Why No Crunch From the Crash?

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Last fall's stock market crash was certainly the biggest economic news of the year. On October 19, 1987, the Dow Jones industrial average stock price fell 22.6 percent, by far the largest one-day decline in the market's history. After the crash, most economists lowered their predictions for economic growth in 1988, which seems reasonable since, in the past, large declines in stock prices have usually weakened U.S. economic activity a lot. But now, in March 1988, economists are stumped: Despite what history says, October's stock market crash doesn't seem to have significantly slowed economic activity yet, and it doesn't seem likely to this year—and we don't know why.

A Puzzle

The usual negative effect on economic activity of large declines in stock prices is clear in the historical evidence. Also clear, though, is the surprising strength in recent economic data and in the predictions of a fairly reliable statistical model of the U.S. economy.

Historical Evidence . . .

One view of history strongly suggests that the stock market crash should have some effect on economic activity. This is the data on what has happened to output in past years when stock prices fell as much as they did on October 19. To get a sample of past declines that large, we must examine declines that took as long as six months. There have been eight such declines since 1920 (and before 1987). And after six of those eight declines, a recession began within six months of the end of the decline and usually lasted at least one year.[1]

More recent historical evidence is consistent with that general view and provides, as well, an estimate of just how much the crash should affect economic activity in 1988. Economic data since World War II suggest that the effect on both consumer spending and the economy as a whole could be quite large.

The impact on consumer spending is perhaps the easiest to estimate. Consumers feel the crash, of course, as a loss in their wealth, and that generally reduces how much they spend. According to standard estimates, in the year after any stock price decline, consumer spending falls, on average, 4¢ for every $1 decrease in stock prices (U.S. President 1988, p. 42). On October 19, stock prices dropped almost $1 trillion, or nearly $4,000 per person in the United States. This suggests that this year consumer spending should drop nearly $40 billion because of the crash.

Not so easy to estimate are all the other potential effects of the crash on the U.S. economy. Spending by businesses on plant and equipment, for example, could be cut back because their cost of capital has changed. Inventory investment could slow because firms expect consumer spending to fall. This could mean layoffs and lower employment—which would exacerbate the

[1] A recession is defined here as two consecutive quarters of decline in the industrial production index, not in the real gross national product (GNP). This is because quarterly GNP data are not available for any year before 1947. Quarterly industrial production data begin in 1919. The data I use here are seasonally adjusted.

slump in consumer spending and the crash's reverberations throughout the economy.

A way to estimate the likely overall economic effects of a crash is to use a model of the U.S. economy which captures the historical relationships among many measures of different types of economic activity and projects them into the future. I will use a model developed and maintained by researchers at the Federal Reserve Bank of Minneapolis.[2] This model uses statistical methods to predict by extrapolating from the relationships among 47 economic variables since 1947. Unlike most other forecasting models, it is purely a statistical model; no one adjusts its forecasts to reflect judgments about what will happen to the economy.

Admittedly, the historical data in this model do not include many stock market crashes: Since 1947, stock prices have fallen as much as 23 percent within six months only two other times. Still, this model can capture many effects of the recent crash. It tracks how other economic variables have reacted to stock price changes of all sizes. It then uses the average relationships among these variables to predict the effects of any change in stock prices. It assumes, that is, that these relationships don't change much when stock prices change much more than usual.

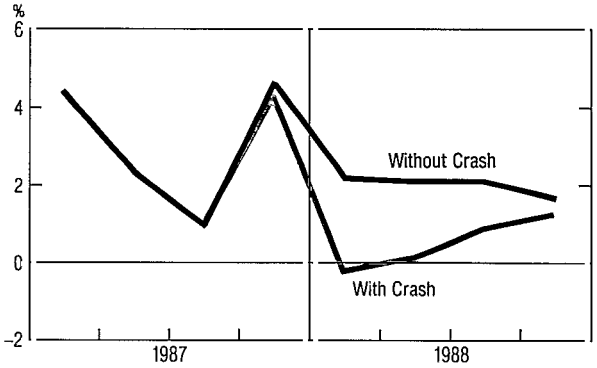
What this simple, history-based model has to say about the crash should be at least as reliable as what other, larger models have to say, for it has in the past performed reasonably well compared to them. McNees (1986) found that from 1980 to 1985 this type of model was more accurate than commercial forecasting models at predicting the national unemployment rate and growth in the inflation-adjusted gross national product (real GNP). This model's predictions for those variables in 1987 weren't too bad, either (Roberds and Todd 1987). In the fourth quarter of 1987, the unemployment rate was predicted to be 6.5 percent; it actually was 5.9 percent. Between the fourth quarters of 1986 and 1987, real GNP was predicted to grow 3.8 percent; it grew 3.9 percent.

