

# CRS Report for Congress

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## The Macroeconomic Effects of Hurricane Katrina

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### Summary

Hurricane Katrina will have substantial and long-term effects on the economies of southern Louisiana and Mississippi. But, given that those two states account for just 2% of total U.S. gross domestic product, the effects on the national economy will be much less dramatic than the effects on the region. Since the storm, a number of economic forecasters have adjusted their predictions to reflect its effects. Most indicate that, as a result of the storm, national economic growth is expected to be 0.5%-1.0% slower than in the second half of 2005. However, as economic activity recovers in the affected region, and rebuilding begins, growth in the first half of 2006 is now expected to be more rapid than was previously forecast. This report will be updated as reliable data become available.

There can be no doubt that Hurricane Katrina was a tragic and historic event that will have substantial and long-term effects on the economies of southern Louisiana and Mississippi. From a national perspective, that region of the country accounts for only a fraction of U.S. economic activity. In 2004, Louisiana and Mississippi accounted for just 2% of national gross domestic product (GDP). In 2003, the New Orleans-Metairie-Kenner metropolitan area accounted for just 0.4% of total national personal income. Given the relatively small percentage that the affected area contributes directly to national output, what are the prospects for a noticeable slowdown in national economic growth?

### Historical Perspective

In 1992, the United States was hit by two major storms: Hurricane Andrew, which hit Florida and Louisiana in late August, and Hurricane Iniki, which hit Hawaii in mid-September. Both storms caused significant destruction of commercial and residential structures. The Bureau of Economic Analysis (BEA) estimated that the storms directly reduced the fixed capital stock by \$55.1 billion, or over \$60 billion in 2005 dollars.<sup>1</sup>

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<sup>1</sup> U.S. Department of Commerce, *Survey of Current Business*, Oct. 1992, pp.2-4.

Gross domestic product, the standard measure of economic output, measures *new* production; destruction of the *existing* capital stock is not part of the GDP measurement. (However, net domestic product, which is GDP less capital depreciation, was reduced.) Of course, the loss of capital and labor reduces the nation's ability to produce new goods and services, but BEA cannot isolate those effects in the aggregate data. For example, BEA cannot quantify how much of a reduction in tourism services is caused by a hurricane compared to other factors. What the data do show is that the growth rate of national GDP actually increased from 3.9% in the second quarter of 1992 to 4.0% in the third quarter. By contrast, the growth rate of net domestic product fell from 4.2% in the second quarter to -1.1% in the third quarter. Nor did the hurricanes cause a fall in gross local output: Florida grew at 3.3% — the same rate as the nation — and Hawaii grew at 2.1%, in 1992. Total employment in Florida grew at a 1.2% rate in 1992, compared to 0.3% nationally.

Most reports suggest that the costs of Hurricane Katrina will surpass those of Iniki and Andrew. For example, the National Association of Home Builders (NAHB) estimated that the number of housing units destroyed by Hurricane Andrew was over 28,000. As a result of damage from Hurricane Katrina, the NAHB expects that a large share of the more than 200,000 homes in New Orleans will be found to have been damaged beyond repair, in addition to storm losses elsewhere not yet estimated.<sup>2</sup>

The economic effects of Hurricane Katrina have also been compared to the terrorist attacks of September 11. The attacks came during the 2001 recession, which began in March 2001, and ended in November 2001. In the third quarter of 2001, national GDP declined by 1.4%. It is likely that third quarter growth would still have been negative had the attacks not occurred. In New York state, output rose by 1.8% in 2001, fell by 0.8% in 2002, and then returned to a healthy growth rate beginning in 2003. The Federal Reserve Bank of New York estimated that September 11<sup>th</sup> caused a loss of 49,000-71,000 jobs in New York City in the worst month, February 2002.<sup>3</sup>

## Effects on National Economic Growth

It is important to keep in mind that the effect on national output from the area affected by Katrina is largely a one-time event. It represents a drop in the *normal level* of output due to lost labor hours and capital. Most of that immediate effect will be reflected in reported GDP growth for the third quarter. Until output returns to *normal levels*, national output may be depressed, but the *growth rate* of the economy is likely to recover quickly.

