

Macro Theory and the Recession of 1990–1991

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Figure 1 shows the basic facts about the recession. The level of real output plunged in the second half of 1990, reached its minimum in early 1991, resumed its normal growth rate by the end of 1991, but lay far below its trend path even at the end of 1992 (the growth of the trend path, 2.3 percent per year, is the average for 1978–1988). Here is a reasonably comprehensive list of possible causes, drawn from all schools of thought:

1. There was a price shock and stabilization policy depressed real output to limit inflation from the shock.
2. Monetary policy switched to a lower target for nominal growth.
3. Government purchases of goods and services declined.
4. Tax rates increased.
5. There was a negative shock to aggregate technology.
6. Regulatory changes reduced the intermediation provided by banks.
7. Changes in the world economy had a negative effect on U.S. output.
8. There was a spontaneous decline in consumption.

My purpose in this paper is to consider the evidence on the relative importance of these possible causes, within the framework of established macro theories.

I. Where Established Theories Are in Conflict: Monetary Nonneutrality

Contemporary macro theories disagree sharply on the issue of monetary neutrality but agree on many other aspects of the

aggregate economy. Ideas about consumption, investment, the aggregate technology, and financial markets are common across the major schools of thought. Of the eight possible causes I have listed, only the first two, a price shock and a change in the monetary target, rest intrinsically on non-neutrality. The remaining six causes would create output declines under almost any macro theory.

A. Price Shock?

There is essentially no factual support for the view that the recession came from a price shock. Figure 2 plots the GDP deflator over the relevant period. For most of the period, the price level stayed remarkably close to the growth path of 4.2 percent per year, shown as a solid line in the figure. There was an almost imperceptible upward deviation in mid-1990, just at the start of the recession, associated with the rise in world oil prices at that time. The only important development over the period with respect to the price level was the dramatic decline in prices relative to the growth path starting in mid-1991. If the recession was the result of a monetary response to the slight shock of mid-1990, the response was wholly out of proportion to the stimulus.

B. Change in Monetary Target?

James E. Meade (1978), James Tobin (1980), and numerous followers (see Hall and N. Gregory Mankiw [1993] for a full bibliography) have advocated that stabilization policy should keep the product of the price level and output at a predetermined value, the policy of *nominal income targeting*. Until recently, it appeared that the Federal Reserve's monetary policy over the past decade was aiming to keep nominal GDP on a constant growth path. The

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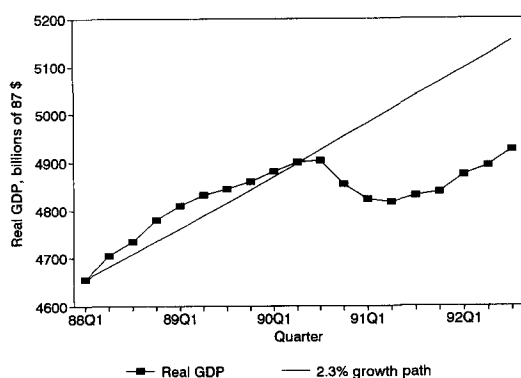


FIGURE 1. REAL GDP

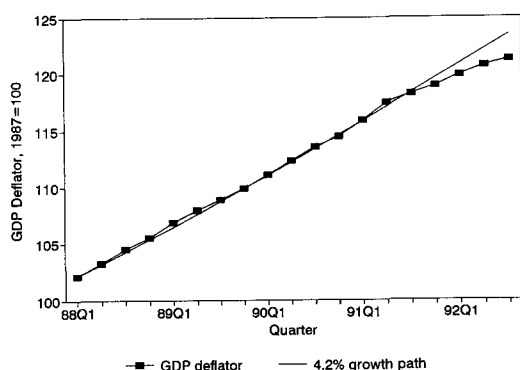


FIGURE 2. GDP DEFLATOR

history of nominal GDP during the recession can be read from Figures 1 and 2. Through mid-1990, the economy stayed very close to a growth path of 6.5 percent per year. The contraction starting at that time took the economy well below the path, and the deviation from the path has grown ever since.

Figures 1 and 2 plainly refute the hypothesis that stabilization policy was committed to a stable growth path of nominal income after mid-1990. No fixed stabilization policy rule is consistent with what happened in the recession: both real output and the price level deviated below trend paths.

