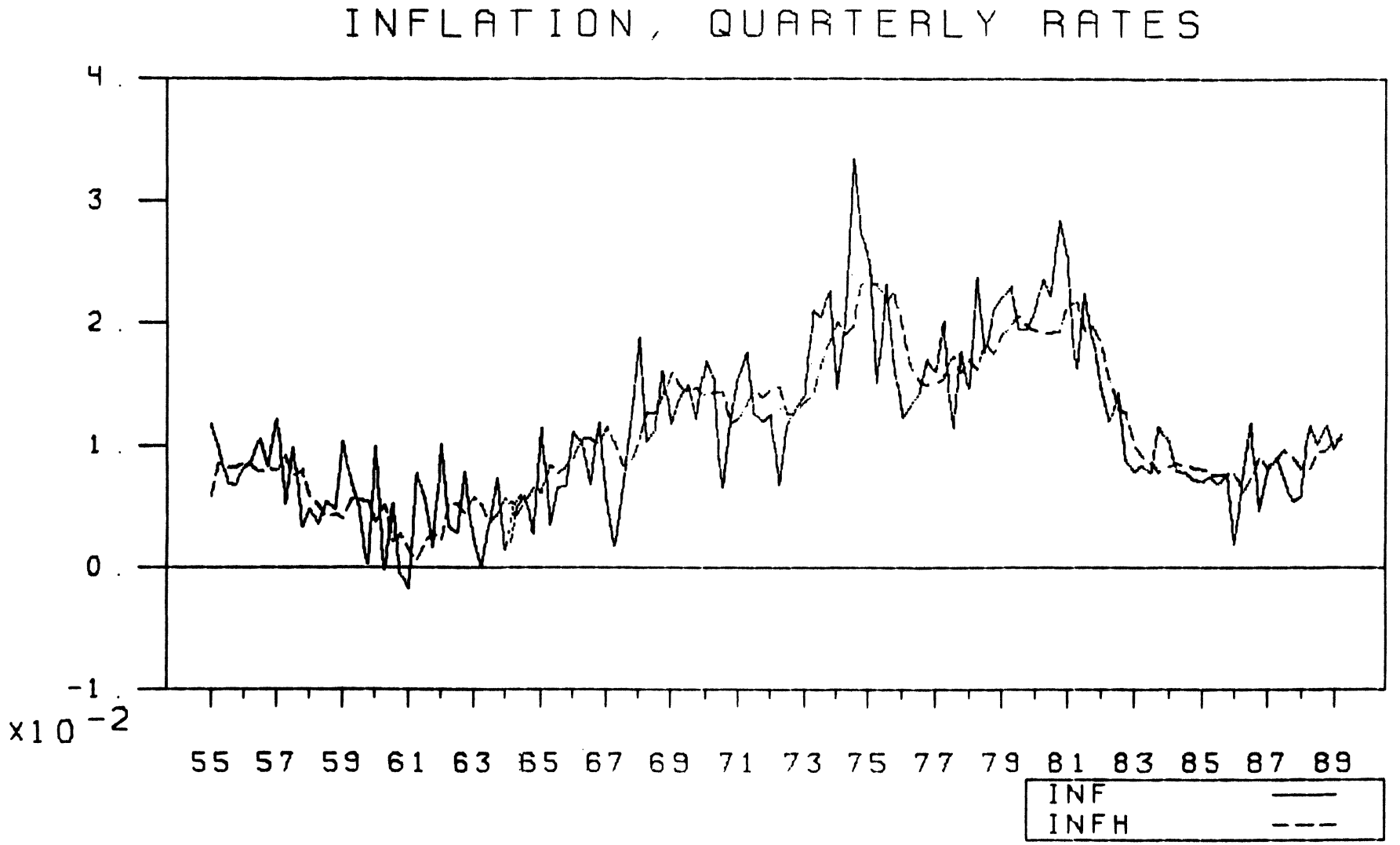
Restrictions: CHI-SQUARE(3) = 3.17 SIGNIFICANCE LEVEL .37

COVARIANCE MATRIX OF RESIDUALS

VARIABLE	ΔlnVB	ΔlnMULT2	ΔINF
ΔlnVB	.10136E-03	.15977	.38219
ΔlnMULT2	.87926E-05	.29881E-04	-.75613E-01
ΔINF	.14818E-04	-.15917E-05	.14830E-04


