

The U.S. Economy in 1980: Shockwaves from 1979

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People from Minnesota will tell you that it's a disappointment when your team doesn't get into the Super Bowl. But it's much worse when your team does get into it and then gets trounced. It hurts when your high hopes are knocked so rudely to the ground.

In 1979, economists learned how the Vikings' fans have been feeling. At the beginning of the year there was hope. Economic policies, which had been shifted in the fall of 1978, at last were directed to reversing the upward swing in inflation while maintaining moderate growth in the real economy. The goal of economic stability seemed obtainable. But then the economy was pulled down by hefty oil prices, and stability wasn't even within kicking distance. Instead of the close-to-trend real growth which was predicted for 1979, we had virtually no real growth at all. And more strikingly, instead of the predicted reduction or leveling in the rate of inflation, we experienced a sharp acceleration to double-digit rates. Just as our hopes were rising, we got trounced.

The trouncing was due largely to the unexpected rise in oil prices, the oil-price shock. This shock can explain most of the errors in our predictions for 1979 and is responsible for a tightening in monetary and fiscal policies that year. Principally because of the oil-

price shock and the way monetary and fiscal policies responded to it, we are predicting a mild slowing in economic activity during the first half of 1980. Our analysis, in fact, raises some questions about the appropriateness of the monetary and fiscal policy responses that occurred in 1979.

What Might Have Been in 1979

As 1979 began, there were good reasons to be optimistic about economic prospects in the year ahead. First, at that time the imbalances in the consumer and business sectors, which typically presage a business downturn, had not appeared. If a downturn were approaching, we would normally expect a slowing in consumer demand, a buildup of business inventories, and a weakening in spending for plant and equipment. But consumer demand remained strong, business inventories were lean relative to sales, and indicators of plant and equipment spending suggested that continued growth was in store. Since sectoral imbalances were not evident, the recovery dating back to 1975 did not appear to be running out of steam.

Second, major structural changes had occurred to make the cyclically sensitive housing market less prone to booms and busts—more resistant to the

vagaries of the business cycle—than it had been in the past. For instance, innovations in financial markets had been designed to keep mortgage funds available in periods of high interest rates. Among the more prominent of these innovations were the legalization of money market certificate accounts and the extension of government guarantees to securities backed by conventional mortgages.

Money market accounts allowed thrift institutions such as savings and loan associations and mutual savings banks—primary sources of mortgage funds—to attract deposits by paying current market interest rates. In the past, such institutions faced legal limits on the interest rates they could pay on accounts under \$100,000. Because of this, they had difficulty attracting funds when market rates climbed above the limits. Once money market accounts became legal, though, thrift institutions could match the interest rates paid by competitors.

Like money market accounts, government guaran-

tees to securities backed by conventional mortgages helped keep mortgage funds available. These guarantees led to standardized contracts and encouraged the development of a broader secondary market in mortgages. This market, by permitting a broader spectrum of investors to participate in mortgage lending, has helped make mortgage funds more available in periods of high interest rates.

Finally, the administration and the Federal Reserve announced a series of important policy actions in the fall of 1978. Although the actions were disparate and not entirely consistent, monetary and fiscal policies did assume a credible anti-inflationary stance. The actions were ostensibly designed to prop up the exchange value of the dollar, but they committed the government to dealing with the more fundamental problem of inflation (see p. 3, "Policy Actions, Fall 1978").

Because of the strength of the economy as 1979 began, the innovations in mortgage markets, and the fall 1978 policy actions, forecasts for the U.S. economy in 1979 were quite optimistic. Our winter 1979 *Quarterly Review* predicted that in 1979 annual average real gross national product would grow at its trend rate of 3 to 3½ percent and the consumer price index would be a little over 8 percent higher than in 1978. Based on current data for the fourth quarter of 1978, these predictions translate into 2.1 percent growth in real GNP and 7.5 percent growth in the CPI over the four quarters of 1979.