To see the model's estimate of the overall effect of the crash, I need merely compare two of its more recent forecasts of real GNP. One is a 1988 forecast based on data available through September 1987, the month before the crash. The other is a simulated 1988 forecast—a prediction made by the model assuming that the only new information it had about October was that stock prices would drop 23 percent. The difference between the two forecasts is the model's initial prediction of what history says the overall effect of the crash should be this year.

Chart 1

A History-Based Model's Early Estimate of the Crash's Effect on Economic Activity

Quarterly Percentage Changes in Real GNP at an Annual Rate, Predicted With Data Available in September 1987, With and Without a 23% Drop in Stock Prices in October 1987*



*The data for the first two quarters of 1987 are actual, not predicted.
Source of actual data: U.S Department of Commerce

That effect appears to be serious. As is clear in Chart 1, the crash makes the model much more pessimistic about growth in 1988. Just before the crash, the model expected real GNP to grow 2 percent this year. Told of the crash, the model slashes that prediction 1.5 percentage points, to a mere 0.5 percent. Note, too, that the model expects real output to actually decline in the first quarter of 1988.

. . . Contradicted

Thus, historical evidence strongly suggests that the stock market crash should substantially reduce real growth this year, if not cause a recession. Yet recent economic data and the model's latest predictions are quite strong. In fact, they look almost as though nothing unusual had happened in the stock market.

Recent data on both consumer spending and general economic activity have been much stronger than the model's initial prediction for the economy, just after the crash. The accompanying table shows that several measures of consumer spending and aggregate measures of production and employment have all grown much more since the crash than the model predicted.

[2]Litterman 1984 and Todd 1984 provide background information on Bayesian vector autoregression models like this one.

Surprising Strength Since the Crash
Percentage Changes at an Annual Rate Between October 1987 and January 1988*

	Spending by Individuals				
	On All Goods & Services	On Durable Goods	At Retail Stores	Industrial Production	Total Employment
Early Model Prediction**	1.0	-2.1	4.5	-4.3	1.2
Actual	4.1	20.1	8.0	3.9	4.1

*For total and durable goods spending only. For the others, these are the geometric means of monthly growth rates. for retail sales and the industrial production index, between November 1987 and January 1988; for employment, between December 1987 and February 1988.

**Predicted with data available in September 1987 and a 23% drop in stock prices in October 1987.

Sources of actual data: U.S. Departments of Commerce and Labor, Federal Reserve Board of Governors

In fact, recent economic news has been so positive that the model's current forecast is not much different than its forecast before the crash.[3] (See Charts 2 and 3.) This is especially true for output (Chart 2). Again, in September, before the crash, the model expected real GNP to grow 2 percent in 1988; now the model expects it to grow 1.9 percent. The only difference between the two forecasts is that growth is now predicted to be weaker in the first half of the year and stronger in the second half. In terms of annual rates, the first-half prediction has dropped from 2.1 percent to 1.2 percent; but the second-half prediction has jumped from 2 percent to 2.5 percent.

The outlook for unemployment has only changed for the better: The model is somewhat more optimistic about it now than before the crash (Chart 3). In September, the model predicted that the quarterly unemployment rate would gradually rise in 1988 and average 6 percent. Now the model expects the rate instead to gently decline in the year and average 5.7 percent.

As Yet, No Solution

Many explanations have been offered for the puzzling economic strength and optimism since the crash. Three of these at first glance seem particularly plausible. On closer examination, however, two of them are clearly wrong and the third, while perhaps right, cannot be judged so without much more research.

Offsetting Interest Rates or Trade?

The first explanation involves the movement of long-term interest rates at the time of the crash. When stock prices fell last fall, these rates quickly fell, too, as investors tried to shift their portfolios from stocks to bonds. In the last two weeks of October, long-term rates dropped 1.2 percentage points. These interest rate changes have two major effects which may have offset the effects of the stock market crash.

One effect of any decline in long-term interest rates is a rise in the price of bonds—which means, of course, an increase in the wealth of individual bondholders. Some analysts think that the wealth gained from the bond price rise that accompanied the October interest rate fall prevented the crash from having negative effects on the economy: it simply replaced in U.S. portfolios the amount of wealth lost in the crash. With no change in total wealth despite the crash, economic activity would not be expected to be changed by it.

