

# SIEPR

## *policy brief*

Stanford Institute for Economic Policy Research

on the web: <http://siepr.stanford.edu>

## The Economic Impact of 9/11

By Nick Bloom

Major events like the terrorist attacks on New York of 11 September 2001 generate large but typically short-lived bursts of uncertainty. New research explores the effects of such shocks on employment, investment and productivity – and how monetary policymakers should decide on the ideal response.

*9/11 led to the loss of one million jobs and investment equivalent to 3% of GDP over the next four months*

What is the impact of shocks like high-profile terrorist attacks on firms' hiring and investment decisions and on their productivity? My research finds big short-run effects from the fear and uncertainty – a temporary drop in GDP as everyone pauses and the economy freezes. But six months from incidents like 9/11, the uncertainty effects are much more muted as firms resume activity and make up for lost time.

There has been extensive research on the impact of major shocks via the levels of future demand and productivity – what economists call “first moment” effects (examined in the research literature on business cycles). But until now, there has been very little investigation of the *uncertainty* – or “second moment” – effects of economic and political shocks.

This is surprising as it turns out that uncertainty shocks occur regularly. As Figure 1 shows, uncertainty – as measured by the widely accepted indicator of monthly stock market volatility-doubled after events like the Cuban missile crisis, the assassination of President Kennedy, the Gulf War and 9/11.

The closest previous work to mine was done as a doctoral thesis more than 20 years ago by the current chairman of the U.S. Federal Reserve Ben Bernanke. Indeed, in a way, my study is a test of the “Bernanke hypothesis,” extending his examination of

*continued on inside...*

### About The Author

**Nick Bloom** is an Assistant Professor of Economics at Stanford. He is also a Faculty Fellow of the Stanford Centre for Economic Development, a Research Associate at the National Bureau of Economic Research, and an International Associate of the Centre for Economic Performance. His research focuses on the impact of major economic and political shocks on the US economy, the role of management and organizational practices in shaping firm and national productivity, and the determinants of innovation. Prior to Stanford Nick worked as a Research Fellow at the London School of Economics, a Business Tax Policy Advisor at the UK Treasury, and an Associate Consultant at McKinsey & Company. He received his PhD from University College London.



# SIEPR *policy brief*

the impact of uncertainty on investment to its effects on hiring and productivity; quantifying it using firm-level data; and confirming via a simulation the prediction that the response to an uncertainty shock is a rapid drop and rebound in economic activity.

Comparing the simulated data with actual data from the period immediately following 9/11 produces a remarkably good fit. Figure 2, which plots actual quarterly changes in net

employment, shows that there was a sharp drop in net employment growth in the quarter after 9/11, with a rapid rebound in the first quarter of 2002.

