

Economic Impacts of Hurricane Katrina

by M. Cary Leahey

Introduction

Hurricane Katrina is the largest natural disaster in our nation's history. Preliminary estimates of the total damages or economic losses from the calamity top \$125B, after being initially pegged at \$25B. If accurate, this will be more than twice as costly as the next largest hurricane—hurricane Andrew, with damages of \$48B in 2004 dollars in 1992. The U.S. government has pledged over \$62B in relief funds with the cumulative long-term spending amounting to \$200B or more. Outside of the \$44B spent in the aftermath of 9/11, the federal government has not spent more than \$10B to help after any other natural disaster (Table 1).

Table 1

	Cost of Disasters (Billions, 2004 dollars)		
	Total Damages	Insured Losses	Post Disaster Federal Outlays
Katrina 2005	125 plus	60 plus	62 plus
9/11/2001	100.0	21.6	44.0
Northridge Cal Earthquake 1994	97.2	12.5	10.9
Andrew 1992	48.1	20.9	8.1
Agnes 1972	27.3	2.0	N/A
Loma Prieta Cal Earthquake 1989	21.3	10.7	N/A
Hugo 1989	19.5	4.6	N/A
Charley 2004	14.7	7.5	N/A
Ivan 2004	12.6	6.4	N/A
Frances 2004	9.5	4.6	N/A
Jeanne 2004	6.8	3.7	N/A
Georges 1998	7.7	3.4	N/A
Floyd 1999	7.5	2.2	N/A
Opal 1995	4.7	2.6	N/A
Iniki 1992	2.7	2.2	N/A
Total cost except Katrina	379.6	104.9	63.0

Source: Decision Economics, Inc.

The areas directly impacted by hurricane Katrina—the coastal regions of Louisiana, Mississippi, and Alabama—represent only 0.7% of U.S. GDP (Table 2). So even if half of the regional output were lost for the next six months, GDP growth would be cut by only 0.3% or so per quarter—a manageable amount. But the major impacts of Katrina are the national (and international) impacts on energy prices and transportation and energy infrastructures. Oil prices soared on reports that as much as 10% of U.S. refining capacity was shut down by the disaster. But as about half of the lost output has been brought on-line and supplies from Europe, Japan, and the U.S. strategic petroleum reserve have increased, oil prices fell. By Thursday, September 8th, the WTI price of crude oil dropped to \$64 from a high of \$70 on August 30th, lower than pre-Katrina.

Highlights

- Hurricane Katrina may turn out to be the costliest natural disaster in U.S. history. With estimated \$125B in economic losses, it would be twice the costs of the next costliest hurricane. The areas affected by Hurricane Katrina—New Orleans and the coastal cities in Mississippi and Alabama—represent about 0.7% of U.S. GDP and employment. For that reason, it is hard to estimate a large impact on the national economy, even if regional output is cut severely over the next few months.
- However, the impact on monthly statistics could be profound. For example, if all of the 900K employees in the region were not counted in the September payroll survey, then total payrolls could easily fall 500K workers—the largest monthly decline in 40 years.
- It is not the regional impacts that are particularly large, but the potentially large nationwide impacts on energy prices from the destruction of the local energy infrastructure. Simulations with \$70/barrel oil compared to a \$40 basecase suggest that the impacts could be as much as 1 percentage lower GDP growth and as much as 0.5 to 0.75 percent higher core inflation over the next year. For these reasons, the forecast of GDP growth in the second half of 2005 is lowered by about 0.5 percentage points.
- The federal government response is massive with \$62B in outlays allocated to disaster relief and rebuilding, with more to come. If that amount is actually spent quickly in the next four months, Katrina may represent a net stimulus to the economy, as regional output is only \$80B annually.
- The hurricane puts the Fed in a tricky position. The energy shock from Katrina simultaneously lowers output growth but lifts inflation, making the possible decision to pause or even lower interest rates difficult. With the Fed committed to inflation rate stability as the first goal, we think that it will stay the course and tighten credit at the next two meetings, choosing to pause at the December meeting in an effort to take stock.