BASE VELOCITY GROWTH
4
3
2
1
0
-1
-2
-3
X10 -2
55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89
DQVB
DQVBH


NOMINAL GNP 55.1-89.2
6
5
4
3
2
1
0
x10 3
55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89
GNP
GNPH


INFLATION, QUARTERLY RATES
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2
1
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-1
x10 -2
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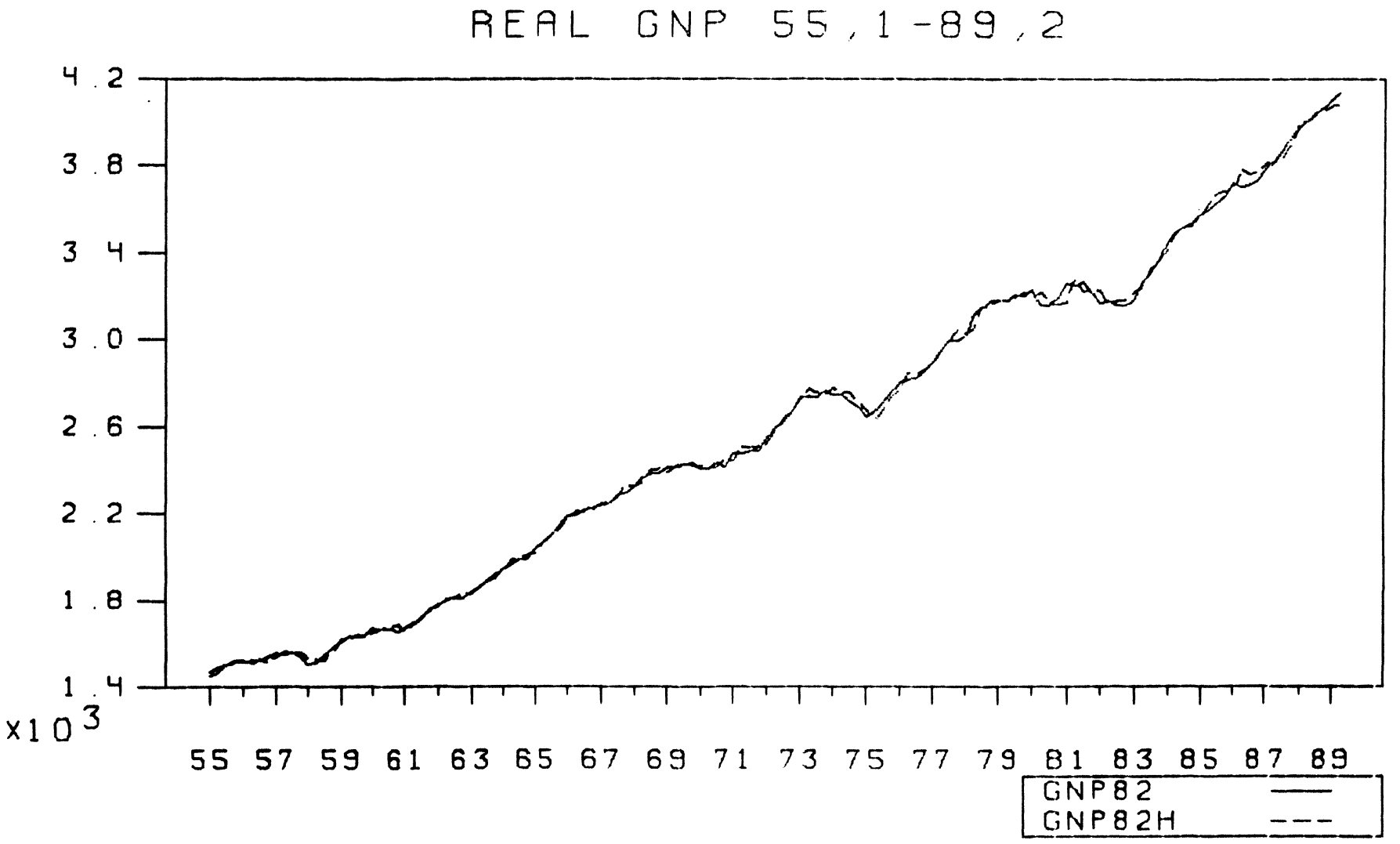
INF
INFH