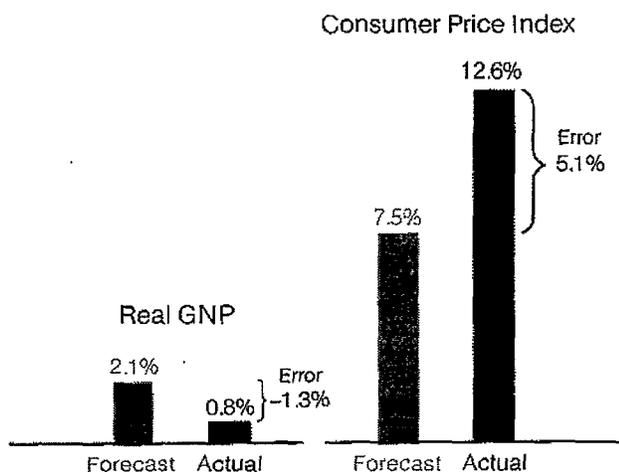
Oil's Impact on the Economy in 1979

Our forecast of 1979's real GNP was a bit too high, and that of inflation, as measured by the CPI, was far too low. Data available through January 1980 indicate that from the fourth quarter of 1978 to the fourth quarter of 1979 real GNP grew 0.8 percent and the CPI rose 12.6 percent. The *Quarterly Review* forecast was off roughly 1 percentage point for GNP and 5 points for the CPI. These large forecast errors were due mainly to the oil-price shock.¹

One measure of the oil-price shock is the difference between actual crude oil prices in 1979 and the prices that forecasters assumed at the beginning of the year. We, along with most other forecasters, assumed

Our forecasts of output and inflation were off . . .

Predicted and Actual Percentage Changes
From 4th Quarter 1978 to 4th Quarter 1979



Sources: U.S. Departments of Commerce and Labor, FRB Minneapolis

¹A *shock* might be defined formally as the part of a forecast error which remains when all the variables which condition the forecast are set at their actual values.

Policy Actions, Fall 1978

As 1978 unfolded, policymakers grew less concerned about the vitality of the economic expansion and more concerned about the declining value of the dollar, both at home and abroad. While real output and employment were continuing to expand at healthy rates, inflation was heating up and the exchange value of the dollar was falling.

On October 24, policy actions were announced to deal with the problems of rising inflation and the falling dollar. These actions included wage-price guidelines, a proposal for real wage insurance, and a planned reduction of the federal budget deficit in fiscal years 1979 and 1980. The actions, however, were misdirected, as Thomas Supel pointed out in the winter 1979 *Quarterly Review* (pp. 7-9). The wage and price guidelines were misdirected, because

In the United States, wage and price restrictions have worked temporarily if at all. They have managed to hold prices down for a short while, but the longer they were in force, the more serious problems they caused—and as soon as they were removed, prices moved quickly back to where they would have been.

The proposal to establish real wage insurance was misdirected, because it

could be disastrously inflationary. . . . What if labor cooperated and there was a drought, an oil embargo, or a war somewhere that disrupted our economy? Such events—by no means unlikely—could cause more inflation than the Administration hoped for, forcing the government to shell out billions of dollars at a time when it should be reducing expenditures. If the wage insurance plan had economy-wide coverage, it could cost the government up to \$11 billion for each percentage point the inflation rate exceeded 7 percent.

Real wage insurance never made it through Congress, which turned out to be a good thing. An uncapped, economy-wide program of real wage insurance would have cost the government on the order of \$50 billion in 1979. The reduction in the deficit, in contrast, was not misdirected, but it was not taken very seriously.

The Administration's pledge to hold the 1980 deficit to \$30 billion was the one substantive announcement of October 24. Unfortunately, the credibility of this announcement was undercut by the weakness of the other parts of the program.

After the October actions, the stock market fell, long-term interest rates rose, and the dollar came under renewed pressure in foreign exchange markets.

Because these actions were so poorly received, the administration and the Federal Reserve enacted a new

set of policies on November 1. These new policies, unlike the earlier ones, were meaningful and well received. They were ostensibly designed to support the dollar, but more fundamentally, they indicated that the government had accepted the blame for its own contributions to inflation and had committed itself to anti-inflation policies in the future.

The new policies included measures to defend the dollar directly, measures to slow down the growth of money, and a plan to reduce the burden of federal regulations. The dollar defense measures, such as buying dollars in exchange markets with borrowed foreign currencies and borrowing from citizens overseas by issuing bonds denominated in foreign currencies, were a gamble on the exchange rate of the dollar. If the dollar were to fall, the U.S. would have to buy foreign currencies at higher prices in order to repay its debts. The dollar support program thus committed the U.S. government to anti-inflationary fiscal and monetary policies, because that was the only prudent way to protect our exchange-rate gamble. If our inflation rate did not improve relative to the rates in other countries, there would be no hope that the dollar could hold its value in terms of other currencies.