One conclusion consistent with the standard analysis of monetary nonneutrality (see e.g., Rudiger Dornbusch and Stanley Fischer, 1989) is that stabilization policy changed dramatically in mid-1990 to a much lower target for the growth of nominal GDP.

The nonneutrality model would then predict what happened to output and prices. At first, almost all the effect took the form of a reduction in growth of real GDP, to negative growth rates. Later, growth of the price level fell, in line with the price-adjustment equation of the nonneutrality model (the Phillips curve).

There are two problems with the hypothesis that the recession was the result of a conscious decision to move to lower nominal growth. First, the Fed made no public announcement of any hawkish change in policy. Within the nonneutrality model, it would be perverse to adopt a stringent anti-inflation policy without announcement, because the policy could achieve its objective with less forgone output were it accompanied by a credible announcement. An announcement probably would have been credible, given the success of the earlier round of anti-inflation contraction during 1979–1982.

The second problem is the behavior of interest rates during the period. If the only cause of the recession were a change to a lower long-run inflation target, the standard nonneutrality model would predict an increase in interest rates. The major policy change initiated in 1979 is a good example of this effect. However, interest rates fell continuously before and during the 1990 recession. The standard analysis would have to invoke changes from other sources, such as items 3–8 on my list, in order to explain the behavior of interest rates. Then, the argument would go, the Fed took advantage of a contraction in the economy from another source in order to change to a substantially lower inflation target.

II. Where Established Theories Agree: Real Factors in the Recession

Figure 3 provides some data on the changes in real GDP between 1989 and 1991. Each bar measures the change in a component, adjusted for the 2.3-percent trend in the total (a component that grew exactly 2.3 percent over the two-year period would be measured as zero change).

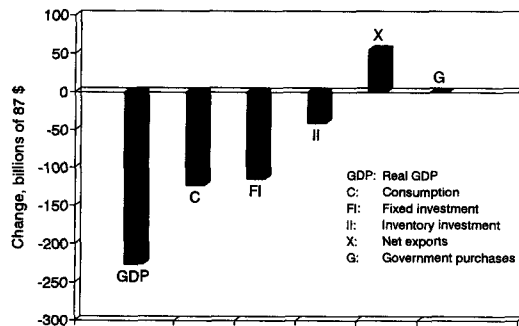


FIGURE 3. COMPONENTS OF GDP (1989-1991), ADJUSTED FOR 2.3-PERCENT TREND

A. Cut in Government Spending?

One conclusion follows immediately from Figure 3: Not much weight could be assigned to a decline in government purchases as a factor causing the recession, because none occurred. Even military spending, often mentioned as a factor in the recession, fell only slightly.

B. Taxes?

No significant change in federal tax and transfer policy occurred before or during the recession. There was a modest increase in the top marginal personal income tax rate, but it would be farfetched to suggest that tax change had any important role in the large shortfall in real output.

C. Technology Decline?

Output per hour in the private nonfarm economy rose by about 0.5 percent from 1989 to 1991. Although this increase was a little below trend, no established model has suggested that such a small shortfall in productivity growth could account for a 5-percent shortfall in real output relative to trend. The effects of technology shocks have received much attention in the real-business-cycle models of Finn Kydland and Edward Prescott (1982) and their followers. In the real-business-cycle model, an adverse productivity shock has more than a propor-

tional effect on real output, because employment falls in response to the shock (via a decline in the real interest rate). However, the multiplier is nowhere near high enough to explain much of the recession of 1990.

The analysis of an adverse productivity shock in the monetary nonneutrality model is somewhat different. In that model, the shock would lower consumption and interest rates. If monetary policy did not respond, there would be some decline in output. If monetary policy kept nominal output at a predetermined level, the decline in output would be offset, except to the extent that there was an increase in the price level.

In neither case would the multiplier be anywhere near large enough to explain the recession of 1990. I conclude that no established macro theory would assign much importance to productivity shocks as a factor in the recession. It seems much more likely that the shortfall in productivity growth was a result of the forces that caused the recession, not a cause itself.

D. Credit Crunch?

Bank regulation has been prominent on many lists of possible causes of the recession. During the relevant period, bank regulators imposed higher capital requirements, more rigorous valuation standards for assets, and higher deposit insurance rates. There were no significant regulatory changes for other intermediaries or for direct use of commercial paper and other securities markets. The share of banks in total financing declined. Figure 3 shows that both fixed investment and inventory investment fell during the recession; the "credit crunch" may have been a factor. However, the decline in consumption refutes the proposition that the higher cost of intermediation was a major causal factor in the recession. Any force that decreased the volume of resources going to capital formation would raise the volume going to other purposes, especially consumption. A second reason for skepticism about the credit crunch as a causal factor is that its effects were spread smoothly over an extended period; the

crunch seems incapable of explaining the sudden collapse of the economy over a brief period in late 1990.