REAL GNP 55.1-89.2
4.2
3.8
3.4
3.0
2.6
2.2
1.8
1.4
x10 3
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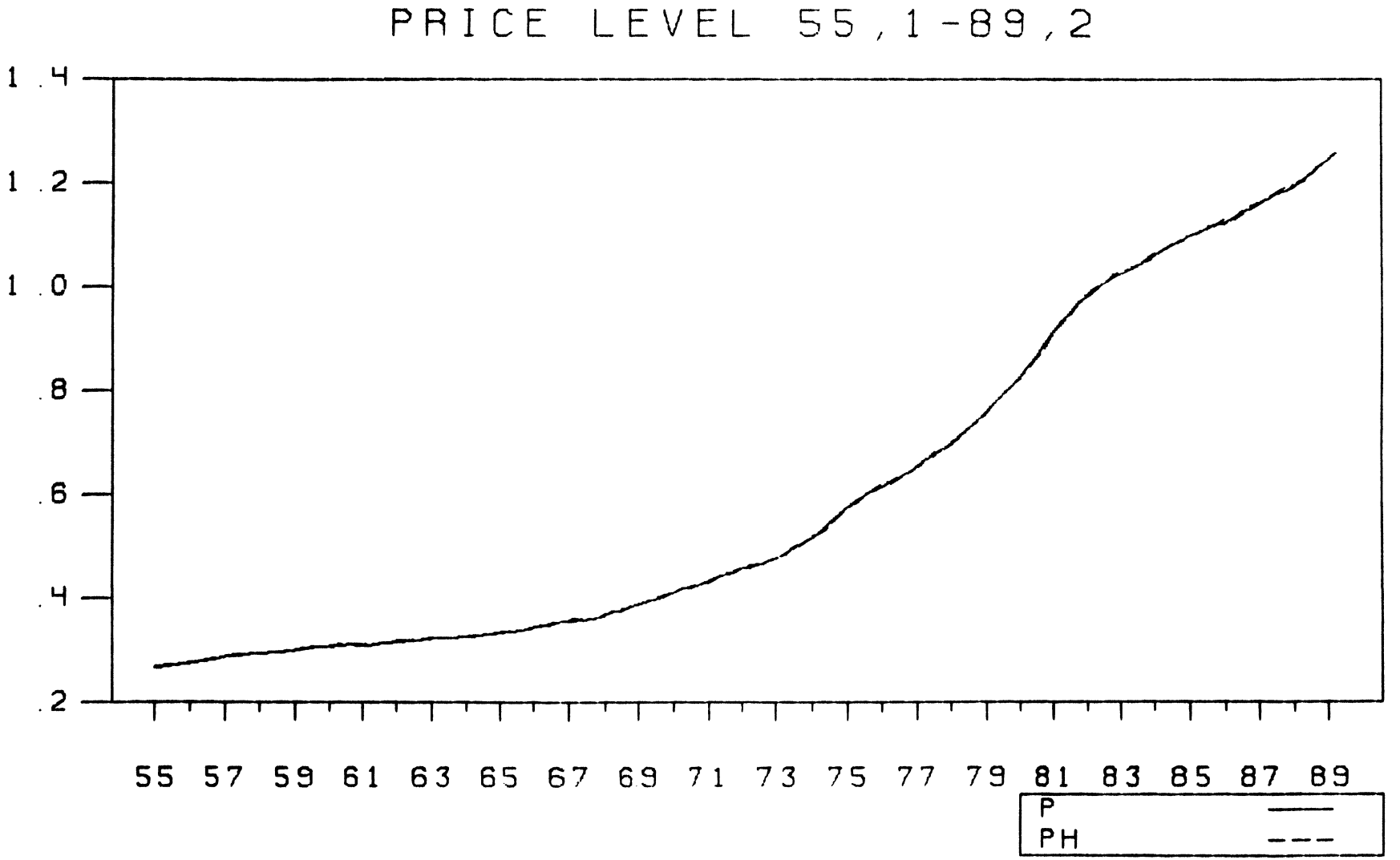
GNP82
GNP82H


PRICE LEVEL 55,1-89,2
1.4
1.2
1.0
.8
.6
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References

Andersen, and Carlson (1970).

Engle, R. and C. Granger (1987), "Forecasting and Testing in Co-Integrated Systems," *Journal of Econometrics*, 35, 143–59.

Friedman, M. and A. Schwartz (1963), *A Monetary History of the United States*, Princeton University Press.

Gould, J. and C. Nelson (1974), "The Stochastic Structure of the Velocity of Money," *American Economic Review*, 64 (june), 405–18.