Other government economic policies also assumed a more credible, anti-inflationary posture on November 1. For instance, the tightening in the federal budget, which was first announced on October 24, became much more believable. The table below documents the impressive narrowing in budget deficits projected by administration economists.

Estimates of Unified Federal Deficit
(in billions)

When Made	For Fiscal Year		
	1978	1979	1980
January 1978	\$62	\$61	\$37
January 1979	\$49	\$37	\$29

Source: U.S. Office of Management and Budget

The Federal Reserve, meanwhile, set in motion its plan to reduce monetary growth by sharply increasing the federal funds rate and the bank discount rate and by raising selected reserve requirements. The plan to reduce the burden of federal regulations, however, seemed to be a longer-term process, which was unlikely to have immediate effects on inflation. Still, the November actions were promising. Following the announcement of these actions, the stock market advanced, long-term interest rates declined, and the dollar climbed in foreign exchange markets.

that crude oil prices in 1979 would rise by a total of 14.5 percent and that the increases would be spread over the year—just as the Organization of Petroleum Exporting Countries (OPEC) had announced. Instead, crude oil prices actually rose on the order of 100 percent, and most of the increases were concentrated in the first half of the year and at year-end. The difference between the actual behavior of crude oil prices and what was assumed is enormous.

Why did crude oil prices rise so much more than was expected? There are two possible explanations, both of which stem from the stoppage of Iranian oil production in the early part of 1979. The first possible explanation is that Iran's lost production was never made up. According to this explanation, when Iranian oil production resumed after the stoppage at about 60 percent of its former level, other members of the oil

cartel cut back their production to maintain the high prices established during the stoppage. Oil prices are higher, in short, because the supply of oil has been reduced.

The second possible explanation is that the stoppage of Iranian oil production made oil-importing countries judge that their sources of oil were less reliable than they previously had believed. Because they perceived that world oil production was more volatile, they increased their desired levels of oil inventories. According to the second explanation, then, oil prices are higher because oil demand is higher.

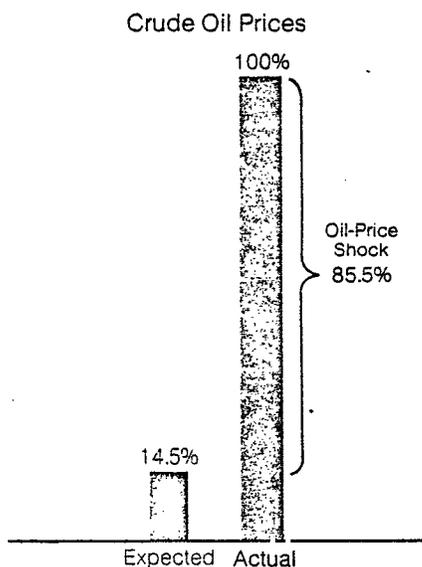
Data on oil production and inventories are perhaps less reliable than the supply of oil itself, so the data cannot confidently be used to reject either one of these explanations. To the extent the data can be trusted, however, it appears that the second explanation is correct: high demand, not low supply, is responsible for the higher oil prices. According to the U.S. Department of Energy, total world crude oil production in the first nine months of 1979 was up 5.5 percent over the same period in 1978. Thus, it appears that the decline in Iranian oil production was more than offset by increased production in other countries. While oil production increased, world oil consumption stayed about the same as in 1978. In the United States, oil consumption in 1979 is estimated to have been down 2 to 3 percent from 1978. The production and consumption data imply that oil inventories were building rapidly. The strength of oil prices, meanwhile, suggests that the increase in oil stockpiles was intentional, because had the increase been unintentional, total oil demand would have fallen, resulting in an oil glut and weakness in oil prices.

An increase in the world's demand for oil can explain the direction of the errors in the 1979 forecasts of the CPI and real GNP. In the world's economy, an increase in the demand for oil should result in a higher aggregate price level. The increase in oil demand apparently was for oil inventories, so it was more a shift from future to current demand for oil than a shift from current demand for other goods into current demand for oil. Since the increase in demand for oil was an increase in the world's aggregate demand for current goods, it should result in a higher level of aggregate world prices.