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<sup>2</sup> National Association of Home Builders news release, Sept. 2, 2005, available at their website, at [<http://www.nahb.org>].

<sup>3</sup> Jason Bram, James Orr, and Carol Rappaport, "Measuring the Effects of the September 11<sup>th</sup> Attacks on New York City," Federal Reserve Bank of New York, *Economic Policy Review*, vol. 8, no. 2, Nov. 2002. However, more recent data suggests that the effect was smaller than originally estimated. See Jason Bram, "New York City's Economy Before and After September 11<sup>th</sup>," Federal Reserve Bank of New York, *Current Issues in Economics and Finance*, vol. 9, no. 2, Feb. 2003.

In fact, increased spending for immediate storm relief will offset some of the losses due to the storm. Although damage to the capital stock does not reduce measured GDP, rebuilding increases it. Some of the regions that take in victims will see their growth rates rise as the victims receive government relief spending and, in some cases, obtain employment in their temporary city. Moreover, there is likely to be an increase in construction spending in the quarters and years to come in the affected area. The effects of that construction boom will be substantial locally, but modest at the national level. Even if estimates of over 100,000 homes destroyed prove correct, their replacement will add only marginally to construction totals nationwide. In 2004, the Census Bureau reported nearly 2 million total new housing starts.

Even if the storm had resulted in the loss of all output contributed by Louisiana and Mississippi, the direct effect on national GDP would only be a drop of 2%. Since some economic activity continues in both states, the loss will be less than that. Those parishes in Louisiana and the counties in Mississippi and Alabama that were declared presidential disaster areas accounted for 1.3% of total national personal income in 2003. Prior to the storm, the U.S. economy was growing well in excess of 2%. The annual rate of growth in real GDP was 4.2% in 2004. For the first two quarters of 2005, the growth rates were 3.8% and 3.3% respectively. Thus, lost output due to the storm seems unlikely to be sufficient to result in recession, or negative economic growth.

**Growth Forecasts.** Some forecasters have adjusted their economic projections to include the potential effects of Katrina. Global Insight has lowered its forecast for economic growth in the second half of 2005 by 0.7 percentage point. Anticipating falling energy prices and a pickup in reconstruction, Global Insight raised its projection for growth in the first half of 2006 by 0.8 percentage point. Measured year over year the changes appear more modest. The forecast for 2005 was reduced by 0.2 percentage point, and the forecast for 2006 was increased by the same amount.<sup>4</sup>

On August 18, 2005, Macroeconomic Advisers released a forecast of 4.6% growth in the third quarter and 3.6% in the fourth quarter. On September 6, 2005, they revised those numbers down to 3.2% and 3.3%. After the storm, the Bank of America is reported to have lowered its GDP growth forecast for the fourth quarter from 3.7% to 3.0%. Merrill Lynch economists were reported to have estimated that the combination of the storm and higher energy prices could reduce output by a combined \$70 billion, or 0.6% of GDP.<sup>5</sup>

The Congressional Budget Office (CBO) estimates that the overall reduction in economic growth due to Katrina in the second half of 2005 is likely to be somewhere between one-half and one percentage point, and will be even less when considered on a year-over-year basis. CBO also estimated the Katrina could reduce employment through the end of the year by as much as 400,000.<sup>6</sup>

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<sup>4</sup> Global Insight, "U.S. Economy: Current Situation: Forecast Flash," posted on the Global Insight website Sept. 8, 2005. Global Insight, "Katrina's Impact on the New Orleans Economy," posted on the Global Insight website Sept. 7, 2005.

<sup>5</sup> Both from Forbes, "Hurricane's Big Bucks," posted at [<http://www.forbes.com>] on Sept. 1, 2005.

<sup>6</sup> Congressional Budget Office, memorandum to Senator William H. Frist, M.D., Sept. 6, 2005.