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Impacts on the monthly indicators could be large

While the lost regional output may not impact national GDP significantly, the impacts on important monthly statistics could be profound. Weekly estimates of consumer confidence have fallen sharply and the initial estimate of consumer sentiment dropped 12 points in September. Initial claims have already increased a cumulative 78K in the last two weeks because of the hurricane. There are potentially over 900K workers in the disaster region who may be unemployed this month. If no one was able to find a job by the survey week of the 12th (an unlikely outcome to be sure), nonfarm payrolls would be sure to decline by 600K or more—which would be the largest one-month drop in 40 years. Table 3 outlines the potential impact of the hurricane on the major monthly statistics.

One may be puzzled by the positive sign on retail sales. But the historical record indicates that retail sales are boosted by hurricanes and other natural disasters. Households buy in advance of the troubles and then spend to rebuild. Of course, many do not have jobs but choose to draw from savings or take on new debts to finance additional spending. The federal government will be giving considerable assistance in the form of debit cards, housing vouchers, free housing, education support, tax credits, etc, which will support private spending.

Construction spending will also be boosted over time. Disasters destroy wealth and the means of production. Production itself is not destroyed, but delayed. Rebuilding efforts will be immense in this case but it will still be hard to tell how much construction activity would go on in the next year without the rebuilding after Katrina.

Impact on GDP Will Be Small, Unless...

The treatment of natural disasters in the GDP accounts is complex. The important point to remember is that disasters wipe out wealth, not production. Rebuilding activity to replace lost wealth will eventually boost GDP even though output will be weaker in the very short run. The Commerce Department does not make an estimate of how much natural disasters impact GDP. But they estimate the effects on individual product and income components, as shown in Table 4.

On the product side, the impacts are generally positive but with one important caveat. While retail sales are expected to rise both before and after the hurricane, consumer spending will initially be negatively affected. Consumer spending includes a component for insurance premiums less payments from insurers. While insurance payments are expected to increase, the Commerce Department smooths out their short-term fluctuations to avoid wide swings to GDP—a change in estimation first initiated in 2003. Investment spending will increase as rebuilding activity commences. Government spending will increase depending on the size of the legislated response—in this case \$62B and counting. Imports may rise as imported goods substitute for domestic production. The increased oil import effect could be large initially. Exports will be hurt as regional production, some of it allocated to trade, is lost.

Table 2

	Gulf Region MSAs					
	GDP			Percent	Payrolls	Percent
	2001	2002	2003	of Total	July 2005	of Total
Total	66	68	70	0.7	916	0.7
New Orleans, Louisiana	42	43	45	0.4	617	0.5
Other affected areas*	24	25	25	0.2	299	0.2
Appendix						
Gross State Product	322	327	347	3.4		
Louisiana	138	134	144	1.4		
Mississippi	66	69	72	0.7		
Alabama	118	124	131	1.3		

*Mobile, Gulfport-Biloxi, Hattiesburg, and Pascagoula

Sources: Decision Economics, Inc. and BEA

Table 3

How will monthly economic indicators be affected?	
Indicator	Impact
Initial claims	Negative, as claims move higher
Employment	Negative, until firms reopen, new jobs found
Retail sales	Positive
Construction	Positive, but with a lag
Confidence	Negative

Source: Decision Economics, Inc.

Table 4

How do disasters impact GDP?	
Indicator	Impact
<i>Product side</i>	
Consumption	Initially negative from treatment of insurance payments Over time, a net positive from rebuilding spending
Investment	Positive, but with a lag
Government	Positive, depending on legislative response
Imports	Positive if oil imports rise
Exports	Negative
<i>Income side</i>	
Wage and salaries	Negative until firms reopen and jobs are found
Rental income	Negative
Proprietors income	Negative
Corporate Profits	Negative, handling insurance losses is messy
Depreciation	Positive
Net impact	Negative in first one or two quarters. Positive thereafter

Source: Decision Economics, Inc.