The effects of an increase in the demand for oil on

... mainly because of the oil-price shock.

Expected and Actual* Percentage Changes in 1979



*Our estimate of the actual increase in world crude oil prices.

Sources: U.S. Department of Energy, FRB Minneapolis

world output are hard to predict. On the one hand, higher aggregate world demand should encourage more overall production in the world. On the other hand, when energy prices rise so much more than other prices, industry should reallocate resources to produce goods that consume less energy. Similarly, higher energy prices should encourage a transfer of resources from industries that burn a lot of fuel to those that produce it. All these adjustments are costly and take time, however. General Motors, for example, cannot transform overnight an assembly line for Chevrolet Impalas into one for Citations. While resources are being shifted from one industry to another, production could decline. It is therefore hard to predict whether or not the expected increase in overall production will be offset by the disruptions created by the reallocation of resources.

In the U.S. economy, a large surprise increase in the demand for oil should also lead to a higher inflation rate, but should cause a decline in the growth of real GNP.

The higher inflation rate is a worldwide phenomenon. Since capital is generally free to move from one country to another, the increase in world prices caused by higher oil demand should be approximately shared among countries.² Thus, in the U.S., as in other countries, an oil-demand shock should cause more inflation.

The effect of an oil-demand shock on U.S. real GNP is less straightforward. The rise in the price of energy relative to other goods should result in more production of energy and less of other goods. Based on this consideration alone, it is hard to determine whether the increase in energy production should make up for the loss in other types of production. Other considerations, though, suggest that overall production should decline.

Total U.S. production, like total world production, should decline temporarily following an oil-demand shock because of delays in reallocating resources. But in the U.S. this temporary disruption is magnified by government price controls and other government interventions that add to the costly adjustment process. Total U.S. production, furthermore, should grow more slowly over a year or two if fiscal and monetary policies tighten appreciably—that is, if budget deficits are greatly reduced and if the growth of the money supply is significantly slowed. This, we believe, is what happened in 1979.

Our analysis indicates that higher oil prices caused the federal budget to tighten automatically. We estimate that the oil-price shock caused the federal budget deficit (national income accounts) to shrink by \$14 billion in calendar year 1979. We attribute the automatic tightening of the federal budget to the progressive nature of the federal tax system—primarily income taxes. When prices rise, individuals' current-dollar incomes rise. This pushes them into higher tax brackets, so that tax liabilities increase by a larger percentage than incomes. Thus, when the level of prices rises, federal tax revenues rise more than proportionately. A vivid illustration of this phenomenon occurred in the second quarter of 1979, when real GNP declined but higher prices resulted in a \$5 billion reduction in the federal budget deficit.

In addition to the automatic tightening in the federal budget from the oil-price shock, there was a deliberate tightening of budget policy. We estimate that the additional tightening made the actual federal budget deficit \$15 billion smaller than our prediction. Thus, due to the automatic tightening in the budget (\$14 billion) and this additional tightening (\$15 billion), the federal budget deficit in calendar year 1979 was \$29 billion smaller than could reasonably be expected at the beginning of the year.

Monetary policy, after accounting for the effects of the oil-price shock, also seemed to be tighter than before. Actual growth in the money supply (M2) was 1.5 percentage points below our prediction, and short-term interest rates (on 4- to 6-month commercial paper) were 2 points higher. A large portion of these differences is due to the monetary policy actions announced on October 6, 1979. These actions included a 100 percent increase in discount rates, an increase in reserve requirements on selected non-deposit sources of funds, and a change in operating procedures to place more emphasis on bank reserves and less on the federal funds rate.

The tightening in fiscal and monetary policies seems, at least in part, to be a deliberate policy response set off by the oil-price shock. Policymakers simply were attempting to offset some of the added

²See John Kareken and Neil Wallace, International monetary reform: the feasible alternatives, *Federal Reserve Bank of Minneapolis Quarterly Review* 2 (Summer 1978): 2-7; and Neil Wallace, Why markets in foreign exchange are different from other markets, *Federal Reserve Bank of Minneapolis Quarterly Review* 3 (Fall 1979): 1-7.

overall inflation caused by escalating oil prices. This tightening, however, seems also in part due to the policy actions of the fall of 1978. These actions likely did signal a significant shift to less inflationary fiscal and monetary policies. It is not possible to sort out the contributions of these two factors.