Just as the loss of output due to Katrina is likely to reduce economic growth somewhat in the second half of 2005, the resumption of economic activity in the affected areas will raise growth, perhaps as soon as early 2006. Both that and the additional spending associated with the rebuilding are likely to be a boost to economic growth in the first half of 2006. In the same two forecasts cited above, Macroeconomic Advisers adjusted their outlook for economic growth in the first two quarters of 2006 from 3.2% and 3.2% before Katrina, to 4.4% and 3.8% afterwards. For the hurricane to have longer lasting negative economic effects, it would have to affect the broader national economy. This could occur if the hurricane led to widespread disruption of specific sectors of the economy.

## Sectoral Issues

Thus far, this report has examined the direct effects of Hurricane Katrina on the local gulf economies as a share of the national economy. Next, the report will examine whether the Hurricane will have any indirect effects on the rest of the nation that was not hit by the hurricane.

**Energy.** The gulf region is an important producer and distributor of oil and natural gas for the nation as a whole. It produces 6.5% of domestic crude oil consumption and 16% of natural gas consumption. Oil refineries in the gulf area were also shut down by Hurricane Katrina; initially, about 2 million barrels per day of refining capacity was lost. The Louisiana Offshore Oil Port receives crude oil imports equal to 5% of consumption, and major pipelines that serve the East Coast, South, and Midwest originate in the gulf. The long-term effect of Katrina on energy prices depends how quickly the production facilities, refineries, ports, and pipelines can be repaired and brought back on line.<sup>7</sup>

Why would higher energy prices be a cause for broader economic concern? Eight of the nine post-war recessions were accompanied by sharp increases in the price of oil. The last four recessions followed this pattern: the 1973-1975 recession followed the oil embargo; the double dip recession of 1980-1982 followed the second oil shock, which was caused by the Iranian revolution and Iran-Iraq War; the 1990-1991 recession followed the oil price spike induced by the Gulf War; and the 2001 recession followed a sharp rise in oil prices from 1999 to 2000.

Energy prices are important to the broader economy because energy is a major component in the production process and a major consumption good for households. Economic theory suggests that oil shocks lead to higher inflation, a contraction in output, and higher unemployment in the short run. It is the rise in energy prices, rather than “high” energy prices, that causes these macroeconomic problems. Effective policy responses are difficult because expansionary monetary policy (lower interest rates) or fiscal policy (increased budget deficit) would exacerbate the inflationary pressures caused by the oil shock, while contractionary policy would exacerbate the contraction in output.

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<sup>7</sup> For the current status, see Energy Information Administration, *Special Report — Hurricane Katrina’s Impact on U.S. Energy*, at [[http://tonto.eia.doe.gov/oog/special/eia1\\_katrina.html](http://tonto.eia.doe.gov/oog/special/eia1_katrina.html), frequently] updated. For more detailed information, see CRS Report RS22233, *Oil and Gas: Supply Issues After Katrina*, by (name redacted) and (name redacted).

Some studies found that the cumulative effect of a 10% increase in oil prices during a one-quarter (3-month) period would reduce economic growth by 0.7-1.4 percentage points over the next year. This means that a small, transient price increase would reduce growth modestly, but a long, sharp price increase could push the economy into recession.<sup>8</sup>

Empirical research and macroeconomic models of the effect of oil price increases on economic growth and inflation are typically measured in terms of the price of crude oil, not gasoline prices. Initially, the effect of the hurricane on crude oil prices has been moderate, while the effect on gasoline prices has been significant. Thus, the macroeconomic models may underpredict the effect of higher prices on the economy. However, the disparity between the increase in gasoline prices and crude oil prices probably reflects the loss of refinery capacity as a result of the hurricane. This suggests that once refinery capacity is brought back on line, gasoline prices should come back in line with crude oil prices.