Nelson, C. and C. Plosser (1982), "Trends and Random Walks in Macroeconomic Time Series," *Journal of Monetary Economics*, 15, 139–62.

Rasche, R. (1988), "Demand Functions for U.S. Money and Credit Measures." forthcoming.

Rasche, R. (1987), "M1-Velocity and Money Demand Functions: Do Stable Relationships Exist?," in K. Brunner and A. Meltzer (eds.), *Empirical Studies of Velocity, Real Exchange Rates, Unemployment and Productivity*, Carnegie-Rochester Conference Series on Public Policy, North-Holland, 9–88.

Rasche, R. and J. Johannes (1987), *Controlling the Growth of Monetary Aggregates*, Kluwer Academic Publishers.

U.S. Monetary Authorities' Foreign Currency Purchases

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Federal Reserve and Treasury combined foreign currency holdings totaled $34 billion at the end of July 1989, the latest reporting date. In the thirteen months since June 1988, the monetary authorities have increased by $23.2 billion their reserves of foreign currencies, mainly yen and D-marks. In months other than November and December 1988, when foreign currency holdings declined by $2.2 billion, substantial increases were reported.

Regulation *N* is the Federal Reserve's authority for foreign currency purchases. It authorizes the FOMC to direct any Federal Reserve Bank to "carry on or conduct through any other Federal Reserve Bank which maintains an account with a foreign bank, any open market transactions authorized by section 14 of the Federal Reserve Act."

At each meeting of the FOMC, it issues two separate authorizations to the Federal Reserve Bank of New York to execute transactions for the System Open Market Account, one for Domestic Operations and one for Foreign Currency Operations. It also issues two directives, a domestic policy and a foreign currency directive.

The authorization for foreign currency operations in effect January 1, 1977, authorized an over-all open position in all foreign currencies not exceeding $1 billion. That amount after repeated increases stood at $12 billion at the beginning of 1988.

Three questions arise:

1. Why are the authorities engaged in foreign currency purchases of this magnitude?

2. Has the exercise achieved its objective?

3. What costs do the purchases portend for the economy?

• **The answer to the first question is that the authorities buy foreign currencies when they want to prevent dollar appreciation. Ten years ago foreign currency reserves were $3.8 billion, so the current figure represents almost a ten-fold increase, far more than the increase in the Federal Reserve portfolio of assets over that time span. In 1979, Federal Reserve assets totaled $160 billion. Currently they total $285 billion.**

• **The answer to the second question is that foreign current purchases have not achieved their objective, judged by the change in the dollar-mark**

and dollar-yen exchange rates over the thirteen months since June 1988. The exchange rate for the D-mark has risen from 1.758 to approximately 1.96, for the yen, from 127.5 to approximately 1.44. The reason intervention has been ineffective is that Federal Reserve policy has sterilized its monetary effects. This is so whether intervention has involved currency purchases or sales.

In November–December 1988, for example, when the U.S. sold marks and yen to prevent dollar depreciation, the exchange rate for the D-mark declined from 1.816 to 1.756 and for the yen, from 128.7 to 123.6.

When the Federal Reserve buys foreign currencies, it sterilizes the purchase by selling domestic assets to maintain the money supply unchanged from what it would otherwise have been. When it sells foreign currencies, it sterilizes the sale by buying domestic assets to maintain the money supply at the level that it would otherwise have been.

What determines exchange rate fluctuations are differences in relative rates of money growth of central banks. The differences in money growth rates produce different inflation rates. The differences in inflation rates in turn produce either exchange rate depreciation or appreciation.

Since early 1987, with the possible exception of the months at the turn of 1988, the Federal Reserve has been restrictive in permitting monetary growth; Japan and West Germany on the whole have been expansionary. Monetary policy has been expansionary in those countries because they have engaged in exchange rate intervention in the attempt to prevent dollar depreciation. Their central banks have bought dollars that they did not fully sterilize. As a result monetary growth has accelerated there.

As a result of these differences in monetary growth rates, inflation rates have been restrained in the United States and resurgent in the other countries, with the expected consequences for exchange rates. Central bank intervention in exchange markets has been a pointless activity with some costs.

• Thirdly, for this country at least two costs may be noted. One is an increase in exchange rate volatility related to the episodic intervention not only by the monetary authorities here but also that undertaken on behalf of other central banks. In addition, the taxpayer bears a double pecuniary loss.