On conceptual grounds, then, the oil-price shock can explain the direction of the forecast errors for 1979. It can also explain their magnitudes. The data reveal that oil prices played a major role in causing the forecast errors.

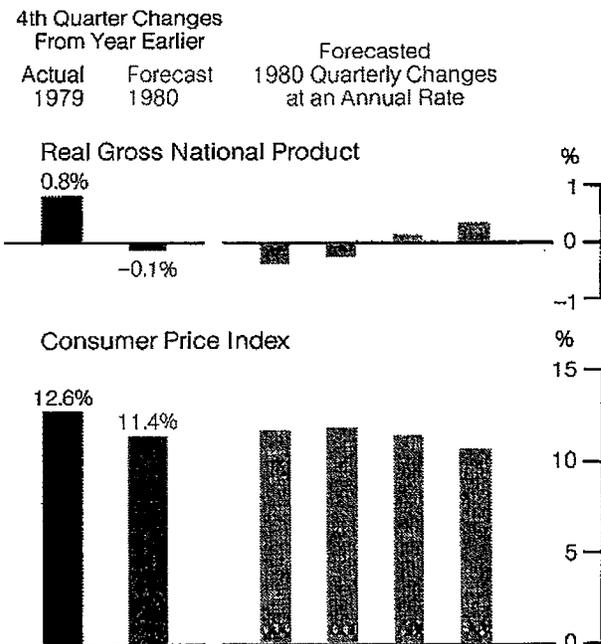
Using a novel forecasting model, we estimate that the oil-price shock caused the consumer price index to be 2.9 percentage points higher over the four quarters of 1979 than it otherwise would have been. (See "Estimating the Effects of the Oil-Price Shock" in this issue.) Higher energy prices seemed to flow directly into higher overall prices. We also estimate that the oil-price shock caused real GNP growth to be 1.7 percentage points lower over the four quarters of 1979 than it otherwise would have been. This means that the oil-price shock can account for over half of the forecast error for the CPI and for all of the forecast error for real GNP.

Our conclusions must be qualified, because there are some unique aspects about the 1979 oil-price experience. Our analysis draws heavily on the experience of 1974 when oil prices quadrupled in the first quarter and then remained stable. But in 1979 oil prices escalated each quarter. One possible interpretation of this difference is that in 1974 oil prices rose due to a supply shock as the oil cartel used its market power to boost prices with a once-and-for-all reduction in output, and that in 1979, in contrast, oil prices rose due to a temporary increase in demand as oil-importing countries built stockpiles. Oil-producing countries may have been reluctant to boost prices all at once to maximize current revenues, because they judged that a large, but unknown, portion of demand was temporary. Although our analysis may be off somewhat because it relies too much on the 1974 oil-supply disruptions, we feel that it is as good as can be, given the state of the economist's art.

The Outlook for 1980

Mostly because of the oil-price shock and the way monetary and fiscal policies tightened in response to it, we predict that over the four quarters of 1980 real GNP will decline by 0.1 percent and the CPI will

The forecast for 1980: essentially no output growth, somewhat less inflation ...



Sources: U.S. Departments of Commerce and Labor, FRB Minneapolis

increase by 11.4 percent. Real GNP is expected to decline at a modest 0.3 percent annual rate in the first half of 1980 and then to recover by year-end to the level it attained by the fourth quarter of 1979. The CPI, meanwhile, is expected to decelerate gradually over the four quarters from its 12 percent annual rate of increase in the fourth quarter of 1979 to a 10.6 percent rate in the fourth quarter of 1980.

Because output is expected to be roughly flat in 1980, civilian employment is expected to show little change over the year. However, with the number of people seeking employment continuing to increase, the unemployment rate should increase over the year. Even though employment demand is expected to be stagnant, compensation per hour is expected to rise by a large 10.3 percent over the year. Consequently, unit

labor costs are expected to rise by about 8 percent in 1980.

While our forecasting model does not provide a detailed breakdown according to real demand sectors, the following interpretation seems consistent with our forecast.