**Trade.** Another channel through which the hurricane could affect the broader national economy is through its effects on international trade. New Orleans and other Gulf ports are major loading points for imports and exports. Imports that passed through Gulf ports in 2003 equaled \$100 billion, about one sixth of all imports passing through U.S. ports. By tonnage, Louisiana contains five of the 12 largest U.S. ports, including the first (South Louisiana) and fifth (New Orleans) largest, and Mobile, AL is the fourteenth largest.<sup>9</sup>

Disruptions to trade may be mostly short-lived. The ports are not expected to be closed for an extended period of time. Ports in Baton Rouge, South Louisiana, and Mobile were open shortly after the storm. The port of New Orleans was re-opened to military and relief vessels on September 7. The Mississippi River was partially reopened to traffic on September 5. Most trade can be diverted to other ports relatively easily. A notable exception is certain agricultural commodities, including half of U.S. grain exports, that are shipped from the Midwest down the Mississippi River on barges to Louisiana ports, and then shipped abroad.<sup>10</sup>

Trade impacts the GDP through net exports. From an accounting perspective, exports add to GDP and imports subtract from GDP. Thus, if both exports and imports fell in equal proportion as a result of the hurricane, GDP would be unchanged. Only if net exports fall (e.g., because of greater oil imports or reduced agricultural exports) would GDP fall as a result of the hurricane's disruptions of trade.

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<sup>8</sup> For more information, see CRS Report RL31608, *The Effects of Oil Shocks on the Economy: A Review of the Empirical Evidence*, by (name redacted).

<sup>9</sup> Statistics from American Association of Port Authorities, *Press Room*, [[http://www.aapa-ports.org/pressroom/katrina\\_updates.htm#Statistics](http://www.aapa-ports.org/pressroom/katrina_updates.htm#Statistics)].

<sup>10</sup> Up-to-date status of ports can be found at American Association of Port Authorities, *Press Room*, [[http://www.aapa-ports.org/pressroom/katrina\\_updates.htm#Port%20Updates](http://www.aapa-ports.org/pressroom/katrina_updates.htm#Port%20Updates)].

## Policy Response

Policymakers have two tools at their disposal to offset the effects of the hurricane on aggregate spending in the economy: fiscal and monetary policy. The Federal Reserve can use monetary policy to stimulate spending by lowering the overnight interest rate.<sup>11</sup> This stimulates interest-sensitive spending on capital investment goods, residential investment, consumer durables, and net exports. Fiscal policy can be used to stimulate spending through an increase in the budget deficit.<sup>12</sup> Deficit-financed spending stimulates aggregate spending because the spending is financed through borrowing. Likewise, deficit-financed tax cuts stimulate private spending by the recipient that is financed through borrowing. Economic theory holds that deficit-financed spending is more stimulative than deficit-financed tax cuts because some of the tax cut would be saved rather than spent. Any stimulus to spending is only temporary; in the long run, spending cannot grow faster than the growth in the productive capacity of the economy.

The emergency supplemental appropriation enacted in response to the hurricane will act as a natural stimulus even though that is not its intention. A \$10.5 billion supplemental was enacted on September 2 (P.L.109-61), and a \$51.8 billion supplemental was enacted on September 8 (P.L.109-62). Combined, these supplementals would equal about 0.5% of GDP; however, further supplementals may be enacted in the future.

If the negative economic effects of the hurricane are as short-lived as predicted, additional stimulus might take effect after the fact. While changes in interest rates can be implemented rapidly, the effect on the economy is delayed. Fiscal policy changes also face an implementation lag. For example, a stimulus bill was proposed immediately following the September 11 attacks, but was not enacted until March 9, 2002 (P.L.107-147). Policy lags are less of an issue for emergency supplemental spending.

If higher oil prices persist as a result of the hurricane, then inflation over the next few quarters is likely to be higher than the Fed expected when it set its interest rate path prior to the storm. While inflation is unlikely to be intolerably high as a result of higher oil prices, it may top 3%, which seems to have been the upper-bound of the Fed's comfort level in recent years. A drawback to stimulative policy is that it would be likely to push inflation even higher.

If economic forecasters are correct that the hurricane will have a limited and temporary effect on economic growth, then fiscal or monetary stimulus would be unnecessary to keep the economy on a growth path near full employment. After being revised downward to take the hurricane into account, most forecasts are still near 3%, which is close to the economy's historical average. If aggregate spending is stimulated when the economy is at full employment, the results are likely to be inflationary.

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<sup>11</sup> See CRS Report RL30354, *Monetary Policy: Current Policy and Conditions*, by (name redacted) and Gail Makinen.

<sup>12</sup> See CRS Report RL31235, *Economics of the Budget Deficit*, by Brian Cashell.

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