One aspect of the loss is related to the Fed's sterilization activity. It offsets open market purchases of foreign currency with open market sales of Treasury and federal agency obligations. The monetary base grew by $10 billion from June 1988 to May 1989. The net change in the System

Open Market Account over the period was a decline of $7 billion. Interest payments to the Treasury by the Federal Reserve have accordingly been reduced. That is one part of the loss sustained by taxpayers.

The other aspect of the loss is related to growing exchange rate risk to which the taxpayer is exposed as foreign currency assets held by the Federal Reserve and the Treasury balloon.

In 1987 the loss on foreign exchange rate transactions by the Federal Reserve was $146 millon. In 1988, the last year for which information is available, the loss was $511 million.

Which Committee of the Congress is paying attention to these losses?

Issues in Foreign Investment in the United States

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The United States exported capital almost every year from World War I to 1970. In the 1970s capital flowed out some years and in others. From 1982 to the present capital flowed in every year, and the inflows have been very large from an historical perspective.

Is the United States better off or worse off as a result of these flows? This question cannot be answered in simple fashion; an answer requires that we specify what might have been different to yield a different result on international capital flows. We surely would have been worse off, for example, if capital had fled the United States because the inflation rate had accelerated and taxes on capital had risen. We surely would have been better off if vigorous growth in Latin America had kept capital from fleeing that part of the world for the safe haven of the United States. I take up some of these macroeconomic issues in the second major section of this position paper.

I begin, however, with a discussion of microeconomic issues. These issues arise even when net capital flows are zero. The net flow is the difference between capital going out and capital coming in. Capital coming in purchases U.S. assets, and some observers are concerned about foreign ownership of U.S. assets regardless of the amount of foreign assets owned by U.S. residents.

Following these two sections on the microeconomic and macroeconomic aspects of foreign investment in the United States I discuss constraints on U.S. policy from foreign investment.

Microeconomic Aspects of International Investment

In the 1980s the United States generally pursued pro-growth investment policies. The Economic Recovery Tax Act of 1981 reduced taxes on the earnings from new business investment, although at the cost of introducing some distortions in the type of investment favored. The Tax Reform Act of 1986 unwisely raised taxes on earnings from new business investment, but reduced disparities in taxation of different types of investment. There were only minor gains in reducing regulatory burdens in the 1980s, but at least the rapid growth of such burdens in the 1960s and 1970s was halted. There has been a major improvement in the inflationary environment; although the current inflation rate of 4–5 percent is too high, the outlook for

the level and stability of the rate of inflation is greatly improved over the 1970s. Reduced cyclical instability has important microeconomic benefits for investment through reduction in risk.

Net flows of capital internationally are the result of macroeconomic conditions, which are discussed in the next section. The gross flows of foreign investment into the Untied States and of U.S. capital abroad are themselves important regardless of the net flows. In 1988, for example, U.S. assets abroad rose by $82 billion while foreign assets in the United States rose by $219 billion. Some would be concerned about foreign capital coming to the United States even if the net flow were zero. That is, issues arise from foreign ownership of land and reproducible capital in the United Sates and of U.S. financial assets independently of the size of such assets relative to U.S. owned assets abroad.

Some reactions in the United States today are quite similar to reactions abroad in the years following World War II. Countries receiving U.S. capital were not always overjoyed; the response was sometimes "Yankee go home." In the 1950s and 1960s U.S. observers argued that it was in the interest of other countries to accept U.S. capital. United States firms brought new products, new technologies, and new methods of management to foreign markets. Competition from U.S. subsidiaries abroad forced local firms to improve efficiency. The result was lower costs for foreign consumers of products produced by both U.S. subsidiaries and local firms. United States firms abroad hired many foreign nationals, providing both employment and training not available from local firms.

Why should the United States be receptive to foreign capital? The arguments are identical to those we have so long offered foreigners concerned about U.S. investment abroad. Foreign subsidiaries in the United States bring new products, new technologies, and new methods of management. Competition from foreign subsidiaries is forcing U.S. firms to improve efficiency and has lowered prices for U.S. consumers. Foreign firms hire many U.S. residents providing employment and training not available from local firms. United States subsidiaries of foreign firms are challenging U.S. firms with entrenched oligopolistic positions. It is worth pointing out that in some industries — the automobile industry is an excellent example — foreign firms first entered U.S. markets by exporting goods produced abroad to the United States, but then found that U.S. protectionism eliminated prospects of further growth in their U.S. sales.