In past U.S. recessions, it was not uncommon for the growth in real consumer spending to exceed the growth in total output by 1 to 2 percentage points. We expect this to happen again in 1980 with real consumption growing about 1.5 percent. This increase is likely to be largely for nondurables and services, as consumer outlays for durable goods, primarily autos, are expected to decline.

We expect the government sector to record only minor increases in real outlays. And, in the face of high mortgage rates and weak income flows, spending on new residential construction is likely to slide below what it was in the fourth quarter of 1979. However, we don't expect the housing sector to suffer as severely as in previous recessions, because there is a large number of young people who want to buy houses and because the innovations in the mortgage industry should keep mortgage funds flowing.

The net export position of the U.S. is expected to improve in real terms by about \$5 billion by the fourth quarter of 1980. This is the same size improvement as that recorded in 1974 and 1975. Such an improvement seems reasonable in 1980, since the real growth of our major trading partners is expected to be somewhat stronger than ours.

The cutback in consumer purchases of durable goods, together with the weakness in other sectors of the economy, seems likely to induce a mild reduction in inventory holdings by the business sector. The accumulation of inventories during 1979 was fairly modest, so that the business sector is entering 1980 with an inventory/sales ratio that is lower than at the beginning of other postwar recessions. This means that a large inventory correction is less likely in 1980 than in past recessions.

Finally, real business outlays for plant and equipment are expected to remain fairly stable. This view is supported by the Commerce Department's December survey of plant and equipment spending intentions. If the business sector turns out to be stronger than it was in past recessions, the overall decline in the economy should not be severe.

Major Uncertainties in the Outlook

Because of recent policy shifts and volatility in oil markets, our forecast is subject to more uncertainty than ordinarily would be the case. We divide the uncertainties associated with our forecast into three categories: ordinary forecast uncertainty, uncertainty due to policy shifts, and uncertainty due to oil prices.

Ordinary forecast uncertainty is that which would remain if all the economic relationships in our forecasting model remained invariant over time. Even if they were invariant, the best our model could produce would be a range of outcomes, because all models are simple approximations of reality. If the relationships in our model remain invariant, we can say with 95 percent confidence that real GNP growth will be -0.1 percent plus or minus 4 percentage points and CPI growth will be 11.4 percent plus or minus 2 percentage points over the four quarters of 1980.³

The uncertainty associated with our forecast may be even greater than the ranges imply, however, because of the *uncertainty due to policy shifts*. A change in government economic policies would cause the relationships in our model to shift in unpredictable ways, thus creating uncertainty. For instance, if policies shifted in the fall of 1978 and again in the fall of 1979, as we have argued, then the effects of the new policies will be hard to predict until people's actions fully adjust to them.⁴ Our model, which like other models implicitly assumes that people's actions do not adjust at all to new policies, is likely in error, but by how much we cannot say. For the recent shifts in policy, it probably overstates the loss in output and understates the slowing of inflation.

Our forecast, furthermore, assumes that government policies will not shift in 1980, but this is again uncertain. Defense spending could be boosted significantly in response to the Russian invasion of Afghanistan. Or taxes could be slashed as a political gesture in an election year. While we assume that neither will occur, they are not totally unlikely. Either one would boost aggregate demand in 1980.

A final type of uncertainty is the *uncertainty due to oil prices*. While our model does not provide a

³This calculation assumes that the coefficients of our model are known with certainty.

⁴For an explanation, see Robert E. Lucas, Jr., and Thomas J. Sargent, "After Keynesian macroeconomics," *Federal Reserve Bank of Minneapolis Quarterly Review* 3 (Spring 1979): 1-16.

specific forecast for oil prices alone, it does forecast that energy prices will continue to escalate in 1980 at a rate of about 20 percent. This forecast could be optimistic if the political turmoil affecting Iran spreads to other oil-producing countries and leads to reductions in output. If our explanation for the 1979 oil-price shock is correct, however, energy prices in 1980 could be much lower than our forecast now indicates. When oil stockpiling is completed, which should be soon, oil demand will fall back to current consumption. Oil production then will be greatly in excess of oil demand, which taken by itself should result in weaker oil prices.

The oil cartel might attempt to counter any fall in prices with a cutback in production, but whether they would succeed remains to be seen. The oil cartel was not tested in 1979, because the demand for oil re-

mained strong. The test of the cartel is whether its members can act in concert to restrain output when demand is weak. The lack of success OPEC had in agreeing to a pricing policy at its meeting in December may indicate that it will have trouble passing that test.