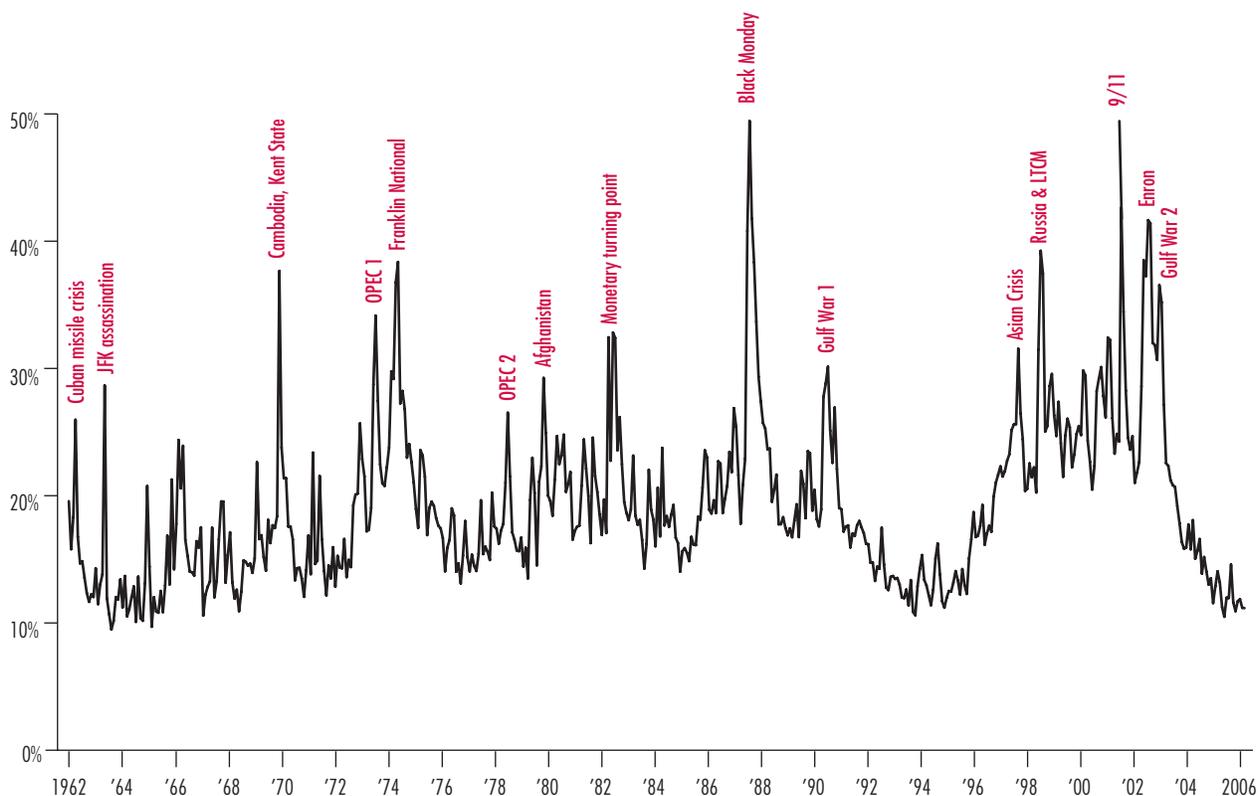
The immediate decrease was the largest quarterly fall in employment growth since 1980; compared with predicted employment changes from the consensus forecasts of 23 August 2001, 9/11 appears to have generated a net job loss of 1 million jobs in the subsequent four months. But comparison

with the forecasts for further ahead suggests that there was little longer-run fall in employment growth.

*The rapid drop in economic activity was followed by a strong rebound with little longer-term impact*

The data for quarterly investment as a percentage

**FIGURE 1**  
Monthly US Stock Market Volatility, 1962-2006



Note: The vertical axis shows a percentage measure of volatility known as 'annualised standard deviation'. Prior to 1986, this is calculated as the percentage actual volatility within each month on the S&P500 index of the US stock market. After 1986, it is calculated using the percentage 'implied volatility' from a basket of options on the S&P100 index.

contribution to real GDP growth follow a similar pattern. As Figure 3 shows, there was a sharp fall after 9/11, with the last quarter of 2001 representing the lowest quarterly value for investment since 1982.

Again, compared with the pre-9/11 consensus forecasts, the short-run effects were large – with the drop in investment cutting annual GDP growth by about 3 percent over the subsequent four months. But there was a rapid bounce-back