Protectionism, of course, flows from the political power of firms and their workers, who are often unionized in oligopolistic manufacturing industries.

Thus, foreign direct investment challenges the economic and political power of entrenched U.S. firms and their unions to the benefit of U.S. consumers. Does anyone doubt that U.S. consumers are better off by virtue of their access to Japanese cars? One year's worth of foreign direct investment in the United States is worth fifty years of federal antitrust cases in terms of increasing the competitiveness of U.S. markets. The process works both ways; U.S. firms operating abroad have increased the competitiveness of foreign markets to the benefit of both foreign consumers and U.S. investors who have profited from entering new markets.

Macroeconomic Aspects of International Investment

In a well-functioning economy there is no necessary relation between the geographic location of saving and the geographic location of investment in newly-constructed physical facilities. This proposition holds for a national economy and for the world economy. Individuals and firms save — consume less than their incomes — for a variety of reasons but where they invest is determined primarily by the prospective return on investment after allowing for risk. For any given individual (or business) saver the problem may involve decisions as to what *financial* assets to buy but ultimately we need to trace the use of the funds raised back to the *physical* investments they finance.

From the perspective of the investor it may matter little whether an investment involves newly-constructed physical facilities or facilities constructed at some prior time. However, for the economy as a whole we must distinguish between new construction and changes of ownership of existing assets. When owners of assets sell them and consume the proceeds the issue involves *saving* behavior rather than investment behavior. When the owners reinvest the proceeds in newly-constructed facilities we are back to an investment issue.

The geographic location of investment is determined in some cases by natural advantages such as the availability of mineral resources. There is no surprise when we see investment in coal mines in West Virginia rather than in Rhode Island. But most investment today is determined by man-made advantages and disadvantages. These conditions, which involve political stability, taxes, regulations, the labor climate, and so forth determine the return on investment and its riskiness. Conditions in one region relative to another determine the regional distribution of investment of the total world supply of saving.

In the 1980s U.S. domestic investment has exceeded U.S. saving, with the

difference reflecting inflow of capital from abroad. The difference between U.S. investment and saving is sometimes referred to as an investment-saving "imbalance," but that term is very misleading as it implies that the "correct" or "normal" situation is for the geographic location of investment to match the geographic location of saving. No one expects such a match across regions within the United States, and there is no reason to expect such a match across countries either.

What conditions explain net international capital flows in the 1980s? Although improvement in the U.S. investment climate has been important, deterioration of investment climates in many nations abroad has probably been even more important. The United States traditionally exported large amounts of capital to Latin America, but those exports came to an end with the debt crisis in 1982. Many Latin American countries have become capital exporters instead of importers as they have struggled to service debts accumulated in prior years and as private capital fled poor investment climates. The investment climate in Europe has not been robust, as most of the region has experienced low growth and chronically high unemployment. In Japan a high saving rate has outrun the country's capacity to generate profitable internal investment opportunities.

In previous SOMC meetings I provided charts comparing saving and investment rates as percentages of Gross Domestic Product in the 1980s with earlier years for the United States, Japan, and OECD Europe. These charts document the point that investment rates have declined abroad. The other important development in this context in the 1980s is that the saving rate in the United States has declined. Declines in U.S. saving and in investment abroad are not desirable, although the decline in Japan's investment rate was no doubt inevitable given how high this rate has been. But these simple facts make clear that the key issue for U.S. policy is the U.S. saving rate; it is simply foolish to argue that foreign investment in the United States per se is a problem.

If the U.S. rate of return is higher it makes sense for capital to flow to the Untied States regardless of how much capital is already here. We would hope, of course, that capital would flow from capital-rich areas to capital-poor areas where returns are *potentially* very high. Unfortunately, many capital-poor areas have very low or negative *actual* returns because their economies are so screwed up through political instability and/or statist policies. It is in the political and economic interest of the Untied States to improve economic conditions abroad but many of the problems are simply beyond U.S. influence. We have no choice but to take as given conditions

we can do nothing about, and if that means that capital flows to the United States where the return on capital is positive rather than to poor countries where the return is negative, then so be it. It is better to get some return on capital than to throw it away.

If the United States were to scare off foreign investment without increasing its saving rate the inevitable result is a decline in U.S. domestic investment — reduced construction of new houses, new plant, and new equipment. Consider plant and equipment. This physical capital earns a rate of return that the U.S. must forego if the capital is not put in place. Of course, much of the return must be paid to the foreigners who made the investment, but in general some of the return is left over for the United States. Of special importance is the fact that a larger capital stock raises the marginal product of labor, raising real wages in the United States.