Policy Issues Raised by Our Analysis

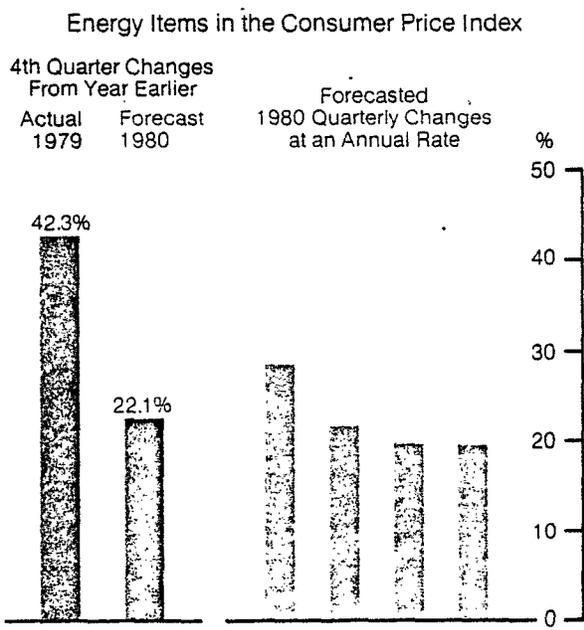
Our model cannot predict the economic effects of different government policies, because the economic relationships estimated in our model would not remain invariant to policy changes. The model, then, cannot be used to argue for any change in current policies, such as for a tax cut. Yet, since policy shocks and policy responses to the oil shock have contributed to a worsening outlook, at least two policy issues seem to deserve further attention.

The first is whether federal taxes should be indexed to inflation. The current progressive tax system relates current-dollar taxes to current-dollar income. It does not distinguish between price changes and real income changes. When the oil-price shock came, this tax system caused federal tax revenues to rise automatically at a rate faster than the rate of inflation. The automatic rise in tax revenues is likely to lead to a fall in output. This indicates that our tax system, long thought to be an automatic output stabilizer, can be destabilizing in the face of certain types of shocks.⁵

A tax system indexed to the cost of living would not be destabilizing and could still be as progressive as legislators wish. In an indexed, progressive tax system, real-dollar taxes are related to real-dollar income. (Real-dollar figures are adjusted to remove the effects of inflation.) Tax rates would rise as real income rose, not as current-dollar income rose.

It is important to note that indexing taxes is not necessarily the same as cutting overall taxes. Some proposals for indexing income taxes are essentially proposals for cutting overall taxes. They would force the government to rely more on deficit spending, and this, according to the best current theories, would be inflationary. However, it is possible to index taxes without increasing deficits, without causing additional

... and smaller increases in energy prices.



Sources: U.S. Department of Labor, FRB Minneapolis

⁵ That this result is theoretically possible was shown in B. T. McCallum and J. K. Whitaker, The effectiveness of fiscal feedback rules and automatic stabilizers under rational expectations, *Journal of Monetary Economics* 5 (1979): 171-86. Moreover, in their model, it can be shown that an indexed progressive tax system dominates an unindexed progressive system in terms of output stability.

inflation. There very well may be great difficulties in implementing an indexed tax system, but our analysis suggests there are great costs—much lost output—when certain shocks occur and taxes are not indexed.

A second issue is whether sharp changes in economic policies are desirable. Perhaps the changes implemented in the falls of 1978 and 1979 were necessary, given the deterioration in the outlook for inflation apparent at those times. But our model cannot forecast with any degree of accuracy what the effects of those policy changes will be, nor can any other macroeconomic technique. Thus, these sharp policy changes in themselves are creating more uncertainty with which the private sector must contend. This puts an extra burden on the economy.

The unexpected rise in oil prices, in sum, made 1979 a worse year for economic growth and inflation than it was predicted to be. The monetary and fiscal policies that responded to the oil-price shock generally exaggerated its output effects. For 1980, we predict that the oil-price shock and the policies that respond to it will lead to a mild drop in economic activity and to continued double-digit inflation.

The views expressed herein are those of the authors and not necessarily those of the Federal Reserve Bank of Minneapolis or the Federal Reserve System.