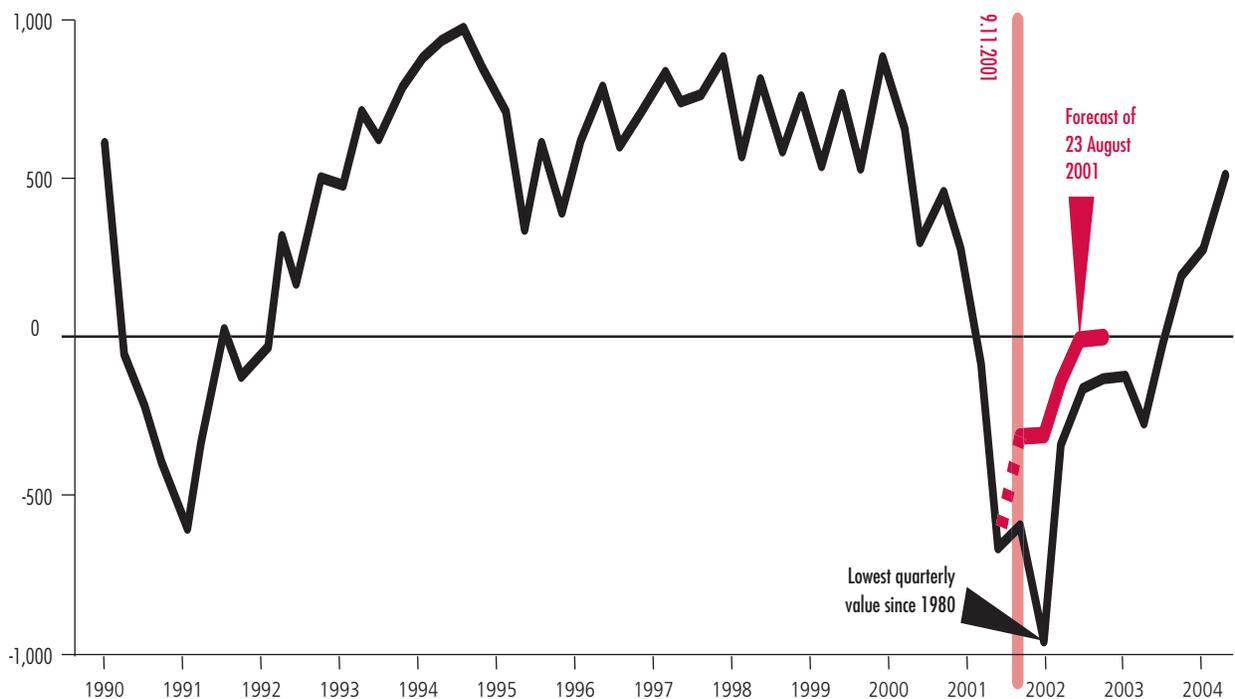
in the first quarter of 2002 and there were no apparent longer-run effects.

Central bank statements of the time provide a broader confirmation of the uncertainty that 9/11 created. Figure 4 plots the frequency of the word “uncertain” in the minutes of the Federal Open Market Committee (FOMC), which displays a clear jump and subsequent decay around 9/11. For example, according to the minutes of 2 October 2001:

“The events of September 11 produced a marked increase in uncertainty ... depressing investment by fostering an increasingly widespread wait-and-see attitude about undertaking new investment expenditures.”

Almost two months later, on 27 November, FOMC member and president of the Chicago Federal Reserve Board Michael Moskow commented,

**FIGURE 2**  
US Quarterly Net Hiring



Note: The vertical axis measures quarterly changes in net employment in the private sector (in thousands of people); the data are from the Current Employment Statistics survey produced by the Bureau of Labor Statistics; the forecast is an average of 33 economic forecasters collected by the Federal Reserve Bank of Philadelphia on 23 August 2001.

“Because the attack significantly heightened uncertainty, it appears that some households and some businesses would enter a wait-and-see mode ... They are putting capital spending plans on hold.”

The FOMC minutes of 6 November noted the additional effects of uncertainty on risk aversion:

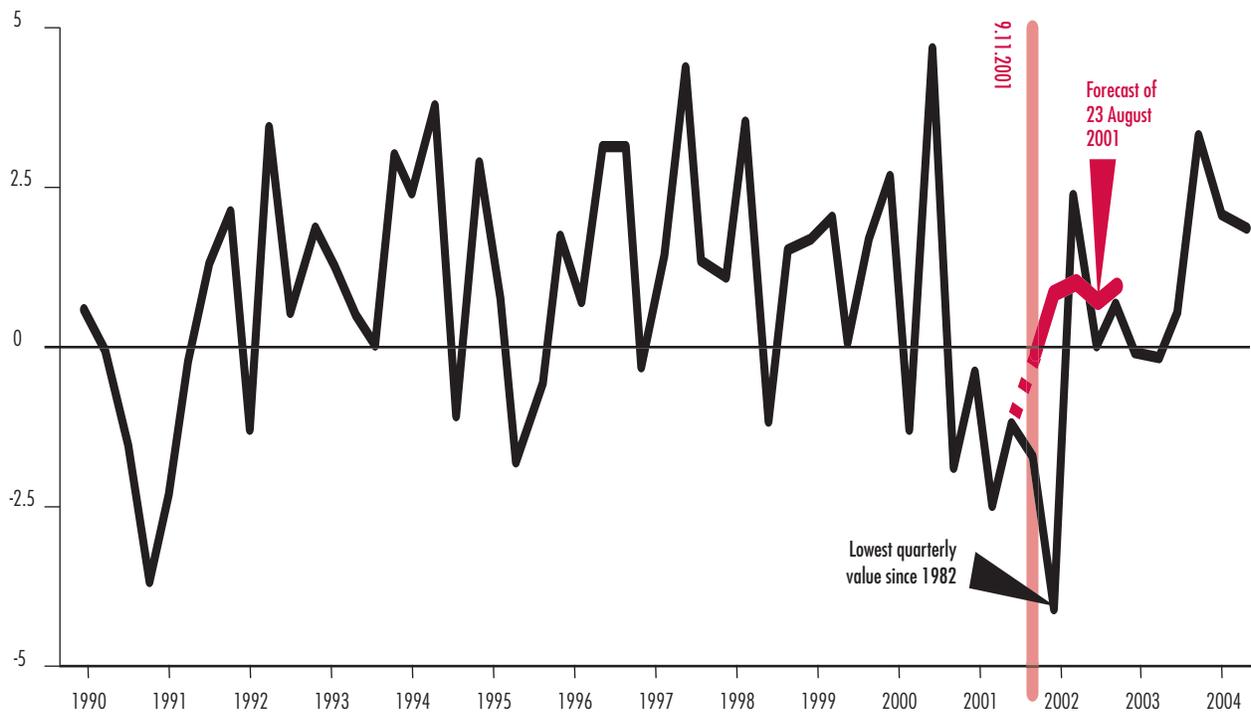
“The heightened degree of uncertainty and risk aversion following the terrorist attack seemed to be having a pronounced effect on business and household spending.”

And other central banks also addressed this phenomenon. For example, according to the 17 October minutes of the Bank of England’s Monetary Policy Committee:

“A general increase in uncertainty could lead to a greater reluctance to make commitments ... Labour hiring and discretionary spending are likely to be deferred for a while, to allow time for the situation to clarify.”

Uncertainty is clearly a ubiquitous concern of monetary policymakers-and it becomes of particular importance in the immediate aftermath of a major shock. When deciding whether

**FIGURE 3**  
US Quarterly Investment



Note: The vertical axis measures the quarterly percentage contribution of investment to real GDP growth; the data are from the National Income and Product Accounts produced by the Bureau of Economic Analysis; the forecast is an average of 33 economic forecasters collected by the Federal Reserve Bank of Philadelphia on 23 August 2001.

to adopt a contractionary, neutral or expansionary stance in response, it is critical to distinguish between persistent first moment effects (which will generate a drop in activity lasting several quarters) and temporary second moment effects like those of 9/11 (which will generate a big drop in month 1 but a complete rebound by month 5).

My research suggests two pieces of information that monetary policymakers might use to assess the likely impact of any shock: first, measures of financial uncertainty from

indices of implied stock market volatility and second, the spread of activity across firms (a first moment shock makes everyone hire less as it's bad news for everyone, while a second moment shock makes all firms more cautious, as they are more uncertain about the future, so that people hiring do less hiring, and people firing do less firing, so that activity compresses).