Suppose the United States were to be successful in raising its saving rate. Would that then justify restricting inflows of capital? The answer is clearly "no." Whatever may be the U.S. saving rate the issue is still the rate of return on investment in the United States relative to that abroad.

Depending on *how* the Untied States were to manage to increase its saving rate, the U.S. rate of return on investment could be either higher or lower than before. The critical issue in this context is that tax increases to reduce the federal deficit could reduce the after-tax rate of return on U.S. investment. Such action would be counterproductive given that the purpose of raising U.S. saving is to increase the amount of capital available in the future.

Another way to look at this matter is to note that the same conditions that determine the return on investment to investors determine the return on investment to the economy as a whole, and therefore the economy's rate of growth. Returns to the investor and to the economy are obviously not identical; tax preferences, for example, may provide high returns to the investor on projects that have low or even negative returns for the economy. But it is generally true that high returns to investors go hand in hand with high returns to the economy. Thus, policies that maintain low tax and regulatory burdens and thereby permit investors to realize high returns on investments providing high returns to the economy will encourage economic growth.

The bottom line is that the United States has one of the most attractive investment climates in the world. Until investment opportunities improve dramatically elsewhere in the world, or deteriorate at home, the United States will continue to import capital. It would be a major mistake for the

United States to pursue policies with the effect, deliberate or otherwise, of degrading its investment climate.

Constraints on U.S. Policy from Foreign Investment

It is common to hear objections to foreign investment based on claims that such investment creates national security hazards, compromises U.S. industrial secrets, opens up the possibility that the United States will be "held hostage" to foreign interests, or that U.S. policy will be constrained in some way or other. These arguments are not convincing, and the basic reason is that they apply equally to activities of both U.S. and foreign owners of assets in the United States.

Consider the problem of defense secrets. Many industries attempt to use the government to keep competitors out, and one of the common strategies is to appeal to "national defense" as a reason to restrict competition. But we should note that the government has an elaborate system of maintaining classified information and of providing security clearances for defense contractors. Those who compromise classified information have many motivations, and the simple facts of citizenship or country of birth probably provide little useful information relevant to providing security clearances. There is also little relevant information in knowing the country in which a firm is incorporated or the distribution by country of a firm's shareholders. The important point is that the national interest in protecting defense secrets should be focused on security issues and not used to provide cover for protectionist actions.

In private legal disputes lawyers often point out that possession is ninety percent of the battle. The same is true for foreign-owed assets in the United States. Attempts by foreign owners to abuse or misuse assets physically located in the United States are risky for the owners since U.S. authorities may seize the assets. Foreign owners may have less legal protection and they certainly have less protection through the political process than do domestic owners. It is hard to see how the United States can be held hostage by foreign ownership of assets in the United States; the reverse situation is much more likely.

As for industrial secrets and technology transfers, the issues cut both ways. Foreign firms are probably more important for the technology they bring to the United States than for the technology they take away. For one thing, there are a lot of cheaper ways for foreign firms to obtain U.S. technology than to establish subsidaries in the United States. United States

subsidiaries abroad are surely more important in transferring U.S. technology than are foreign subsidiaries in the United States.

Finally, it is sometimes argued that U.S. macro policy may be constrained by the need to keep foreign financial capital from fleeing the country. This argument is invalid because financial capital owned by U.S. residents is just as mobile as is foreign-owned capital. In the late 1970s dollar depreciation caused by capital outflows became a policy problem, but the problem had nothing to do with the ownership of the capital that was moving. United States inflation and low real returns on capital were the core problems; dealing with these core problems reduced the outflow of capital owned by U.S. residents and attracted foreign capital.

In fact, we should not regard capital mobility as a rising policy problems at all. It is a good thing that policymakers are constrained by market realities. We are better off rather than worse off when markets respond to costly policies in ways that make life difficult for politicians. International capital mobility promotes efficient international investment, which is the basic microeconomics argument for free movement of capital, and in so doing constrains both micro and macro policy. It is a good thing that the government cannot pursue inflationary policies or impose onerous taxes and regulations on investment without seeing the immediate negative consequence of a depreciating currency and capital outflows. Limited government is a good thing, and the limits arise from both economic and political processes.