But it is on the income side that the impacts are generally negative. Wage income will be weaker until firms reopen and/or workers find new jobs. Given that hundreds of thousands of individuals were displaced and are unlikely to return to the Gulf Coast for months, the loss of wage income could be very large. Rental income is lowered by the destruction of real property (net of insurance benefits). Proprietors' income is similarly negatively affected by the disaster. Corporate profits are hurt, particularly for insurers. The treatment of insurance services is very complex and is not discussed in detail here.

Oil Prices Remain Elevated or the Energy/Transportation Infrastructure Is Seriously Damaged

The net impact on GDP should be small from these regional effects, probably on the order of less than 0.5 percentage points. But the important macro impacts are the destruction of energy infrastructure and, to a lesser extent, the transportation network. As we discussed above, oil prices have retraced their post Katrina gains but remain well above \$60, \$20 higher than the beginning of the year. Simulation work with \$70 oil and the use of more conventional rules of thumb suggest that real GDP growth could be cut as much as 1 percentage point and inflation could be boosted by as much as 0.5 to 0.75 percentage points. As a first pass to these effects, we think the Q3 GDP growth post-Katrina will be around 3.5%, down from 4% estimated earlier, while Q4 GDP growth will be 2.5% or so, down from 3% estimated earlier. This assumes a decidedly negative consumption response with the Sinai-Boston (SB) model of the economy.

An additional complication is the impact on the transportation infrastructure, notably shipping. The port of New Orleans handled about 20% of U.S. exports and imports. As of September 12th, the river was finally navigable to deep-water vessels and the port shipped its first tanker on September 14th. Within a month, the port expects to be 30% operational and 70% to 80% operational within three months. There are reports that shipping is being diverted to other ports, so delays seem likely. The fact that there are not more panic stories in the business press is comforting.

Could Katrina Be a Net Stimulus to Growth as Soon as Q4?

The standard interpretation of the impact of hurricane Katrina is that it is negative in the short-run (mainly because of oil) and a net positive in the longer-run because of rebuilding effects. President Bush unveiled a new set of initiatives Thursday night which suggested an open-ended approach to dealing with the relief and rebuilding efforts. According to a wide variety of estimates, the federal government has already "spent" about \$10B this month. But this spending is not really "spending" but pledges to spend money over time. According to the Daily Treasury Statement, the U.S. has spent little under \$1B so far in actual outlays this month.

But the size of the federal response is so great that the net positive rebuilding effect could dominate as soon as Q4. Congress has already opened up the piggybank to the tune of \$62B and that money will be spent and pretty quickly. There is already talk that that money will already be pledged ("used up") by next month. The mayor of New Orleans says that 180K residents will be able to return in just a few weeks—about one-third of the pre-hurricane population. And each household and individual is eligible for \$26K in housing support—or between \$21B and \$46B in the aggregate (depending on whether one uses the number of people in the affected regions or the number of households). Do you think that money will not be applied for and spent?

Some have argued that much of the spending will not happen until many months or even years down the road, citing 9/11 as an example. Rebuilding has been slow in the NYC downtown district, with the twin towers project still under review. This comparison to 9/11 is nonsense. The 9/11 rebuilding has been hampered by issues about the size of memorial, what cultural groups can relocate there, what size tower, etc. But very few people had to be relocated and a transportation and energy

infrastructure was relatively unaffected. Post-Katrina is a very different story—people have to be housed and fed, infrastructure repaired, etc. And, most importantly, the White House has decided to spare no expense to limit the political damage. While the ultimate spending may not reach \$200B it will still be well in excess of \$100B, dwarfing the \$44B spent after 9/11. And a billion here and a billion there and it soon adds up to real money.

As a first pass, we assume that \$7B is spent in actual outlays this month and then \$15B in each of the next 3 months for a total of \$52B—still well short of the \$62B in outlays already authorized by Congress to be spent. We then assume 33% or \$17B is counted as a purchase, with remaining 67% as a transfer to households or firms. Since purchases are counted directly in GDP, then the increased purchases add 0.3% to Q3 and 1.7% to Q4 GDP growth. Now the remaining 67% or \$35B is going to be spent, partly as consumption and partly as investment. If so, private final demands are going to receive a big \$35B boost in the next four months.