While perhaps appealing in its simplicity, this story cannot be true, because stocks and bonds are quite different types of assets. A stock represents partial ownership of a firm. When its value falls, wealth is lost. A bond, however, is a loan, an obligation by a debtor to repay a creditor. When the value of a bond rises, the creditor's assets increase, but so do the debtor's liabilities: the total wealth of debtors and creditors does not change. Thus, a rise in the value of bonds cannot offset a fall in the value of stocks.

[3]The current forecast is based on data available on March 10, 1988. The accompanying box shows the 1988–89 forecast in detail, along with some historical perspective.

Charts 2 and 3

The Model's Revised View of 1988

Predictions* Made With Data Available

Before the Crash (in September 1987)

Six Months Later (in March 1988)

Chart 2 Real GNP Growth

Quarterly Percentage Changes at an Annual Rate

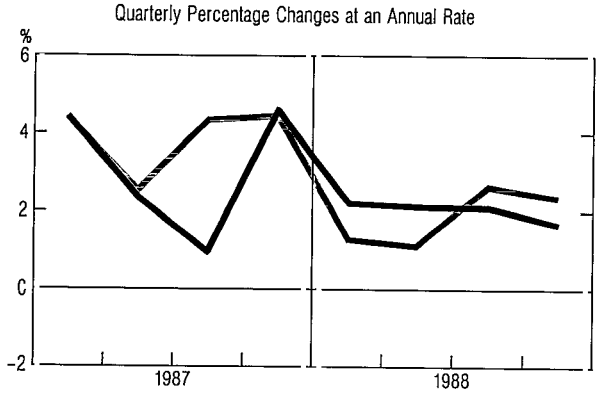
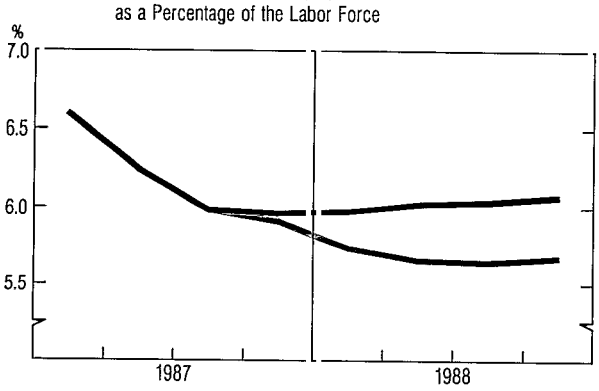


Chart 3 Unemployment Rate

Quarterly Levels of Unemployment as a Percentage of the Labor Force



*The 1987 data are actual, not predicted—except for the third and fourth quarters for the September forecasts.

Sources of actual data: U.S Departments of Commerce and Labor

The other interest rate effect said to offset the effects of the crash is a change in people's decisions about how much to spend today rather than save today in order to spend tomorrow. The drop in long-term interest rates last fall could have made spending now seem much more attractive than before. And this increased spending due to decreased interest rates could have been great enough to at least partially offset the depressing effects of the stock market crash.

A fast way to check whether interest rate effects actually could be offsetting the effects of the crash is to have the model predict real GNP growth after the declines in both stock prices and interest rates and compare that predicted growth to the model's prediction before either decline. If the effects of the interest rate fall really erased the effects of the stock price fall, then the two predictions should be the same.

They are not. Recall that the model predicted in September, before the crash, that real GNP would grow 2 percent in 1988. When it is given that same data available in September plus the paths of stock prices and interest rates for the rest of 1987, the model's prediction for real GNP growth drops to just 0.6 percent. Therefore, the decline in interest rates cannot be responsible for the economy's current strength and the model's current optimism.

A second, very different explanation for the current strength and optimism is that the negative effects of the stock market crash on the U.S. economy have been overwhelmed by the rapid improvement in the U.S. trade balance in the months since the crash. Certainly, the trade balance has been better than expected since the crash. With September data and the crash, the model predicted that the annualized value of the trade deficit would be $145 billion between November and January. Actually, in those months, the trade deficit was $130 billion.

Still, a broader perspective reveals that other factors must be responsible for the economic strength since the crash. The stock market crash, after all, was worldwide, so if it had a depressing economic effect, then that effect also should have been worldwide. And if the improved U.S. trade balance were offsetting that effect in this country, then the worsening trade balances of U.S. trading partners should be exacerbating the effect in those countries. But this is not what is happening. The U.S. trade balance has improved since the crash, while Great Britain's and Japan's, for example, have worsened, yet economic activity in all of these countries continues to be strong.

Temporary Wealth?