E. *Rest of the World?*

It appears unlikely that events in the rest of the world contributed to the recession. Figure 3 shows that net exports grew a little during the recession. It would be almost impossible to tell a story in which events in world markets caused a U.S. recession but U.S. net exports rose.

F. *Consumption Shift?*

Last on my list is a spontaneous decline in consumption. Figure 3 shows that consumption accounted for over half of the decline in output in the recession. There is remarkably little disagreement among schools of macro theory on the principles governing consumption. The life-cycle-permanent-income model of Modigliani and Friedman informs essentially all research on consumption; the contentious issues are mainly how much of an adjustment needs to be made for the fact that households cannot borrow against future labor earnings. When an event causes consumption to fall by half as much as real GDP falls, the causal event must have had more than a transitory effect on the economy.

A spontaneous decline in consumption would probably result in unusual behavior of consumption during the recession relative to its prerecession values and relative to real disposable income. With this in mind, I calculated residuals for durables, on the one hand, and nondurables and services, on the other hand, from regressions on current and lagged annual real disposable income and on the lagged dependent variable. Both regressions show modest evidence of a spontaneous shortfall of consumption in 1991. The combined shortfall is 18 billion 1987 dollars, a very small fraction of the total shortfall of real GDP from trend of almost \$250 billion. The shortfall is just under one standard deviation, so it is not unusual by statistical standards. It is worth mentioning, however, that consumption exceeded its

predicted value by a large margin (\$41 billion) in 1987 and by over \$20 billion in 1988. There was a considerable swing in consumption at much lower than a recession frequency from 1987 to 1991. At the same time, survey measures of consumer confidence fell from record high to somewhat subnormal levels. Although a sharp spontaneous contraction of consumption was not part of the story of the recession, changes in consumption not associated with changes in disposable income may be an important part of a bigger story about the late 1980's and early 1990's.

III. Assessment

In the neoclassical model that underlies established macro models, relative prices adjust to offset the impacts of particular shocks. The real interest rate is a particularly important relative price. For example, if the government, consumers, or the rest of the world demand fewer goods and services, the interest rate falls in order to divert those resources into investment. That mechanism is prominent in all established macro models today. If there were a single major shock that caused the recession, one could spot it by a characteristic pattern in the data on the components of GDP. A spontaneous decline in consumption should be absorbed by investment, for example; or a negative effect of the credit crunch on investment should result in higher consumption and net exports. Instead, one finds that the recession involved major contractions in all categories of investment and in both durables consumption and other consumption.

An adverse technology shock could generate simultaneous declines in consumption and investment. However, the observed shortfall in productivity was not nearly large enough to explain what happened.

I conclude that established models are unhelpful in understanding this recession, and probably most of its predecessors. There was no outside force that concentrated its effects over a few months in the late summer and fall of 1990, nor was there a coincidence of forces concentrated during that period. Rather, there seems to have been a

cascading of negative responses during that time, perhaps set off by Iraq's invasion of Kuwait and the resulting oil-price spike in August 1990. Consumers responded to the negative forces as they would to a permanent decrease in their resources. Their unwillingness to buy cars was a particularly important factor, and this unwillingness lasted long after gasoline prices returned to normal in late 1990. In spite of low interest rates, firms cut all forms of investment, again as they would if there had been some permanent adverse shock. As usual in a recession, firms cut production by *more* than their sales fell, making up the difference from inventories. Little of this falls into the type of behavior predicted by neoclassical models.

In a model without neoclassical curvature conditions, small events can have large consequences. The recent recession seems to call for models of that type, rather than the established neoclassical models.

The Federal Reserve reacted cautiously to the collapse of late 1990. Short-term interest rates fell by only a little over 100 basis points between July 1990 and January 1991, at which time the magnitude of the contraction was fully documented. The Fed showed no desire to keep real activity and

inflation in the sort of balance dictated by nominal income targeting or its variants. Rather, the Fed appears to have viewed the decline in real activity as an opportunity to move to a much more aggressive anti-inflation policy. And, indeed inflation has fallen dramatically since the recession.

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