GDP accounting is not easy to follow, with the conversion from monthly to quarterly to annual rates. Another way to see this is to reverse the process and go from annual to monthly rates. The annual output of the region affected by the hurricane is about \$80B based on local personal income data, which is \$7B at a monthly rate ($=80/12$). The government has \$62B to spend and it will be spent, perhaps quickly. If we assume the federal spend-out is \$0.5B per day; that equals \$15B per month for 3 to 4 months. So federal spending is \$15B per month; twice the GDP of the region. So if one half of the federal spending is spent in Q4, then the impact is a wash. So a net positive is easy to produce arithmetically in Q4.

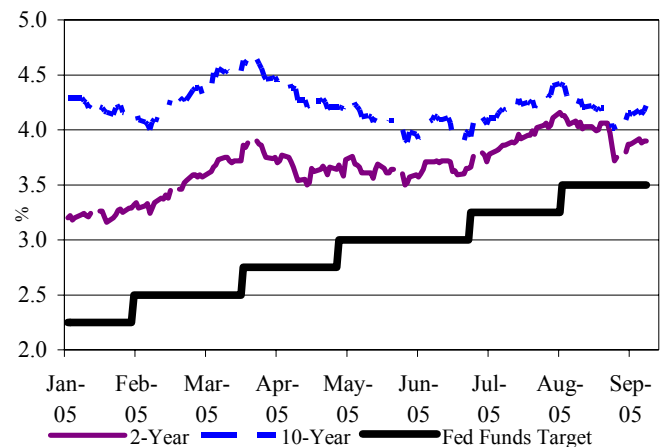
The Fed is in an unenviable position

The Fed now has to deal with a disaster of unprecedented scope. The impacts on the regional economy suggest that a modest amount of output will be lost in the short-run. That alone would suggest that the Fed might skip a meeting and not raise rates. But the impact on the regional energy infrastructure suggests that inflation could move higher, perhaps quite substantially. And fiscal policy is turning massively stimulative, which may need to be offset by tighter monetary policy. And if the first goal of the Fed is to control inflation, then the Fed should continue to tighten credit, unless they think there is a "large enough" chance of a recession.

The Fed knows that it could have a public relations disaster on its hands if it tightens on September 20th without a sense that the economy is on a mend. (We are sure this was a topic of discussion when Bush lunched with Greenspan earlier this month.) The bond market rallied on this development initially, with a sizeable rally across the curve. But a combination of lower oil prices, a firm September employment report, and remarks by FOMC members Moskowitz and Yellen that emphasized the upside risks to inflation persuaded investors to rethink their initial enthusiasm and repriced the curve (Chart 1).

But how much is "large enough"? Under the risk management regime of the Greenspan, the Fed has even lowered rates in 2002-03 when they wanted to avoid even the very small possibility of disinflation turning into deflation. The sharp rise in initial claims and the sharp fall in confidence could be the harbingers of a larger potential slowdown that is indicated by our arithmetic outlined above. And what's the harm of waiting a meeting? But will this projected slowdown have even a very small chance of becoming a downturn? We do not know, but the Fed does not know either. The Fed has no real experience in this situation. Hurricane Andrew happened in August 1992 when the Fed was just completing its long process of easing. The last rate cut was in September 1992. The Fed had started easing in January 2001 so the 9/11 disaster accelerated the pace of easing for a time. We would think that the risk of recession is not large enough to dissuade the Fed from staying the course. In any event, the Fed will have to explain their actions with a sentence or two added to the policy statement to indicate that they are alert to the situation. The phrase "heightened surveillance" has been used in the past. If they hike rates, the Fed will indicate that they are aware things could get worse. If they pause, that the Fed will remind us they are ready to resume tightening if the adverse effects are temporary.

Chart 1
Yield Curve
(Percent)



Source: Federal Reserve