A third explanation for the current economic strength and optimism is that people didn't change their spending after the loss in wealth that accompanied the crash because it wasn't a loss to them; in fact, they expected it. According to this explanation, the crash came after a large increase in stock prices last spring and summer

The U.S. Economic Outlook for 1988–89

Here is what the Minneapolis Fed researchers' model is currently predicting for selected U.S. economic variables in 1988 and 1989, along with how well those variables did last year and how well they have done, on average, over the last 40 years. (The current prediction is based on data available on March 10, 1988.)

Indicator	Actual 1987	Model Forecast 1988	Model Forecast 1989	1948–87 Average
Annual Growth Rates (4th Qtr. % Changes From Year Earlier)				
Real Gross National Product	3.9%	1.9%	3.1%	3.3%
Consumer Spending	0.8	3.3	2.9	3.4
Durable Goods	-3.7	6.3	2.8	5.1
Nondurable Goods & Services	1.7	2.8	3.0	3.2
Investment	13.7	-1.8	5.2	4.4
Business Fixed	4.5	3.8	3.5	3.7
Residential	-2.4	3.1	7.0	3.9
Government Purchases	3.2	1.7	2.2	3.7
Gross National Product Deflator	3.3	3.2	3.6	4.2
4th Quarter Levels				
Change in Business Inventories (Bils. of 1982 $)	56.6 bil.	19.9 bil.	25.7 bil.	—
Net Exports (Bils. of 1982 $) (Exports less Imports)	-136.4 bil.	-147.7 bil.	-155.4 bil.	—
Civilian Unemployment Rate (Unemployment as a % of the Labor Force)	5.9%	5.7%	5.7%	5.7%

Sources of actual data: U.S. Departments of Commerce and Labor

which was caused by speculation or other factors unrelated to the financial health of firms. Any apparent gain in wealth caused by such factors would not be expected to last. Thus, when stock prices dropped, economic activity would not be affected: not having felt a gain from the stock price rise, people would not feel a loss from the crash.

One way to investigate this explanation for the missing economic effects of the crash is to examine data on last year's durable goods purchases. Spending on durable goods—things like automobiles, appliances, and furniture—is highly volatile because these goods are not so much daily necessities as they are long-term investments. Nondurable goods like food and clothing must be bought in both good times and bad. However, when times are bad, purchases of durable goods are often postponed until times start to look good again.[4] People's current attitudes about their wealth, that is, are generally reflected in their spending on durable goods.

Data on this spending in the first half of last year seem to be consistent with the temporary wealth explanation for economic activity since the crash. Stock prices rose 20 percent during the first half of 1987, much more rapidly than the model predicted early in the year. At that time, the model expected durable goods purchases to increase at an annual rate of 4.4 percent in the first half of 1987. If people believed that their new stock market wealth would last, they should have increased their spending on durable goods more than they had been expected to. But they don't seem to have. In fact, instead of increasing, durable goods purchases fell at an annual rate of 3.4 percent in the first half.

Data for the second half of the year are consistent with the temporary wealth explanation, too. If people believed that the crash really decreased their wealth, then durable goods purchases after it should have been lower than predicted before the crash. But as we saw earlier (on the table), that is not true. In the three months after the crash, durable goods purchases were expected to fall at an annual rate of 2.1 percent; they actually increased 20.1 percent.

All of these data on durable goods spending suggest that the movements in stock prices last year did not affect people's wealth perceptions or their consumption decisions. But the idea of temporary wealth has other implications which should be studied and confirmed before this explanation for the current strength and

[4]For evidence on the volatility of durable goods consumption and its usefulness as a leading economic indicator, see Prescott 1983.

optimism is judged correct. While such a comprehensive study is beyond my scope here, I offer two specific suggestions for further research. One is to examine whether or not purchases of houses and other major assets changed after the crash. The other is to conduct a survey to discover whether or not people felt poorer or changed their economic behavior because of the crash. The temporary wealth explanation implies that neither of these types of data should show any changes.

No Puzzle?

Thus, I end where I began: puzzled by the economic strength and optimism since the October stock market crash. Some evidence suggests that people may not have considered last year's large swings in stock values to be changes in their wealth, but more evidence is needed to be confident about that explanation. On rumination, another potential explanation comes to mind. Perhaps the depressing effect of the stock market crash has merely been delayed for some reason, so that eventually there will be no puzzle to explain. According to the model, this is certainly possible. When the model estimates the uncertainty in its latest forecast, it says that the U.S. economy still has a 23 percent chance of falling into a recession this year. This potential explanation may not be reassuring, but at least we can be sure that it will be tested by time.

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