Given the rapid drop and rebound from second moment shocks and the long delays in monetary policy, the best response is a limited one. So the cautious stabilization pursued by the Federal Reserve and

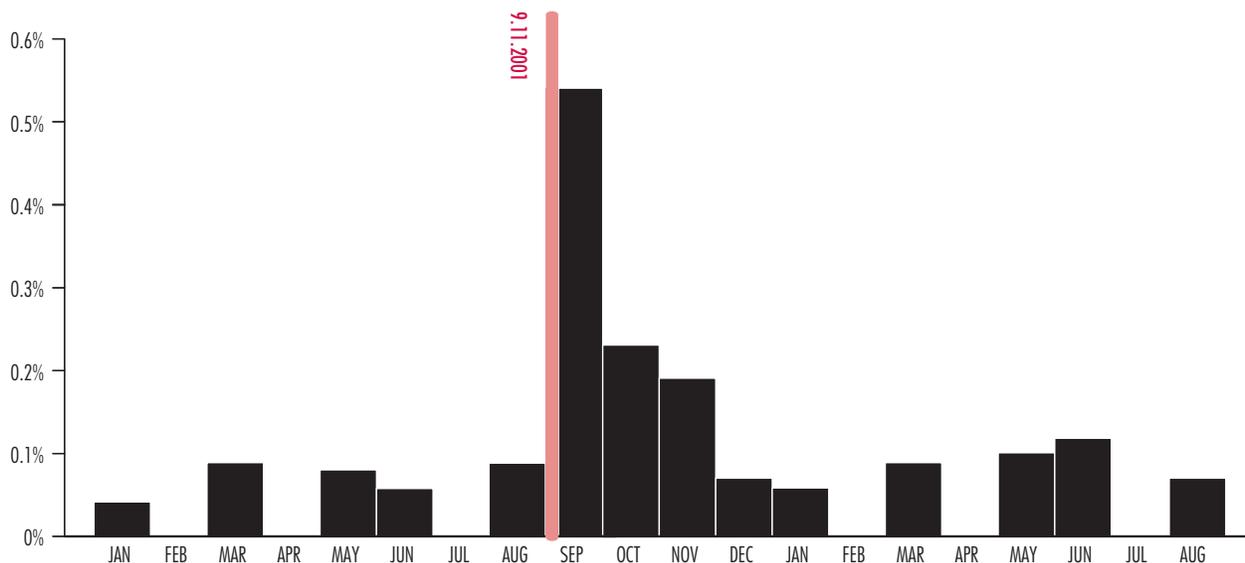
the Bank of England in late 2001 looks entirely appropriate based on these results-and with hindsight was proved correct.

This article summarizes "The Impact of Uncertainty Shocks: Firm Level Estimation and a 9/11 Simulation" by Nick Bloom, <http://www.stanford.edu/~nbloom/ImpactUncertaintyShocks.pdf>

### Further reading

Ben Bernanke (1983), "Irreversibility, Uncertainty and Cyclical Investment," *Quarterly Journal of Economics* 98, 85-106.

**FIGURE 4**  
Frequency of the Word "Uncertain" in the Minutes of the Federal Open Market Committee (FOMC)



Source: FOMC minutes; note that the FOMC typically meets only eight times a year so some months have no meetings.

# SIEPR

## About SIEPR

The Stanford Institute for Economic Policy Research (SIEPR) conducts research on important economic policy issues facing the United States and other countries. SIEPR's goal is to inform policy makers and to influence their decisions with long-term policy solutions.

## Policy Briefs

With this goal in mind SIEPR Policy Briefs are meant to inform and summarize important research by SIEPR faculty. Selecting a different economic topic each month, SIEPR will bring you up-to-date information and analysis on the issues involved.

SIEPR Policy Briefs reflect the views of the author. SIEPR is a non-partisan institute and does not take a stand on any issue.

## For Additional Copies

Please see SIEPR website at:  
<http://SIEPR.stanford.edu>

## Taube Family Foudation

SIEPR Policy Briefs are underwritten by a generous grant from the Taube Family Foundation.

# SIEPR *policy brief*

A publication of the  
Stanford Institute for Economic Policy Research  
Stanford University  
579 Serra Mall at Galvez Street  
Stanford, CA 94305  
MC 6015

Non-Profit Org.  
U.S. Postage  
**PAID**  
Palo Alto, CA  
Permit No. 28